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Survey of
Asset Valuation Methods
for Defined Benefit
Pension Plans

Submitted by: **The Society of Actuaries' Committee on Retirement Systems Research**

The Pension

Forum

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FOR DEFINED BENEFIT PENSION PLANS

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EXECUTIVE SUMMARY

In 1998, the Society's Committee on Retirement Systems Research conducted a survey of asset valuation methods used in valuations of defined benefit plans. For this purpose, asset valuation methods were classified into four groups and nine specific methods, as follows:
- Fair market value (1 method)
- Discounted cash flow (1 method)
- Book value (3 methods: cost, amortized, contract)
- Smoothed value (4 methods: blend of cost and market, write-up, deferred recognition, average market value).

Pension actuaries who are members of the Society were surveyed and asked to provide details on the asset valuation methods used on each pension plan they valued, and some details about the plan, its investment mix and other related information. Approximately 6,000 questionnaires were mailed out and responses for a total of 9,983 plans were returned. Out of those responses, 9,670 were determined to be complete and consistent enough to be included in the study. This total included 9,026 U.S. plans (about 13% of all U.S. plans), 612 Canadian plans (about 9% of all Canadian plans) and 32 other plans.

The following table summarizes the relative frequency of asset valuation methods for the four categories listed above, shown separately by country and size of plan. "Small" plans are defined to be those with less than 100 participants. The percentages shown indicate relative frequency for all plans in the respective columns. For example, 65.3% of all small plans in the U.S. use fair market value.

Asset Valuation Method Relative Frequency				
	United States		Canada	
	Small Plans	Large Plans	Small Plans	Large Plans
Number of Responses [1]	5,799	3,168	274	311
Asset Valuation Group				
Fair Market Value	65.3%	48.6%	90.5%	47.3%
Discounted Cash Flow	0.0%	0.1%	0.0%	0.3%
Book Value	27.8%	13.9%	1.1%	4.5%
Smoothed Value	6.9%	36.4%	8.0%	42.1%
Other (including combination methods)	0.1%	1.0%	0.4%	5.8%

[1] *Results exclude 59 U.S. plan responses and 27 Canadian plan responses that failed to indicate the number of particpants covered.*

The survey found that fair market value is the most frequently used method, especially for smaller plans (smaller by both participant count and assets). Discounted cash flow is very rarely used in either country.

Book value methods are used considerably more frequently in the U.S. than in Canada. In the U.S., this category is dominated by contract value, a method that is not used at all in Canada. In both countries, cost value is used more frequently with government plans than with other plans.

Smoothed value methods account for a total 17% of plans in the United States and a total 25% of plans in Canada. Among the smoothed methods, write-up is the most frequently used in the U.S., and deferred recognition is the most frequently used in Canada. Some other findings related to smoothed value methods include:

- Five years is the most common smoothing period in both countries.
- Most U.S. plans use a corridor of 80% to 120% of fair market value; most Canadian plans use no corridor.
- Most U.S. plans using the write-up method use a write-up rate equal to the rate used to discount the liabilities, and make an adjustment to the preliminary value equal to a fixed percentage of the difference between fair market value and the preliminary value.
- In both countries, a majority of plans using the deferred recognition and average market value methods base the smoothing on either all investment experience in excess of an assumed rate or all realized and unrealized capital gains.
- The deferred recognition method is used more by pay-related plans than non-pay-related plans in the U.S. and less by pay related plans than non-pay-related plans in Canada.
- In both the U.S. and Canada, collectively bargained plans use smoothed methods more frequently (and fair market value less frequently) than non-bargained plans.
- In the U.S., most new asset methods are adopted on a prospective basis, whereas in Canada prior asset experience (usually including up to five years' worth) is typically reflected.
- During the period from 1988 through 1996, plan assets were "marked to market" sparingly in the U.S. (a low of 0.3% of all plans in 1989 to a high of 2.6% of all plans in 1996) and very rarely in Canada.

This survey represents the first phase of a two-phase research project. The objectives of the second phase are to fine-tune the classification system presented in this study, compare and contrast key characteristics of the various asset valuation methods, and assess each asset valuation method's effectiveness in achieving particular financial objectives.

INTRODUCTION

The Society of Actuaries' Committee on Retirement Systems Research recognizes the need for pension actuaries in the United States and Canada to be aware of the techniques available for use in the appropriate measurement of asset values in support of defined benefit plan liabilities. This project represents the first phase of a two-step study of asset valuation methods. The objectives of this first phase were (i) to suggest a standard classification system for the various asset valuation methods used by pension actuaries in North America, and (ii) to measure the relative prevalence of each method. The objectives of the second phase will be to fine-tune the classification system as appropriate, compare key characteristics of asset valuation methods, and assess each method's effectiveness in achieving various financial objectives.

Historically, little has been published on the subject of asset valuation method. Pension textbooks typically devote only a chapter or section to asset valuation methods and, often, research in this area has been hampered by a lack of standardized terminology. A small number of papers have been published in the SOA Transactions. A list of these papers and certain books that discuss the subject are included in the Bibliography section of this report.

To study the classification and prevalence of asset valuation methods, a Project Oversight Group (POG) appointed by the Committee, working with McGinn Actuaries, Ltd., developed a detailed survey that was to be completed by pension actuaries in the U.S. and Canada. In addition to collecting information on relative frequency, the survey was designed to collect related information such as the type of entity sponsoring the plan, plan size (in terms of both participant counts and plan assets), and actuarial cost method used in conjunction with the asset valuation method.

As part of this study, nine asset valuation methods were identified and classified into one of four categories:

- Fair market value (1 method)
- Discounted cash flow (1 method)
- Book value (3 methods)
- Smoothed value (4 methods)

Section 2 of the report provides a description of the nine methods, including possible adjustments and/or application of corridor limits that are necessary to fully describe the method. Section 3 of the report presents a discussion of the survey methodology, and Section 4 presents the actual survey results. Section 5 presents a bibliography of books and articles that discuss various aspects of asset valuation methods, and Section 6 includes a sample copy of the survey form.

DESCRIPTION OF ASSET VALUATION METHODS

Description of Nine Methods Included in Survey

The nine asset valuation methods described in the survey are summarized below. Many of the methods-especially those in the "Smoothed Methods" category-will typically require additional information (such as the types of returns subject to smoothing, potential adjustments towards fair market value, and application of any corridor limits) to completely describe the asset valuation process.

- *Fair Market Value (FMV)* − Asset valuation is based on the price for which the assets could be sold on the valuation date. (This method is also known as Fair Value, Market Value and Actual Value.)

- *Discounted Cash Flow* − This method discounts the future cash flow of the asset to the valuation date. Currently, it is common to discount the anticipated cash flow using a fixed interest rate. (This method is also known as the Present Value or Perpetuity method.)

- *Book Value Methods* − This category of methods is based on the use of a stated or fixed asset value other than fair market value.

  - *Cost Value* − Asset valuation is based on the price at which the asset was purchased. (This method is also known as Book Value or Acquisition Value.)
  - *Amortized Value* − This method is generally used for fixed income investments only. Under this method, valuation assets are calculated to be the par value or face value of the investment adjusted for the amortized premium or discount on the acquisition cost. The amortization typically extends over the period from the acquisition date to maturity (or first call) date.
  - *Contract Value* − Asset valuation is based on the value of the contract as stated by the issuing financial institution (typically an insurance company or bank). This method is frequently used in connection with Guaranteed Investment Contracts, Individual Participation Guarantee, Deposit Administration and similar general account investment contracts.

- *Smoothed Value Methods* − This category includes asset valuation methodologies that, while reflecting fair market value, incorporate a specific algorithm for smoothing market fluctuations.

  - *Blend (or Average) of Cost and Market Values* − This asset valuation method either blends the current Fair Market and Cost Values or averages the ratio of Fair Market Value to Cost Value over two or more years.

- *Write-up* - A preliminary asset value is developed by bringing forward the prior year's actuarial asset value, adding contributions, subtracting benefit payments (and possibly expenses), and increasing this result with assumed earnings. The assumed earnings can be based on either a specified fixed rate of return or on a variable rate determined by a specific formula (e.g., yield on T-bills plus 3%). This preliminary asset value could be subject to certain other adjustments to develop a final asset value. The adjustment to the preliminary asset value might include a partial adjustment toward Fair Market Value or a modification to keep the final asset value within a certain corridor. If no other adjustments are made, the preliminary asset value is the final asset value. (This method is also known as the **Long Term Appreciation** or **Long Range Yield** method.)

- *Deferred Recognition* – Under this method, only a portion of investment experience is recognized in the current year. A preliminary asset value is developed by subtracting (or adding) a portion of previously unrecognized gains (or losses) from the current Fair Market Value. The amounts deferred could be based on specific types of investment returns (i.e., realized and unrealized gains) or on overall returns in excess of (or less than) a specified rate. This preliminary asset value could be subject to certain other adjustments such as those outlined above for the Write-up Method, to develop a final asset value. If no other adjustments are made, the preliminary asset value is the final asset value. (This method is also known as the **FAS 87,** or **Adjusted Market** method.) This method can be shown to be equivalent to the Average Market Value described below.

- *Average Market Value* – A preliminary asset value is developed as the average of the current year Fair Market Value and one or more Adjusted Fair Market Values (AFMV) from prior years. The AFMV for each prior year is developed by adjusting that year's Fair Market Value to the valuation date, by adding contributions, subtracting benefit payments (and possibly expenses) and further adjusting by certain specific items of investment experience. This preliminary asset value could be subject to certain other adjustments to develop a final asset value. If no other adjustments are made, the preliminary asset value is the final asset value. (This method is also known as the **Average Value, IRS Average of Market, Average Accumulated Market,** or **Moving Average of Market** method.) This method can be shown to be equivalent to the Deferred Recognition Method described above.

Other Information Submitted by Survey Respondents

The research team encouraged respondents to provide additional details regarding the asset valuation methods they submitted, and many did so. The additional information supplied generally was of two types: (1) the use of a different asset method for different asset classes, and (2) the description of a method fundamentally distinct from any of the original nine described in the survey. The new smoothed value methods generally fell into one of the following two categories:

- **Trend-Line Method -** Under this method, the current Fair Market Value is multiplied by a trend-line factor based on an extrapolation of a least-squares regression line to the valuation date. Based on the descriptions received, this method seems to be most commonly applied separately to distinct asset classes. The regression line applicable to a given asset class is based on the ratio of an appropriate published index to the underlying Fair Market Value of assets in the class.

- **Average Unit Value Method -** Under this method, asset valuation is based on the product of an "average unit value" and an accumulated number of units. The average unit value is developed over a specified period of time, ending with the current year. (The contributor of this method did not provide any additional details concerning either the calculation of the annual unit values or the method used to accumulate units.)

Certain Regulatory Considerations in the United States

Section 412(c)(2) of the Internal Revenue Code specifies broad guidelines for the valuation of assets to be used in connection with minimum funding standards. In general, the value of plan assets "shall be determined on the basis of any reasonable actuarial method of valuation which takes into account fair market value" and which is permitted under regulations.

The regulations under § 1.412(c)(2)-1 provide additional details with respect to "reasonable" asset valuation methods. The list below highlights some of those details that are relevant to the general methodologies and special features discussed in this paper.

- **Amortized Value:** Paragraph (2)(B) of IRC Section 412(c)(2) permits the value of bonds to be determined on an amortized basis. This method is only available to multi employer plans, and an election to use this method, once made, can be revoked only with the consent of the Secretary of the Treasury.
- **Average Value:** This asset valuation method, described in subsection (b)(7) of the regulations, is a special case of the Average Market Value method described above. Additional details are presented in the "Automatic Approval" table below.
- **Corridor Limits:** In accordance with subsection (b)(6) of the regulations, a "reasonable" asset valuation method must produce an actuarial value that is not less than some minimum amount and not more than some maximum amount. Originally the minimum was set equal to the lesser of 80% of FMV and 85% of the "average value" mentioned above, but the 85% of average value limit was removed by the Pension Protection Act of 1987. Similarly, the maximum was originally set equal to the greater of 120% of FMV and 115% of average value, but the 115% limit was eliminated in 1987.

Enrolled Actuaries in the U.S. must receive approval from the Internal Revenue Service (IRS) to change the asset valuation method used to satisfy minimum funding standards. The IRS has identified certain methods that (subject to certain timing considerations) are granted "automatic" approval for such a change. Using the classification system presented in this paper, these so-called automatic approval methods are listed in the table on page 7.

IRS Revenue Procedure	AA #	IRS Description	Asset Valuation Methods Description				
			Method	Types of Earnings Subject to Smoothing	Smoothing Period	Adjustment Towards FMV?	Other Features
95-5	10	Fair Market Value	Fair Market Value	N/A	N/A	N/A	N/A
95-5 [1]	11	Average Value (without phase-in)	Average Market Value [2]	All *except* FMV appreciation & depreciation	≤ 5 years	N/A	Based on & 1.412 (c) (2)-1(b)(7) by direct reference
95-5 [1]	12	Average Value (without phase-in)	Average Market Value [2]	All *except* FMV appreciation & depreciation	≤ 5 years	N/A	Phases into full AA # 11 over not more than five years
98-10	15	Smoothed Market Value (without phase-in)	Deferred Recognition [3]	All	≤ 5 years	Yes	Preliminary asset value based on prior year FMV rolled forward (with cash flows) at valuation interest rate
98-10	16	Smoothed Market Value (without phase-in)	Deferred Recognition [3]	All	≤ 5 years	Yes	Starts with FMV; phases into full AA #15 over not more than five years
98-10	17	Average Value (with alternative phase-in)	Average Market Value [2]	All *except* FMV appreciation & depreciation	≤ 5 years	N/A	Starts with FMV; phases into full AA #11 over not more than five years

[1] *Clarified by Revenue Procedure 98-10*

[2] *Can be shown to be algebraically equivalent to a properly structured Deferred Recognition method*

[3] *Can be show to be algebraically equivalent to a properly structured Average Market Value method*

SURVEY METHODOLOGY

Basic Approach
Various approaches were considered for collecting asset valuation method information accurately and in a manner that would be considered representative of the majority of methods in use by pension actuaries across the U.S. and Canada. A survey approach was selected and physical data collection was accomplished via a standardized, commercial answer form suitable for mechanically scanning results into a computer data base file.

Survey Design
Published reference material was reviewed to gauge the scope and variety of asset valuation methods. This research, supplemented by the practical experience of the POG members, resulted in an identification of four categories of methods encompassing a total of nine distinct asset valuation methods (See Section 2). In addition to the nine asset valuation methods, a tenth option ("Other") was added to accommodate any other methods not explicitly described.

The survey also included certain questions designed to identify such aspects as the use of initialization techniques, the application of asset value adjustments (e.g., corridor limits), the incidence of marking assets to market value, and the use, where applicable, of specific smoothing techniques. Next, the survey was structured to distinguish between the use of a particular asset valuation method for funding purposes and the use of the same or a different method for financial accounting purposes.

Other plan-specific data also was requested in order to explore potential relationships between various plan characteristics and particular asset valuation methods. Plan characteristics investigated through the survey included:

- Type of plan sponsor (corporate, multi-employer, government)
- Type of plan (i.e., ERISA, non-ERISA, Canada; pay-related or not pay-related)
- Presence of collective bargaining agreements,
- Number of plan participants,
- Total fair market value of assets, and
- Percentage of assets invested in equities
- Actuarial cost method for funding

To collect survey data on a manageable basis for such a large number of plans, respondents were asked to group their small plans (less than 100 participants) by asset valuation method, and to complete *one survey per method.* For larger plans, respondents were asked to complete *one survey per plan.* A copy of the survey package is included in the Appendix.

Data Collected

Initially, surveys were mailed to over 3,900 SOA Pension Section members in the U.S. and Canada. Shortly after the first set of surveys was mailed, phone calls were made to the chief actuaries of a number of large consulting firms encouraging participation in the survey. Subsequently, the scope of the study was extended to include approximately 2,100 SOA members who indicated a pension interest, but who were not members of the Pension Section. Respondents were given four weeks from the date of the cover letter to complete and return the survey. However, due to a significant number of respondents who indicated their desire to complete the survey for submission after the original due date, the original deadline for responses was extended two weeks.

In total, responses covering 9,983 plans were received. Of those responses, the asset valuation methods indicated for 313 plans (all U.S. ERISA-covered corporate plans) were excluded from the study due to invalid or internally inconsistent responses. The total number of plans included in the survey results, therefore, is 9,670, including 9,026 U.S. plans, 612 Canadian plans, and 32 "other" miscellaneous plans.

The U.S. Department of Labor's (DOL) 1998 Abstract of 1994 Form 5500 Annual Reports includes summaries of various statistics regarding U.S. pension plans. The following table presents a comparison of the total number of U.S. plans reflected in this survey to the total number of defined benefit plans in the U.S. (excluding plans covering only one participant or not reporting participant count) that filed a Form 5500 for the 1994 plan year.

Number	Current Survey		DOL 1998 Abstract [1]		Survey
of	U.S. Plan	Percent	Plan	Percent	Count/
Participants	Count [2]	of Total	Count	of Total	DOL Count
Less than 10	2598	29%	27278	40%	9.5%
10 thru 99	3201	36%	22975	34%	13.9%
100 thru 499	1342	15%	10270	15%	13.1%
500 thru 999	937	10%	2829	4%	33.1%
1,000 thru 4,999	600	7%	3709	5%	16.2%
5,000 thru 9,999	115	1%	644	1%	17.9%
Greater than 9,999	174	2%	649	1%	26.8%
Total	8967	100%	68354	100%	13.1%

[1] *Table B1. Distribution of Pension Plans (by participant size, 1994)*

[2] *59 U.S. plan responses failed to indicate the number of participants covered*

Although the data from the DOL report predates the current survey by a number of years, the researchers and POG members believe that the U.S. survey responses received constitute a reasonably representative sample of defined benefit plans in the United States. The comparison indicates that there was a heavier relative response rate among large U.S. plans, especially those with 500 or more participants. One possible reason for this phenomenon is discussed in the "Data Issues" section that follows.

The 1996 Statistics Canada report included 6,884 plans covering over 4.5 million participants. The report indicated that, like U.S. plans, the majority of Canadian plans covered fewer than 100 participants. The following table presents a comparison of the total number of Canadian plans reflected in this survey to the total number of defined benefit plans based on 1996 Statistics Canada data.

Number of Participants	Current Survey		DOL 1998 Abstract [1]		Survey Count/Statistics Canada Count
	Can. Plan Count [2]	Percent of Total	Plan Count	Percent of Total	
Less than 10	191	32%	2371	34%	8.1%
10 thru 99	83	14%	2222	32%	3.7%
100 thru 499	200	34%	1511	22%	13.2%
500 thru 999	40	7%	322	5%	12.4%
1,000 thru 4,999	50	9%	355	5%	14.1%
5,000 thru 9,999	6	1%	46	1%	13.0%
Greater than 9,999	15	3%	57	1%	26.3%
Total	585	100%	6884	100%	8.5%

[1] Table 3: Number of plans and members by membership-size group -- Defined benefit plans
[2] 27 Canadian plan responses failed to indicate the number of participants covered

The category including Canadian plans with $10 - 99$ participants was inexplicably underrepresented in the survey responses. Despite this slight skewing of results towards large Canadian plans, the researchers and POG members believe that the survey responses received for Canadian plans constitute a reasonably representative sample of all Canadian defined benefit plans.

Data Issues
Of the 9,983 plans for which responses were received, 15 plans were immediately excluded from the study due to missing or invalid responses.

A few actuaries who wanted to submit data on a large number of large plans requested permission to report these plans in small plan format, i.e., one form per asset valuation method. The research team decided that it was in the best interests of the study to include this information, as long as no distortions were introduced into the data set. In total, 41 survey forms were submitted in this manner, reflecting a total of 1,417 large plans. Upon further analysis, three of these forms, representing a total of 298 large U.S. ERISA-covered corporate plans, were excluded due to internal inconsistencies.

Shortly after the original set of survey forms were sent out, the research team called the chief actuaries at a number of large consulting firms in an effort to encourage participation in the survey. This could have contributed to the relatively heavy response rates for plans with over 500 participants. Also, since actuaries in large firms often gravitate

towards one or two asset valuation methods preferred by their particular firm, a dispro-portionately large number of submissions from these organizations might have produced some skewing effect on the relative frequency results for large plans.

SURVEY RESULTS

This section of the report is organized into 17 tables with accompanying commentary, followed by a discussion of other related topics at the end. The following display summarizes the tables included:

Table Number	Description
1	Relative Frequency of Asset Valuation Methods (Funding Purposes)
2	Asset Valuation Method Frequency (Funding Purposes) U.S. Compared to Canada
3 [1]	Asset Valuation Frequency by Plan Participant Count
4	Fair Market Value and Contract Value Methods Frequency (Funding Purposes) by Plan Participant Count
5 [1]	Asset Valuation Method Frequency (Funding Purposes) by Value of Plan Assets
6	Asset Valuation Method Frequency by Type of Entity Sponsoring Plan
7	Asset Valuation Method Frequency (Funding Purposes) for ERISA Plans Compared to Non-ERISA Plans
8	Asset Valuation Method Frequency (Funding Purposes) by Collective Bargaining Status
9	Asset Valuation Method Frequency (Funding Purposes) by Type of Benefit Formula
10 [1]	Asset Valuation Method Frequency (Funding Purposes) by Actuarial Cost Method
11 [1]	Asset Valuation Method Frequency (Funding Purposes) by Percentage of Common Stocks
12 [1]	Asset Valuation Method Frequency – Financial Accounting versus Funding
13 [1]	Asset Valuation Method Frequency (Financial Accounting Purposes) by Value of Plan Assets
14 [1]	Asset Valuation Method Frequency (Financial Accounting Purposes) by Percentage of Common Stocks
15 [1]	Years of Smoothing Period by Type of Asset Valuation Method
16 [1]	Years of Smoothing Period by Percentage of Common Stocks
17 [1]	Prior Asset Experience Reflected in Initial Application of Method

1   *Consists of two separate table, "A" for U.S. results and "B" for Canadian results.*
NOTE: Due to the rounding methodology used to develop percentages, totals may not add to 100 percent.

A total of 9,670 defined benefit plans (9,026 U.S., 612 Canada, and 32 "miscellaneous") were included in the survey. Table 1 summarizes the number of plans and relative frequency of the asset valuation methods indicated on the surveys:

TABLE 1 Relative Frequency of Asset Valuation Methods (Funding Purpose)		
Asset Valuation Method Method	Number of Plans	Relative Frequency
1 Fair Market Value	5,827	60.3%
2 Cost Value	36	0.4%
3 Average (or Blend) of Cost & Market	182	1.9%
4 Discounted Cash Flow [1]	4	+
5 Amortized Value	17	0.2%
6 Contract Value	2,016	20.8%
7 Write-Up	912	9.4%
8 Deferred Recognition	448	4.6%
9 Average Market Value	174	1.8%
10 Other (including Combination) [2]	54	0.6%
Totals	9670	100%

[1] *Throughout this survey results section, a plus sign (+) designates a positive percentage less than 0.05%, and a dash (-) designates no responses.*

[2] *Throughout the remainder of this survey results section, "Other" will be used to designate "Other" (including Combination)."*

Note: Given that there were only 32 responses received for "miscellaneous" plans, those responses have been excluded from the remainder of this survey results section.

Table 2 summarizes the relative frequency (by number of plans) of each asset valuation method by country:

The survey findings indicate that actuaries in both countries utilize the Fair Market Value

TABLE 2 Asset Valuation Method Frequency (Funding Purposes) U.S. Compared to Canada			
Asset Valuation Method		Relative Frequency	
		U.S.	Canada
1	Fair Market Value	59.6%	68.60%
2	Cost Value	0.2%	2.80%
3	Average (or Blend) of Cost & Market	1.7%	4.40%
4	Discounted Cash Flow [1+]	+	0.2%
5	Amortized Value	0.2%	0.2%
6	Contract Value [1-]	22.3%	-
7	Write-Up	9.9%	2.6%
8	Deferred Recognition	4.2%	11.1%
9	Average Market Value	1.5%	7.0%
10	Other	0.4%	3.1%
Totals		100.0%	100%

[1] *Throughout this survey results section, a plus sign (+) designates a positive percentage less than 0.05%, and a dash (-) designates no responses.*

method significantly more frequently than any other method. The Amortized Value and Discounted Cash Flow methods are the least utilized methods in both countries. Respondents reported using Cost Value for only 19 U.S. plans and 14 of these were government plans not subject to ERISA. It is also interesting to note that no respondent reported using Contract Value for any Canadian plan.

With the exception of the Write-Up method, each of the smoothed methods has greater overall relative frequency in Canada than in the United States. The most frequently used smoothed methods in the U.S. and Canada are the Write-Up method and Deferred Recognition method, respectively.

Tables 3A and 3B summarize the Asset Valuation Method Frequency by Participant Count for U.S. and Canadian plans, respectively. Not unexpectedly, the responses indicate that actuaries use the Fair Market Value method more frequently for plans with smaller participant counts. For example, Fair Market Value is used for over 90% of the 274 Canadian plans surveyed with fewer than 100 participants. In the U.S., of the 5,799 plans

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with less than 100 participants that responded to the survey, over 65% use Fair Market Value and another 27% use Contract Value. Of the U.S. and Canadian plans with 5,000 or more participants responding, only 22.5% and 28.6%, respectively, use Fair Market Value.

TABLE 3A
Asset Valuation Method Frequency (Funding Purposes) by Plan Participant Count
(U.S. Only)

| | | Plan Participant Count | | | | | | |
| | | Small Plans Total = 5,799 | | | | Large Plans Total = 3,168 | | |
		Less than 10	10 thru 99 Apr-00	100 - 4999	500 - 999	1,000 - 4,999	5,000 - 9,999	More than 9,999
	Number of Responses [1]	2,598	3,201	1,342	937	600	115	174
	Asset Valuation Method							
1	Fair Market Value	81.6%	52.0%	35.4%	74.5%	50.3%	27.8%	19.0%
2	Cost Value	-	0.1%	0.9%	0.2%	0.2%	0.9%	0.6%
3	Average (or Blend) of Cost and Market	-	1.0%	3.7%	3.1%	3.7%	4.3%	6.9%
4	Discounted Cash Flow	-	-	0.1%	-	0.2%	-	-
5	Amortized Value	-	0.4%	0.1%	-	0.2%	-	-
6	Contract Value	18.1%	35.1%	28.2%	3.9%	1.0%	-	-
7	Write-Up	0.2%	9.8%	22.1%	10.0%	19.0%	18.3%	29.3%
8	Deferred Recognition	-	0.4%	6.3%	6.2%	20.8%	37.4%	31.6%
9	Average Market Value	+	1.2%	2.8%	1.5%	2.5%	8.7%	9.2%
10	Other	-	0.1%	0.4%	0.5%	2.2%	2.6%	2.9%

[1] *Results exclude 59 U.S. plan responses that failed to indicate the number of participants covered.*

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Caution should be used in interpreting the results for the largest Canadian plans (in the "5,000 - 9,999" and "Greater than 9,999" columns in Table 3B below) due to the small number of plans included in those categories. For example, the 66.7% using Fair Market Value in the "5,000 - 9,999" category represents only four plans, and the 26.7% using Cost Value in the "Greater than 9,999" category represents four large government plans.

TABLE 3B

Asset Valuation Method Frequency (Funding Purposes) by Plan Participant Count (Canada Only)

	Plan Participant Count						
	Small Plans Total = 274		Large Plans Total = 311				
	Less than 10	10 thru 99	100 - 4999	500 - 999	1,000 - 4,999	5,000 - 9,999	More than 9,999
Number of Responses [1]	191	83	200	40	50	6	15
Asset Valuation Method							
1 Fair Market Value	99.5%	69.9%	61.5%	22.5%	18.0%	66.7%	13.3%
2 Cost Value	0.5%	1.2%	4.0%	2.5%	2.0%	-	26.7%
3 Average (or Blend) of Cost and Market	-	6.0%	5.0%	12.5%	12.0%	-	6.7%
4 Discounted Cash Flow	-	-	-	-	2.0%	-	-
5 Amortized Value	-	1.2%	-	-	-	-	-
6 Contract Value	-	-	-	-	-	-	-
7 Write-Up	-	2.4%	1.5%	7.5%	10.0%	-	20.0%
8 Deferred Recognition	-	12.0%	15.0%	12.5%	34.0%	16.7%	26.7%
9 Average Market Value	-	6.0%	7.5%	32.5%	16.0%	16.7%	6.7%
10 Other	-	1.2%	5.5%	10.0%	6.0%	-	-

[1] *Results exclude 27 Canadian plan responses that failed to indicate the number of participants covered.*

The U.S. and Canadian results exhibit significant differences in asset valuation method frequency as the participant size of the plan increases. Relative use of the Cost Value method for large plans, for example, is significantly greater in Canada due to legislated restrictions on Cost Value in the United States.

For U.S. plans, this decrease in the frequency of Fair Market Value is not linear with increasing plan sizes. However, if the frequency of Fair Market Value is added to the frequency of Contract Value, as summarized in Table 4 below, the decrease in the combined frequency is nearly monotonic as the participant count of the plan increases.

TABLE 4

Fair Market Value and Contract Value Methods Frequency
(Funding Purposes) by Plan Participant Count
(U.S. Only)

			Sub-Totals by Plan Participant Count				
	Less than 10	10 thru 99	100 - 4,999	500 - 999	1,000 - 4,999	5,000 - 9,999	More than 9,999
Number of Responses [1]	2,598	3,201	1,342	937	600	115	174
Asset Valuation Method							
Fair Market Value	81.6%	52.0%	35.4%	74.5%	50.3%	27.8%	19.0%
Contract Value	18.1%	35.1%	28.2%	3.9%	1.0%	-	-
Combined Total	99.7%	87.1%	63.6%	78.4%	51.3%	27.8%	19.0%

[1] *Results exclude 57 U.S. plan responses that failed to indicate the number of participants covered.*

Tables 5A and 5B analyze the asset valuation method frequency by total fair market value of plan assets for the U.S. and Canada, respectively. (All dollar amounts are shown in local currency.) The results are consistent with the results of the analysis by participant count as summarized in Tables 3A and 3B. In both countries, the frequency of Fair Market Value (and Contract Value in the U.S.) generally decreases, and the frequency of the smoothed value methods generally increases as the fair market value of plan assets increases.

TABLE 5A
Asset Valuation Method Frequency (Funding Purposes) by Value of Plan Assets (U.S. Only)

	Fair Market Value of Plan Assets				
	Less than $1 Million	$1 Million to $5 Million	$5 Million to $25 Million	$25 Million to $100 Million	Greater than $100 Million
Number of Responses [1]	4,652	2,335	1,205	461	358
Asset Valuation Method					
1 Fair Market Value	77.6%	45.1%	36.7%	43.4%	18.2%
2 Cost Value	+	0.2%	0.2%	1.3%	1.1%
3 Average (or Blend) of Cost and Market	0.3%	2.0%	3.8%	3.3%	8.1%
4 Discounted Cash Flow	-	+	0.1%	0.2%	-
5 Amortized Value	-	0.6%	-	0.2%	0.3%
6 Contract Value	18.7%	33.6%	27.4%	6.7%	0.3%
7 Write-Up	2.9%	14.4%	22.2%	14.5%	24.6%
8 Deferred Recognition	0.4%	1.8%	6.9%	23.0%	36.3%
9 Average Market Value	0.1%	2.1%	2.1%	5.6%	8.1%
10 Other	+	0.3%	0.7%	1.7%	3.1%

[1] *Results exclude 15 U.S. plan responses that failed to indicate asset size.*

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TABLE 5A
Asset Valuation Method Frequency (Funding Purposes) by Value of Plan Assets
(U.S. Only)

	Fair Market Value of Plan Assets				
	Less than $1 Million	$1 Million to $5 Million	$5 Million to $25 Million	$25 Million to $100 Million	Greater than $100 Million
Number of Responses [1]	118	52	248	57	61
Asset Valuation Method					
1 Fair Market Value	93.2%	55.8%	73.8%	21.1%	18.0%
2 Cost Value	2.5%	1.9%	2.4%	3.5%	8.2%
3 Average (or Blend) of Cost and Market	1.7%	5.8%	3.2%	14.0%	9.8%
4 Discounted Cash Flow	-	-	-	1.8%	-
5 Amortized Value	-	1.9%	-	-	-
6 Contract Value	-	-	-	-	-
7 Write-Up	-	7.7%	-	7.0%	13.1%
8 Deferred Recognition	1.7%	15.4%	10.5%	24.6%	27.9%
9 Average Market Value	-	11.5%	6.0%	21.1%	16.4%
10 Other	0.8%	-	4.0%	7.0%	6.6%

[1] Results exclude 76 Canadian plan responses that failed to indicate asset size.

Table 6 summarizes survey results by type of entity (corporate, multiemployer, and government) sponsoring the plan. The results in Table 6 exclude plans with less than 100 participants.

TABLE 6
Asset Valuation Method Frequency (Funding Purposes) by Type of Entity Sponsoring Plan (Large Plans Only)

	U.S.			Canada		
	Corporate	Multi-employer	Government	Corporate	Multi-employer	Government
Number of Responses	2,747	168	253	264	20	27
Asset Valuation Method						
1 Fair Market Value	50.4%	17.9%	49.8%	52.7%	25.0%	11.1%
2 Cost Value	0.1%	-	5.1%	3.0%	-	22.2%
3 Average (or Blend) of Cost and Market	2.3%	14.3%	11.5%	4.9%	35.0%	7.4%
4 Discounted Cash Flow	0.1%	60.0%	-	-	5.0%	-
5 Amortized Value	0.1%	60.0%	-	-	-	-
6 Contract Value	15.2%	1.8%	80.0%	-	-	-
7 Write-Up	18.8%	19.0%	11.1%	3.4%	15.0%	7.4%
8 Deferred Recognition	9.4%	43.5%	13.4%	15.9%	15.0%	44.4%
9 Average Market Value	2.5%	2.4%	7.9%	13.3%	5.0%	7.4%
10 Other	1.1%	-	0.4%	6.8%	-	-

[1] *Results exclude 27 Canadian plan responses that failed to indicate the number of participants covered*

The distribution of methods varies significantly by sponsoring entity. The portion of government sponsored plans using Cost Value is considerably larger that the portion of corporate or multiemployer sponsors. (This is not surprising in the U.S. given legislative requirements applicable to the valuation of ERISA-covered plans.) It is interesting to note the high frequency of the Deferred Recognition method among U.S. multiemployer plans and Canadian government plans. Care should be taken, however, when trying to draw any conclusions regarding multiemployer and government plans in Canada due to the small number of responses in these categories.

Table 7 provides analysis of the frequency of asset valuation methods in the U.S. between ERISA and Non-ERISA plans (only for plans reporting 100 or more participants). Non-ERISA plans tend to use Cost Value, Average (or Blend) of Cost and Market, and Average Market Value methods considerably more frequently than plans subject to ERISA.

TABLE 7
Asset Valuation Method Frequency (Funding Purposes) for ERISA Plans
(U.S. - Large Plans Only)

		ERISA Plans	Non-ERISA Plans
	Number of Responses	2,918	250
	Asset Valuation Method		
1	Fair Market Value	81.6%	47.6%
2	Cost Value	0.1%	5.2%
3	Average (or Blend) of Cost and Market	3.1%	10.8%
4	Discounted Cash Flow	0.1%	-
5	Amortized Value	0.1%	-
6	Contract Value	14.4%	1.2%
7	Write-Up	18.9%	10.4%
8	Deferred Recognition	11.3%	14.0%
9	Average Market Value	2.3%	10.4%
10	Other	1.1%	0.4%

Table 8 presents a comparison of the frequency of asset valuation methods used by plans whose active participants are subject to one or more collective bargaining agreements to non-bargained plans. Results are displayed separately for U.S. and Canadian Plans. In both the U.S. and Canada, collectively bargained plans use Fair Market Value less frequently than Non-Bargained Plans. The Average (or Blend) of Cost and Market, Deferred Recognition and Average Market Value Methods are used more frequently in plans subject to collective bargaining. Similar trends were reported in the U.S. and Canada.

TABLE 8
Asset Valuation Method Frequency (Funding Purposes)
by Collective Bargaining Status (Large Plans Only)

	U.S.		Canada	
	Bargained [1]	Non-Bargained	Bargained [1]	Non-Bargained
Number of Responses	583	2,583	113	198
Asset Valuation Method				
1 Fair Market Value	30.5%	52.7%	28.3%	58.1%
2 Cost Value	0.5%	0.5%	7.1%	3.0%
3 Average (or Blend) of Cost and Market	9.9%	2.3%	7.1%	7.1%
4 Discounted Cash Flow	0.3%	+	0.9%	-
5 Amortized Value	0.2%	0.1%	-	-
6 Contract Value	1.4%	16.0%	-	-
7 Write-Up	19.0%	18.0%	7.1%	3.0%
8 Deferred Recognition	28.3%	7.7%	32.7%	10.1%
9 Average Market Value	7.9%	1.8%	14.2%	11.1%
10 Other	1.9%	0.8%	2.7%	7.6%

[1] *Includes plans that are partially covered by one or more collective bargaining agreement.*

Table 9 exhibits the frequency of asset valuation method by benefit formula (pay related versus non-pay related). The Deferred Recognition method is used significantly more by non-pay related plans in the United States and by pay-related plans in Canada. Surprisingly, over 17% of the Canadian respondent's non-pay related plans used the Average (or Blend) of Cost and Market Method. However, this represents only nine plans.

TABLE 9
Asset Valuation Method Frequency (Funding Purposes)
by Type of Benefit Formula (Large Plans Only)

	U.S.		Canada	
	Pay Related	Non-Pay Related	Pay Related	Non-Pay Related
Number of Responses [1]	2,611	462	260	51
Asset Valuation Method				
1 Fair Market Value	51.0%	36.1%	46.9%	49.1%
2 Cost Value	0.6%	0.4%	5.0%	2.0%
3 Average (or Blend) of Cost and Market	3.1%	7.8%	5.0%	7.6%
4 Discounted Cash Flow	*	0.4%	-	2.0%
5 Amortized Value	0.1%	0.2%	-	-
6 Contract Value	15.9%	1.7%	-	-
7 Write-Up	16.8%	18.4%	5.0%	2.0%
8 Deferred Recognition	9.0%	28.1%	20.4%	7.8%
9 Average Market Value	2.6%	5.4%	11.5%	15.7%
10 Other	1.0%	1.3%	6.2%	3.9%

[1] *Results exclude 95 large U.S. plan responses that failed to provide information on type of formula.*

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TABLE 10B
Asset Valuation Method Frequency (Funding Purposes) by Actuarial Cost Method
(Canada - Large Plans Only)

	Actuarial Cost Method (Funding)				
	Standard Unite Credit	Projected Unit Credit	Entry-Age Normal	Frozen Initial Liability	All Others [1]
Number of Responses [2]	133	172	0	0	3
Asset Valuation Method					
1 Fair Market Value	63.2%	33.7%	-	-	66.7%
2 Cost Value	5.3%	4.1%	-	-	-
3 Average (or Blend) of Cost and Market	6.0%	8.1%	-	-	-
4 Discounted Cash Flow	0.8%	-	-	-	-
5 Amortized Value	-	-	-	-	-
6 Contract Value	-	-	-	-	-
7 Write-Up	2.3%	6.4%	-	-	-
8 Deferred Recognition	9.8%	25.0%	-	-	33.3%
9 Average Market Value	9.8%	14.5%	-	-	-
10 Other	3.0%	8.1%	-	-	-

[1] Includes Aggregate (2 plans) and Individual Aggregate (1 plan)

[2] Excludes 3 plans that did not indicate a method for accounting.

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Table 11A and 11B exhibit survey results summarized by the percentage of common stock in the portfolio being valued. Other than the declining frequency of Contract Value as the percentage of common stock increase, these results show no pattern or consistency. In Canada, comparisons involving common stock percentages below 40% are not useful due to the small number of responses in those ranges.

TABLE 11A
Asset Valuation Method Frequency (Funding Purposes) by Percentage of Common Stocks (U.S. - Large Plans Only)

	Percentage of Common Stocks			
	Less than 20%	20% to 39%	40% to 59%	60% or greater
Number of Responses [1]	698	298	663	1,198
Asset Valuation Method				
1 Fair Market Value	12.5%	68.8%	38.8%	63.4%
2 Cost Value	1.6%	0.3%	0.8%	-
3 Average (or Blend) of Cost and Market	1.3%	8.7%	5.7%	2.9%
4 Discounted Cash Flow	0.3%	-	-	0.1%
5 Amortized Value	0.1%	0.7	-	-
6 Contract Value	59.0%	1.0%	0.5%	0.1
7 Write-Up	22.6%	9.4%	22.5%	17.0%
8 Deferred Recognition	2.1%	9.7%	22.5%	11.4%
9 Average Market Value	0.4%	1.3%	5.1%	3.3%
10 Other	-	-	1.2%	1.8%

[1] *Results exclude 311 large U.S. plan responses that failed to provide information on percentage of common stock.*

TABLE 11A
Asset Valuation Method Frequency (Funding Purposes) by Percentage
of Common Stocks (Canada. - Large Plans Only)

	Percentage of Common Stocks				
	Less than 20%	20% to 39%	40% to 59%	60% or greater	
Number of Responses [1]	10	13	248	36	
Asset Valuation Method					
1 Fair Market Value	20.0%	7.7%	53.2%	27.8%	
2 Cost Value	80.0%	-	-	13.9%	
3 Average (or Blend) of Cost and Market	-	38.5%	6.0%	5.6%	
4 Discounted Cash Flow	-	7.7%	-	-	
5 Amortized Value	-	-	-	-	
6 Contract Value	-	-	-	-	
7 Write-Up	-	-	4.0%	11.1%	
8 Deferred Recognition	-	7.7%	21.0%	11.1%	
9 Average Market Value	-	15.4%	10.1%	27.8%	
10 Other	-	23.1%	5.6%	2.8%	

[1] *Results exclude four large Canadian plan responses that failed to provide information on percentage of common stock.*

Tables 12A and 12B present comparisons of asset valuation methods used (by large plans only) for financial accounting purposes relative to those used for ongoing funding purposes. Actuaries for large plans in the U.S. tend to use Fair Market Value considerably more frequently for financial accounting purposes than for funding purposes. This pattern is not so strong in Canada. The large-plan relative frequency of Fair Market value

TABLE 12A
Asset Valuation Method Frequency - Financial Accounting vs. Funding
(U.S. - Large Plans Only)

	Asset Valuation Method for Funding Purposes				
	Fair Market Value or Contract	Average or (Blend) of Costs and Market	Write-Up	Deferred Recognition	Average Market Value
Number of Responses [1]	1,915	94	553	290	77
Asset Valuation Method					
1 Fair Market Value	94.4%	73.4%	73.4%	44.1%	55.8%
2 Cost Value	-	-	0.4%	-	-
3 Average (or Blend) of Cost and Market	0.1%	23.4%	-	-	-
4 Discounted Cash Flow	-	-	-	-	-
5 Amortized Value	-	-	-	-	-
6 Contract Value	1.4%	-	-	-	-
7 Write-Up	+	-	10.1%	1.0%	1.3%
8 Deferred Recognition	3.6%	3.2%	17.0%	54.5%	2.6%
9 Average Market Value	0.5%	-	0.2%	0.3%	40.3%
10 Other	-	-	0.4%	-	-

[1] *Results exclude 188 large U.S. plan responses that failed to provide information and 51 plans that use other methods for funding.*

in the U.S. is 83.1% for financial accounting and 48.6% for funding. The corresponding percentages for large plans in Canada were both approximately 50%.

Many actuaries in the U.S. (and most in Canada) who use the Deferred Recognition and Average Market Value methods for funding purposes use the same method for financial accounting purposes. The standard FAS 87 Market-Related Value methodology for smoothing assets can be formulated as a variation of either of these two methods.

TABLE 12B
Asset Valuation Method Frequency - Financial Accounting vs. Funding
(Canada - Large Plans Only)

	Asset Valuation Method for Funding Purposes				
	Fair Market Value or Contract	Average or (Blend) of Costs and Market	Write-Up	Deferred Recognition	Average Market Value
Number of Responses [1]	80	11	10	53	36
Asset Valuation Method					
1 Fair Market Value	93.8%	72.7%	10.0%	20.8%	33.3%
2 Cost Value	-	-	-	-	-
3 Average (or Blend) of Cost and Market	-	18.2%	-	-	-
4 Discounted Cash Flow	-	-	-	-	-
5 Amortized Value	-	-	-	-	-
6 Contract Value	-	-	-	-	-
7 Write-Up	5.0%	9.1%	90.0%	-	-
8 Deferred Recognition	1.3%	-	-	79.2%	2.8%
9 Average Market Value	-	-	-	-	63.9%
10 Other	-	-	-	-	-

[1] *Results exclude 92 large Canadian plan responses that failed to provide information and 2 plans that use other methods of funding.*

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Table 13A and 13B analyze the frequency of the asset valuation method used for financial accounting purposes by asset size for the U.S. and Canada respectively. The results are similar to the results of the analysis by Plan Participant Size as summarized in Tables 3A and 3B. In the U.S., the frequency of the both Fair Market Value method and Contract Value decreases as the asset value increases and the frequency of smoothed methods generally increases as the value of assets increases. In Canada, the pattern is not as clear.

TABLE 13A
Asset Valuation Method Frequency (Financial Accounting Purposes) by Value of Plan Assets (U.S. - Large Plans Only)

	Fair Market Value of Plan Assets				
	Less than $1 million	$1 Million to $5 Million	$5 Million to $25 Million	$25 Million to 100 Million	Greater than $100 Million
Number of Responses [1]	208	983	1,083	402	304
Asset Valuation Method					
1 Fair Market Value	93.8%	92.5%	89.5%	67.9%	42.1%
2 Cost Value	-	0.1%	0.3%	1.5%	1.6%
3 Average (or Blend) of Cost and Market	-	0.2%	0.8%	0.5%	3.6%
4 Discounted Cash Flow	-	-	0.1%	-	-
5 Amortized Value	-	-	-	-	-
6 Contract Value	1.0%	1.5%	0.8%	-	0.3%
7 Write-Up	0.5%	0.3%	1.0%	2.7%	11.5%
8 Deferred Recognition	3.8%	5.1%	6.4%	24.6%	32.9%
9 Average Market Value	1.0%	0.3%	0.7%	2.7%	6.6%
10 Other	-	-	-	-	1.3%

[1] *Results exclude 92 large Canadian plan responses that failed to provide information and 2 plans that use other methods of funding.*

TABLE 13A
Asset Valuation Method Frequency (Financial Accounting Purposes)
by Value of Plan Assets (Canada - Large Plans Only)

	Fair Market Value of Plan Assets (in Canadian Dollars)				
	Less than $1 million	$1 Million to $5 Million	$5 Million to $25 Million	$25 Million to 100 Million	Greater than $100 Million
Number of Responses [1]	4	11	105	42	58
Asset Valuation Method					
1 Fair Market Value	75.0%	45.5%	60.0%	50.0%	32.8%
2 Cost Value	-	-	1.0%	2.4%	6.9%
3 Average (or Blend) of Cost and Market	-	-	1.0%	2.4%	-
4 Discounted Cash Flow	-	-	-	-	-
5 Amortized Value	-	-	-	-	-
6 Contract Value	-	-	-	-	-
7 Write-Up	-	9.1%	1.0%	7.1%	15.5%
8 Deferred Recognition	-	27.3%	23.8%	19.0%	24.1%
9 Average Market Value	-	18.2%	6.7%	14.3%	13.8%
10 Other	25.0%	-	6.7%	4.8%	6.9%

[1] *Results exclude 91 large Canadian plan responses that failed*

Table 14A and 14B present a summary of how the relative frequency of asset valuation methods used for financial accounting purposes varies as the percentage of common stock held in the portfolio increases. In the U.S., other than the general decline in frequency for Fair Market Value and the general increase in frequency for the smoothed methods as the percentage of common stock increases, the results show no strong patterns. In Canada, comparisons involving common stock percentages below 40% are not useful due to the small number of responses in those ranges.

TABLE 14A
Asset Valuation Method Frequency (Financial Accounting Purposes) by Percentage of Common Stocks (U.S. - Large Plans Only)

	Percentage of Common Stocks			
	Less than 20%	20% to 39%	40% to 59%	60% or greater
Number of Responses [1]	668	269	595	1,162
Asset Valuation Method				
1 Fair Market Value	93.7%	91.4%	69.1%	80.6%
2 Cost Value	1.2%	0.4%	0.8%	0.1%
3 Average (or Blend) of Cost and Market	0.3%	1.5%	1.2%	0.9%
4 Discounted Cash Flow	0.1%	-	-	-
5 Amortized Value	-	-	-	-
6 Contract Value	3.6%	0.4%	-	-
7 Write-Up	-	1.1%	3.5%	2.6%
8 Deferred Recognition	0.9%	3.7%	22.2%	14.3%
9 Average Market Value	0.1%	1.5%	3.2%	1.2%
10 Other	-	-	-	0.3%

[1] *Results exclude 474 large U.S. plan responses that failed to provide information.*

TABLE 14B

Asset Valuation Method Frequency (Financial Accounting Purposes) by Percentage of of Common Stocks (Canada – Large Plans Only)

	Percentage of Common Stocks			
	Less than 20%	20% to 39%	40% to 59%	60% or greater
Number of Responses [1]	9	9	170	30
Asset Valuation Method				
1 Fair Market Value	22.2%	66.7%	50.0%	56.7%
2 Cost Value	66.7%	-	-	-
3 Average (or Blend) of Cost and Market	-	-	1.2%	-
4 Discounted Cash Flow	-	-	-	-
5 Amortized Value	-	-	-	-
6 Contract Value	-	-	-	-
7 Write-Up	-	-	7.1%	6.7%
8 Deferred Recognition	-	-	26.5%	16.7%
9 Average Market Value	-	-	9.4%	20.0%
10 Other	11.1%	33.3%	5.9%	-

[1] *Results exclude 93 large Canadian plan responses that failed to provide information.*

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Tables 15A and 15B summarize the distribution of asset smoothing periods for those large plans that use a smoothed value method: Write-Up, Deferred Recognition, Average Market Value, or Other. The tables indicate that five years is generally the most common smoothing period in both the U.S. and Canada.

Table 15A displays one outlier for U.S. plans using the Write-Up method (where four-year smoothing is the most common), but analysis of the actual survey responses suggests that 140 out of 145 of the plans in this category appear to have been submitted by only two respondents.

Table 15A
Years of Smoothing Period by Type of Asset Valuation Method
(U.S. - Large Plans Only)

	Write-Up	Deferred Recognition	Average Market Value	Other
Number of Responses	289	316	87	16
Number of Years				
3 or less	4.5%	15.8%	19.5%	62.5%
4	50.2% [1]	3.2%	12.6%	-
5	33.6%	78.8%	66.7%	25.0%
6	1.7%	0.3%	-	-
7	0.3%	1.3%	1.1%	6.3%
8 or more	9.7%	0.6%	-	6.3%

[1] 140 out of 145 plans in this category appear to have been submitted by only two respondents.

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Table 15B
Years of Smoothing Period by Type of Asset Valuation Method
(Canada - Large Plans Only)

	Write-Up	Deferred Recognition	Average Market Value	Other
Number of Responses	12	51	35	16
Number of Years				
3 or less	8.3%	31.4%	28.6%	6.3%
4	25.0%	21.6%	5.7%	6.3%
5	58.3%	47.1%	65.7%	87.5%
6	-	-	-	-
7	-	-	-	-
8 or more	8.3%	-	-	-

Tables 16A and 16B summarize the distribution of asset smoothing periods (only for large plans that use one of the smoothed value methods) by percentage of common stocks. Once again, five years is generally the most common smoothing period in both the U.S. and Canada. Table 16A displays one outlier for U.S. plans with less than 20% of common stock exposure, but analysis of the actual survey responses suggests that the 140 of the 142 responses in that category appear to have been submitted by only two respondents.

In Canada, comparisons involving common stock percentages below 40% are not useful due to the small number of responses in those ranges.

Table 16A
Years of Smoothing Period by Percentage of Common Stocks
(U.S. - Large Plans Only)

	Percentage of Common Stocks			
	Less than 20%	20% to 39%	40% to 59%	60% or greater
Number of Responses	156	34	247	234
Number of Years				
3 or less	-	8.8%	16.6%	13.7%
4	91.0% [1]	-	5.7%	4.3%
5	8.3%	82.4%	68.0%	76.1%
6	0.6	2.9%	1.6%	-
7	-	-	0.4%	1.7%
8 or more	-	5.9%	7.7%	4.3%

[1] *140 out of 142 plans in this categroy appear to have been submitted by only two respondents.*

Table 16B

Years of Smoothing Period by Percentage of Common Stocks

(Canada - Large Plans Only)

	Percentage of Common Stocks			
	Less than 20%	20% to 39%	40% to 59%	60% or greater
Number of Responses	0	5	93	16
Number of Years				
3 or less	-	20.0%	19.4%	56.3%
4	-	-	15.1%	18.8%
5	-	82.4%	64.5%	25.0%
6	-	-	-	-
7	-	-	-	-
8 or more	-	-	1.1%	-

Tables 17A and 17B summarize the results of Question 13 of the survey, which deals with the years of prior asset experience, if any, that were reflected at the time when the current method was first adopted. A significant number of respondents in both countries answered Question 13 "Not Known" or left it unanswered.

Most large plan actuaries in the U.S. who answered this question other than "Not Known" adopted their particular smoothed value method on a "prospective only" basis, and virtually all who reflected past asset experience did so over five years or fewer. Inclusion of prior asset experience at initial application was relatively more common in Canada, with virtually all of those responses reflecting a period of five years or fewer.

Table 17A
Prior Asset Experience Reflected in Initial Application of Method
(U.S. - Large Plans Only)

	Write-Up	Deferred Recognition	Average Market Value	Other
		Sub-Totals by Smoothed Value Method		
Number of Responses [1]	468	315	88	16
Years of Prior Experience Reflected				
More than 5 years	0.9%	0.3%	-	-
5 Years or Less	26.1%	15.6%	18.2%	56.3%
Prospective Only	46.8%	46.0%	51.1%	25.0%
Not Known	26.3%	38.1%	30.7%	18.8%

[1] *Results exclude 175 U.S. responses for smoothed value method plans that left question 13 unanswered.*

Table 17B
Prior Asset Experience Reflected in Initial Application of Method
(Canada - Large Plans Only)

	Write-Up	Deferred Recognition	Average Market Value	Other
		Sub-Totals by Smoothed Value Method		
Number of Responses [1]	12	54	38	47
Years of Prior Experience Reflected				
More than 5 years	-	1.9%	5.3%	-
5 Years or Less	50.0%	35.2%	23.7%	27.7%
Prospective Only	16.7%	53.7%	13.2%	2.1%
Not Known	33.3%	9.3%	57.9%	70.2%

[1] *Results exclude 12 Canadian responses for Smoothed Value method plans that left question 13 unanswered.*

SURVEY RESULTS (Continued)

Other Survey Results

Survey Results Regarding Corridor Limits

A number of survey questions dealt with the use of various corridor limits as a component of the formal asset valuation methodology (for large plans not using the Fair Market Value methodology). The U.S. responses indicate that the vast majority of plans (85.7%) use the 80% − 120% of fair market value corridor needed to satisfy the IRC "reasonable" valuation method criterion. In fact, the next most frequently chosen answer in the U.S. was "no corridor" (11.3% of valid U.S. responses), most of which are used for plans not subject to IRC section 412(c). Over 92% of the valid Canadian responses indicated that no corridor limits are used.

Survey Results Regarding Marking Assets to Market

Item 11 of the survey questionnaire dealt with the timing of a technique often referred to as "marking-to-market." Under this technique, the otherwise calculated actuarial value of assets is reset equal to fair market value at a given point in time, often in combination with a prospective change in the underlying asset valuation methodology.

The results in the U.S. indicate a small but generally increasing proportion of large plans have marked to market at least once between 1988 and 1996. Since 1988, the year that had the lowest percent of plans marked to market was 1989, in which only 0.3% of eligible plans (i.e., large plans using an asset valuation method other than Fair Market Value) in the U.S. used this technique. The two biggest years since 1988 were 1996 and 1995, when 2.6% and 2.3%, respectively, of eligible plans used this option. The survey also indicates that in the U.S., the mark-to-market technique is more frequently used in combination with the Write-Up, Deferred Recognition, and Average Market Value methods than it is with the Average (or Blend) of Cost and Market method.

The survey results also indicate that marking-to-market is very rare in Canada. In fact, out of the 150 valid Canadian responses for this question, only 11 plans indicated that plan assets were ever marked-to-market over the entire period from 1988 through 1996.

Additional Results Regarding the Write-Up Method

Virtually all (95.6%) of the large U.S. plans that use the Write-Up method use a write-up rate equal to the rate used for discounting liabilities. Also, 84.1% of these plans include an adjustment to the preliminary value equal to a fixed percentage of the difference between FMV and the preliminary value. Only 8.8% do not make any adjustment to the preliminary value. (There were not enough Canadian plans reporting the Write-Up method to produce credible results.)

Additional Results Regarding the Deferred Recognition and Average Market Value Methods

The following table summarizes the relative frequency among large plans that reported using either the Deferred Recognition or Average Market Value method of the components of investment return that are subject to smoothing. (Based on a total of 432 responses in the U.S. and 91 responses in Canada.)

Components of Investment Return That Are Smoothed	U.S.	Canada
Number of Responses	13.4%	25.3%
Number of Years	37.7%	44.0%
3 or less	42.4%	20.9%
4	-	-
5	4.4%	8.8%
6	1.4%	1.1%
7	0.7%	0.0%

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Society of Actuaries
Survey of Pension Section Members
Asset Valuation Methods for Defined Benefit Pension Plans

The purpose of this survey is to collect information regarding the variety of methods used by pension actuaries in the United States and Canada to value defined benefit plan assets. If you served as the principal actuary during 1996:

- Please complete **one survey form *per plan***, for each plan you serve that has **100 or more participants.**

- Please complete **one survey form *per asset valuation method*** you use for plans that each have **fewer than 100 participants.** (Note: if you complete a single form for multiple small plans with one asset valuation method, you will be asked to provide additional information regarding cost methods and asset smoothing periods in Section IV of the survey. Therefore, when completing Sections I through III of the survey, you should base your answers on the plan that is most representative from the perspectives of cost methods and asset smoothing periods.)

Survey Instructions

Scantron standard form F-2637 (provided) is required for recording your answers to these survey questions. Use a number 2 or HB pencil to mark your answers on the form. Each answer bubble you mark must be filled-in completely to ensure accurate results. If you must change a response, erase the prior mark *thoroughly*. The top, right corner of each form provides an example of a properly marked answer bubble. **DO NOT USE THE TOP, LEFT BOX TO RECORD ANSWERS. All answers must be recorded beginning with row number 1 beneath this box.**

For more forms, please call McGinn Actuaries Ltd. at **(714) 634-8337** weekdays, 8:30 a.m. to 5:00 p.m. Pacific Standard Time.

SECTION I - General Information

1. What Type of Entity is the Plan Sponsor?
    (1) Corporate (includes multiple employer and non-profit)
    (2) Multiemployer   (3) Government

2. Pension Plan Origin:
    (1) U.S. ERISA covered   (2) U.S. non-ERISA covered
    (3) Canada   (4) Other

3. Are Participants Covered Under a Collective Bargaining Agreement (CBA)?
    (1) Yes   (2) No   (3) Partial CBA Coverage

4. Total Number of Participants Covered by the Plan:

(1) Fewer than 10	(4) 500 to 999	(7) 10,000 to 24,999
(2) 10 to 99	(5) 1,000 to 4,999	(8) 25,000 to 49,999
(3) 100 to 499	(6) 5,000 to 9,999	(9) More than 50,000

5. Indicate the amount of invested assets (fair market value):

(1) Less than $1 Million	(5) $100 Million to $250 Million
(2) $1 Million to $5 Million	(6) $250 Million to $500 Million
(3) $5 Million to $25 Million	(7) $500 Million to $1 Billion
(4) $25 Million to $100 Million	(8) More than $1 Billion

6. Indicate the type of benefit formula used to determine retirement benefits for <u>most</u> participants:
    (1) Non-pay related (e.g., $15 per month per year of service)
    (2) Pay Related

7. Indicate the cost method used to fund the plan liabilities:

(1) Unit Credit	(4) Frozen Initial Liability	(7) Individual Aggregate
(2) Projected Unit Credit	(5) Attained Age Normal	(8) Individual Level Premium
(3) Entry Age Normal	(6) Aggregate	(9) Other

8. Indicate the approximate percentage of assets invested in common stocks for this plan:

(1) 0 to 19	(2) 20 to 39	(3) 40 to 59
(4) 60 to 79	(5) 80 to 100%	

SECTION II - Plan Funding Information

Regarding the valuing of assets for plan funding purposes, please complete questions 9 through 19.

9. For <u>plan funding purposes</u>, indicate the asset valuation method you employ for the majority of assets: (See Description of Asset Valuation Methods)

(1) Fair Market Value Method (FMV)	(6) Contract Value Method
(2) Cost Value Method	(7) Write-up Method
(3) Average (or Blend) of Cost and Market Method	(8) Deferred Recognition Method
(4) Discounted Cash Flow Method	(9) Average Market Value Method
(5) Amortized Value Method	(10) Other (please describe on separate sheet)

10. Does the asset valuation method you selected in question 9 include one or more "corridors" (specified minimum and maximum values expressed in terms of fair market value (FMV) or average market value between which the final actuarial value must lie)?

(1) No corridor	(4) Yes; corridor of 85% -
(2) Yes; corridor of 90% −	115% of Average Market Value
110% of FMV	(5) Yes; combination of 3. and 4. above
(3) Yes; corridor of 80% −	(6) Yes; other corridor
120% of FMV	

11. Indicate the most recent calendar years, if any, in which valuation assets were "marked to market" (i.e., actuarial value reset to fair market value):

(1)	1988	(3)	1990	(5)		1992	
(7)	1994	(9)	1996				
(2)	1989	(4)	1991	(6)		1993	
(8)	1995	(10)	N/A or Other				

If you selected any of the methods (1) through (6) in question 9, go directly to question 17.

12. If a smoothing technique is applied to any investments, please indicate period used in technique:

    (1) 3 or fewer years   (3) 5 years   (5) 7 years
    (2) 4 years   (4) 6 years   (6) 8 or more years

13. When the asset valuation method was first adopted, did the initial actuarial value reflect retrospective smoothing of prior asset experience or was all smoothing, if any, prospective?

    (1) Retrospective smoothing of more than 5 years of prior asset experience
    (2) Retrospective smoothing of 5 or fewer years of prior asset experience
    (3) Prospective smoothing only
    (4) Not known

Answer questions 14 and 15, only if you selected asset valuation method (7) Write-up Method:

14. What rate of return is used to develop the preliminary value?

    (1) The same rate used to discount liabilities
    (2) A specified long-term rate not necessarily equal to the rate used to discount liabilities
    (3) Actual dividends and interest plus moving average of capital gains
    (4) Moving average of actual prior rates earned by the fund
    (5) Other

15. Does the asset valuation method include an annual adjustment toward market of the preliminary value (other than corridor-type adjustments)?

    (1) No adjustment
    (2) Yes; fixed percentage of difference between FMV and preliminary value
    (3) Yes; variable percentage of difference between FMV and preliminary value
    (4) Yes; other type of adjustment

Answer question 16, only if you selected asset valuation method (8) Deferred Recognition Method or (9) Average Market Value Method.

16. Which components of investment experience are subject to deferred recognition (if you selected asset valuation method (8) Deferred Recognition Method), or are excluded from the adjusted FMVs (if you selected asset valuation method (9) Average Market Value Method)?

    (1) All investment experience
    (2) All Investment experience in excess of (less than) an assumed rate
    (3) All realized and unrealized capital gains
    (4) Realized and unrealized capital gains in excess of (less than) an assumed rate
    (5) Unrealized capital gains only
    (6) Unrealized capital gains in excess of (less than) an assumed rate
    (7) Other

Answer questions 17 through 19, only if you use a combination of two or more asset valuation methods:

17. Indicate the method used for the majority of common stock assets:

(1) Fair Market Value Method (FMV)	(6) Contract Value Method
(2) Cost Value Method	(7) Write-up Method
(3) Average (or Blend) of Cost and Market Method	(8) Deferred Recognition Method
(4) Discounted Cash Flow Method	(9) Average Market Value Method
(5) Amortized Value Method	(10) Other (please describe on separate sheet)

18. Indicate the method used for the majority of fixed income assets:

(1) Fair Market Value Method (FMV)	(6) Contract Value Method
(2) Cost Value Method	(7) Write-up Method
(3) Average (or Blend) of Cost and Market Method	(8) Deferred Recognition Method
(4) Discounted Cash Flow Method	(9) Average Market Value Method
(5) Amortized Value Method	(10) Other (please describe on separate sheet)

19. Was the method indicated in question 18 influenced by a dedicated or immunized bond portfolio?

    (1) Yes   (2) No

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SECTION III - Plan Accounting Information
Regarding the valuing of assets for Financial Accounting purposes, please complete questions 20 through 25.

20. For financial accounting purposes, indicate the asset valuation method you employ:

(1) Fair Market Value Method (FMV)   (6) Contract Value Method
(2) Cost Value Method   (7) Write-up Method
(3) Average (or Blend) of Cost   (8) Deferred Recognition Method
and Market Method   (9) Average Market Value Method
(4) Discounted Cash Flow Method   (10) Other (please describe on
(5) Amortized Value Method   separate sheet)

21. If a smoothing technique is applied to any investments, please indicate period used in technique:

(1) 3 or fewer years   (3) 5 years   (5) 7 years
(2) 4 years   (4) 6 years   (6) 8 or more years

22. Which components of investment experience are subject to deferred recognition (if you selected asset valuation method (8) Deferred Recognition Method), or are excluded from the adjusted FMVs (if you selected asset valuation method (9) Average Market Value Method)?

(1) All investment experience
(2) All investment experience in excess of (less than) an assumed rate
(3) All realized and unrealized capital gains
(4) Realized and unrealized capital gains in excess of (less than) an assumed rate
(5) Unrealized capital gains only
(6) Unrealized capital gains in excess of (less than) an assumed rate
(7) Other

Answer questions 23 and 24, only if you use a combination of two or more asset valuation methods:

23. Indicate the method used for the majority of common stock assets:

    (1) Fair Market Value Method (FMV)   (6) Contract Value Method
    (2) Cost Value Method   (7) Write-up Method
    (3) Average (or Blend) of Cost   (8) Deferred Recognition Method
    and Market Method   (9) Average Market Value Method
    (4) Discounted Cash Flow Method   (10) Other (please describe on
    (5) Amortized Value Method   separate sheet)

24. Indicate the method used for the majority of fixed income assets:

    (1) Fair Market Value Method (FMV)   (6) Contract Value Method
    (2) Cost Value Method   (7) Write-up Method
    (3) Average (or Blend) of Cost   (8) Deferred Recognition Method
    and Market Method   (9) Average Market Value Method
    (4) Discounted Cash Flow Method   (10) Other (please describe on
    (5) Amortized Value Method   separate sheet)

25. Was the method indicated in question 24 influenced by a dedicated or immunized bond portfolio?

    (1) Yes   (2) No

STOP! - If you have completed this survey on a "per method" basis, please continue below.

Use questions 26 through 28 to indicate the number (count) of plans for which you employ the asset valuation method indicated in question 9 above. Question 26 is used to indicate the hundreds position; question 27 is used to indicated the tens position and question 28 is used to indicate the ones position. For example, if you serve 107 small plans using the asset valuation method indicated in question 9 above, you would mark questions 26, 27 and 28 as follows:
26. (1)
27. (10)
28. (7)

Note: If you serve more than 1,000 plans using the same asset valuation method, enter 999 for questions 31 through 33.

SECTION IV - Information for Plans with Less than 100 Participants

26. Indicate the count (in the hundreds position) of the small plans for which you employ the asset valuation method chosen in question 9 above.

(1) 100	(3) 300	(5) 500	(7) 700	(9) 900
(2) 200	(4) 400	(6) 600	(8) 800	(10) less than 100

27. Indicate the count (in the tens position) of the small plans for which you employ the asset valuation method chosen in question 9 above.

(1) 10	(3) 30	(5) 50	(7) 70	(9) 90
(2) 20	(4) 40	(6) 60	(8) 80	(10) less than 10

28. Indicate the count (in the ones position) of the small plans for which you employ the asset valuation method chosen in question 9 above.

(1) 1	(3) 3	(5) 5	(7) 7	(9) 9
(2) 2	(4) 4	(6) 6	(8) 8	(10) 0

29. Indicate the proportion of these plans for which you use the cost method indicated in question 7 above.

(1) 0% to 49%	(2) 50% to 74%
(3) 75% to 99%	(4) 100%

30. If you use a smoothing technique, please indicated the proportion of these plans for which you use the same time period as indicated in question 12 above.

(1) 0% to 49%	(2) 50% to 74%
(3) 75% to 99%	(4) 100%

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