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IMPLICATIONS OF FOUR THEORETICAL PERSPECTIVES FOR PENSION ACCOUNTING RESEARCH*

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1.0 INTRODUCTION

'Pension accounting' is a term that loosely describes the set of accounting problems affecting a range of measurement and reporting issues associated with contractual pension commitments made by employers to their employees. These issues may be related to either (i) costs borne by employers who sponsor (usually defined benefit funded) pensions plans for their employees that are disclosed in their financial statements; or (ii) financial reports prepared by those responsible for managing various types of pension plan arrangements. The social, economic and political significance of pension contracts to the operation of both capital and labor markets, irrespective of whether they are publicly or privately-funded, is likely to grow into the 21st century as the populations of most countries gradually age. Their accounting implications should be of concern not only to the employees and managers of affected organizations, but more generally to accountants and public policymakers.

In many countries, government legislation now codifies the accountability and other fiduciary duties of those responsible for managing employers' pension promises to their employees, as an integral, deferred component of employment compensation contracts. However, for a number of years accounting rule-making bodies have grappled with a number of apparently unresolved measurement and disclosure issues associated with the reporting of these commitments in both the employer sponsor's and pension plan's financial statements. This is because the employer sponsors' future contingent claims arising from past service obligations, although disclosed in the financial statements, are often not known values, but estimates based on a range of actuarial assumptions involved in a present value calculation. Moreover, the pension commitment made either explicitly or implicitly by an employer to its workforce can be plausibly viewed from a range of broader economic or social-based disciplinary perspectives. Differences in how the pension contract is viewed also has implications for deciding how pension commitments are defined, measured and reported.

Prior to the 1980s, pension accounting practices were dominated by a legalistic, explicit contract view of pensions, which implied that actuarial-based obligations for prior service costs do not accrue to a sponsoring employer in the form of accounting liabilities. This perspective was challenged by the development of new economic theories, largely sanctioned by government legislation, concerning the importance of implicit pension contract rights within

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the employee compensation package. This in turn influenced the promulgation of new accounting standards that attempted to standardize the measurement and disclosure of actuarially-determined pension funding commitments that are made by employer sponsors. These activities also stimulated further accounting research, which sought to examine which perspective was most consistent with key attributes of the new accounting standards.

The purpose of this paper is to overview the development of alternative theoretical perspectives on the nature and scope of pension commitments, in order to review the promulgation of accounting standards and evaluate relevant, pension-related accounting research. This inquiry updates Stone's [1982] prior extensive survey of pension accounting research, which examined alternative theoretical perspectives for analyzing different aspects of pension arrangements, together with the impact of the passage of pension reform legislation in motivating research.¹ The promulgation of pension accounting standards sanctioned an economic-based measurement of pension commitments that was inconsistent with any particular theoretical perspective. This in turn has constrained the scope and validity of subsequent relevant empirical research findings that were originally motivated by these standards. The accounting standards also permit management to exercise considerable discretion over alternative pension accounting practices and actuarial funding choices, which may well be endogenous with their funding and investment policies. This leaves open a number of other researchable questions concerning apparent variations in pension accounting practices, which, if left unresolved, reduces the perceived credibility of reported pension commitments to a range of potentially affected stakeholder groups.

Figure 1, which is an update of the figure originally presented in Stone [1982], illustrates the linkage of the development of theoretical perspectives on pension liabilities, the issue of new pension accounting standards, related hypothesis generation and testing, and implications for future research. The rest of the paper is divided into sections according to the framework presented in Figure 1. Section 2 overviews the development of alternative theoretical perspectives on pension commitments. Section 3 discusses the institutional background to the promulgation of U.S. standards on the topic of employers' pension cost accounting. Section 4 synthesizes hypotheses generation and testing by accounting research related to these perspectives and to relevant accounting standards. Section 5 discusses the implications arising from the endorsement of certain theoretical perspectives by accounting standard setters and identifies a number of unresolved research questions. Finally, section 6 contains a summary and conclusion.

2.0 DEVELOPMENT OF ALTERNATIVE THEORETICAL PERSPECTIVES

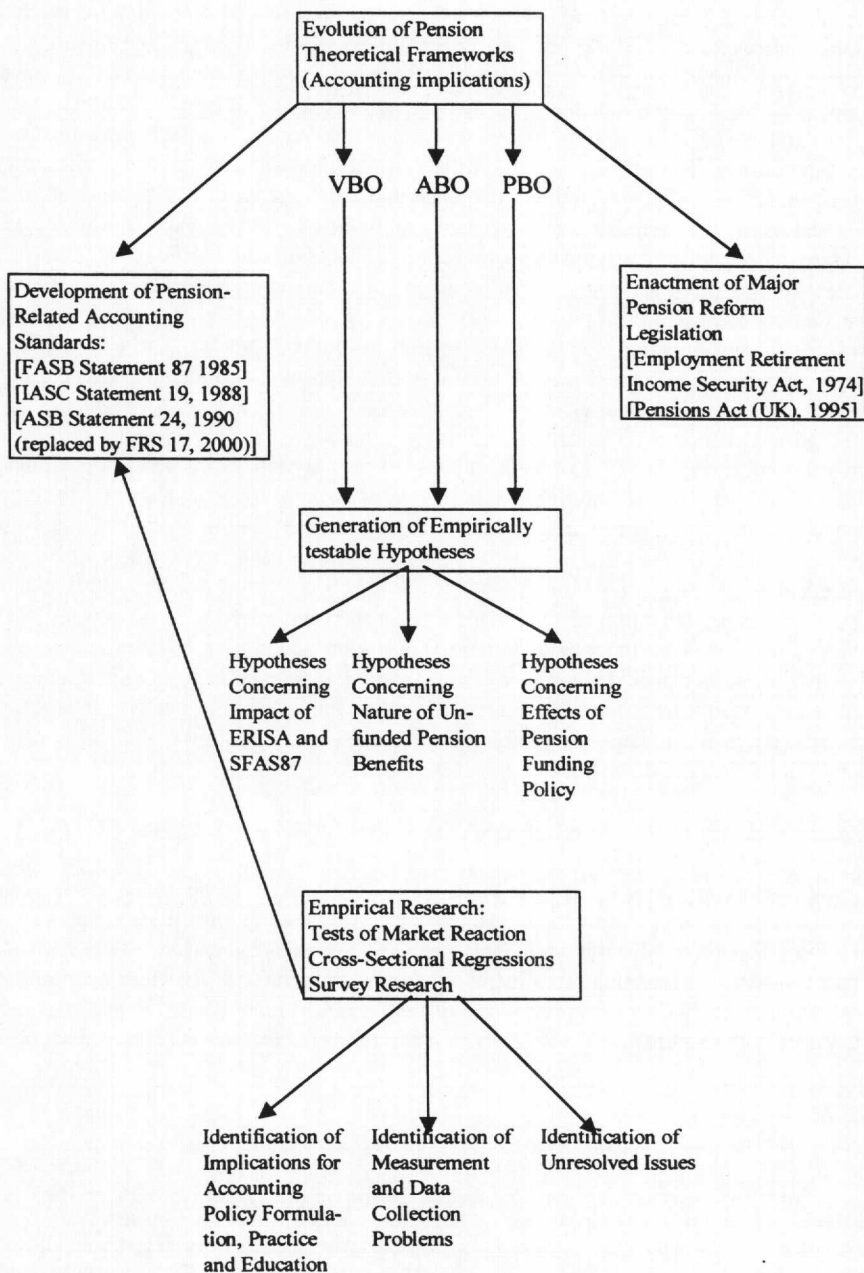
Four theoretical perspectives can be taken about the nature of pensions. These perspectives need not be viewed as mutually exclusive theories of what constitutes the pension contract, but rather reflect distinct disciplinary insights on various dimensions of observable corporate pension decisions that are affected by this phenomena, e.g., (i) labor economics; (ii) corporate finance; and (iii) insurance; and (iv) inter-generational equity.² Understanding the differences in the nature and scope of pension commitments that are implied by each of these

¹ Stone [1982] concludes that only a minimal amount of accounting research has been conducted in the pension area.

² Stone [1982] examines three alternative theoretical frameworks from which various aspects of modern defined benefit pension arrangements can be analyzed. These perspectives are (i) pensions as deferred wages (gratuity theory and deferred wage theory), (ii) pensions as contingent claims (options pricing theory), and (iii) incentive effects of plan sponsorship (agency theory). These theories have since developed into alternative implications about the valuation of pension assets and liabilities.

Figure 1

An Overview of the Linkage of Pension Theory Development, Accounting Reform Legislation and Empirical Research (following Stone (1982))



perspectives provides a conceptual basis to assess the contributions and implications of extant pensions-related research, and to critically evaluate the ongoing promulgation of pension-related accounting standards.³ Table 1 summarizes the conceptual differences between each of the four perspectives, and their accounting implications.

2.1 Labor Economics Perspective

Early economic theory depicted pension contracts as a form of discretionary gratuity paid for loyal and faithful service [Stone, 1984; McCallum, 1991].⁴ However, the implementation of wage-price control laws during and after the Second World War highlighted the role of pensions as an increasingly important element of the employee compensation package. Accordingly, employers found that the structure of pension contracts could be used to bind employees to their organizations, and thus provide incentives to improve productivity. This led to the view that labor markets are multi-period contractual markets in which long-term employment relationships are formed [Logue and Rader, 1999]. According to the labor economics perspective, pension benefits are deferred compensation, and pension plans are designed to achieve efficiency in the long-term relationship between the employer and employee.⁵

This perspective has its greatest power in explaining the vesting and retirement provisions of pension plans. Vesting rules specify the number of years an employee must work for the employer before getting title to any pension benefits earned under the plan [Bodie, 1990a]. These vesting rules are designed primarily to reduce labor turnover, but may also affect worker effort [Lazear, 1986]. The legal enforceability of such rules was sanctioned by the passing of legislation in the USA (*The Employee Retirement Income Security Act of 1974*, hereinafter 'ERISA'). This Act codified employer sponsors' duties and obligations associated with the operation of a pension plan and imposed a contingent liability upon employers for accrued, unfunded pension benefits (including past and prior service costs).

Pesando and Clarke [1983] argue that such an analysis of the trade-off between current wages and pension benefits also offers key insights into the problem of pension accounting. They claim [p. 739] that a common thread in the literature which views pensions as an integral part of long-term labor contracts is to view workers and firms as entering into 'implicit lifetime contracts'. The central argument of this view is that the employer tacitly promises that the right to terminate the pension scheme will not be exercised. Stone [1991] cites empirical support for the validity of implicit contracts.

The evolution of the labor economics perspective has significantly influenced the definition of the pension accounting problem. This is because the periodic payments that employers make to pension funds on behalf of their employees are not merely matching periodically

³ It is beyond the scope of this review to provide a detailed history of the development of alternative perspectives on pensions, nor to examine accounting issues related to post-retirement benefits other than pensions or retirement settlements, which may involve similar issues. For example, Haw and Lilien [1991] examine why firms settle their overfunded defined benefit pension plans as permitted by SFAS 88, 'Employers' accounting for settlements and curtailments of defined benefit plans and for termination benefits', issued at the same time by the FASB as SFAS 87. They conclude that firms undertake settlement to offset a decline in earnings and mitigate restrictive debt covenant constraints.

⁴ The labor economics perspective evolved from economic theory about the relationship of pensions to the employee compensation package. Stone [1982] examines two alternative theories of the pension component of employee compensation packages; a gratuity from a grateful employer for long and faithful service (gratuity theory) and as a current economic value to employees reflecting the forces of competition in the market place (deferred wages theory). Stone [1984] subsequently provides an historical account of the move from gratuity to deferred wages explanations of pensions in the U.S. during the 1920s and 1930s.

⁵ Lazear [1986] explains how firms and their employees face incentives to enter into such 'lifetime' contracts in order to increase productivity or reduce shirking.

Table 1

Major Differences Among Theoretical Frameworks on Pension Liabilities

Framework	Theoretical Basis	Definition of Liability	Measurement of Liability
Labor Economics	Pension benefits are a form of deferred compensation	Employees willing to forego current wages in return for vested and non-vested benefits	PBO; projected labor contracts
Corporate Finance	Pension benefits are a gratuity over a spot contract	Only pension benefits which 'legally' accrue during period in which service performed	ABO; accrued labor contracts
Insurance (actuarial)	Pension benefits are actuarially calculated moral obligations	Present value of future benefits calculated over pension plan's lifetime	EBO; Implicit lifetime labor contracts
Inter-Generational Equity	Pension benefits are sets of generational accounts	Various participants entitlements are subject to inter-generational conflict	Generational accounts

with the benefit accrued (as in wages), but are governed by the need to actuarially fund past service obligations related to lifetime labor contracts. Thus, pension accounting evolves from being directed primarily at periodic expense measurement to the need to recognize an accrued liability for the funding of prior service costs. Pesando and Clarke [1983] argue that the contributions established by a projected benefit method of funding the pension obligation (or 'PBO') would be most consistent with a lifetime contract model.⁶ The PBO is the actuarial present value, as of a specified date, of benefits attributed by the pension plan's benefit formula to employee service rendered prior to that date.

2.2 The Corporate Finance Perspective

The labor economics perspective depicts pension plans as primarily affecting the operation of the labor market. Other economic theorists have considered whether the financial structure of pension arrangements is potentially relevant to capital market participants'

⁶ Pesando and Clarke [1983] criticize earlier studies for making recommendations which are inconsistent with the implications of the lifetime contract of the labor market.

valuation of the sponsoring firm. Financial economists applied principles of corporate finance to develop linkages between the financial strategy of the pension fund and that of its employer sponsor [Sharpe, 1976; Treynor et al., 1976] and to identify the tax advantages of pension funds. The corporate finance theory literature views pension fund assets and liabilities as an integral part of the employer sponsor's own assets and liabilities [Black, 1980; Tepper, 1981]. This integrated perspective requires managing the sponsoring firm's extended balance sheet, including both conventional assets and liabilities and its pension assets and liabilities, in the best interests of its shareholders. This literature views pension commitments as money-fixed liabilities of the shareholders, and thus as an integral part of corporate financial policy. This explains the choice of risk-less, high-quality corporate bonds for the discount rate, since the comparative advantage of a pension fund lies in its ability to be invested in the most heavily taxed assets. Bodie [1990a] argues that these tax effects are the most important aspects of the integrated balance sheet for the sponsoring firm, since they can effectively earn a pre-tax rate of return on any assets held in the pension fund and pass these returns through to shareholders.

However this view does not explain important observed features about the existence of employer-provided pension plans, their design, and their funding and investment policies. For instance, the integrated perspective unrealistically assumes that shareholders own 100% of the pension surplus, and leads to the conclusion that corporate pension funds should pursue extreme funding policies: either maximum funding and investment entirely in taxable bonds, or minimal funding and investment entirely in stocks. However available empirical evidence does not support this perspective [Thomas, 1989; Bodie et al., 1987; Stone, 1987].

Nevertheless, this literature emphasizes the ability of the employer sponsor to alter the magnitude and even the existence of pension fund surpluses by exercising discretion over pension funding and investment strategy, voluntary termination and/or takeover decisions. It thus questions the standard assumption that the pension fund is a going concern and instead is based on the belief that employer sponsors effectively own the pension plan surplus. There is nothing that morally binds the employer sponsor to a set of existing employees beyond the current accounting period. This view leads Bulow [1982] to question important labor economics assumptions about pensions, which produce results that are at variance with 'normal corporate securities valuation'. These are:

- (i) The real value of a worker's pension claim exceeds the present value of whatever benefits a worker would receive if employment were immediately terminated (the 'projected benefits assumption');
- (ii) The firm has an implicit obligation to pay off all promised benefits regardless of the firm's legal liabilities (the 'ongoing plan assumption').

Bulow [1982, p. 436], instead, suggests that pension liabilities can be analyzed similarly to other corporate securities (that is, without the assumption of complex implicit contracts). Pesando and Clarke [1983] argue that those who analyze the tax and related pension issues from the perspective of finance theory also tend to adopt an 'explicit spot contract model' instead of an implicit lifetime contract model. The 'spot' element arises from financial economists such as Sharpe [1976] who advocate a market-valued measure of employer sponsors' pension liabilities. This measure calculates the pensions due under the terms of a plan as if it were to be immediately terminated, which are then costed at current annuity rates. This is also known as a 'wind-up' measure since it identifies the precise amount that the firm would require to discharge its 'explicit' legal obligation if the plan were terminated [Pesando, 1985].

An essential feature of the 'explicit spot contracting' model is that there is nothing which binds the worker to the firm for other than the immediate period, and vice versa. As a consequence, workers must receive total compensation equal to the value of their marginal product in each and every period [Pesando and Clarke, 1983, p. 736]. Since the rational worker will grant no concession in current wages in return for a non-vested pension benefit, workers will attach no value to non-vested pension benefits in an explicit spot contract [Pesando and Clarke, 1983].

The accounting measure of pension costs which ensures that total labor costs are charged to the period in which labor services are performed is simply the wages foregone to acquire the pension benefits which 'legally' accrue during the period. Thus, the rational worker is assumed to grant no wage concession in return for non-vested pension benefits, so that the accounting measure of pension costs must be zero if total labor costs charged to the period are to equal the value of services performed. Further, labor earnings attributable to future periods are not relevant to the calculation of current pension benefits. Pesando and Clarke [1983] conclude that only an accrued benefit method of funding pension obligations ('accrued benefit obligation' or ABO) can establish pension plan contributions which correctly measure the cost of labor services provided during the period in excess of the current wages paid to workers. The ABO is the actuarial present value of benefits attributed by the pension plan's benefit formula to employee service rendered before a specified date, based upon employee service and compensation prior to that date. Unlike the PBO, the ABO does not utilize salary projections to estimate the amount of benefits that will ultimately be payable and to determine the proportion of those projected benefits that are related to service to date. Thus, the ABO measure is inconsistent with the going concern principle.

2.3 The Insurance Perspective

Both the labor economics and corporate finance perspectives define pension contracts within the context of a specific workforce. This is because they are based on the restrictive assumption that pension commitments are linked to periodic wages (that is, defined benefit funded) using either spot or lifetime compensation contracts. However the insurance perspective takes a broader perspective by examining the insurance elements inherent in both defined benefit and defined contribution funded pension schemes. Bodie [1990a] argues that this is the conventional view of pensions as expressed by 'most pension professionals' and that it has been codified in existing pension law. This perspective assumes that it is economically efficient for employers to supply the kind of retirement income insurance that their employees desire, as they have better access to information about employee earnings, benefit from economies of scale in processing this information, and can easily implement forced saving for employees.

According to Bodie [1990a], employers face economic incentives to act in the best interests of their employees, in order to enhance their motivation and labor productivity. Thus employers are assumed to be able to avoid adverse selection problems associated with the annuities market.⁷ He also argues that defined benefit should be the dominant form of employer funded pension plan because it provides more complete insurance against major sources of retirement income risk (replacement rate inadequacy, social security cuts, inflation risk, longevity and investment risk) than does the defined contribution form of funding plan.

⁷ Stone [1982, p. 5] argues that agency theory can provide 'a framework for understanding why firms choose to offer defined benefit pension plans and how the benefits and risks of pension plan sponsorship are shared among management, employees and investors.

Defined benefit pension plans are also considered to be insurance subsidiaries of the sponsoring corporation. As such, their primary concern is to hedge the pension liabilities incurred by the parent corporation [Bodie, 1990a].

This view suggests that employer sponsors' total pension commitment constitutes an economic or actuarial benefit obligation (or EBO). McGill and Grubbs [1989] define the EBO as the actuarial present value of future benefits less the actuarial present value of future normal cost accruals. The unfunded actuarial liability is that portion of actuarial liabilities not offset by plan assets, and is thus an item of significance and concern to actuaries. The actuary observes that over the lifetime of a funded plan the benefits paid must come from contributions into the fund or from fund earnings. The actuarial aim is to calculate a reasonable contribution from time to time, based on estimates of benefits, fund earnings and differences between previous estimates and actual outcomes. The annual contributions required by the employer to fund the plan are in turn determined by an actuarial valuation on each future year's simulated plan membership, which requires a number of actuarial assumptions (e.g.: termination and retirement rates, interest and salary rates) and cost funding methods [Winkelvoss, 1993].

Bodie [1990b] suggests that pensions offered under a defined benefit pension plan are better viewed as participating annuities that offer a guaranteed minimum nominal benefit, determined by the pension plan's benefit formula. Consequently, there is likely to be cross-sectional variation in pension benefits in practice. If a sponsoring firm does not do well financially, then employees cannot expect to get anything more than the minimum benefit guaranteed by the benefit formula (typically the ABO). But, at managerial discretion, this guaranteed benefit is more likely to be enriched from time to time, depending on the financial condition of the employer sponsor, increases in the living costs of retirees and the performance of the plan's assets. This means that the corporate pension liability can be viewed, at least partially, as a complex implicit contingent claim by the employees on the pension plan sponsor.⁸

Bodie [1990c,d] presents 'economic' balance sheets which he claims reflect the financial condition of a sponsoring corporation (re-produced in Table 2). These differ from conventional ones in that they explicitly include the corporate sponsor's guarantee of the ABO (G) as an asset of the pension fund and a liability of the corporation.⁹

The corporate guarantee of the ABO is in effect a put option on the investments of the pension plan with an exercise price equal to the present value of the ABO. The pension plan net worth (S) is the difference between its total assets (investments plus corporate pension guarantee, I+G) and the ABO. The employer sponsor owns a proportion, \emptyset , of the pension fund net worth; the remainder $(1 - \emptyset)$ belongs to the employees. The shareholders' equity in the sponsoring corporation (E) is the difference between total corporate assets (conventional plus the corporation's share of the pension fund surplus, $A + \emptyset S$) and corporate debt (conventional plus the guarantee of the pension benefits, D+G).

While the corporate guarantee of G is a put option, the pension plan's net worth is analogous to a call option. While the put is entirely a liability of the corporation, the call may

⁸ The optionality element inherent in pension commitments is introduced by Sharpe [1976], who focuses on the impact of the introduction of government pensions insurance in ERISA on the nature of an employer sponsors' pension obligations. However this does not attempt to model an equivalent implicit contingent claim by employees on the pension fund surplus, which is the major focus of the insurance perspective [Bodie, 1990a].

⁹ Although the insurance perspective implies that the EBO is the most appropriate pension commitment for the employer sponsor of a defined benefit pension scheme, Bodie [1990c, d] argues that the employer sponsor's management will seek to minimize the cost of meeting a guaranteed floor specified by the pension benefit formula (i.e. the ABO). However such behaviour appears to contradict his claim made elsewhere [Bodie, 1990a, b] that employer sponsors tend to act in the best interests of their employees.

Table 2
Economic Balance Sheets of the Corporation and the Pension Fund
(Bodie, 1990c,d)

Corporate Balance Sheet

Assets		Liabilities + Owner's Equity	
Conventional assets	A	Conventional debt	D
Corporate Share of Pension		Corporate Guarantee of ABO	G
Fund Net Worth	ØS	Shareholders' Equity	E

Pension Fund Balance Sheet

Assets		Liabilities + Net Worth	
Investments	I	Accumulated Benefits	ABO
Corporate Guarantee of ABO	G	Net Worth	S

only partially be a corporate asset because employees claim a proportion of the surplus. If so, the corporate sponsor has an incentive to minimize G, the cost of the benefit guarantee. Moreover, if the volatility of the underlying security's price increases, then the put and the corresponding call option will both increase in value by the same amount. Thus, if the value of both the corporate pension guarantee and the pension fund net worth increase by the same amount, the value of corporate equity must go down. Formally, the payoff structure at the date of termination is $\text{Max}(0, \text{ABO} - I)$. That is, if fund investments cover the ABO, the guarantee costs the corporation nothing; if fund assets fall short of the value of the ABO, however, the corporation must make up the difference. However these option pricing calculations require a number of strong assumptions to be made about the nature of the employer sponsor's pension guarantee. They are also complex when they include multi-period contributions, benefit payments and voluntary terminations that are a prevalent feature of all pension plans, which might explain the lack of evidence on Bodie's model.¹⁰

More generally, the insurance perspective highlights the importance of relying on statistically-based actuarial theory for estimating future benefit payments and allocating the accruing obligation to accounting periods. Actuarial calculations of the EBO are routinely performed for the purposes of recommending programs to fund employers' pension commitments to defined benefit pension plans. Unlike the ABO and PBO, which are constrained by deterministic assumptions about the workforce, the EBO measure is more appropriate to funding decisions, consistent with a longer-term actuarial valuation perspective. However such practices do not attempt to model one correct accrued liability for pensions at the end of the period or one correct figure for pension cost for a period. Rather, variances in figures

¹⁰ Danetig et al. [1982] demonstrate analytically that both sets of restrictive conditions are important to an employer's decision to terminate a pension plan. Marcus [1987] derives and presents empirical estimates of the put option. His findings suggest that the existence of government insurance of under-funded pension obligations is economically significant, although the U.S. government has since acted to reduce the ability of firms to exercise this option. Option values are very sensitive to changes in interest rate and other assumptions in the model.

are possible when applying different actuarial methods and assumptions (any of which are equally acceptable under actuarial theory) to the same fact situation. Nevertheless, it has been assumed that such methods would also provide a more satisfactory basis for accounting treatment of periodic pension expense and obligation for financial reporting purposes. The considerable scope for managerial manipulation over actuarial assumptions underlying the EBO is problematic for standard setters attempting to standardize pension accounting and financial reporting.¹¹

2.4 Inter-generational Equity Perspective

All the perspectives discussed so far assume that there is inter-generational harmony of the implicit pension contract that underlies an employer's estimated pension commitments. Tinker and Ghicas [1993] argue that, even under the implicit life-time contract perspective, these assumptions are unlikely to be met in practice. This criticism highlights the fact that orthodox economic theory pays little attention to the social structural context underlying conflicts over title to pension property claims, by reducing such issues to abstractions of risk and uncertainty.¹² Tinker and Ghicas [1993] also argue that it is incapable of dealing with the possibility that agreements may in various ways be coerced and manufactured, and takes no cognizance of social or class inequalities between the contracting parties to a pension contract. These parties are the employer sponsor, unions representing various age-cohorts of existing employees, and retired employees who are pension beneficiaries. Thus, the possibility of coerced agreements or manufactured consent escapes examination, as does the social and political context in which such 'agreements' are constituted. Tinker and Ghicas [1993] claim that by reducing pension commitments to a technical choice among either the ABO, PBO and EBO, accounting unavoidably 'takes sides' in resolving conflict and enforcing consent.

An alternative, critical perspective suggests that inter-generational inequity is a key dimension of pension arrangements between these parties. This concept is especially applicable in pension funding environments where the employer does not pre-fund the pension obligation and is effectively unable to do so because of fiscal stress (e.g., the public sector) or where pension commitments payable under the pension plan are frequently amended over time. In this situation, inter-generational disputes may exist over the ownership of any calculated surplus or deficit of the fund. Moreover, it is likely that such disputes will involve past, current and future generations of employee participants in pension plans.

The generational accounting perspective ultimately implies that standard notions of surplus when applied to pension plans are rather meaningless, and that identifying generational accounts by cohort may provide important insights into the potential for the abrogation of employees' legitimate expectations.¹³ Generational accounts indicate, in present value terms,

¹¹ Indeed the only theoretical restriction on the age-specific normal cost values is that their accumulated values of normal cost should accumulate to the present value of the future benefits at retirement age. Since an infinite number of normal cost patterns could be calculated such that these conditions hold, there exist an infinite number of actuarial cost methods [Winkelvoss, 1993].

¹² Marxist political economy attempts to analyze the interaction of various social phenomena and relate them to a particular mode of production and social formation according to the principles of historical and dialectical materialism. Deaton [1989] uses this framework to provide a critical analysis of pensions policy in Canada, the U.K. and the U.S. using the approach of Marxist political economy.

¹³ Generational accounts indicate, in present value terms, what the typical member of each generation can expect to contribute, now and in the future, given an employer sponsor's budget constraint in funding the plan. This is because a single measure cannot identify the inter-generational distribution of the burden of fiscal pressure at any time [Auerbach et al., 1994]. Without dealing with these issues it is impossible to identify how the burden of fiscal pressure is distributed across generations.

what the typical member of each generational cohort of participants can expect to pay, now and in the future, in net contributions (i.e., contributions paid net of any pension benefits received). Thus generational accounting indicates not only what existing generations will pay, but also what future generations must pay, given current funding policy and the sponsoring employer's inter-temporal budget constraint in meeting any unfunded obligations.

This perspective has the greatest power in potentially explaining incentives for pension plan terminations and under-funding behavior in the public sector. However, it is critically dependent upon some unspecified equilibrium in inter-generational equity, and upon identifying a relevant rate to discount economic growth and the mortality of various age cohorts. Further, it is likely that such calculations may include notional implicit ex-ante pension commitments by future generations of employee participants, calculations that are normally considered to be beyond the scope of accounting liabilities (when defined as commitments arising from past events). Except for evidence in pension plan curtailments, this perspective has received little, if any, attention from accounting standard setting bodies and accounting researchers to date.

3.0 ACCOUNTING STANDARDS ON PENSION LIABILITIES

Prior to the 1980s, pension accounting standards specified only the income statement effects on employer sponsors of incurring expenses in relation to defined benefit pension plans.¹⁴ Accounting Principles Board Opinion No. 8, issued in 1965, formally recognized pension funding issues, but left to the discretion of the actuary the determination of a proper methodology for valuing the pension plan and disclosure of pension values. However, ERISA established funding requirements for corporate pension plans and mandated numerous reporting requirements to government agencies that monitor compliance with pension legislation. This information was not required to be disclosed in financial reports issued by the sponsoring firm to the public.

The passing of ERISA motivated the Financial Accounting Standards Board (hereinafter 'FASB') to begin work on disclosure requirements, issuing a Discussion Memorandum in 1975, holding public hearings in 1976, and issuing an Exposure Draft in 1977 with a tentative date of December 15, 1977. However, controversy led to the indefinite postponement of the 1977 statement and further work on the proposal. A revised Exposure Draft was issued in 1979 and final promulgation of pension accounting regulations occurred in 1980 with Statement of Financial Accounting Standards (hereinafter 'SFAS') No. 35 and SFAS No. 36, both issued in early 1980. SFAS 35 required that pension plans disclose to participants such information as net assets available to pay benefits and the ABO. SFAS 36 required firms to disclose the net assets available for benefits, the ABO, and its two components – vested and non-vested benefits, as well as the assumed rate of return in determining the actuarial present values. However, these disclosures were confined to the footnotes to the financial statements and the only pension liability recognized on the balance sheet was the unfunded accrued pension cost. Indeed, such was the controversy over how pension commitments should be defined that a limited 'legal' conceptualization of this issue dominated the pension accounting standard setting arena until it was eventually superseded by SFAS No. 87 in 1985.¹⁵

¹⁴ This section is intended to give a brief overview of the promulgation of accounting standards, in order to illustrate the linkage with the development of relevant theoretical perspectives. McGill and Grubbs [1989] provide a more detailed analysis of the historical development of employer sponsors' pension accounting standards.

¹⁵ There is some evidence that there was a lack of consensus among accounting academics and practitioners over this issue at this time. Some were concerned that, consistent with a lifetime model, the failure to recognize a liability for past and prior service cost effectively ignored a significant obligation for the sponsoring firm [Cramer

The 1980s subsequently witnessed the promulgation of new accounting standards related to pensions, and thereby an attempt by accounting standard setting bodies to develop a more theoretically defensible approach to the uniform disclosure and measurement of pension commitments. In particular SFAS 87 ('Employer Sponsors' Accounting for Pensions'), issued in 1985, stimulated a major new body of empirical accounting research. The rest of this section provides the institutional background of SFAS 87 and provides a critical analysis of its treatment of pension liabilities relative to that implied by each of the four perspectives outlined above.

3.1 Institutional Background of SFAS 87

The issue of SFAS 87 in December 1985 marked the end of a drawn-out and controversial project by the FASB to develop employer sponsors' pension accounting standards in the United States. Over a period of several years the FASB had produced a background paper, a discussion memorandum, a set of tentative conclusions entitled 'Preliminary Views' and an exposure draft before finally issuing the standard.

Certain propositions underlie SFAS 87's definition of a pension liability:

- (i) Pension benefits are not gratuities, but are a type of deferred compensation and employers' obligations are incurred when the services are rendered [para. 79];
- (ii) Pension accounting should be based on the going concern assumption. Thus the FASB concluded that the employer's probable future sacrifice is not limited to either the termination liability or the amounts already vested. Rather the actuarial measurement of the obligation encompasses the probability that 'some employees will terminate and forfeit non-vested benefits' [para. 149].
- (iii) Several different measures of the value of pension benefits attributable to the past, which it calls the benefit obligation [paras. 17-18]: the ABO, VBO and PBO.

All of these measures depend upon actuarial assumptions to calculate the actuarial present value of pension benefits. These reflect the time value of money and a number of other assumptions related to the probability of payment [para. 39]. SFAS 87 also requires recognition of the net periodic cost based on the present value of the obligation, based on the condition that the ABO exceeds the 'fair value' of plan assets. Thus the employer should recognize a liability in its statement of financial position that is at least equal to the unfunded accumulated benefit obligation [para. 36]. The employer is also required to disclose the ABO in their statement of financial position. SFAS 87 permits footnote disclosure of the PBO, which is to be the basis of attributing pension benefits to annual pension cost provisions (being the service cost component of the 'net periodic pension cost').

3.2 How SFAS 87 Compares with the Theoretical Perspectives

Table 3 summarizes the differences in accounting treatment (in terms of recognition and/or disclosure of the relevant pension assets and liability measures), which are implied by the various theoretical perspectives, and that currently required by SFAS 87. These differences are briefly discussed below.

and Neyhart, 1980). By contrast, practitioners took the view, consistent with the spot model, that the non-vested components of these liabilities were executory only and thus did not accrue any liability until enhanced productivity was delivered in the future [Kirk, 1981; Lorensen and Rosenfield, 1983].

The corporate finance perspective implies that the net worth of the pension fund should be fully consolidated into the employer sponsor's balance sheet. Therefore, the pension fund's net surplus or deficit, defined as the fair market value of plan assets minus the ABO, should be recognized on the employer sponsor's balance sheet. Since pension liabilities are just another form of fixed monetary debt, they can be discounted using the corporate bond rate. Note that this is virtually identical to the current treatment in SFAS 87, except that only in the case of a net deficit are the unfunded liabilities recognized.

By contrast, the labor economics perspective implies that the pension fund is a separate legal entity from the employer sponsor. Therefore, the net surplus or deficit, defined as the fair market value of plan assets minus the PBO, would not be shown on the employer's balance sheet unless there was a deficit (i.e. $PBO > \text{fair market value of plan assets}$). Note that the valuation of the deficit which is recognized under SFAS 87 instead requires recognition of the ABO (with the PBO being footnoted). Moreover, the labor economics approach implies that pension liabilities should be segregated, and that an appropriate discount rate should be used for fixed monetary liabilities and for salary-related liabilities.

Table 3

Major Differences Among SFAS 87 and Theoretical Frameworks on Employer Sponsor's Balance Sheet Recognition of Pension Assets and Liabilities

Framework	Theoretical Basis	Definition of Discount rate	Recognition of Surplus/Deficit
SFAS 87	Combination of corporate finance and labor economics	Prime corporate bond rate	ABO-FMV if $ABO > FMV$, zero otherwise (footnote PBO)
Corporate Finance	Pension benefits are a form of corporate debt; integrated with firm view	Fixed interest corporate bond yield	FMV - ABO
Labor Economics	Pension benefits are a form of deferred compensation; separate legal entity view	Long-term corporate bond rate for pensions, index-linked rate for salary-related liabilities	PBO-FMV if $PBO > FMV$, zero otherwise
Insurance	Pension benefits are actuarially calculated moral obligations	Long-term rate of return on a portfolio of assets	AMV - EBO, Corporate guarantee of ABO

SFAS 87 represents a compromise between the corporate finance and labor economics perspectives. The most significant inconsistency between SFAS 87 and these perspectives concerns what measure should be reported in the financial statements. By allowing both footnote disclosure of the PBO and balance sheet recognition of the ABO in SFAS 87, the FASB does not fully support either the labor economic or corporate finance perspective.¹⁶ Further, by requiring full recognition of the ABO (instead of the PBO), SFAS 87 appears to contradict its going concern assumption [para 149].

Another area of inconsistency between SFAS 87 and these perspectives concerns its requirement to recognize the larger of a 'minimum liability' or the unfunded accrued pension expense. However, these measures are based on differing underlying perspectives. The minimum liability is the unfunded ABO, which is implied by the corporate finance perspective. By contrast, the alternative measure (the unfunded accrued pension expense), results from the failure to fund accrued periodic pension expense and incorporates nonvested benefits and salary progression for normal service, but not unamortized past and prior service costs. However, it concludes that the ABO, which is measured without considering future compensation levels, should be the basis on which to decide whether a minimum liability needs to be recognized [para. 152].

A third area of inconsistency concerns the treatment of pension assets and liabilities. US GAAP generally prohibits the offsetting of a long-term liability with a long-term asset. By contrast, SFAS 87 promulgates a notion of 'offsetting', whereby recognized values of assets contributed to a [pension] plan and the net pension cost of past periods are shown net in the employer's statement of financial position. This is inconsistent with the corporate finance perspective, which suggests that property rights over pension assets and liabilities lie fully with the firm. It is also inconsistent with the labor economics perspective, which suggests that the pension plan is a fully separate legal entity from the sponsoring firm.

These inconsistencies are not surprising since they appear to reflect underlying dissension within the FASB itself over the pension accounting issue. One dissenting FASB member, Arthur Wyatt, believes that the PBO should measure the pension obligation reported in the financial statement. He points out that while the ABO recognized in SFAS 87 does not make any allowance for inflation, it is discounted with a market interest rate that implicitly embodies an inflation expectation. Tinker and Ghicas [1993, 365] point out that this is tantamount to assuming that that employers can avoid maintaining the real value of pensions.

Another dissenting FASB member, Robert Sprouse, argues that employer sponsors do not have a present obligation for pension benefits related to salary increases that are contingent upon future events as defined by the PBO. He claims that accounting should only recognize the consequences of decisions about salary increases at the time the event occurs. However, his opposition to using future salary levels in estimating cash flow benefits is contradicted by his willingness to use interest rates that include this component to discount nominal cash flows.

In some respects SFAS 87 adopts certain elements of the insurance perspective by relying upon a number of actuarial assumptions that underlie its various measures of pension obligations [para. 39]. It also recognizes that employers undertake pension obligations with the expectation of future economic benefits [para. 145] and requires recognition of a guaranteed minimum nominal benefit [para. 152]. However, in many other respects SFAS 87 is also inconsistent with the insurance perspective. Winkelvoss [1993] levels several criticisms at

¹⁶ Rue and Tosh [1987] identify a number of other, more detailed aspects of SFAS 87 which demonstrate that it is neither consistent with a corporate finance perspective on the pension accounting problem. These include asset recognition, salary progression, non-vested benefits and past service costs.

various aspects of SFAS 87 requirements which he claims are not consistent with an insurance perspective. These include: the use of the settlement or 'wind up' rate for discounting liabilities; the use of benefit rather than salary service proration for the PBO; and the failure to prorate the projected benefit uniformly from entry age to each future decrement age.

SFAS 87 also does not recognize any contingent claims by employees over the pension plan's surplus to recognized in the employer's balance sheet.¹⁷ When compared with the economic balance sheet shown in table 2, neither the value of the corporate guarantee G , nor the pension fund net worth (presumably defined in a manner consistent with the standard actuarial methodologies used to measure funded assets and liabilities (EBO)) is recognized under SFAS 87. Furthermore, the insurance perspective appears to assume that pension liabilities should be discounted from an appropriate portfolio of assets derived by asset/liability models [Exley et al., 1997]. This stands in contrast to SFAS 87's use of a fixed interest corporate bond yield to discount all liabilities. Nevertheless, the economic balance sheet implied by the insurance perspective is of particular significance to pension accounting research, because it is defined in terms of probability, not legality, since presumably economic measurements (rather than legal measurements) will be useful for investment decisions.

The generational accounting perspective implies that recognizing a single surplus or deficit is a meaningless figure. The concept of inter-generational inequity has greatest explanatory power in describing the demographic nature and financial dimensions of underfunded pension liabilities of governments. These are typically funded indirectly by taxpayers on a 'pay-as-you-go' financing system. Since these types of public pension funding arrangements are not widespread in the private sector, table 3 does not attempt to compare SFAS 87 and the inter-generational equity perspective.

4.0 RESEARCH ON THE EFFECTS OF SFAS 87

The development and issue of SFAS 87 stimulated a range of empirical studies which tested hypotheses implied by various theoretical perspectives concerning their explanatory power on observable properties of either reported pension liabilities or managerial behavior. Most of this research employs either standard capital markets or positive accounting-based research methodology to test alternative hypotheses about pension funding behavior implied by the labor economics and corporate financial perspectives. A few studies examine hypotheses concerning the effect of SFAS 87 on managerial discretion over a range of actuarial assumptions that bear upon the testable implications of the insurance perspective. Only Tinker and Ghicas [1993] specifically address issues potentially raised by the inter-generational equity perspective. This section briefly overviews each of these areas of research and critiques their findings.

4.1 Capital Market Views of Corporate Pension Liabilities

Research on capital markets' view of corporate pension liabilities has focused on three empirical questions arising from the implementation of SFAS 87: (1) whether the stock market valuation of the firm reflects their reported funding status; (2) is the measure of employers' pension obligation that is currently recognized in the financial statement (the ABO) more appropriate to various financial statement users than the measure reported in the footnote (the PBO); and (3) whether SFAS 87 information can improve the predictive ability of

¹⁷ SFAS 87 is also inconsistent with the generational accounting perspective for these same reasons, but moreover because it generally fails to acknowledge any competing property right claims over the pension fund's surplus or deficits.

bond rating decisions.¹⁸ Table 4 summarizes the research objectives, data set and major results of empirical studies in each of the major categories of research identified below.

Empirical findings that are consistent with each of these stated hypotheses implies support for the corporate finance perspective, while their rejection implies support for the labor economics perspective. A number of early studies examine the stock market's valuation of employer sponsors' unfunded pension liabilities using cross-sectional asset-liability valuation models that effectively assume that pension liabilities are 'owned' by the shareholders. These studies generally conclude that unfunded pension obligations are considered to be relevant by capital market participants' valuation of the firm's equity or financial leverage. However, the researchers were constrained by the lack of relevant data. They examine the association of firms' share prices with their reported pension liabilities during periods prior to the date when SFAS 87 became fully effective (i.e., when only the unfunded portion of the VBO was required to be disclosed under SFAS 36). Thus, it is difficult to draw any implications of their results for discriminating among alternative hypotheses.

Several studies using US data examine whether the full pension assets and the PBO, which are reported only in the notes to financial statements, are value-relevant to capital market valuations of firm's securities. However their results are mixed, and in any case their interpretation is likely to be severely undermined for at least three reasons. First, the standard capital markets methodology biases towards rejection of the null, since the empirical models implicitly assume (jointly test for) the informational efficiency of the stock market under observation. Second, since SFAS 87 still allows firm managers with considerable discretion over various actuarial assumptions used to calculate reported pension liabilities, observed cross-sectional variation in these practices across the sample potentially reduces the power of these tests. Finally, as with most other research of this type, many of these studies produce coefficients with such large standard error terms that it is impossible to judge how accurately corporate pension liabilities are reflected in security prices. This suggests that their cross-sectional valuation regression models are most likely to be mis-specified. Since these studies also employ various empirical models and included a variety of explanatory variables, it is very difficult to draw any general conclusions from their results.

There is a more fundamental reason for doubting the validity of the reported results generated by capital market studies for discriminating among alternative hypotheses. By examining only balance sheet variables, these studies also implicitly assume that a sponsoring firm's liabilities are based on the ABO or 'explicit contract model', whereas in reality a firm could also operate with an economic liabilities based on the 'implicit contract model'. A firm can generally operate with either type of labor contracting model for its employees, but not both. Until evidence can separate whether a firm is using one model or another, it will not be possible to measure how completely the market reacts to unfunded liabilities.¹⁹ This is important because in the implicit contract model, the liabilities might exceed the measured liabilities by a large and variable amount depending on the particular firm. Scholes [1987] concludes that, without resolving these issues, it is difficult to draw any conclusions from these studies.

¹⁸ There are a number of technical complications to these basic questions that cannot be covered in this brief review. Revsine et al. [1998, p. 659] provide a more detailed exposition of these issues and of the relevant research evidence.

¹⁹ Landsman and Ohlson (1990) examine the extent to which stock prices fully reflected the unfunded pension liability when reported by way of footnote during the four-year period 1979-82. They found that the market was information inefficient and that it displayed a general under-reaction relative to the net pension liability. Evidence of market under-reaction to footnote disclosure has also been detected by behavioral studies, using sophisticated users such as bankers and debt rating agencies (e.g. Frishkoff et al. [1984], Harper et al. [1987]; Maher [1987]).

Table 4

Empirical Pension Accounting Research – Summary Of Results Obtained
Research on Market Perceptions

Study	Research Question	Sample size	Results obtained
1. Daley [1984] most	Determine the consistency of 3 measures of pension cost with equity value	153 firms which had complete data for earnings and total assets and reported all 3 measures (1961-1979)	Reported pension expense is consistent with equity market's aggregate valuation process
2. Dhaliwal [1986]	Investigate the effect of unfunded vested pension obligations on market-perceived risk of the firm	55 firms which filed 10-K reports and had material unfunded vested pension liabilities (1976 -1979)	The market views unfunded vested pension obligations as a form of debt
3. Landsman [1986]	Examine whether pension fund assets and liabilities are valued as corporate assets and liabilities	235 (1979), 621 (1980) and 624 (1981) publicly traded firms	The market prices pension fund assets and liabilities as corporate assets and liabilities
4. Barth [1991]	Which measure of pension assets and liabilities in SFAS 87 have less measurement error?	150 (1985), 702 (1986) and 1,082 (1987) publicly traded firms which adopted SFAS 87	PBO is closer to those assessed in market valuations than ABO, but PBO viewed as 'noisy'
5. Barth et al. [1992]	Do market participants implicitly assign different coefficients to components of pension cost?	300 publicly traded firms which adopted SFAS 87 (1987)	Coefficients of pension cost components significantly differ from one another
6. Gopalakrishnan & Sugrue [1993]	Examine how VBO, ABO and PBO are valued by stock market participants	659 (1987) and 739 (1988) publicly traded firms which adopted SFAS 87	PBO is perceived by market participants as liabilities of the firm

4.2 Tests of Managerial Discretionary Behavior

Another body of research has studied firms' pension accounting, financing and investment choices and lobbying activities related to the development of SFAS 87. These studies examine the cross-sectional association between various firm characteristics and managerial discretion over lobbying and adoption timing decisions. They generally test hypotheses concerning systematic regularities in the empirical association among these variables and discretionary choices available to managers.²⁰ Uncovering the existence of such relationships is held to imply that SFAS 87 has potential economic consequences for the firm, consistent with the corporate financial perspective.²¹

Other studies examine early adoption incentives, since the FASB permitted an extended adoption period for the controversial new standard. The most important common finding among these studies is that the issue of SFAS 87, while primarily intended to increase comparability of reported pension costs, served only to increase earnings management behavior related to pension reporting by a number of firms. This is because SFAS 87 permitted firm managers discretion to separate their pension funding and reporting policies. However, since these studies fail to distinguish between those sample firms with long term, implicit labor contracts from those with explicit spot labor contracts, it is difficult to draw any inferences from these studies about the testable implications of alternative perspectives. Implicit contracts imply that unfunded pension liabilities might exceed the measured, reported liabilities (as required by SFAS 87) by a large and variable amount depending on the particular firm. It also implies that, for those firms choosing to offer implicit labor contracts, pension plans are designed as part of a deferred compensation package to improve their productivity. The broader question of whether pension plans are successful in providing such incentives can then be addressed.

In any case, extreme caution must be exercised in attempting to infer any general conclusions from the results of studies of this kind. This is because none of these studies attempt to control for significant cross-sectional variation in discount rates (over which management also has discretion). Further evidence on this issue is discussed below.

4.3 Tests of Managerial Discretion Over Actuarial Assumptions

Pension liabilities included in the financial statements are estimated values based on a number of assumptions including mortality, employee turnover, disability rates, salary rates, retirement rates and investment performance. The insurance perspective implies that the rates used to discount pension assets and liabilities should be consistent with a long-term funding rather than short-term reporting perspective. Prior to the issue of SFAS 87, management had considerable discretion over the determination of these discount rates. Early

²⁰ This research was partly motivated by claims that disclosing the funding position in accord with SFAS 87 requirements would impose severe adverse economic consequences on the sponsoring firms. Prior research based on the analytical review of the potential impact on firm balance sheets was unable to resolve this question. Morris and Nichols [1983] study the effect of the adoption of the FASB's *Preliminary Views* on pension accounting on the balance sheets of a large sample of companies. They find that if salary progression had been omitted from the *Preliminary Views*, most companies would record a net pension liability on their balance sheet. On the other hand, Rue and Volkan [1983] find that the economic and financial consequences of the pension accounting proposals vary between industries and are generally negligible.

²¹ Another set of studies examine alternative corporate perspective and 'traditional' explanations for the observed empirical association of corporate financial characteristics and assumed managerial discretion over levels of pension funding and asset mix [e.g. Ali and Kumar, 1993; Bodie et al., 1987; Francis and Reiter, 1987; Thomas, 1988] or managerial lobbying against SFAS 87 [e.g. Francis, 1987; Ndubizu et al., 1993].

studies document the scale of possible variations in these values on pension liabilities and costs, and examine the stock market's sensitivity to managerial discretion over pension liability discount rate assumptions.²²

Relative to SFAS 36, SFAS 87 imposed further restrictions on the rate used to discount pension liabilities (representing a best estimate, settlement rate) and the expected rate of return on plan assets (based on as the estimated long-run, average rate of earnings on pension investments). However, Fogarty and Grant [1995] note that SFAS 87 remains silent as to the requirements for many other underlying actuarial assumptions, including mortality, work life and projected wage growth. Blankley and Swanson [1995] investigate a number of reasons for longitudinal effects of variation in these assumptions.

The continuing potential for systematic differences in the pension liability discount rates chosen by firms is of interest to researchers because the sponsoring firm's management's propensity for earnings management (although subsequently SFAS 106, paras. 186-187, removed this discretion in relation to post retirement employee benefits other than pensions). If firms select rates that are consistent with a long-term, insurance perspective, then there should be no difference between rates used for financial reporting and accounting purposes under SFAS 87 and those required for funding purposes under ERISA. Alternatively, if there is significant variation in discount rates across firms, perhaps in accord with the financial condition, this behavior suggests a more short-term, earnings-management based strategy that is more consistent with that implied by the corporate financial perspective.

Prior empirical studies examine managerial motivations for changing interest rate assumption as permitted under SFAS 87 and examine the predictability of estimated rates of returns [Ghicas, 1990; Amir and Benartzi, 1998]. These studies document the lack of observed systematic manipulation of SFAS 87 pension rate estimates by management in order to influence funding. These results therefore lend tentative support to the insurance perspective. However, these studies do not attempt to control for possible variation in labor contracts by different firms within their samples. Nor do they control for other choices over other funding, taxation and investment choices over which management may have discretion. The empirical implications for assessing managerial discretion over funding, investment and termination decisions must await confirmation by future researchers.

4.4 Research on Pension Fund Terminations

At the time of implementation of SFAS 87, many firms' pension plan assets significantly exceeded their ABO. These surpluses resulted primarily from substantially higher interest rates in the 1970s and 1980s that had increased the reported return on plan investments, and from various tax-driven incentives that had led firms to over-fund pension plans. Thus, asset reversions from terminations of over-funded defined benefit plans became popular in the early- to mid- 1980s, totaling US\$19 billion in the period 1981 to 1987. However, the October 1987 stock market crash appeared to diminish, but not entirely eliminate, pension fund

²² Schipper and Weil [1982] and Selling and Stickney [1986] examine the impact of alternative actuarial cost methods and examine the sensitivity of calculated pension liabilities to alternative interest rate assumptions. Both studies conclude that accountants, rather than actuaries, should be held accountable for reported calculations. In a pre-SFAS 87 environment, Ghicas [1990], Mittlestaedt [1989], Healy and Palepu [1989] and Godwin et al. [1997] all find that cash funding is linked to reported pension actuarial assumptions. Chen and D'Arcy [1986] use an event study of the market sensitivity to interest rate assumptions in pension funds and posit that firms using a low interest rate assumption outperform securities of other firms using a high interest rate assumption during the period surrounding the release of SFAS 36 in May 1980. However in addition to suffering from similar limitations to other studies noted above, the empirical implications of these results is reduced since managerial discretion over the choice of discount rate was significantly reduced under SFAS 87.

surpluses. While pension contracts specifically allow reversions of excess assets, pension plan terminations are a contentious political issue.

Two competing ownership hypotheses have been developed to explain why firms might terminate pension plans in the literature. The integration hypothesis states that the assets of the pension fund are inseparable from the assets of the firm, which is sponsoring the defined benefit plan. This hypothesis is consistent with the corporate finance perspective. The separation hypothesis holds that the assets of the pension plan are distinct from the assets of the sponsoring firm. The rationale for the hypothesis is derived from both ERISA and the implications of both the labor economics and inter-generational accounting perspectives, which imply that employer sponsors have implicit long term contracts with their employees. This distinction is important because these theories offer competing explanations about the financial consequences of termination. The separation hypothesis implies that a termination constitutes a breach of implicit contracts and results in a windfall gain to the sponsoring corporation; the integration hypothesis implies that it merely constitutes a liquidation of financial slack or rearrangement of assets within the augmented firm.²³

A body of empirical research has developed since the late 1980s which seeks to explain what factors are related to a firm's decision to terminate over-funded pension funds. These studies consider various (financing, wealth transfer, financial distress, tax, takeover, breach of implicit contract) explanations for firms' pension plan termination decisions. The research designs of these studies focus on examining a number of financial and pension variables for samples of firms which petitioned the Pension Benefit Guaranty Corporation for fund termination, and which anticipated asset reversions in excess of a million dollars. Table 5 summarizes the research objectives, data set and major results of the studies in the major categories of research identified below.

All of these studies conclude that firms either terminating, switching or settling their pension commitments were more financially weak than non-terminating firms, consistent with the integrated view implied by the corporate finance perspective. However, Tinker and Ghicas [1993] question the validity of these conclusions. They adopt a unique research design and hypothesis development, focusing instead on whether pension plan terminations violated implicit agreements with employees by usurping their claim to the pension fund surplus. They also examine whether such 'betrayals of trust' increase contracting and monitoring costs in the economy. Their empirical evidence is based on a comparison of pension ratios for four samples: firms that were acquired and their pension plans terminated, firms that were acquired but who did not terminate their pension plans, firms that terminated their pension plans but were not acquired, and a benchmark group of independent firms that were neither acquired nor involved in terminating their pension plans. Their results support their contention that the magnitude of the pension surplus is an important determinant in the decision to terminate a plan after takeover. Moreover, it appears that, for some acquiring firms, the surplus is not impounded in the target firm's stock price. This contradicts results obtained by Mittlstaedt and Regier [1991] and is claimed to support Tinker and Ghicas' [1993] contention that surplus ownership is a contested and uncertain issue.

All of the above studies use samples of terminated pension plans in the period 1981-1985, that is, prior to the implementation of SFAS 87. However upon adopting SFAS 87 many firms had pension plan assets in excess of their reported ABOs. The excess pension assets establish a substantial pool of off-balance-sheet deferred pension gains. However, SFAS 88 provided a new accounting choice to firms by allowing them to engage in a settlement transaction, which does not necessarily terminate the existing plan, and consequently is unaccompanied by asset reversions. Instead, firms enter into an irrevocable transaction that

²³ This is also a controversial topic in the finance literature, as evidenced by the conflicting evidence provided by Alderson and Chen [1986] and Moore and Pruitt [1990].

Table 5
Empirical Pension Accounting Research – Summary Of Results Obtained
Research on Termination Decisions

Study	Influencing Factor	Sample size	Results obtained
(I) Factors affecting termination decisions:			
1. Hamdullah and Ruland [1986]	Financial leverage, tax carryforwards, size, employee organization, management compensation, control	167 firms petitioning PBGC for termination (1980-1983)	Terminating firms are non-unionized, carryforward taxes, highly levered, use income
2. Stone [1987]	Internal resources generated, cash flow values, size, long-term debt, debt capacity, tax carryforwards	214 firms petitioning PBGC for termination (1982-1984)	Firms most likely to draw on slack when: generate internal resources, lower cash flows
3. Thomas [1989]	Financial slack liquidation, wealth transfers from bondholders	514 firms completed terminations; 97 firms proposed (1985)	Firms terminating plans have financial slack
4. Mittelstaedt [1989]	Financial weakening, susceptible to takeover, marginal tax rates	52 terminators, 47 contractors, 59 maintainers (1982-1984)	Firms terminating plans are financially weak
(II) Post-termination decisions:			
5. Stone [1991]	Financial distress, dividend paying ability	56 terminated plans of which 40 were defined contribution, 16 defined benefit	Switching firms were less able to pay dividends
(III) Settlement decisions			
6. Haw et al. [1991]	Earnings decline, capital constraints	73 firms which settled their pension plans (1985-1988)	Earnings decline, accounting-based debt covenant constraints

relieves the company of primary responsibility for the pension obligation, thus enabling them to recognize immediately, as current income, all or portions of their deferred gains from these overfunded defined benefit plans.

While settlements and the related transaction of curtailments (e.g., significantly reducing the expected years of future service of employees) can help the employer to eliminate significant risks related to the pension obligation and the assets used to effect such transactions, it also raises important questions of generational inequity for participants of affected plans. One might predict that firms most likely to engage in such transactions are those with unfunded obligations owed to a relatively mature workforce, where benefits are more likely to be based on implicit contracts. However currently it is not possible to quantify these inequities because pension plans are not required to disclose the percentage of retired or near-retired workforces, nor dis-aggregate their calculated benefit obligations across different generational cohorts of participating employees. Consequently, the implications of the inter-generational equity perspective remain untested for accounting periods subsequent to the implementation of SFAS 88.

5.0 DISCUSSION AND IMPLICATIONS FOR FURTHER RESEARCH

The promulgation of SFAS 87 and the associated endorsement of certain theoretical positions on the nature of pension commitments by the FASB significantly influenced the course and direction of published accounting research that it stimulated. This section briefly discusses these implications and identifies neglected areas of research to test other hypotheses implied by the theoretical perspectives on pension commitments.

5.1 SFAS 87 Vis a Vis the Perspectives and Pension Accounting Research

The promulgation of SFAS 87 significantly influenced the direction and regularity of particular modes of research that sought to discriminate among various competing hypotheses about the nature of pension commitments that were implied by each of these theories. Moreover, in reaching a compromise position that was acceptable to its constituents, the FASB effectively privileged particular lines of research inquiry that tested implications arising from certain perspectives, while silencing others.

There are a number of ways in which the inter-relationship between accounting standard setting activities and the ongoing development of particular modes of related research can be analyzed. One approach is to consider the extent to which testable hypotheses about pension commitments implied by various theoretical perspectives were sufficiently articulated to the FASB prior to its promulgation of SFAS 87. Neither the insurance perspective nor the inter-generational equity perspective were articulated by their underlying disciplinary literature prior to the standard being issued. It should therefore not be surprising that their testable implications for measuring the nature and scope of pension commitments were neither endorsed by the FASB nor well understood by most accounting researchers.

An important exception in this respect was Selling and Stickney [1986], who sufficiently understood the techniques of actuarial methodology to demonstrate the correlation among the ABO, PBO and EBO under alternative assumptions. However, it was another decade before other accounting researchers began to utilize this methodology to explore the implications of actuarial science which underpinned the insurance perspective in order to examine the sources of variability affecting various pension liability calculations required by SFAS 87.

By contrast, the predominantly economic-based literature underlying both the labor economics and corporate finance perspectives was well established prior to the issue of SFAS 87. Indeed, this line of work had already motivated a considerable body of empirical

evidence on pension accounting practices. This research employed mainstream techniques of positive accounting or capital markets methodology that were well known to many researchers, in order to examine various properties of numbers reported under the previous standards APB 8 and SFAS 36. Moreover, the rigor and precision of this line of research in discriminating among alternative hypotheses implied by these perspectives improved over time as the empirical implications of the underlying theories gradually became better understood.

5.2. Continuing Unresolved Issues in Pension Accounting Research

Prior research examined above focused exclusively on testing implications derived from various theoretical perspectives on pension commitments which are (i) US-based; (ii) defined benefit funded; (iii) reported by a corporate employer sponsor. However, in addition to the issues raised above, pension commitments also impact a number of other areas in the field of pension accounting which to date have attracted little attention from researchers. This section identifies other fruitful lines of research, in terms of examining hypotheses implied by the various perspectives outlined in Section 2.

5.2.1 Pension Arrangements in the Public Sector

Public pension plans cover government employees and command a substantial proportion of any nation's total capital investment. However, unlike privately funded pension funds, public sector funds are typically under-funded in the sense that the employer fails to pay the necessary contributions as they fall due. Thus, the liability created by under-funding shifts payment away from the present generation of tax payers onto future generations who must presumably make up the funding shortfall as benefits actually fall due. Together with aging populations, Loeb [1987] suggests that this growing liability raises concerns about whether governments' future revenues will be sufficient to secure public pension obligations. This provides an opportunity to examine whether pension contracts written in the public sector are more consistent with 'accrual accounting' (implied the labor economics perspective) or with 'generational accounting' (as implied by the inter-generational equity perspective).

Relative to accrual-based accounting principles, it may be argued that a generational accounting perspective serves a broader objective in reporting on inter-generational equity that typically pervades under-funded pensions in the public sector. It also addresses Copley et al's [1997] concerns about the decision usefulness to the citizenry of the application of accrual-based accounting to the public sector, by providing information relevant to a broader user constituency of both current and future generations of taxpayers. Finally, a generational accounting perspective is applicable to public sector pension funds by recognizing explicitly those items that are required to bring an under-funded public pension fund into generational balance. Generational accounting can thus indicate the zero-sum nature of pension funding policy in the public sector, when viewed from an inter-generational equity perspective.

Only US government standards affect public sector funds. The GASB claims that under-funded pension pose a threat to 'inter-period equity'. According to the GASB [1987, 22] financial statements need to report on inter-period equity as a key element in demonstrating accountability in the government sector. However, this assumes that under-funding is undesirable and perceives financial reporting as a monitoring mechanism in producing inter-period equity. Analogous to the SFAS 87 recognition requirements, GASB 27 requires government employers to recognize only positive values of their net pension obligations.

Although public sector pension plans can be very large, only a few published studies have empirically investigated the extent of managerial discretion over funding and accounting policy choices in this environment. Engstrom [1984] examines 116 municipal reports to

observe their degree of compliance with proposed and current government pension standards. The results suggest that pension disclosures vary widely. Some cities report total unfunded liabilities, whereas others fail to disclose the existence of a liability. Stone et al. [1987] examine incentives facing public sector funds to adopt alternative pension liability calculations. They find that these differences are not explained by behavioral factors. Marks et al. [1988] examine various alternative explanations for government pension underfunding. They find that the degree of underfunding is sensitive to fiscal pressures facing the sponsoring public sector employer.

Government contractors may also have incentives to manipulate their pension costs. Thomas and Tung (1992) examine the incentives for defense contractors that operate under cost reimbursement to manipulate their pension costs. Their analysis identifies evidence of inter- and intra-firm variation in funding levels and actuarial variables across a sample of 80 major defense contractors. Their results suggest that cost reimbursement could also create incentives to inflate pension costs.

Consistent with the literature reviewed above, all of these studies assume that the measured pension obligations that are recognized in government accounting standards are equivalent to those applying in the private sector. However, as noted above, these studies make very restrictive assumptions about the operation of the labor market. They imply that employees pay their employers an amount (i.e. suffer a deduction from salary) that is precisely equal to the present value of expected pension payments they expect to receive [Pesando, 1992; Ippolito, 1986]. They also incorporate measures of the pension obligation which ignore the effects of salary increases and life time employment expectations of employees that determine the expected present value of future cash flows. However, it is generally assumed that these funding practices are determined by accrual-based accounting principles (i.e. supporting ABO rather than PBO disclosure), which may be unrealistic for understanding the behavioral implications of underfunded government pension funds. Explicating the generational accountability of public sector management to various stakeholders regarding the financial dimensions of underfunded government pension liabilities and their financial implications is also a fruitful area for further research.²⁴

One conceivable hypothesis is that each public sector entity's jurisdiction can be thought of as having a particular political climate, or culture, that affects its propensity to fund pension obligations. According to this view, past funding practices do not change much, or if they do, change slowly. Thus one might expect behavioral persistence with respect to funding, producing a positive and possibly unitary relationship between current contributions and expenditures. An alternative view of underfunding practices is that public sector entities may hold to the philosophy that expenditures should equal contributions, but not necessarily over a short period. If so, the long-term relationship between these flow variables should reflect regression to the mean, i.e., past underfunding practices may be offset by current attempts to balance the books [Mitchell and Smith, 1994].

A range of socio-economic factors can be posited to influence both societal characteristics affecting the demand for, and agency-financing factors affecting the supply of, public pension provision that might in turn influence public pension underfunding behaviour by public sector entities. These will depend on the type of public sector entity being studied but may include demographic factors affecting fiscal pressures, average labor pay rates, local unemployment rates etc. Any empirical analysis of these variables, within an inter-generational

²⁴ Klumpes [2001] examines the generational accountability and financial dimensions of underfunded pension obligations of Australia's largest public sector fund, the State Authorities Superannuation Board of New South Wales, over the 10 years of its existence from 1987 to 1996.

equity perspective, requires assuming that the net present value of projected public pension expenditures or outflows to present and future retirees by a government entity is endogenously related to the present value of contributions or inflows by current and future generations of public sector workers.

However, while prior accounting researchers model under-funding behavior in terms of the net difference between these variables (i.e., consistent with an accrual-based corporate finance perspective), an important feature of the inter-generational equity perspective is that these variables are assumed instead to be simultaneously determined and thus must be modeled endogenously. That is, future expected levels of the public sector entity's expenditure is assumed to be dependent on the contributions and vice versa. The failure of prior research into the determinants of public sector under-funding behavior (in other contexts) to recognize this endogenous relationship between pension contributions and expenditures has thus resulted in possibly mis-specified models and erroneous inferences [Mitchell and Smith, 1994].

5.5.2 Pension Plans

Despite the issue of pension plan accounting standards, such as SFAS 36 ('Accounting by Defined Benefit Pension Plans'), empirical research has not examined behavioral factors affecting relevant managerial choices. Cramer and Neyhart [1980] adopt a labor economics perspective by arguing that, since pension plans are organized as equitable trusts and are legally separate from the employer sponsor, they require an entity concept. Adopting this perspective raises a number of new insights into some old issues. For example, prior researchers have adopted earnings management explanations for managerial discretion over actuarial-related pension choices (i.e., assuming that managers are myopically focused on the impact of their behavior on the sponsoring firm's shareholders). However, none of these researchers have incorporated pension fund characteristic variables (e.g., asset allocation, maturity) into their research design. Managerial discretionary behavior may for instance be driven by cross-sectional variation in pension funding or investment characteristics (thereby affecting their political visibility to employee participants) rather than by the corporate sponsor's own financial condition. This in turn implies that a labor economics perspective or insurance perspective may have a far greater explanatory power than hitherto has been recognized by researchers.

For example, evidence that observed switching of actuarial cost methods was affected by pension fund characteristics (e.g., maturity of the employee participants) could support the hypothesis which suggests that this decision primarily reflects financial conditions of the pension funds they sponsor, rather than the corporate financial condition of the firm itself. These results would be consistent with an insurance perspective, i.e., that pension funding decisions should be based solely upon the expected future stream of employee pension liabilities (irrespective of corporate financial condition). Evidence that firms electing to switch from cost to market-based actuarial funding methods for reporting purposes tend to sponsor pension funds which generate lower earnings on the fund's investment portfolio, have higher pre-switch percentage of retired workers participating in the pension fund, would be consistent with the labor economics perspective. Such results would be further strengthened if one could control for various financial characteristics of the corporate sponsor (e.g., gearing or financial risk), which prior researchers document as being the major determinants of US firms' pension accounting and funding decisions (i.e., consistent with the corporate finance perspective).

Pension funding or investment characteristics may also relate to the observed association between a sponsoring firm's share price behavior and the level of its unfunded pension liabilities. While prior researchers have adopted an equity valuation model to identify any such association, the impact of the maturity of the sponsored pension plan on the duration or

interest sensitivity of that liability over time has not been addressed. This requires an alternative returns specification and an industry matched pair research design to dichotomize these effects among firms who employ a mature versus young workforce.

Bulow et al. [1987] develop a variable effect event study methodology to circumvent problems associated with the standard cross-sectional approach identified above. They examine whether an exogenous event (i.e. unexpected changes in interest rates) has a differential effect on the value of shares of firms depending on the magnitude of their unfunded pension liabilities. Unanticipated changes in interest rates should have a differential effect between firms with under-funded pension plans and those with over-funded pension plans. Their results confirm earlier analyses suggesting that the stock market valuation of firms reflects their pension funding situations. This conclusion is reached using alternative methodological approaches and data from several different years and so is reasonably robust.

Given the actuarial complexity and government regulation attached to defined benefit funded pension liabilities as documented above, it is not surprising that non-defined benefit pension plans (i.e., accumulation-based or defined contribution) are gaining increasing popularity. However, pension accounting issues concerning defined contribution pension funds have to date attracted very little interest from accounting researchers. Consistent with the insurance perspective, Bodie [1990] posits that employer-sponsored, defined benefit pension funds, which are often operated jointly by employer and employee-appointed trustees, will provide their participants with more complete insurance against various sources of retirement income insurance, than will defined contribution pension funds, which are generally not funded by the employer sponsor but are instead managed directly by third parties (e.g. insurance firms).

Defined contribution pension funds therefore rely on the managerial expertise of financial intermediaries, who must be paid a fee or 'spread'. The spread significantly reduces the value of the pension fund net asset value over longer holding periods, and implies significantly greater incentive conflicts for defined contribution-funded pension funds than for defined benefit-funded pension funds. Klumpes and McCrae [1999] study the magnitude of the intermediary spread for a sample of 66 defined contribution and 54 defined benefit Australian pension funds during 1991-93. The intermediary spread is found to significantly reduce the average reported earnings on the investment portfolio, particularly for defined contribution pension funds.

5.2.3 International Differences in Accounting Standards

Virtually all of the empirical pension accounting research in recent years has studied the effects of the U.S.-based SFAS 87 pension policy choices of employer sponsors. However, to date very little research has studied managerial pension choices outside the USA. Scott [1994] examines voluntary disclosure by firms of pension plan information in Canada, where institutional pension disclosure rules are weaker than SFAS 87 and vary in scope across the provinces. Disclosure incentives are found to be consistent with Verrecchia's [1983] proprietary cost theory, which states that disclosure incentives are negatively related to proprietary costs of disclosure, and positively associated with the favorableness of the disclosure news. Klumpes [2000] examines competing proprietary cost (corporate finance perspective) and political cost (labor economics perspective) hypotheses concerning Australian and UK pension plan managers' motives for voluntary disclosure during 1991-95 (Australian, but not UK, pension fund reporting standards require pension funds to either recognize or disclose the ABO). Defined contribution pension fund managers are unlikely to face any proprietary costs associated with any voluntary disclosure decision, since employer sponsors are not liable for funding future, uncertain pension benefits payable to participants. However, managers who elect not to disclose it may be exposed to greater political scrutiny by the media

or government threats of regulatory intervention. It was hypothesized that defined contribution pension funds with high political visibility would be more likely to voluntarily disclose sensitive information (e.g. periodic investment earnings on the portfolio) than those with low visibility. Only Australian defined benefit pension managers' disclosure policies were found to be consistent with proprietary costs, while Australian defined contribution and UK defined benefit pension managers' disclosure policies were consistent with their political visibility.

There are significant international differences in pension accounting standards. Needles et al. [1991] hypothesize and find a strong positive association between institutional pension stringency and the extent of pension disclosures. Currently, UK pension accounting standard SSAP 24 does not require the employer to recognize the prior periodic cost component of pension cost and only requires footnote disclosure of pension funding, allowing considerable discretion as to the actuarial funding method.²⁵ The economic liability also differs. Under US law, employer sponsors are legally obliged to fund only the ABO, whereas UK law (Pensions Act, 1995) requires pension liabilities to be indexed on a PBO basis. UK GAAP also give considerable discretion to the actuary, who is only required to perform a triennial valuation. However the Accounting Standards Board recently updated UK GAAP with the promulgation of Financial Reporting Standard No. 17, which will require, effective from 2003 reporting years, annual actuarial valuation and the recognition of both the market value pension assets and the ABO on the employer sponsor's balance sheet.

In updating its own Statement No. 19 on pension liabilities, the IASB adopted market-based discounting of pension liabilities and requires the employer sponsor to recognize the deficit or surplus defined in terms of the difference between the fair market value of assets and the ABO. In this respect, the IASB's requirements for employer sponsor's pension accounting differ from that of SFAS 87 and are entirely consistent with that implied by the corporate finance perspective. These proposals have attracted widespread controversy in the professional accounting literature [Micallef et al., 1997; McGeachin and Whittington, 1997], but have received little attention from accounting researchers. This continuing debate centers on whether the rate used to discount pension liabilities should reflect standard market rates or be left to the discretion of actuaries and company directors. These issues are important because they raise the prospect of future revisions to existing national-based accounting standards early in the 21st century. The validity of these arguments also depends upon which theoretical perspective about pension liabilities reflects reality. To date, empirical research has not examined these kinds of issues.

6.0 CONCLUSION

This paper reviews the implications of various theoretical perspectives for defining the nature and scope of employers' pension commitments and its impact on both accounting standard setting activities and hypothesis generation and testing by accounting researchers. This review is timely because of the growing economic and social significance of pensions and the development of new and/or revised accounting standards.

²⁵ However the Accounting Standards Board recently issued a Draft conceptual framework which emphasized the measurement of pension liabilities and the extent to which they are funded. This suggests that UK GAAP may be moving from a predominantly income statement toward a balance sheet view of employers' pension commitments, similar to that already adopted by SFAS 87. This raises a number of interesting researchable issues for researchers, including earnings management incentives to voluntarily switch from cost-based to market-based actuarial valuations.

The development of research over the last two decades was stimulated by contemporary theoretical developments in labor economics and corporate finance, which in turn significantly influenced the promulgation of SFAS 87 in a number of ways. Since the FASB espoused an approach to financial reporting of pension commitments which was inconsistent with pension accounting treatments implied by either the labor economics or corporate finance perspective, most researchers appear to have tested hypotheses that attempt to untangle these effects. However, because SFAS 87 permitted both footnote disclosure of the PBO and balance sheet recognition of the unfunded ABO, the predictions of these theories are difficult to empirically test, as their effects may either offset or reinforce each other. Consequently, conclusions of cross-sectional studies on corporate pension policy, market perceptions and managerial choices that relate to SFAS 87 disclosures are equivocal. Results contain severe measurement error and are typically based on predictive models incorporating a variety of explanatory variables. Moreover, it is difficult to draw much from this line of work, since it generally failed to control for the possibility that managerial accounting policy choices may be inter-related with their discretion over a variety of actuarial assumptions which influence the reported pension commitment.

The FASB's primary justification of the seemingly inconsistent accounting treatment of pension assets and liabilities in SFAS 87 appears to have been based on implicit trade-off between relevance versus reliability. Nevertheless, it is possible to draw some public policy implications from the findings of empirical research, which imply that capital market participants view the PBO as having incremental information content to that of ABO. This finding appears to favor the labor economics perspective's implied accounting treatment of pension assets and liabilities as being a separate legal entity from the employer sponsor (i.e., to only recognize any positive difference between the excess of the PBO over the fair market value of assets). The research therefore implies that SFAS 87 should be revised to be more consistent with the labor economics perspective by requiring recognition of the PBO, rather than the ABO. However, the IASB subsequently developed an accounting treatment that is consistent with the integrated view of the corporate finance perspective, by requiring employer sponsors to recognize only the net difference between the ABO and the fair market value of assets.

The corporate finance perspective makes the dubious assumption that pension surpluses or deficits 'belong' entirely to shareholders, while the labor economics perspective implies that they belong entirely to employees. However, neither of these polemic views about the economic relationship between pension plans and employer sponsors appears to accord entirely with either pension law or with economic reality.

By contrast, the insurance perspective makes an economically more plausible assumption that shareholders and employees both have contingent claims over these surpluses or deficits. It also implies an economic measure of an employer sponsor's longer-term pension commitment to its employee workforce (the EBO) which is potentially a larger and more uncertain estimated figure than either the ABO and PBO measures. Because the EBO will be affected by actuarial estimates of future, rather than past events, it does not satisfy the realization principle that currently underlies conservative GAAP. Moreover, the predicted implications for corporate funding and investment decisions have to date received scant attention from accounting researchers. Yet this perspective may provide deeper insights into understanding the longer-term impact of pension commitments on both employer sponsor and pension fund accounting policy choices. It is expected to provide a more meaningful basis to develop pension accounting standards, as researchers and practitioners gradually become more familiar with incorporating risk and uncertainty into employers' pension commitments.

Similarly, the inter-generational equity perspective may provide a more plausible basis for explaining the longitudinal impact of changes in pensions contracts over time, and the welfare dimensions of under-funded pension arrangements in the public sector. This perspective may also have wider application for better understanding the impact of under-funding on the broader structure of employee compensation (e.g., health care obligations and employee stock options).

The most exciting prospect for future research identified by this review is the potential to broaden the pension accounting problem by attempting to discriminate among competing hypotheses that reflect various perspectives on pension funding and accounting. For pension accounting by private sector employers, the insurance perspective offers the most promise for stimulating future hypothesis generation and testing by pension accounting researchers. It remains a burden of future accounting researchers to investigate these and other unresolved pension accounting issues as pensions continue to gain increased economic, social and political significance into the twenty-first century.

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