

Chapter 9 – Pension and Retirement Planning – The tax benefit of qualified plans is that the employer gets an immediate deduction when contributions to the pension plan are made but the employee defers recognition of income until distributions from the plan are received. In order for a pension plan to qualify for this favorable tax treatment, many detailed requirements must be satisfied including contribution limits, antidiscrimination rules (that is, the plans may not discriminate in favor of high-income employees), and vesting rights. Note that failure to comply with the labor law requirements of ERISA is criminal even if the tax benefits are not claimed.

9.1 Types of Pension Plans

9.1.1 Defined Contribution Plan: In a defined benefit contribution plan, the employer and the employee make specified (i.e., defined) contributions into the pension fund that is held by the pension administrator as an exempt pension trust. Note that defined contribution plans can include certain profit-sharing plans and employee stock ownership plans (ESOPs) as well as the more traditional 401(k) plans.

9.1.1.1 The amount of retirement income that a defined contribution plan will generate is determined by the account balance of the plan at the time of the employee's retirement. Thus, the employee bears the risk of investment performance. For this reason, most defined contribution plans give the employee some control over plan investments.

9.1.1.2 An employee must begin to withdraw funds from a defined contribution plan by April 1 following the year in which the employee turns age 71½. Such withdrawals must equal or exceed certain defined minimum amounts (determined by reference to the plan balance at retirement). Funds withdrawn from a defined contribution plan are taxed as ordinary income by the employee when received. Distributions received prior to the age of 59½ are also subject to an early withdrawal penalty of 10%.

9.1.2 Defined Benefit Plan: A defined benefit plan provides an employee with a stated (that is, defined) benefit upon retirement usually based on some combination of years worked, age at retirement, and highest salary. To fund such a benefit, the employer must make contributions to a pension trust sufficient to fund the eventual obligation. Thus, the employer must make actuarial computations to determine the amount of its annual contribution into the pension trust. If these computations prove false (because, for example, the investment funds do not grow as expected), the pension plan will be underfunded.

9.1.2.1 One variety of defined benefit plan is a cash balance plan. In such a plan, the employer guarantees that there will be a specific cash balance in the employee's account at retirement, and then that cash balance can be used by the employee to purchase an annuity or provide other retirement benefits. See footnote 2 at page 9-2.

9.1.2.2 The clear trend today is for employers to offer defined contribution plans rather than defined benefit plans, although DBPs remain popular in state and local governments. See Table 9.1 at page 9-3.

9.2 A Comparison of Salary and Pension Compensation: Because contributions to qualified pension plans are immediately deductible to an employer as is direct cash compensation, an employer is indifferent between paying salary or the same amount in the form of a pension contribution. But the employee likely will not be indifferent because each dollar of salary will grow to $(1 - t_{po})(1 + r_{pn})^n$ (see **equation 9.2**) while each dollar of pension contribution will grow to $(1 + R_{pen})^n(1 - t_{pn})$ (see **equation 9.1**). In particular, if tax rates remain constant, then pension contributions will be preferred to salary if $(1 + R_{pen})^n > (1 + r_{pn})^n$ (see **equation 9.3**). (Note that r_{pn} is the annualized, *after-tax* return that the employee can earn outside of the pension trust while R_{pen} is the *before-tax* rate of return that can be earned inside the pension trust.)

9.2.1 Rates of Return on Investments In and Out of Pension Accounts: Investment returns inside pension accounts may be reduced because employers are permitted to limit the investment opportunities of the employees. Such limitations may preclude optimal investments by eliminating, for example, the ability to engage in family tax-planning strategies.

9.2.2 Antidiscrimination Rules: Qualified pension plans are not permitted to be limited to highly compensated employees. But for lower income employees who have significant liquidity concerns, a pension contribution might be worth less than an equivalent salary payment.

9.3 Deferred Compensation Versus Pension: Because an employer can deduct (nonqualified) deferred compensation only in the year actually paid to the employee, one dollar reserved to pay deferred compensation in n years will generate deferred compensation of $(1 + r_{cn})^n / (1 - t_{cn})$. Because the after-tax cost of a dollar of pension contribution equals $(1 - t_{co})$, an employer is indifferent between contributing one dollar into a qualified pension plan or reserving $(1 - t_{co}) (1 + r_{cn})^n / (1 - t_{cn})$. From the employee's perspective, one dollar invested in the pension plan will yield $(1 + R_{pen})^n(1 - t_{pn})$ while reserving the equivalent amount for deferred compensation will yield $[(1 - t_{co}) (1 + r_{cn})^n / (1 - t_{cn})] (1 - t_{pn})$ (see **equation 9.4**). As discussed on page 9-7, a comparison of these two results for the employee yields the following results: (1) the employee's tax rates have no effect on the comparison; and (2) if corporate tax rates do not change, then the deferred compensation will be preferred to the pension contribution only if $(1 + r_{cn})^n > (1 + R_{pen})^n$.

9.4 The Stocks-Versus-Bonds Puzzle: Because pension funds trusts are nontaxable organizations and distributions from pension fund trusts are taxed as ordinary income to the employee when distributed, pension fund trusts form a natural clientele for highly taxed bonds. Yet equities historically comprised the majority of assets held by pension trusts. Why?

9.4.1 One theory is that equities offer a risk-premium that could not be captured by investing in bonds because few high-yield bonds were issued. Now such bonds

are available, yet pension trusts continue to invest a significant portion of their assets in equities. One possible explanation is that an investment manager is unlikely to be sued if an investment generates a profit even if the profit is low while investing in a risky investment that fails is almost sure to generate litigation. Now that most qualified deferred compensation is generated by defined contribution plans in which the beneficiaries maintain significant control over investment choices, we should see a switch to high-yield bonds (which has occurred), and perhaps the current equity share can be explained by lack of sophistication by the beneficiaries or lack of choice given to the beneficiaries by the plan sponsor (i.e., the employer). Why would a plan sponsor limit investment opportunities?

9.4.2 The Black-Tepper Tax Arbitrage Strategy: For a taxable employer who offers a defined benefit retirement for its employees, there is the Black-Tepper organizational arbitrage strategy to improve the net return over just holding equities. First, have the pension trust invest in bonds. Second, borrow outside the pension trust and use the proceeds to purchase stock. The annual cost of the borrowing is $R_b(1 - t_c)$ (assuming the corporation can borrow at the same rate it pays in interest), and the return on the purchased stock is r_c^* . Thus, the net annual return outside the pension trust equals $r_c^* - R_b(1 - t_c)$. The annual return inside the pension trust equals R_b . Thus, the combined return equals $r_c^* + R_b t_c$, and that exceeds the after-tax return from the equity-only investment of r_c^* by $R_b t_c$ independent of the return on the equities. Note that this works only if the employer can capture the benefit of the higher return through reduced future pension contributions and so is limited to defined *benefit* plans.

9.5 Does It Pay to Maintain an Overfunded Pension Plan [omitted]

9.6 Funding Post-Employment Health Care Benefits: In general, an employer can pay for employee health benefits in one of two ways: (1) increase tax-preferred pension benefits and tell employees to pay their own health care costs; or (2) pay health care costs as they are incurred by the employees (essentially self-insurance from the employer's perspective).

9.6.1 The Sweetened Pension Benefit Approach: If the employee will pay health care costs out of taxable pension distributions, a future dollar of health care will require $1/(1 - t_{pn})$ dollars of distribution. To fund that amount, the employer must contribute $1/(1 - t_{pn})$ times $1/(1 + R_{pen})^n$ immediately. Note that $1/(1 - t_{pn})$ will compound tax-free within the pension trust at a rate of R_{pen} per year, so that the investment will yield $1/(1 - t_{pn})$ at the end of n years. Because this cost is deductible to the employer when made, the immediate after-tax cost of funding the health care with after-tax dollar to the employee in n years is $\mathbf{1/(1 - t_{pn}) \times 1/(1 + R_{pen}) \times (1 - t_{co})}$ (equation 9.7, at page 9-16). See example 9.1 (page 9-16) for a nice numerical example.

9.6.2 The Pay-as-You-Go Approach: With the pay-as-you go approach, the employer gets a deduction when the payment is made and the employer (generally) can

exclude the payment when received (because it qualifies as a tax-free fringe benefit). Because the employee is not taxed on the receipt, the employer need only pay one dollar for each one dollar needed by the employee. To fund this amount in n years, the employer must immediately invest $1/(1 + r_c)^n$. Further, because the employer will be entitled to deduct the payment when made, the future after-tax cost is only $(1 - t_{cn})$. Accordingly, the amount that must be reserved immediately to fund the future payment is $(1 - t_{cn})/(1 + r_c)^n$ (**equation 9.8**, at page 9-16). From **equation 9.10** (page 9-17), we see that the pay-as-you go approach will be superior if (1) the employer's tax rates are constant and (2) $r_c = R_{pn}$. The second condition is problematic: why would an after-tax rate of return (r_c) equal a pre-tax rate of return (R_{pn})? The most obvious case is when the employer is a tax-exempt organization such as an educational institution or other charity.

9.7 Employee Stock-Ownership Programs: An ESOP is a type of qualified pension plan, a defined contribution plan in which the employer's cash contributions must be converted into employer stock. (Employer contributions also can be made directly in its own stock.) They were created to better align employee's economic interests with those of their employers, but the downside of an ESOP is that a significant downturn in the employer's business risks the employee's job as well retirement. ESOPs have been used as a way to thwart hostile takeovers because employee managers of the ESOP generally vote with management, thereby indirectly giving management additional votes on corporate restructurings.

9.8 Questions (p. 9-21):

9.8.1 Question 1: In a defined contribution plan, the contributions made to the plan by the employer (and the employee) are specified. The pension benefits that the employee ultimately receives depends not only on the amount contributed to the plan but on the plan's investment performance as well. The employee bears all the risk of the fund's performance rather than being guaranteed a certain level of retirement benefits. In a defined benefit pension plan, the employee's benefits at retirement are specified. The employee need not be concerned with either the amount contributed to the plan by the employer or the investment performance of the assets (other than that the employer may default on the pension promise and the government may not cover the default fully). It is often difficult, however, to determine the required level of contributions into a defined benefit plan. The funding formula requires numerous actuarial assumptions about discount rates, terminal salary, life expectancy of the employees, the fund's earning rate, and expected quit rates of employees.

9.8.2 Question 6: The puzzle is that pension funds have traditionally held nearly 50% of their assets in common stocks that bear high implicit taxes even though they form a natural tax clientele for taxable bonds. One explanation is that fund managers want to invest in riskier projects that have risk premiums and thus higher expected returns. Black and Tepper argue that firms would be better off

holding bonds in their pension funds and purchasing risky stocks outside the fund with corporate debt. Their model has some limitations, however. For example, they assume that the bonds in the pension fund secure the corporate debt, but in the event of bankruptcy, the pension funds would be off-limits to the corporate creditors.

9.8.3 Question 11: An employee stock ownership plan, or ESOP, is a special type of defined contribution pension plan that is required to invest primarily in the stock of the company establishing the plan. A major reason for Congressional support for ESOPs is that these plans provide a form of employee ownership in the corporation.

9.9 Exercises (p. 9-21):

9.9.1 Exercise 13: The employer is willing to pay the employee \$100 in salary. The employer is also willing to make an immediate pension contribution or agree to deferred compensation if the after-tax cost of these alternatives is the same as the immediate salary. The after-tax cost of an immediate salary payment of \$100 is $\$100(1 - t_{co})$ because the salary is immediately deductible. The after-tax cost of an immediate pension contribution of \$100 is the same because a pension contribution also is immediately deductible to the employer. If D_n equals the amount of deferred compensation the employer will agree to pay in n years, then $D_n = \$100(1 - t_{co})(1 + r_{cn})^n / (1 - t_{cn})$,¹ where t_{co} and t_{cn} represent the employer's current and future tax rates and r_{cn} represents the *annual* after-tax rate the employer can earn on marginal investments. Thus, $D_n \equiv \$100[(1 - 0.35)/(1 - 0.21)](1 + 0.10)^{15}$, or $D_n = \$100(.8228)(4.177) = \343.68 . To the employee, the after-tax future value of the deferred compensation equals $\$343.68(1 - t_{pn}) = \268.07 . Salary to the employee will accumulate to $\$100(1 - t_{po})(1 + r_{pn})^n$, or $\$100(1 - 0.32)(1 + .10)^{15} = \$100(.68)(4.1777) = \$284.08$, and that is an after-tax figure because r_{pn} is the annualized after-tax return to the employee. To the employee, the pension will grow to $\$100(1 + R_{pen})^n(1 - t_{pn})$ or $\$100(1 + 0.12)^{15}(1 - 0.22) = \$100(5.4755)(0.78) = \$427.09$. Are we surprised that the pension contribution yields the best results? If the employer's tax rate is declining, that favors a current deduction (pension or immediate salary), while if the employee's tax rate is declining, that favors deferred income (pension or deferred compensation), and the pension can earn higher after-tax annual rate of return: all 3 together favor the pension contribution. Note that we are not directly minimizing the amount paid by the parties in taxes but rather are maximizing the employee's after-tax return.

9.9.2 Exercise 16: The pension contribution today required to provide a \$1,000 benefit to the employee in n years (note that the employee pays tax on the pension income so the employer must provide more than \$1,000 in retirement) is: \$1,000 times $1/(1 - t_{pn})$ times $1/(1 + R_{pn})^n$, and the after-tax cost to the employer is that amount times $(1 - t_{co})$, or \$1,000 times $(1/(1 - 0.20))$ times $1/(1 + 0.12)^{25}$ times $(1 - 0.35) = \$47.775$. If $t_{co} = 21\%$, then the after-tax cost is

¹ Note the after-tax cost of the future payment of D_n equals $D_n(1 - t_{cn})$, and discounting that to present value equals $D_n(1 - t_{cn}) / (1 + r_{cn})^n$.

\$73.53. Note that with a corporate tax rate of 21% as opposed 35%, much more has to be contributed to the pension than when the corporate tax rate is lower: the firm would rather contribute when the tax rate is higher.