

## Retirement Plans and Pensions: An Empirical Study

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Article abstract

Il y a eu, durant la dernière décennie, quantité de recherches sur le rôle des régimes de pension payés par l'employeur dans la promotion des contrats de travail de longue durée. Le régime de pension occupationnel s'acquitte de ce rôle en offrant aux employés un droit à des bénéfices futurs de pension sujet à un rendement adéquat jusqu'à ce moment. Cependant, on ne peut faire que peu de généralisations au sujet de tels contrats, en partie à cause des faiblesses méthodologiques de ces recherches.

Dans les études sur la retraite, par exemple, les modèles empiriques utilisés contrôlent peu l'aspect volontaire du choix de l'âge de la retraite par l'employé. De plus, on n'a pas réussi à expliquer comment la pension influence la retraite. Finalement, les explications alternatives et plausibles des effets de la pension n'ont pas toujours été contrôlées.

Nous tentons de nous attaquer à certaines de ces faiblesses en examinant les effets incitatifs de la pension occupationnelle sur la planification de la retraite des employés. Nous nous attardons à l'expérience de 512 employés masculins et féminins travaillant à plein temps, âgés entre 20 et 64 ans, qui travaillent pour une grande entreprise syndiquée de service public en Ontario et qui jouissent d'un régime de pension à bénéfices définis. Nous avons sondés ces employés en 1988. Ils sont représentatifs de la population de quelque 17 000 personnes en termes de sexe, d'âge et d'années de service. Empiriquement, nous avons fait une régression de l'âge planifié volontairement de retraite en regard de différents déterminants de cette décision. Nous avons observé que cet âge était fortement influencé par des incitatifs à la préretraite. Plus particulièrement, plus la prime de préretraite est généreuse, plus l'âge planifié de retraite est bas. Ce résultat est important vu que les pensions représentent une option de planification de la gestion stratégique des ressources humaines. De façon opposée, d'autres instruments, tels les primes salariales au rendement et les bonus de paies de vacances n'ont pas beaucoup d'influence sur le choix de l'âge de retraite.

Les projets de retraite sont aussi influencés par l'exactitude des informations fournies sur les caractéristiques des régimes de pension, par l'âge, par le sexe, par l'état de santé, par le statut civil et, surtout, par le statut d'emploi et de pension du conjoint. D'un point de vue de politique générale, le fait que les personnes mal informées sur les caractéristiques de leur fond de pension aient tendance à prendre leur retraite plus tôt est troublant puisque cela suggère que telles décisions cruciales et irréversibles peuvent être prises erronément. S'assurer d'une information adéquate est donc nécessaire à une décision rationnelle.

Notre étude soutient quelque peu l'hypothèse quant au rôle positif des pensions dans la promotion des conventions de travail de longue durée. Plus spécifiquement, les bénéficiaires des régimes de pension supportés par l'employeur répondent positivement aux effets incitatifs inscrits à leurs régimes de pension et, de façon plus particulière, adaptent leur date préférée de retraite à la générosité des bénéfices de préretraite. Cela est vrai, même après avoir contrôlé les autres variables déterminantes de l'âge planifié de retraite, incluant ces facteurs influençant le volontarisme de cette décision, tels la probabilité de mise à pied ou de recherche volontaire d'emploi et ces autres programmes de ressources humaines créant des incitatifs aux contrats de travail de longue durée.

# *Retirement Plans and Pensions*

## *An Empirical Study*

ANDREW A. LUCHAK

*Based on 512 survey respondents, the age at which people voluntarily planned to retire was found to be influenced most strongly by incentives for early retirement embodied in their pension plan. The planned age of retirement was also influenced by the accuracy of information about pension plan features as well as by the respondents' age, gender, health status, and marital status, especially the employment and pension status of the spouse. Implications for public policy and human resource practices of the firm, as well as for implicit contracting are discussed.*

Over the past decade, there has been a wealth of research on the role of employer-sponsored pension plans in promoting long-term employment contracts.<sup>1</sup> The occupational pension plan performs this role by providing employees with a contingent right to a future pension benefit subject to adequate performance up to that point in time. If pensions perform this role, then employees should have knowledge of and preferences for such arrangements, and they should be responsive to pension incentives in their behaviour. Despite all the research to date, however, few generalizations can be made about these propositions. Part of this problem can be attributed to methodological limitations in the research. For example, in the retirement

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1. Reviewed, for example in Allen and Clark (1987); Ippolito (1987, 1994); Mitchell (1988); Lazear (1990); Gustman, Mitchell and Steinmeier (1994); Dorsey (1995); Luchak (1995).

literature,<sup>2</sup> where most pension research has been conducted, most empirical models have not always provided strong controls over the voluntarism of an employee's choice of retirement age, pension measures have not always fully captured the mechanisms through which pensions affect this choice, and plausible alternative explanations for pension effects have not always been well controlled.

This study helps address these issues by examining the effects of pension incentives on the retirement plans of employees under a defined benefit employer-sponsored pension plan. A stronger test of long-term contracting through the employer-sponsored pension plan is provided by addressing many of the aforementioned concerns. The paper is organized as follows. First, previous empirical research dealing with the effects of employer-sponsored pensions on the plan or decision to retire from work is reviewed. Second, the research methodology and data are described. Third, findings are discussed. Finally, conclusions are drawn and implications for policy, human resource practices and future research are discussed.

### ***REVIEW OF THE LITERATURE***

As discussed, methodological problems with the measurement of retirement, pension incentives and plausible alternative explanations for pension effects limit the validity of the conclusions that can be drawn from existing research about pensions as vehicles for enforcing long-term employment contracts.

#### ***Methodological Problems with the Measurement of Retirement***

If employees are not retiring voluntarily from the firm in response to pension incentives, then it cannot easily be said that they have preferences for long-term contracting arrangements through their pension plan. This suggests the need for retirement measures that control for the voluntary and involuntary constraints surrounding an employee's exit from the firm.

An examination of the retirement research, however, reveals that the dependent variables used have not always been sensitive to the need for such controls. The measures used, either singly or in combination, have

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2. Anderson and Burkhauser (1985); Anderson, Burkhauser and Quinn (1986); Anderson, Clark and Johnson (1980); Barfield and Morgan (1969); Bazzoli (1985); Bould (1980); Burkhauser (1979); Burtless and Hausman (1982); Clark, Johnson and McDermed (1980); Fields and Mitchell (1984a, 1984b); Gordon and Blinder (1980); Gustman and Steinmeier (1984); Hall and Johnson (1980); Hanoch and Honig (1983); Hayward and Hardy (1985); Honig (1985); Kotlikoff (1979); Monahan and Greene (1987); O'Rand and Henretta (1982); Pesando, Hyatt and Gunderson (1992); Quinn (1977); Shaw (1984).

included: (i) planned age of retirement (e.g., individuals identify the age at which they plan to retire); (ii) self-perception of retirement status (e.g., individuals identify whether they consider themselves to be retired or not); (iii) labour force status (e.g., individuals are considered retired when they cease participating in or withdraw from the labour force); (iv) reduction in hours worked (e.g., individuals are considered retired if they work less than some pre-specified number of hours per week or weeks per year) or drop in labour supply (e.g., individuals are considered retired if they experience a discontinuous drop in labour supply); (v) leaving the main employer (e.g., individuals are considered retired if they cease working in a long-term job); and (vi) pension acceptance (e.g., individuals are considered to have retired once they file, accept and/or start receiving a public or private pension).<sup>3</sup>

None of the foregoing measures are satisfactory. The drop in hours worked or in labour supply definitions are problematic because those who reduce their level of participation in the labour force do not actually leave paid employment despite the fact that pension receipt is typically conditional on permanent withdrawal from the sponsoring firm. While no one can generally be forced to retire from the labour market, labour force participation definitions do not always distinguish between the reasons for exit from the labour force and so may include employee initiated behaviours, such as retirement or quitting a job, as well as employer initiated behaviours such as layoff or discharge. Even where these reasons are given, however, there may be a problem in separating voluntary from involuntary behaviour. For example, what appears as a voluntary retirement may actually be a response by the employee to an anticipated layoff or discharge. While the planned age of retirement measure would appear to best capture the concept of employee choice in that it taps forward-looking behaviour that may be less encumbered by involuntary constraints, it is limited in the sense that plans may also be made in anticipation of such constraints; moreover, such plans may not always translate into actual behaviour. In

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3. For planned age of retirement see: Barfield and Morgan (1969); Kotlikoff (1979); Hall and Johnson (1980); Shaw (1984); Anderson, Burkhauser and Quinn (1986). For self-perception of retirement status see: Boskin (1977); Bould (1980); Gustman and Steinmeier (1984). For labour force status definition see: Boskin (1977); Quinn (1977, 1978); Clark, Johnson and McDermid (1980); Gordon and Blinder (1980); Anderson, Clark and Johnson (1980); Bould (1980); O'Rand and Henretta (1982); Hanoch and Honig (1983); Hurd and Boskin (1984); Bazzoli (1985); Hayward and Hardy (1985); Anderson and Burkhauser (1985); and Anderson, Burkhauser and Quinn (1986). For reduction in hours worked definition see: Boskin (1977); Palmore, George and Fillenbaum (1982); Hardy (1982); Hanoch and Honig (1983); Bazzoli (1985). For drop in labour supply definition see: Burtless and Moffitt (1984); Burtless (1986). For leaving main employer definition see: Burtless and Hausman (1982); Fields and Mitchell (1984a); Bazzoli (1985). For pension acceptance definition see: Burkhauser (1979, 1980); Burtless and Hausman (1982); Palmore, George and Fillenbaum (1982); Fields and Mitchell (1984a); Monahan and Greene (1987).

cross-sectional studies of the currently employed, discrete measures of an actual or planned separation date, coupled with controls for the circumstances surrounding an employee's exit from the firm may be the only realistic way to ensure the voluntarism of a retirement in response to pension incentives.

### ***Methodological Problems with Pension Incentives***

Employer-sponsored pensions regulate retirement behaviour in at least two important ways. First, they provide a source of income for meeting financial needs independent of work. Second, they affect returns to continued work as those returns are altered by the stream of pension benefits that will be received over alternative retirement dates. According to the first "income" effect, pension benefits that are available earlier and which are higher in value should lead to earlier retirement as the individual will be more likely to be able to afford to retire earlier. According to the second "substitution" effect, the greater the loss (gain) in future benefits due to continued employment, the greater the likelihood that the employee will retire earlier (later) as the returns to continued working are reduced (increased).

But the pension research on retirement has not always been sensitive to tapping into these two mechanisms. The variables or approaches that have been used in the research are listed in Table 1. Pension plan coverage is the least responsive of measures, among other reasons, because it does not necessarily imply entitlement to eventual pension benefits. While the general eligibility measure remedies the question of entitlement, neither it nor the coverage measure provides any indication of the level of financial security provided by the pension guarantee. The pension benefit measure corrects the magnitude problem of the foregoing two measures, but none of these three variables provides any indication of the sustainability of the pension benefit over time or the gains or penalties associated with immediate or postponed receipt of the pension. Self-report measures of the latter two variables may also suffer from important sources of error given significant gaps in employee information about their own eligibility (Mitchell 1988; Luchak 1995) and/or level of benefits (Leigh 1981) at retirement. The gain in pension benefit measure provides an improvement over the foregoing measures in that it provides an indication of the costs and benefits of postponing acceptance of pension benefits, but like the others, this measure does not provide an indication of either the sustainability of the pension guarantee over time, or the level of financial security provided by the pension guarantee. Pension wealth represents the present discounted value of the future stream of pension benefits over the remainder of an individual's lifetime and has typically been valued as of the date retirement status is observed. This variable has the advantage of capturing the magnitude of the

TABLE 1  
Evidence of Pension Incentives on Retirement

<i>Variable</i>	<i>Finding</i>
Pension plan coverage	Coverage induces earlier actual (O'Rand and Henretta 1982; Gustman and Steinmeier 1984; Hanoch and Honig 1983; Anderson, Burkhauser and Quinn 1986) or planned (Kotlikoff 1979) age of retirement. For exceptions see Anderson, Clark and Johnson (1980); O'Rand and Henretta (1982); Hanoch and Honig (1983).
Pension benefit eligibility	Current eligibility induces earlier age of retirement (Quinn 1977; Bould 1980; Clark, Johnson and McDermed 1980; Gordon and Blinder 1980; Burtless and Hausman 1982). Eligibility for more generous benefit in current (subsequent) period induces earlier (later) actual (Bazzoli 1985) or planned (Shaw 1984) age of retirement. For exceptions see Clark, Johnson and McDermed (1980).
Amount of pension benefit or ratio of benefit to nominal wage	Higher current benefits or ratio of benefits to wages induces earlier actual (Boskin 1977; Burtless and Hausman 1982; Fields and Mitchell 1984) or planned (Barfield and Morgan 1969; Hall and Johnson 1980) age of retirement. Higher benefits in subsequent period induces later actual age of retirement (Burtless and Hausman 1982). For exceptions see O'Rand and Henretta (1982); Fields and Mitchell (1984).
Pension wealth	Higher difference in pension wealth between current and subsequent period induces earlier retirement (Burkhauser 1979; Fields and Mitchell 1984a). For exceptions see Clark, Johnson and McDermed (1980); Monahan and Greene (1987).
Option value	Higher option value of working additional year induces later age of retirement (Stock and Wise 1988; Pesando, Hyatt and Gunderson 1992).

lifetime stream of pension benefits available to the employee at any given retirement age. The option value of pension benefits is related to the pension wealth measure but captures forward-looking behaviour by characterizing the decision to work in the immediate period as giving the employee the option to work in subsequent periods, and thereby, the option of continued pension accruals. These latter two variables, however, have a number of common problems. First, they may not be sensitive to employees' liquidity constraints as annual pension benefits may be rising at a point in time where these values are falling. Second, these three variables require detailed information about specific pension plan characteristics to be calculated.

Information of this sort has not always been available, compelling researchers to make simplifying assumptions.<sup>4</sup> Finally, these variables are complex concepts, causing some doubt as to whether workers estimate them at the time of planning their retirement.

### *Methodological Problems with Plausible Alternative Explanations*

Pension incentives are only one of many possible avenues for promoting the existence of long-term employment contracts. Other explanations include the possibility that workers are misinformed about the contingent pension contract, are responding to other workplace incentives that encourage long-term employment, are subject to mandatory retirement rules, are subject to opportunistic firm behaviour or have simply sorted themselves into long-term jobs. Failure to control for these plausible alternative explanations may lead to faulty conclusions about the role of pensions in contracts for long-term employment.

If pensions are vehicles for long-term contracting then employees should be knowledgeable about their restrictive features. A failure to control for the quality of pension information means that misinformation about pension effects, rather than the effects of pensions themselves, may account for some part of, or otherwise obscure, the retirement-inducing features of employer-sponsored pension plans. Other seniority-based fringe benefits, wage tilt, shared investments in firm-specific human capital, efficiency wages and enhanced employment security may each be alternative vehicles used by employers to promote long-term employment relationships. Certain fringe benefits, such as vacation pay, may at once encourage long tenure by growing more generous with years of service and regulate retirement by being capped at a maximum value. This cap reduces the economic benefit of remaining employed an additional year, and hence, the returns to continued employment. Wage tilt may promote long-term employment by shifting the distribution of wages over an employee's career so that below-market wages are paid early in the career and above-market wages are paid in later years (Ippolito 1991). Shared investments in firm-specific human capital can promote long-term employment relationships if employees are made to share in the costs of this investment in the early part of their career and in the returns to this investment at later points. Compensation premiums or efficiency wages can promote long-term contracts by paying above-market wages (Allen, Clark and McDermed 1993; Gustman and Steinmeier 1993). Workers will be less likely to retire for fear of losing their wage premium. Earlier

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4. The pension wealth measure has been used almost exclusively on social security in U.S. studies of retirement behaviour because of the greater availability of detailed earnings and employment histories data needed to perform the pension wealth calculation. This type of information is generally not available for employer-sponsored pension plans.

retirement trends among pension covered workers may be due to opportunistic firm terminations close to the end of an employee's career (Cornwell, Dorsey and Mehrzad 1991). If employer opportunism accounts for more of retirement behaviour than do pensions, then this casts doubt on the long-term contracting thesis. Mandatory retirement may be a better vehicle for enforcing the termination of the implicit contract than are pension incentives to the extent that mandatory retirement gives greater certainty to the retirement date. Without this date, firms might increasingly run the risk of paying increasing amounts of deferred compensation for an indefinite period (Lazear 1979). Mandatory retirement may be particularly important for programs such as wage tilt and efficiency wages where incentives for delayed retirement will be most pronounced. Finally, labour market sorting argues that employees with strong preferences for leisure sort themselves into jobs providing generous early retirement pensions and/or that the firm is responding to their preferences for early retirement in the design of the pension plan (Gustman, Mitchell and Steinmeier 1994). If valid, the sorting thesis makes spurious the relationship between pension incentives and earlier retirement.

There is only limited evidence to evaluate the role of pension incentives in comparison to plausible alternative explanations. This evidence suggests that pension incentives play a dominant role over shared investments in human capital, mandatory retirement (Gordon and Blinder 1980; Hall and Johnson 1980; Hanoch and Honig 1983; Quinn and Burkhauser 1983), a lack of employment security (Cornwell, Dorsey and Mehrzad 1991) and labour market sorting (Fields and Mitchell 1984b; Lumsdaine, Stock and Wise 1990). However, no empirical studies known to this author have controlled for other plausible alternative explanations or have dealt comprehensively with all such factors under one research design.

### *Contributions of this Research*

Many of the foregoing problems in the literature are dealt with in this study by the use of data from a survey, conducted by the author, that links individuals to specific pension plan, demographic, spousal, job and labour market characteristics.

First, the use of a cognitive measure of retirement — in this case, the planned age of retirement — provides a cleaner measure of the voluntarism of employee responses to pension incentives. This advantage is strengthened by controlling for employees' layoff and job search perceptions, which can reflect other reasons for separating from the firm. An obvious limitation of examining retirement plans is that they do not necessarily lead to actual retirement behaviour. This limitation may be mitigated by several considerations: most behaviour is preceded by cognition such as a plan or intention;



empirical research establishes a close link between retirement plans and behaviours (Anderson, Burkhauser and Quinn 1986); and there is considerable similarity between the empirical determinants of planned and actual retirement behaviour.

Second, this study uses a measure of the type of pension benefit employees are eligible to receive at age 55. This measure has the important attribute of identifying the benefit at or around first eligibility, thus providing a benchmark for assessing the magnitude of pension benefits on the opportunity to retire. Also, by controlling for pension benefits that are known to either increase or decrease in value after initial eligibility, this measure captures the effect of gains or losses in pension benefits on the retirement decision. The fact that this measure can easily be determined by the employees in question without an array of simplifying assumptions is important because information processing capabilities of individuals are likely limited.

Third, this study provides some checks against plausible alternative explanations for pension effects as a determinant of employees' retirement plans. In particular, this study provides the first empirical evidence on the effects of imperfect pension information, other seniority-based fringe benefits and employer opportunism on employees' retirement plans. Reasonable controls are also provided for shared investments in firm-specific human capital, wage tilt, efficiency wage and labour market sorting arguments. The respondents are all subject to compulsory retirement at age sixty-five so that an evaluation of the importance of this requirement can be made through the effects of other variables that provide escalating incentives for delayed retirement and by examining the frequency of retirements planned around this age.

### ***METHODOLOGY AND DATA***

The empirical work essentially regresses a measure of the individual's self-reported planned age of retirement on various determinants of this decision. The independent variables or determinants of the planned age of retirement are grouped according to pension, demographic, spousal, job and labour market characteristics. (The variables included in the analysis are defined in an appendix available from the author upon request.) The dependent variable—planned age of retirement—is based on the following survey question: "Please indicate the age at which you expect to retire from the firm." Leaving the firm is a condition precedent to receipt of a pension benefit under this plan.

The data comes from a 1988 survey, conducted by the author, of 1,000 full-time male and female employees between the ages of 20 and 64 who were employed by a large, unionized public utility company in the province

of Ontario with a defined benefit pension plan of the final earnings variety. While the restriction of the analysis to a single firm limits the generalizability of this study's findings, this is tempered by the inclusion of many micro-level variables not often available in larger data sets, by stronger control over the institutional characteristics of the pension plan and by the representative character of many of the features of the pension plan under consideration.<sup>5</sup> A total of 529 questionnaires were returned and form the basis of the analysis to follow. Despite the low response rate of 52.9%, the sample is closely representative of the approximately 17,000 target population employees in terms of gender, age and years of service.<sup>6</sup> Total sample size was subsequently reduced due to item non-response among some of the variables under study. This problem was not common among originally measured variables, occurring for a maximum of 4.0 percent of the observations in the case of the training variable. Regression imputation procedures were used to impute missing values for each of the independent variables with missing data. This yielded almost identical results (available from the author on request) to the procedure of deleting the 15 percent of observations that had missing values for *any* of the variables. Seventeen observations were deleted because they had no information on the dependent variable, planned age of retirement, leaving 512 observations for the statistical analyses.

The expected impact of the independent variables is interpreted mainly through the reservation wage concept and the conventional income-leisure choice model applied to the retirement decision (i.e., the decision not to participate in the labour market). That is, the person plans to retire when their reservation wage (valuation of time in retirement) becomes greater than their market wage. Variables that increase their reservation wage, other things equal, will induce them to want to retire sooner. Variables that increase

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5. The subject pension plan is a defined-benefit plan, requires an employee contribution, has a final earnings benefit formula, provides early retirement both with and without discount, and has ad hoc, partial indexation of pension benefits. In Canada, at the applicable time, the proportion of pension plan members with similar plan characteristics was: defined-benefit plans (91.4%); employee contribution required (69.8%); final earnings benefit formula (60.0%); early retirement provisions (97.8%), including those with undiscounted benefits (53.5%); and some form of inflation protection for pension benefits (34.3%) (Statistics Canada, *Pension Plans in Canada*, 1990).
  6. Sample estimates showing approximately 21% of all employees to be female and, on average, to be 38 years of age and to have 12 years of service, compare favourably with descriptive statistics provided by the union showing 21% of all bargaining unit members to be female, and on average, to be 38 years of age and to have 13 years of service. While information was not available to assess the representativeness of the achieved sample on other variables, the close fit on these three characteristics is re-assuring given that they likely share high levels of covariation with other determinants of the retirement decision such as health status and expected level of pension benefits.

their market wage (more generally, their total compensation or returns to work), other things equal, will increase their planned age of retirement. Increases in their market wage will also lead to increases in their income or wealth, and this will enable employees to afford to retire earlier, although this effect can be muted by the fact that employees may only get the increased income if they do not retire. This framework provides a convenient and readily understood perspective for delineating the expected impact, on the planned age of retirement, of a variety of pension, demographic, spousal, job and labour market characteristics.

The key pension variables used here are the type of pension benefits employees would be eligible to receive at age 55, the age at which most employees are initially eligible to receive some form of pension benefit under the plan.<sup>7</sup> The construction of the pension variable in this way assumes that employees are forward-looking and will select a retirement date that responds to the incentives embodied in their pension plan. Early retirement benefits are expected to induce early retirement because any subsidy to the employee that is involved would augment their income and thereby enable them to afford to retire earlier. Early retirement benefits could also induce earlier retirement by reducing the returns to additional labour market work since the subsidy is forgone by working longer. Obviously the retirement-inducing effect is larger for the more generous early retirement options.

The most generous early retirement option is special early retirement at age 55 (55SPEC), which is available after 35 years of service, and which involves no discounting of benefits in spite of the fact that the benefits are received earlier and for a longer period of time. These enhanced benefits exceed the losses that otherwise occur because by retiring early one forgoes any pension increases that accrue from higher final average wages and additional service credits by not retiring (Pesando and Gunderson 1988). The other early retirement options, in descending order of their generosity are: reduced or discounted benefits after a high service requirement of 31–34 years (55REDU31); reduced benefits after a medium service requirement of 25–30 years of service (55REDU25); and reduced benefits after a low service requirement of 2–24 years of service (55REDU2). The longer service requirements are associated with more generous early retirement benefits because the discounting or reduction formula is smaller the greater the employee's length of service. While the special early retirement option invariably entails a subsidy to the employee, the reduced early retirement benefits may entail a subsidy or a penalty, depending upon whether the

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7. All respondents whose current age exceeded fifty-five were included in the analysis under the assumption that they had previously evaluated their retirement options at this age and had decided to continue working.

reduction formula is sufficiently small that the enhanced pension benefits outweigh the losses from forgoing the opportunity to accrue additional service credits or wage increases that can enhance pension benefits in such final earnings plans.

An index of the overall quality of pension information that employees have about their pension plan (INFO) is used to evaluate the impact that such knowledge has on their planned age of retirement, and to control for the possible effect of misinformation on the retirement decision. This index was based on the weighted sum of nine factual questions asked of respondents about the characteristics of their pension plan.<sup>8</sup> Weights were assigned based on the identifiable components of information that an employee needed to know in order to possess accurate information about the plan provision in question. The index summed to eighteen and scores were standardized out of one hundred (100) for ease of interpretation. If pensions are vehicles for long-term employment contracts then they should have an influence on retirement plans after controlling for pension information. Because the quality of information measure used provides no indication of whether employees are under- or over-valuing pension entitlements, the specific direction of the effect of pension information on planned age of retirement is an empirical question.

Personal and demographic characteristics of the employee can also affect the planned age of retirement. The effect of age (AGE), per se, is ambiguous. Younger employees may be more likely to plan to retire early as they incorporate earlier retirement trends into their life-cycle decision making. Younger workers also have earlier expected dates of death which may lead to preferences for earlier retirement due to the shorter time period over which they can expect to receive pension benefits. Alternatively, younger workers may plan to retire later to the extent that greater uncertainty about their future income prospects creates uncertainty about whether they can afford to retire early.

There is little reason to believe that gender (FEMALE) should substantially affect the planned age of retirement, after controlling for the impact of other determinants of retirement. However, females may plan to retire earlier to the extent that they have more viable alternatives to labour market work, and their labour market activity may be subject to discrimination. Working in the other direction, the longer expected lifetime of females may lead to later planned ages of retirement.

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8. The nine questions making up the information index asked employees if they knew about the following features of their pension plan: whether employee contributes; employee contribution formula; benefit formula; age of normal retirement; type of early retirement benefits; compulsory retirement policy; compulsory retirement age; type of pension eligible for receipt at planned age of retirement; and type of inflation adjustment.

Poorer health (HWORSE) likely increases the disutility of labour market work relative to non-labour market activities, thereby increasing reservation wages. This in turn should lead to an earlier planned age of retirement.

Marital status, and the employment and pension status of one's spouse, can also have an impact on retirement plans. Persons without a spouse (NOSPOUSE) have fewer family attachments and possibly more attachment to their labour market work (Monahan and Greene 1987), both of which lower their reservation wage and hence reduce the likelihood that they would want to retire early. In contrast, the planned age of retirement for persons with a spouse may be lower given the possibility of family activity upon retirement, and the potential ability to afford to retire earlier especially if the spouse is also employed (SEMPLOY) and also has an occupational pension plan (SPENSION). If the spouse is not employed (SUNEMP) then these resources to afford early retirement may not be available and the planned age of retirement may come later.

Individuals with more education (EDUC) or who have firm-specific training (FSTRAIN) may plan to retire later so as to amortize the costs of their investments over a longer period. Persons with more education also may get greater non-pecuniary benefits from labour market activities. On the other hand, higher education may enhance the enjoyment of retirement and may provide more opportunities to earn supplementary income upon retirement.

Characteristics of the individual's job, compensation structure, and the labour market in which they operate can also affect their planned age of retirement. Blue-collar workers (BLUE) may want to retire earlier than white-collar workers due to the generally more arduous and less intrinsically interesting nature of their work. Status in the organization, such as having supervisory status (SUPER), may lead to later retirement plans, this being established with more certainty for professional occupations (Kilty and Behling 1985; Monahan and Greene 1987).

The payment of efficiency wage premiums should increase the returns to working in that particular firm and hence lead to increases in the planned age of retirement from the firm. Such efficiency wages are premiums above the market clearing rate, and are used to induce positive work behaviour and reduce unwanted turnover. They are often measured as the wage premium that exists after controlling for the effect of other wage determining variables. They are proxied here by the individual's expected wage at age 55 (55WGPREM), after controlling for the effect of other wage determining factors such as gender, years of service, education, firm-specific training, and alternative employment opportunities.

If wages are deferred or backloaded over a worker's lifetime with the firm (Lazear 1990) then such "wage tilt" should lead to increases in the

planned age of retirement so that the employee can “collect” their deferred wage. In essence, the returns to continued employment are high in such circumstances. Such wage tilt (55TILT) is proxied here by years of service at age 55.

Other seniority-based benefits could perform alternative or substitute roles to pension incentives in affecting the retirement decision. The employees in this sample were entitled to increasing levels of vacation pay up to a maximum of eight weeks pay for thirty-five years service. Consistent with the forward-looking approach used with pension incentives, employees are conceptualized as evaluating their entitlement to this benefit at age fifty-five (55VAC). Vacation pay is expected to have an indeterminate effect on retirement with continued eligibility for higher levels of vacation pay increasing the returns to labour market work and thereby providing an initial incentive for delayed retirement, but with service after the point of being capped having the opposite effect.

Employees who expect to be subject to an involuntary layoff (LAYOFF) are likely to want to delay their retirement age given the drop in their income that would probably accompany such a layoff. If they intend to engage in voluntary job search (SEARCH), however, they may plan to retire earlier from the firm as part of that job search. A higher unemployment rate in their region (URATE) is also likely to foster a later planned retirement age given the fewer alternative employment opportunities that may be available for those that want to continue employment elsewhere. Regional control variables (REGIONAL, NUCLEAR) are also included in the analysis to control for any regional factors that may influence the planned age of retirement.

One important variable excluded from the empirical model is eligibility for Canada Pension Plan benefits, which may be expected to have a retirement-inducing effect for the reasons discussed previously. The bias from this omission is lessened somewhat because early retirement under the Canada Pension Plan had only been available one year prior to the date of data collection, yet trends toward early retirement, at least amongst older Canadian males, had been occurring for several decades prior to this date. Furthermore, the benefits available through the Canada Pension Plan only commence as early as age 60 and are significantly lower, on average, than those available to employer-sponsored pension plan members so that it is the effects of the latter pension entitlements that will likely determine the choice of retirement dates. Nevertheless, it should be recognized that the retirement-inducing effect of employer-sponsored pensions reported here are larger than would otherwise be the case if eligibility for Canada Pension Plan benefits were taken into account.

**FINDINGS**

The empirical results, shown in Table 2, generally confirm expectations that the planned age of retirement is influenced by the returns to continued employment with the firm compared to the alternatives in retirement, and that those returns and alternatives are influenced by the various early retirement options as well as the personal, demographic, job and labour market characteristics of the employee.

TABLE 2  
OLS Regression on Planned Age of Retirement (PAR)

	<i>Mean</i>	<i>Coeff</i>	<i>S.E.</i>	<i>Beta</i>
PAR	57.017			
[55REDU2]				
55REDU25	.201	-2.247**	.953	-.203
55REDU31	.320	-3.265***	1.221	-.343
55SPEC	.305	-3.730***	1.353	-.387
INFO	57.527	.025***	.007	.146
AGE	38.061	.074***	.027	.161
FEMALE	.205	-1.518***	.581	-.138
[HSAME]				
HWORSE	.069	-1.287**	.642	-.073
HSOMBET	.206	-.655	.412	-.060
HBETTER	.198	.087	.428	.008
[NOSPOUS]				
SUNEMP	.318	-1.123*	.633	-.118
SEMPLOY	.240	-1.621***	.625	-.156
SPENSION	.251	-1.858***	.576	-.181
EDUC	13.061	-.159	.115	-.055
FSTRAIN	.898	-.627	.557	-.043
BLUE	.427	-.608	.381	-.068
SUPER	.125	-.269	.510	-.020
55WGPREM	8.854	-.042	.147	-.016
55TILT	29.870	-.187	.130	-.312
55VAC	6.877	.470	.754	.154
LAYOFF	.449	.257	.348	.029
SEARCH	.377	-.597*	.356	-.065
[HEAD]				
REGIONAL	.358	-.103	.474	-.011
NUCLEAR	.376	.349	.465	.038
URATE	5.219	-.040	.117	-.022
CONSTANT		63.029***	3.497	
F		14.205***		
R <sup>2</sup>		.412		
N		512		

p < .10 \*, p < .05 \*\*, p < .01 \*\*\*

The significant and negative coefficients on the early retirement variables indicate that subsidized early retirement benefits can lower the planned age of retirement. The fact that the negative coefficients become larger as the generosity of the plan increases (e.g., they are largest for the special retirement option, 55SPEC, which entails no discounting of benefits) highlights that the more generous the option, the earlier the planned age of retirement.

Employees who are better informed about their pension plan tend to have later planned ages of retirement. Conversely, those who are less well informed tend to plan to retire earlier, raising the concern that such decisions could be ill-informed. The problem is especially of concern since the decision to retire from the firm early is a major decision and largely irreversible.

After controlling for the impact of other determinants of the retirement decision, age (AGE) is negatively related to the planned age of retirement, and the effect is quite pronounced. Workers who are age 35, for example, plan to retire 7.4 years earlier than do workers who are just 10 years older. Apparently, early retirement trends are being incorporated into the planning of younger workers, as is their earlier expected date of death, and this is outweighing any tendency to want to retire later given the uncertainty over their income prospects.

After controlling for other determinants of the retirement decision, females (FEMALE) plan to retire 1.5 years earlier than men, perhaps reflecting their alternatives to labour market work and possible discrimination in the labour market.

People in poorer health (HWORSE) also plan to retire earlier than persons of average health, although the planned age of retirement is not significantly altered if persons perceive their health to be somewhat better than average (HSOMBET) or better than average (HBETTER).

Persons with a spouse are more likely to want to retire earlier, presumably reflecting the viability of family activities upon retirement. The effect is largest when the spouse is also employed (SEMPLOY) and especially if he or she also has an occupational pension plan (SPENSION), likely reflecting the additional resources to be able to afford to retire early in those circumstances.

Most of the job and labour market characteristics were not significantly related to the planned age of retirement, although persons who planned to engage in voluntary job search (SEARCH) also planned to retire earlier from the firm. This highlights the fact that retirement from the firm need not imply retirement from the labour force, since people who retire from the firm may still intend to engage in active job search. Persons who



expect to be laid off (LAYOFF) want to work longer, presumably to mitigate the income losses of the possible layoff (although the coefficient is not statistically significant). Blue-collar workers plan to retire earlier than do white-collar workers, likely reflecting the more arduous nature of such work (although the coefficient is marginally insignificant,  $t=1.60$ ). While vacation pay (55VAC) is positively related to retirement plans, its effect is insignificant for the population, casting doubt on the continuing need for mandatory retirement as a device for concluding long-term employment contracts.

### *DISCUSSION*

The results of this analysis suggest that the age at which people plan to retire is responsive to various factors that affect the returns to continued employment versus the monetary and non-monetary attractiveness of retirement. Generous early retirement incentives in pension plans can encourage employees to plan to retire earlier, and the more generous the incentives, the earlier they would like to retire. This is important since this is a strategic human resource policy option for the firm. In contrast, other instruments, like efficiency wage premiums, wage tilt, and vacation pay bonuses do not seem to have much effect.

From a policy perspective, the fact that people who are most misinformed about their pension plan features tend to retire early is worrisome since it suggests that such crucial and irreversible decisions may be made in error. Ensuring adequate information, perhaps through reporting and disclosure requirements, may be desirable to ensure that the decision is a rational one.

While pension plan features and information requirements are subject to policy control by the firm, other personal and demographic characteristics that affect the planned retirement age are not subject to such control. Yet it is important to know their impact on the planned age of retirement so as to predict and anticipate future trends as those characteristics change. To the extent that the workforce ages and becomes more white-collar, and poor health becomes less prominent, then the pressure from employees will be towards later retirement ages. To the extent that the workforce becomes more female and especially if they become more covered by occupational pension plans, then the pressure will be towards earlier retirement. Since these trends are likely to prevail into the future, and they have opposite impacts on the planned age of retirement, then the aggregate impact on the planned retirement age is indeterminant. For particular firms where some of these trends are likely to be more prominent than others, however, the impacts may be more unidirectional.

This study also provides some support for the role of pensions in promoting long-term employment contracts. Specifically, employer-sponsored pension plan members do respond to the incentive effects embedded in their plans, and in particular, they will adjust their preferred retirement date in response to the generosity of early retirement benefits of such plans. This is the case even after controlling for other determinants of the planned age of retirement, including those factors affecting the voluntarism of this decision, such as the likelihood of layoff or voluntary job search, and other human resource management programs creating incentives for long-term contracts.

The results of this study may help to understand trends toward earlier retirement among older males in the Canadian labour market during the 1980s. Specifically, a shift toward plans with more generous early retirement provisions and increased inflation protection for pension benefits during this time period would have increased the economic incentives for earlier retirement.<sup>9</sup> The absence of a trend among females does not imply that they are not responsive to pension incentives, but rather, that this trend may be obscured in the general population by their lower coverage, lower probability of being eligible for generous early retirement benefits and expected receipt of lower benefits (Pesando, Gunderson and McLaren 1991; Statistics Canada, *Pension Plans in Canada*, 1994).

Future research should focus on explaining male-female differences in retirement behaviour. Important in this regard may be the need to control for the full range of workplace and other constraints and opportunities that may ultimately affect the labour market choices of women. This conclusion finds support in the findings of this study concerning the role of spousal characteristics in the retirement decision.

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9. Between 1980 and 1992, the labour force participation rates amongst 55-64 year old males declined from 76.2% to 62.0%, while for females they rose slightly from 33.7% to 36.4%, respectively (Statistics Canada, *The Labour Force*, various issues). During this same time period, the proportion of employer-sponsored pension plan members having indexed benefits rose from 31.5% to 43.7%, while between 1980 and 1988 those belonging to plans having special early retirement rose from 42.0 to 53.5%, respectively (Statistics Canada, *Pension Plans in Canada*, various issues).

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## RÉSUMÉ

### **Projets de retraite et pension : une étude empirique**

Il y a eu, durant la dernière décennie, quantité de recherches sur le rôle des régimes de pension payés par l'employeur dans la promotion des contrats de travail de longue durée. Le régime de pension occupationnel s'acquitte de ce rôle en offrant aux employés un droit à des bénéfices futurs de pension sujet à un rendement adéquat jusqu'à ce moment. Cependant, on ne peut faire que peu de généralisations au sujet de tels contrats, en partie à cause des faiblesses méthodologiques de ces recherches. Dans les études sur la retraite, par exemple, les modèles empiriques utilisés contrôlent peu l'aspect volontaire du choix de l'âge de la retraite par l'employé. De plus, on n'a pas réussi à expliquer comment la pension influence la retraite. Finalement, les explications alternatives et plausibles des effets de la pension n'ont pas toujours été contrôlées.

Nous tentons de nous attaquer à certaines de ces faiblesses en examinant les effets incitatifs de la pension occupationnelle sur la planification de la retraite des employés. Nous nous attardons à l'expérience de 512 employés masculins et féminins travaillant à plein temps, âgés entre 20 et 64 ans, qui travaillent pour une grande entreprise syndiquée de service public en Ontario et qui jouissent d'un régime de pension à bénéfices définis. Nous avons sondés ces employés en 1988. Ils sont représentatifs de la population de quelque 17 000 personnes en termes de sexe, d'âge et d'années de service.

Empiriquement, nous avons fait une régression de l'âge planifié volontairement de retraite en regard de différents déterminants de cette décision. Nous avons observé que cet âge était fortement influencé par des incitatifs à la préretraite. Plus particulièrement, plus la prime de préretraite est généreuse, plus l'âge planifié de retraite est bas. Ce résultat est important vu que les pensions représentent une option de planification de la gestion stratégique des ressources humaines. De façon opposée, d'autres

instruments, tels les primes salariales au rendement et les bonus de paies de vacances n'ont pas beaucoup d'influence sur le choix de l'âge de retraite.

Les projets de retraite sont aussi influencés par l'exactitude des informations fournies sur les caractéristiques des régimes de pension, par l'âge, par le sexe, par l'état de santé, par le statut civil et, surtout, par le statut d'emploi et de pension du conjoint. D'un point de vue de politique générale, le fait que les personnes mal informées sur les caractéristiques de leur fond de pension aient tendance à prendre leur retraite plus tôt est troublant puisque cela suggère que telles décisions cruciales et irréversibles peuvent être prises erronément. S'assurer d'une information adéquate est donc nécessaire à une décision rationnelle.

Notre étude soutient quelque peu l'hypothèse quant au rôle positif des pensions dans la promotion des conventions de travail de longue durée. Plus spécifiquement, les bénéficiaires des régimes de pension supportés par l'employeur répondent positivement aux effets incitatifs inscrits à leurs régimes de pension et, de façon plus particulière, adaptent leur date préférée de retraite à la générosité des bénéfices de préretraite. Cela est vrai, même après avoir contrôlé les autres variables déterminantes de l'âge planifié de retraite, incluant ces facteurs influençant le volontarisme de cette décision, tels la probabilité de mise à pied ou de recherche volontaire d'emploi et ces autres programmes de ressources humaines créant des incitatifs aux contrats de travail de longue durée.

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