THE SURVEY OF INCOME AND
PROGRAM PARTICIPATION

PENSION PORTABILITY & LABOR MOBILITY: EVIDENCE FROM SIPP

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I. Introduction.

This paper investigates whether a lack of pension portability is primarily responsible for the low job mobility rates observed for pension covered workers. Using the Survey of Income and Program Participation (SIPP), the analysis develops evidence which casts doubt on non-portability as the primary culprit for these low mobility rates. Instead, the evidence is consistent with an alternative view, that pension covered jobs offer higher levels of compensation than workers can obtain elsewhere, and it is this compensation premium, rather than non-portability, that accounts for lower turnover among workers covered by pensions. These results have implications for legislation addressing perceived problems associated with pension portability, and these implications are also explored.

It is a well established empirical result that individuals with pensions have low turnover (Bartel and Borjas, 1977; Mitchell, 1982, 1983; and McCormick and Hughes, 1984, among others). It is also known that defined benefit pensions, which are the predominant form of pensions and which calculate benefits from formulae using job tenure and/or wages, accrue value disproportionately in the later years of employment (Bulow, 1981, 1982; Kotlikoff and Wise, 1985, 1987). This "backloading" of pension benefits means that workers who leave the firm prior to retirement give up a large share of their potential pension benefits.[1] In an important sense, such plans lack portability even if the worker is vested and eligible to collect some benefits at retirement. Putting together the low mobility from pension covered jobs with the disproportionate loss of potential benefits due to backloading, it has been argued that backloaded pensions account for the low mobility from jobs offering pensions of this type (Ippolito, 1986).

However, the empirical work in this paper finds several reasons to

believe that the backloaded accrual pattern of most pensions is not the primary cause of the low turnover rates of pension covered workers. First, simple tabulations from SIPP reveal that workers who separate from pension jobs typically suffer losses in wages and pension eligibility in their new jobs, and these losses are large in comparison to the losses due to backloading. Second, with the exception of those approaching retirement age, the loss from backloading is a very small fraction of total compensation, so that those who would gain from a move can easily offset the loss. Third, estimates of mobility equations indicate that the effect of defined contribution plans, which are not backloaded, is about equal to the effect of backloaded defined benefit plans. This suggests that it is not the financial backloading aspect of pensions that causes lower turnover rates. Finally, when a measure of the compensation premium is included in the mobility equation in addition to a measure of backloading, the compensation premium measure and not the backloading measure accounts for most of the difference in mobility rates between pension and non-pension workers. These empirical findings are consistent with the results from an earlier study of ours, Gustman and Steinmeier (1987), which was based on retrospective mobility data from the 1983 Survey of Consumer Finances.

The organization of the paper is as follows. The next section discusses basic descriptive statistics on mobility, pensions and compensation. In Section III, the results from a simple probit analysis of the determinants of mobility are presented. The following section introduces compensation premia into the analysis, which must then allow for the fact that the premia are not observed for individuals who remain in their jobs. Section V presents some corroborating evidence from the Panel Study on Income Dynamics (PSID). A final section summarizes the study and

discusses implications of the findings for labor market analysis and for pension regulation and policies.

II. Descriptive Statistics.

This section will present some basic descriptive statistics pertinent to the relations among pensions, compensation and job mobility. The source of the data is the 1984 panel of the Survey of Income and Program Participation, a large sample of individuals followed over the 1983-1986 period. SIPP conducted nine interviews with these individuals at intervals of every four months, each time inquiring about activities over the previous four calendar months. Each interview consisted of a core questionnaire, which remained relatively constant from one time to the next, plus a topical module which varied across interviews. This paper focuses on mobility between the fourth and seventh interviews, since in only these two interviews was information about pensions collected in the topical modules. For all individuals in the survey, the fourth interview covered a period in 1984 and the seventh covered a period in 1985. Some supplementary information from the third, fifth and sixth interviews is also utilized, as indicated below.

The sample includes all males in the SIPP who completed the fourth and seventh interviews, were 31 to 50 years old at the time of the fourth interview, and who at the beginning of the period covered by the fourth interview were employed at least 30 hours per week in private sector, non-agricultural firms. The age range is chosen to eliminate both the initial job shopping and the final retirement phases of employment from the analysis, and the analysis is confined to males in order to avoid the complicating effects of career interruptions. Mobility is considered to have occurred for an individual if a separation occurs from the initial job

and a new job is started by the beginning of the period covered by the seventh interview, one year later. Construction of the mobility variable, which must be done with some care for the SIPP data, is described in Appendix D.

The first two panels of Table 1 present some rather striking results on the relation among pensions, mobility and wages. First, individuals initially without pensions are over three times more likely (19.5% vs. 6.1%) to move from the 1984 job than are individuals without pensions. Stayers, both with and without pensions initially, experience small wage gains over the one year period, but the experience of movers differs dramatically according to initial pension status. Movers from non-pension jobs gained an average of 6.6% in wages, while movers from pension jobs lost an average of 6.2%. The differential experience of the two groups is even wider when pensions in the new jobs are considered. 13.8% of movers from non-pension jobs gained pensions in their new jobs, while 64.2% of movers from pension jobs lost pensions in the move.[2]

These results indicate that, for movers from non-pension jobs, the wage difference between the initial job and the next best opportunity (as judged on an ex post basis) was about 13 percentage points greater than for movers from pension jobs. But what about the potential wage change of a typical non-pension worker (including those who stayed) relative to the potential change of a typical pension worker? There are two effects, working in opposite directions, which may affect the measured differential between non-pension and pension movers relative to the differential between typical non-pension and pension workers. On the one hand, the pension movers include a higher proportion of involuntary movers. This would tend to depress the average wage change of that group and cause the measured differential to overstate the differential between potential wage changes

of typical pension and non-pension workers. On the other hand, since there are very few voluntary pension movers, one would expect these individuals to be relatively higher in the distribution of potential wage changes. This effect would increase the average measured wage changes among pension movers and cause the measured differential between non-pension and pension movers to understate the differential for typical workers.

Rough calculations, presented in Appendix A, suggest that under stylized but plausible assumptions, these two effects are approximately offsetting.[3] If so, the fact that non-pension movers had wage changes about 13 percentage points better than pension movers would indicate that non-pension workers in general have, relative to their current jobs, better alternative potential wages than do pension workers. Results from the Panel Study of Income Dynamics, presented later in the paper, corroborate the finding that, relative to their current jobs, non-pension workers have better alternatives.

The remainder of Table 1 separates the results for pension covered workers according to whether the coverage was by defined benefit or defined contribution plans. Because the SIPP question sequence on plan type is atypical, two sets of results are included for defined contribution plans. Respondents were first asked: "Is ...'s (basic) retirement plan a profit sharing plan?" If they responded no, they were then asked: "Are the retirement benefits of ...'s (basic) pension plan determined by years of service and pay, or by the amount of contributions to the plan?" In the first set of defined contribution results, respondents were classified as having defined contribution plans if they answered yes to the first quenstion or chose the second alternative of the second question. However, this procedure results in 35% of the plans being classified as defined

contribution, which appears to be an overstatement of the frequency of defined contribution plans and raises question whether this group may be contaminated with some defined benefit plans. To address this concern, a second set of defined contribution results is limited to only those respondents who had non-profit sharing defined contribution plans (i.e., those who responded no to the first question and chose the second alternative to the second question). These plans comprise only about 10% of the total, and hence should be relatively uncontaminated by misclassified defined benefit plans.

The most important aspect of these results is that the mobility rates among pension covered workers are only about a third of the rate for non-pension workers, regardless of the type of pension. Workers with defined contribution plans are slightly more mobile than workers with defined benefit plans (6.2% or 6.9% vs. 6.0%), but the differences are not significant. In terms of wages, the patterns of workers covered by defined benefit and non-profit sharing defined contribution plans are very similar, with movers suffering around a 10% wage loss in both cases. For workers under profit sharing plans, the pattern is slightly different. Movers from these plans appear to come from lower in the wage distribution and do not suffer any wage loss in their new jobs. However, this group has the lowest mobility rate of all (5.9%), indicating that only a small number of workers from this group found better alternative jobs.

Table 2 indicates the relative sizes of the pension backloading, the value of the pension, and the total compensation gap between pension and non-pension covered workers. The compensation figures in this table are calculated as the average discounted per hour compensation between the survey date (1984) and the date the individual expects to retire. In cases where the expected retirement date is unavailable (which includes all

workers under 40), the calculation is to age 62. The wage path for this calculation is constructed by starting at the wage on the survey date and projecting it forward using the tenure and experience coefficients from estimated wage equations which are reported in Appendix Table C1. Pension compensation each year is calculated as the difference in pension values between leaving the job that year and leaving the next year, with both values discounted to the first year. Pension values are calculated from detailed pension descriptions in the 1983 Survey of Consumer Finance, which are matched on the basis of three-digit industry, broad occupation group (blue collar, white collar, or management), union status, and type of employer (private or public).[4,5] Further descriptions of the pension calculations are contained in Appendix D.

In Table 2, means of these average hourly projected compensation figures are calculated for workers in pension and non-pension jobs, and for the pension covered workers, including and excluding the pension itself. In addition, for pension covered workers a compensation figure is derived which excludes that part of pension value which is due to backloading. The measure of backloading is a generalization of Ippolito's (1986) "capital loss." This capital loss calculation begins by determining the contribution rate that would be required for a defined contribution plan to achieve the same value as the actual plan at the projected retirement date. Next, the current value of this hypothetical defined contribution plan is calculated. This current value is a measure of how much value the actual plan would have accrued were it not backloaded. The difference between this value and current value of the actual plan is a measure of the backloading loss.

Appendix B demonstrates that this measure of backloading is equal to

Ippolito's calculation of capital loss for the standard defined benefit plan he examines. For the more complicated plans occasionally encountered in the SCF, the appendix argues that this generalized capital loss measure is more appropriate. The value of the backloading loss is expressed in terms of dollars per hour until retirement, since the individual must work until retirement in order to avoid the loss. The appropriate comparison is to cumulative wages until retirement, again expressed in terms of dollars per hour until retirement.

The figures in Table 2 indicate that the value of the backloading is only 2.5% of total projected compensation for pension covered workers. This represents 21% of the value of the pension for workers in this age range and 7% of the gap between average compensation on pension and non-pension jobs. The small size of the backloaded component of compensation does not, by itself, unequivocably translate to a small impact on mobility, since the non-backloaded part of the compensation for pension workers could simply represent the opportunity wage. However, the results in Table 1 suggest that at least some of the gap is a compensation premium, and the figures in Table 2 imply that if the premium is a nontrivial part of the gap, then the backloading component of compensation may be small by comparison.

The magnitude of this backloading loss is consistent with results reported by Allen, Clark and McDermed (1987). For 35 to 44 year olds in the PSID, they report an average capital loss figure of $6,530 in 1975. From Table 2, we find a loss of 37 cents per hour until retirement for 31 to 50 year olds in the SIPP. Multiplied by 2000 hours per year and approximately 20 years until retirement, this works out to a loss of $14,800 in 1983 dollars. Given the increase in overall wage levels between 1975 and 1983, our figures and those of Allen, Clark and McDermed are

relatively close to one another, with both indicating that the average size of the capital loss for pension covered individuals in this age range is approximately 7 months of current wages.

These figures do not appear very sensitive to the interest rates used to evaluate the losses. To illustrate, consider a worker who joins a firm at age 30 and plans to retire at 60, which is typical of pension covered workers in this sample. Suppose his plan pays benefits equal to 1% times years of service times final salary, again typical. Using the assumptions of this study (interest rate of 5.7%, nominal wage growth of 5.7%, and inflation rate of 4.0%), which roughly correspond to the Social Security IIB scenario, the pension capital loss for the worker is equal to 68.5% of his annual wage at age 40. Using an interest rate equal to the 1984-1985 average of 10 year treasury securities and changing inflation accordingly (interest rate of 11.3%, nominal wage growth of 11.3%, and inflation rate of 9.6%), the capital loss is 70.0% of the annual wage at age 40. Both calculations assume that post-retirement benefits are increased by 38% of the inflation rate, consistent with the findings of Allen, Clark and Sumner (1986). Evidently the increase in capital loss due to the greater spread between current and retirement wages in the second case is roughly offset by the increased erosion of post-retirement benefits due to incomplete indexing of those benefits.

III. Mobility Equation Estimates

This section will consider several probit estimates of job changes over the one-year period between the fourth and seventh interviews in the SIPP. As before, a job change is considered to have occurred when the individual leaves the job held at the beginning of the period and takes a job with a different employer. Since the focus of the paper is on the

effect of pension backloading on mobility, a general reduced form of the mobility relation is employed. No presumptions are made as to whether the effects of the remaining explanatory variables are due to match quality effects, asymmetric information, changing demand patterns, or other causes. This allows the examination of the effect of backloading on mobility to proceed without introducing assumptions as to the process generating mobility, assumptions which potentially introduce specification errors if incorrect.

The first column in Table 3 gives the coefficient of the pension coverage variable in a probit equation which also includes variables for personal characteristics (age, education, work experience, marital status, children, years until expected retirement, home ownership, SMSA residence, and race), and job characteristics (industry, occupation, union status, and firm size). Sample statistics for these variables and the full probit estimates from column 1 are reported in Appendix Table C2. All of the job characteristics refer to the initial job. Union status and work experience are taken from questions which pertain to status at the end of the period covered by the third interview, while the other variables pertain to the beginning of the period covered by the fourth interview.

The coefficient of the pension variable is highly significant in this equation. Indeed, a glance at the complete results of the probit in Appendix Table C2 indicates that the pension variable has far and away the most powerful impact on mobility behavior of any of the variables considered. Evaluated at the means, pensions are associated with a 9 percentage point reduction in one-year mobility rates, which is two-thirds of the pension/non-pension mobility differential reported in Table 1.

The second column of Table 3 separates the pension variable according

to whether the pension is defined benefit or defined contribution. To the extent that the effect of pensions on mobility operates through backloading, defined contribution plans should not exhibit an effect since they are not backloaded. In the empirical results, the coefficients of the defined benefit and defined contribution variables are each highly significant and are almost identical in magnitude, and a formal test of the hypothesis that they are equal is not rejected at almost any level of significance.[6] The third column separates the defined contribution variable into profit sharing plans and non-profit sharing plans, as discussed previously. Again, there is little evidence of a strong differential effect of defined benefit and defined contribution plans on mobility. These results are not what we would expect if backloading were an important consideration in determining the differential mobility rates from pension vs. non-pension jobs, and they further reinforce the impression to that effect from the last section.

The final column of Table 3 omits the pension variables and instead includes measures of average hourly compensation until retirement. The log of compensation in the current job ($\ln C_c$) is separated into two parts, one part excluding pension backloading ($\ln C_n$) and the remaining part due to backloading ($\ln C_c - \ln C_n$). With the omission of the highly significant pension variable, this form of the equation should be the most favorable possible in terms of finding an effect of backloading, and the estimates comply. It would appear on the basis of these results that the two components of compensation are both highly significant, but that an additional dollar of backloading is much more potent than is an additional dollar of other compensation.[7]

It is a major contention of this paper, however, that the tremendous effect of backloading in the fourth equation of the table is the result of

a serious misspecification of the equation. The problem is that the total compensation excluding the backloading variable may be the wrong variable to have in the equation. To the extent that this variable represents opportunity costs, then there is no particular reason to suppose that its effect on mobility should be particularly strong. However, any part that represents a compensation premium should have an effect on mobility analogous to the effect of pension backloading and perhaps of comparable size. Since a measure of the compensation premium is omitted from the equation, any effects it may have will be picked up by other correlated variables. If these premia are substantial and are strongly correlated with pensions, as suggested by the evidence in the preceding section, then the effect of omitting the premium could be to bias strongly upward the coefficient of the backloading variable, consistent with the results in Table 3.

To assess whether this is really the case, it is necessary to include in the mobility equation a variable representing the compensation premium, defined as the difference between the total compensation on the 1984 job and the opportunity compensation, rather than just a measure of total compensation. However, this strategy runs into problems because a measure of the compensation premium is available only for individuals who do in fact move to another employer. This kind of systematic lack of observation of a variable is a standard selection problem, and it is to its solution that we turn in the next section.

IV. Mobility, Backloading, and the Compensation Premium.

With the backloading variable and the remainder of the compensation premium entered separately, the mobility equation is

(1) $$M = \alpha_1 (C_c - C_n) + \alpha_2 (C_n - C_a) + X_1 B_1 + \epsilon_1$$

where M is an indicator variable which is positive if the worker changes jobs during the period and negative otherwise. As before, C_c and C_n are the logs of compensation in the current job and the non-backloaded part of compensation in the current job, and C_a is the log of compensation in the alternative job, with all compensation measured in dollars per hour until retirement. The first two terms in the equation are the backloaded and non-backloaded parts of the compensation premium. X_1 is a vector of explanatory variables, and ϵ_1 is a normally distributed error term. As before, X_1 includes all the variables in the previously reported estimates except for the pension variable, again so as to allow the backloading variable to pick up as much of the effect of pensions as possible. With the exception of C_a in the second term, this equation is exactly the same as the equation whose results appear in the fourth column of Table 3.

C_c and C_n are observed for the individuals in the sample, but C_a is observed only for movers. Therefore, it is necessary to specify an equation for C_a

(2) $$C_a = X_2 \beta_2 + \epsilon_2$$

where X_2 is a vector of explanatory variables and ϵ_2 is a normally distributed error term. To allow for the possibility that compensations in the current and alternative jobs are correlated and the possibility that the error terms of either or both may be correlated with the error term in the mobility equation, an equation for C_c is introduced

(3) $$C_c = X_3 \beta_3 + \epsilon_3$$

where X_3 is the same vector of explanatory variables as in X_2 and ϵ_3 is another normally distributed error term. It is assumed that the three error terms in these equations can have a general covariance structure.

In order to estimate the parameters of equation (1), it is necessary first to substitute from equation (2):

$$(1') \qquad M = \alpha_1 (C_c - C_n) + \alpha_2 (C_n - X_2\beta_2) + X_1B_1 + \epsilon_1^*$$

where $\epsilon_1^* = \epsilon_1 + \alpha_2\epsilon_2$. Equations (1'), (2), and (3) are estimated as a set by maximum likelihood. For any set of parameters and observed values of the variables, the fitted values of ϵ_2, ϵ_3, and the deterministic part of M can be calculated. Call this latter quantity I_m. The contribution to the likelihood function for a stayer is $F(-I_m \mid \hat{\epsilon}_2)\, f(\hat{\epsilon}_2)$ and the contribution for a mover is $[1 - F(-I_m \mid \hat{\epsilon}_2, \hat{\epsilon}_3)]\, f(\hat{\epsilon}_2, \hat{\epsilon}_3)$. The likelihood function is simply the product of these contributions, and estimates are obtained by maximizing this function with respect to the α's, the β vectors, and the variance-covariance matrix of the error terms. The maximization employs a modified Newton-Raphson algorithm with the Berndt-Hall-Hall-Hausman algorithm for evaluating the required second derivative matrix.

The results of interest from estimating this system are presented in Table 4. Two versions of the model are estimated, one allowing α_1 and α_2 to be free and the other constraining them to be equal, with complete results for the constrained version reported in Appendix Table C3. As the estimates in column 1 indicate, when these two parameters are allowed to be free, they are estimated to be fairly close in value. The second column reports the estimated value when the two parameters are constrained to be equal. Using the log-likelihood values in the two models, the hypothesis of equality of these two coefficients is not rejected at any reasonable

level of significance. What this means is that once a proper measure of compensation premium is included in the mobility equation, there is no evidence that pension backloading has any greater impact per dollar on mobility than does any other component of the premium.

In order to assess the importance of backloading for mobility, however, it is necessary to consider the magnitude of the backloading as well as the impact per dollar. This is done in Table 5, which presents the results of several simulations using sample members with pensions and the constrained version of the model reported in Table 4. For each individual, the simulations calculate probability of moving as $[1 - F(-I_m \mid \hat{\epsilon}_2, \hat{\epsilon}_3)]$, conditioned by $\hat{\epsilon}_2$ and $\hat{\epsilon}_3$ calculated from the compensation equations when the compensation amounts are available. The percentage figures reported in the table aggregate the probabilities for the individuals in the sample, using the SIPP weights.

The first simulation in the table uses observed compensation in the mobility equation to provide a base simulated mobility rate for comparison. The second row excludes the backloaded part of the compensation premium and simulates the mobility rate as if only the non-backloaded part of the premium were present. Recalling that the basic mobility rates for pension covered and nonpension covered workers were 6.1 percent and 19.5 percent respectively, the comparison between the two rows suggests that backloading accounts for less than one percentage point, or about five percent of the total difference in mobility rates between pension workers and non-pension workers.[8] The third row in the table excludes the pension entirely from the premium. As might be expected on the basis of the relative sizes of pension values and backloading reported in Table 2, the total effect of the pension is substantially larger than the effect of backloading alone, at

almost five percentage points.

The final row in the table reports the effect if the entire compensation premium associated with pension jobs were eliminated. To estimate the value of the premium, the effects of pensions in the two compensation equations are compared. As reported in Appendix Table A3, the coefficient of pensions in the current compensation equation is 0.343, while the corresponding coefficient in the alternative compensation equation is 0.126 (with t-statistics of 17.80 and 0.74, respectively). These estimates imply that pensions are associated with an increase of 0.217 in the difference between log compensations in the current job and the alternative job, which is the compensation premium. The simulation excludes this amount from the premium, with the result that mobility would increase by almost nine percentage points. This is about two-thirds of the total differential between the mobility rates of pension and non-pension workers. In comparison with the much smaller reduction from backloading alone, it suggests that the non-backloaded part of the premium is more responsible for the relatively low mobility rates among pension workers than is the backloading. To put it another way, restructuring pensions so that they were perfectly portable would, to a first-order approximation, increase the mobility of pension covered workers very little.

V. Evidence from the Panel Study on Income Dynamics

A central result of the preceding analysis is that the lower mobility rates of middle aged pension covered workers arises because these workers face worse alternatives, relative to their present jobs, than do workers not covered by pensions. Evidence that pension covered workers do in fact face worse alternatives was presented in Table 1, but that evidence is somewhat open to question because of the inability in the SIPP data to

separate clearly voluntary movers from involuntary movers. In this section, evidence is presented from the Panel Study of Income Dynamics (PSID) that, while not conclusive by itself, corroborates the SIPP evidence from Table 1.

In 1984, the PSID asked whether respondents were covered by a pension in their current jobs. This makes it possible to analyze mobility among pension and non-pension covered workers from 1984 to 1987, the most recent year for which the PSID data are available. Further, the PSID inquires about reasons for leaving jobs, so that it is possible to separate job movers according to whether the change was voluntary or involuntary.

Table 6 presents descriptive statistics pertaining to workers in pension and non-pension jobs in 1984. The sample inclusion criteria and definitions are the same as with the SIPP results in Table 1. Similar to the SIPP data, PSID mobility from non-pension jobs is two and a half times as large as mobility from pension jobs. Also as with the SIPP data, the geometric mean wage of movers from non-pension jobs stays about the same after the move, while the wage of movers from pension jobs falls. More tellingly, the geometric mean wage of involuntary movers from non-pension jobs falls about 6.3% [$e^{-0.065}$-1], while the corresponding wage of involuntary movers from pension jobs falls by 14.0%, about 8 percentage points more. Since involuntary movers are less likely to be subject to choice-based selection problems, this is somewhat stronger evidence that pension covered workers face worse alternatives than do non-pension workers.[9]

Since these results are based on relatively small numbers of observations of the four kinds of movers (pension and non-pension covered voluntary and involuntary movers), it is important to confirm that the results are not driven by one or two extreme outliers. For the 123 movers,

the absolute values of $\Delta \ln W$ are distributed as follows:

Range of $\lvert\Delta \ln W\rvert$	Number of Observations
0 - 0.25	72
0.25 - 0.50	32
0.50 - 0.75	11
0.75 - 1.00	4
1.00 - 1.25	4

The largest absolute value of $\Delta \ln W$ is 1.13. Further, the four observations in the 1.00-1.25 range are not concentrated in any single group, with one such observation occurring in each group. Of the four observations in the 0.74-1.00 range, two observations are in the non-pension voluntary movers group, and one each are in the non-pension and pension involuntary movers groups.

Overall, then, there is no evidence that these results are driven by extreme outliers, or that the larger values or concentrated in any particular group. However, the distribution of $\Delta \ln W$ does reflect a considerable amount of variation and indicates that the mean values of $\Delta \ln W$ are measured imprecisely. In fact, of the four groups of movers, only for the pension covered involuntary movers is the mean $\Delta \ln W$ significantly different from zero. These results might be taken as less than conclusive on their own, but they do serve to corroborate and further support the evidence previously developed in the SIPP. Both data sets appear to point in the same direction, namely, that workers in pension jobs tend to have less favorable opportunities, relative to their current jobs, than do workers in non-pension jobs.

VI. Summary and Conclusions.

Does a lack of pension portability, resulting from the backloading of

accrual rates under defined benefit plans, contribute importantly to the lower mobility rates observed for workers in pension covered jobs? On the basis of the evidence developed in this study, the answer would appear to be no.

Simple tabulations, both from the Survey of Income and Program Participation and from the Panel Study of Income Dynamics, of the experiences of separated pension covered workers, indicate that they suffer a wage loss on their next jobs. The tabulations from the SIPP indicate that, more often than not, they lose pension coverage as well. Thus, pension covered workers have much more to lose than just the amount of pension backloading. Further calculations suggest that the value of these additional losses, which amount to a compensation premium in the current job, may be several times the value of the backloading loss.

The empirical work suggests that, dollar for dollar, the compensation premium received by pension covered workers relative to compensation in their next best opportunity has about the same effect on mobility as does backloading. Reflecting that the value of the premium is so much larger than the backloading loss, our estimates imply that backloading lowers the mobility rate of pension covered workers by less than one percentage point, while the remaining part of the compensation premium lowers it by about eight percentage points. Since the basic mobility rates for pension covered and nonpension covered workers in our sample are 6.1 percent and 19.5 percent respectively, the backloading accounts for about five percent of the difference in mobility rates between these groups, and the remaining premium accounts for about 60 percent.

An independent piece of evidence provides additional support for thinking that the effect of backloading is relatively minor. In probit

estimates including non-portable defined benefit pensions and portable defined contribution pensions separately, both have roughly the same effect on mobility. This result would certainly not be expected if pension backloading were a major determinant of mobility.

Due to problems of identification, the present study does not explicitly model a third potential explanation (in addition to premia and backloading) about why pension covered workers exhibit low mobility rates. According to that explanation, workers who are inherently less likely to move sort themselves into pension covered jobs (Allen, Clark and McDermed, 1989). The evidence developed here suggests that premia dominate backloading as an explanation of the lower mobility rates. Accordingly, these findings would suggest that any sorting of stayers toward pension covered jobs is in response to a wage premium rather than backloading. Thus our findings do not exclude the possibility that one way that wage premia work to reduce turnover is through sorting. Whatever the role for sorting, it is highly unlikely that initial sorting leads to an understatement of the effects of pension backloading on mobility.

The findings in this paper are consistent with evidence developed in an earlier study, Gustman and Steinmeier (1987), which used retrospective mobility data from the 1983 Survey of Consumer Finances. They confirm the findings from earlier studies that pensions are associated with lower mobility; however, the further inference drawn in these studies, that the reduced mobility is attributable to the backloading of defined benefit pension plans is not consistent with the evidence developed here or in our previous paper. As we have shown, it is a mistake to estimate the effects of backloading by simply including a measure of backloading in a mobility equation. By failing to incorporate an adjustment for the systematically larger difference between current compensation and the opportunity wage for

pension covered workers, the resulting estimates are subject to omitted variable bias. The effect is to overstate the influence of backloading.

The finding that pension backloading is not important in stemming worker turnover, especially in the early decades of attachment, casts doubt on the idea that a central purpose of backloaded pensions is to preserve or recover hiring and training costs. Current pension regulations and contemplated future regulations are not likely to affect productivity by affecting investment in training. Nor does the evidence gathered to date strongly support the existence of some other mechanism by which the pension structure, or governmental policies which regulate pensions, have large effects on productivity (Gustman and Mitchell, 1990).

Nevertheless, there is concern at the Department of Labor that pensions discourage mobility and thereby adversely affect productivity, motivating a search for potential legislative cures. Some fear that workers, because of backloaded pensions, may stay too long with declining firms, worsening the positions of these firms, and similarly, that workers might be reluctant to move to expanding sectors, raising the labor costs of promising enterprises and inhibiting growth. In contrast, our findings suggest that although the common observation that mobility from pension covered jobs is much lower than from nonpension covered jobs is correct, the cause of any reduced mobility is not the pension backloading, at least for prime aged workers.

A partial remedy suggested by some for the losses to mobile workers from pension backloading, and for the potentially adverse impact of pension backloading on mobility and thus efficiency in the labor market, is to require that firms settle obligations under defined benefit plans using some kind of projected wage. For example, The Congressional Budget Office

(1987, pp. 116-117) examines a policy whereby the final average wage used in calculating the pension benefit would be indexed by the rise in the CPI. Our analysis suggests that such legislation is not likely to have a major effect on the mobility behavior of prime aged pension covered workers.

None of the foregoing denies that multiple job changes will lower pension incomes after retirement. Indeed, it is well known that frequent job changes will adversely affect the pensions of those with defined benefit plans. However, pension losses incurred in separating from covered jobs are generally dwarfed by the higher salaries available over the duration of those jobs. Moreover, the evidence that rents or quasi-rents are paid to those holding pension covered jobs raises questions about whether equity considerations justify governmental efforts to insure that workers subject to layoff or plan termination receive more than the accrued pension liability. Although one can argue about the relative merits of settling on the basis of accrued or projected liability, we do not know enough about the mechanism generating compensation and any related sources of market failure to justify governmental action.

Footnotes

1. The expression "backloading of benefits" is sometimes used to refer to a weighting scheme whereby the pension formula explicitly gives greater weight to later than to earlier years of employment. In the context of this paper, backloading refers to the positive slope of the accrual profile that results even when all years of work receive equal weight in the pension benefit formula.

2. These pension figures for the new job include only individuals who report themselves as participating in a pension plan at the time of the 1985 survey. Including those who are not participating because they "have not worked for the employer long enough" raises the percentage of movers from non-pension jobs who gained pensions in their new jobs to 20.6% and reduces the percentage of movers from pension jobs who lost their pensions in the move to 55.8%.

3. Separate results from quits and layoffs are not presented because with SIPP data, the cause of separation can be determined for less than 40% of the movers, and the resulting subset of movers appears to be highly unrepresentative. For example, the average wage change is a 6.6% gain among all nonpension movers and a 6.2% loss among all pension movers, but among movers for whom a reason for job change can be determined, the two figures are a 31.5% gain and a 13.2% gain, respectively. The discrepancy is so wide that we defer an analysis of quits and layoffs separately to the PSID data, for which this kind of problem is avoided.

4. Note that plan type (defined benefit or defined contribution) is not used as part of the basis for matching. As previously discussed, SIPP individuals appear to have overstated the prevalence of defined

contribution plans. As a result, including plan type as one of the criteria for matching would introduce substantial noise into the pension value calculations.

5. Given that Survey of Consumer Finances provides by far the most complete pension descriptions, it is inviting to use the 1983 and 1986 panels of the SCF in a mobility study. Unfortunately, the 1986 survey was a reduced budget telephone interview, and attrition among workers not covered by pensions in 1983 is particularly severe for those whose observed characteristics (lack of home ownership, low education, low experience, etc.) are associated with increased job mobility. Perhaps as a result of selective attrition, and contrary to findings on virtually all previous studies, multivariate analysis with SCF panel data fails to find a significant impact of pensions on mobility, making moot the use of these data to analyze the reasons for lower mobility from pension covered jobs. For further discussion, see Gustman and Steinmeier (1990).

6. This result, and the estimated parameter values in columns 1-3 of Table 3, remain unaffected if either the wage on the 1984 job, or a measure of the average hourly wage from the current period until retirement, is included as an additional independent variable.

7. These results are similar to those of a similar equation in Allen, Clark and McDermed (1987). For a Panel Study on Income Dynamics sample of males below age 55, they found approximately equal coefficients for hourly wages and pension capital losses measured in $1000's. Those results imply that an increase of $1000 in pension capital loss has about the same effect on mobility as a $1 per hour increase in wages, which has a present value of $20,000-$30,000 in the 15-20 year period until retirement. Put another

way, the impact of $1 of capital loss is about 20-30 times the impact of $1 in wages, which is about the same ratio as the two coefficients in the last column of Table 3.

8. The impact of backloading is somewhat larger for older workers. When the same exercise is done for the 436 pension covered workers in the 45-50 age range, excluding backloading raises the mobility rate from 4.44% to 5.40%, almost a full percentage point. This is half again as large as the effect for the full age range, but still small relative to the gap in mobility rates between pension and non-pension covered workers.

9. See, however, Gibbons and Katz, 1989, who do find some evidence of selection in layoffs. The same result arises if, instead of using the change in the geometric means, the mean percentage change in wages is used. These mean figures are generally higher, since arithmetic means exceed geometric means, but if anything the discrepancy in alternate opportunities is greater. Using mean percentage changes, involuntary movers from non-pension jobs gain 4.1% in wages, while involuntary movers from pension jobs lose 9.1%, a 13 percentage point differential. For voluntary movers, the mean percentage changes are gains of 7.9% for movers from non-pension jobs and 1.1% from pension jobs.

Table 1
Wages, Pensions and Mobility

		Stayers	Movers
No Pension in 1984 Job			
Percent Movers	19.5% (998)		
Mean Wage in 1984		$8.71 (654)	$7.72 (133)
Mean Wage in 1985		$8.86 (654)	$8.23 (133)
Percent with 1985 Pension			13.8% (160)
Pension in 1984 Job			
Percent Movers	6.1% (1753)		
Mean Wage in 1984		$11.87 (1490)	$11.22 (88)
Mean Wage in 1985		$11.89 (1490)	$10.52 (88)
Percent with 1985 Pension			35.8% (107)
Defined Benefit Pension in 1984 Job			
Percent Movers	6.0% (1126)		
Mean Wage in 1984		$11.95 (960)	$11.94 (58)
Mean Wage in 1985		$11.94 (960)	$10.81 (58)
Percent with 1985 Pension			42.9% (63)
Defined Contribution Pension in 1984 Job (Including Profit Sharing Plans)			
Percent Movers	6.2% (627)		
Mean Wage in 1984		$11.73 (530)	$9.94 (30)
Mean Wage in 1985		$11.82 (530)	$9.96 (30)
Percent with 1985 Pension			21.9% (32)
Defined Contribution Pension in 1984 Job (Excluding Profit Sharing Plans)			
Percent Movers	6.9% (174)		
Mean Wage in 1984		$11.53 (149)	$12.03 (8)
Mean Wage in 1985		$11.44 (149)	$10.70 (8)
Percent with 1985 Pension			22.2% (9)

Figures in parentheses are numbers of observations. Wages are indexed to 1984 dollars by the Index of Average Hourly Earnings (1989 ERP, Table B-44) and are included in the means only if valid wage observations are available in both years. Means are geometric means (i.e., antilogs of mean log wages). Wages less than $1 or greater than $50 are excluded from the analysis.

Table 2
Decomposition of Total Compensation in 1984 Job

Mean Compensation:	No Pension in 1984 Job	Pension in 1984 Job
Total		$14.92
Excluding Backloading		$14.55
Salary Only	$9.50	$13.19
Number of Observations	867	1678

Compensation figures are average hourly figures between 1984 and the expected date of retirement. Means are geometric means.

Table 3
Mobility Equations

	(1)	(2)	(3)	(4)
Pension Coverage	-0.527 (6.50) [-0.090]			
Pension Coverage by Defined Benefit Plan		-0.538 (5.87) [-0.092]	-0.538 (5.86) [-0.092]	
Pension Coverage by Defined Contribution Plan		-0.511 (4.93) [-0.087]		
Pension Coverage by Profit-Sharing Defined Contribution Plan			-0.529 (4.51) [-0.090]	
Pension Coverage by Non-Profit-Sharing Defined Contribution Plan			-0.467 (2.70) [-0.080]	
Log of Hourly Compensation, Excluding Backloading ($\ln C_n$)				-0.202 (2.83) [-0.034]
Log of Hourly Compensation, Backloading Component Only ($\ln C_c - \ln C_n$)				-4.749 (3.28) [-0.809]
Log-likelihood	-748.34	-748.31	-748.25	-747.74
Number of Observations	2545	2545	2545	2545

Dependent variable is job separation. Numbers in parentheses are asymptotic t-statistics. Numbers in brackets are marginal responses of the probability of job separation. Additional explanatory variables are age, education, experience, years until expected retirement, and binary variables for manufacturing, white collar, management, union status, firm size over 100, race, marital status, children under 18, home ownership, and residence in an SMSA. Complete results for the first equation are in Appendix Table A2.

Table 4
Mobility Equations with Compensation Premium Variables

	Coefficients Unconstrained	Coefficients Constrained
	(1)	(2)
Hourly Compensation Premium, Excluding Backloading	-1.783 (2.48) [-0.304]	
Hourly Compensation Premium, Backloading Component Only	-2.079 (1.68) [-0.354]	
Hourly Compensation Premium, Including Backloading		-1.724 (2.58) [-0.294]
Log-likelihood	-2304.45	-2304.57
Number of Observation	2545	2545

See notes to Table 3. Complete results for the second equation are in Appendix Table A3.

Table 5
Effects of Pensions on Mobility Rates
for Those with Pensions in Their 1984 Jobs

Simulated Mobility Rates:	
With Observed Compensation	5.71%
Excluding Backloading Component of Pensions	6.39%
Excluding Pension Compensation Entirely	10.38%
Excluding Entire Compensation Premium, As Inferred from Compensation Equations	14.39%
Number of Observations	1768

Table 6
Descriptive Statistics from 1984-87 PSID

No Pension in 1984 Job

Percent Movers	38.0% (258)			
Percent Voluntary Movers			64.3 (98)	
	Stayers	**Movers**	**Voluntary Movers**	**Involuntary Movers**
Geometric Mean Wages:				
In 1984	$10.51	$8.79	$ 9.83	$7.26
In 1987	11.47	8.78	10.18	6.80
Mean Δ ln(Wage)	0.088	-0.002	0.035	-0.065
	(107)	(71)	(45)	(26)

Pension in 1984 Job

Percent Movers	15.4% (397)			
Percent Voluntary Movers			60.7 (61)	
	Stayers	**Movers**	**Voluntary Movers**	**Involuntary Movers**
Geometric Mean Wages:				
In 1984	$12.76	$12.26	$13.60	$10.64
In 1987	13.09	11.19	12.97	9.15
Mean Δ ln(Wage)	0.026	-0.091	-0.047	-0.151
	(270)	(52)	(30)	(22)

Figures in parentheses are numbers of observations. Wages are indexed to 1984 dollars by the Index of Average Hourly Earnings (1989 ERP, Table B-44) and are included in the means only if valid wage observations are available in both years. Geometric mean wages are antilogs of mean log wages. Wages less than $1 or greater than $50 are excluded from the analysis.

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Appendix A

The Relation Between Observed Wage Changes of Job Movers and Potential Wage Changes of Typical Workers

Let the distribution of potential (log) wage gains for a group of workers be distributed normally with mean μ and variance σ^2. Suppose that layoffs come randomly from the distribution, and that quits come from the high part of the remainder of the distribution. The situation is illustrated in Figure 1, where layoffs (L) are subtracted proportionately from the entire distribution and quits (Q) occupy the right part of the remainder. We observe only the average wage changes of workers who separate (S), which is the sum of quits and layoffs. To find the mean of these observations, evaluate

$$\begin{aligned} E(\Delta w \mid S) &= (L/S)\ \mu + (Q/S)\ E(\Delta w \mid Q) \\ &= (L/S)\ \mu + (Q/S)\ (m + \sigma f(\Delta w_q) / [1-F(\Delta w_q)]) \\ &= \mu + [(1-L)/S]\ f(\Delta w_q)\ \sigma \end{aligned}$$

In the right hand side of the top equation, the first term is the fraction of separations that are layoffs times the mean wage change of layoffs, and the second term is the the fraction who quit times the mean wage of quitters. Δw_q is the potential wage change above which an individual will quit, and the expected value of that part of the distribution above Δw_q is given by the standard formula $E(\Delta w \mid Q) = \mu + \sigma f(\Delta w_q) / [1-F(\Delta w_q)]$. The fraction of the entire distribution above Δw_q is $Q/(1-L)$, or alternatively it may we written as $1-F(\Delta w_q)$.

The mean of the observed wage changes is above the mean of the potential wage changes for the entire group by the amount

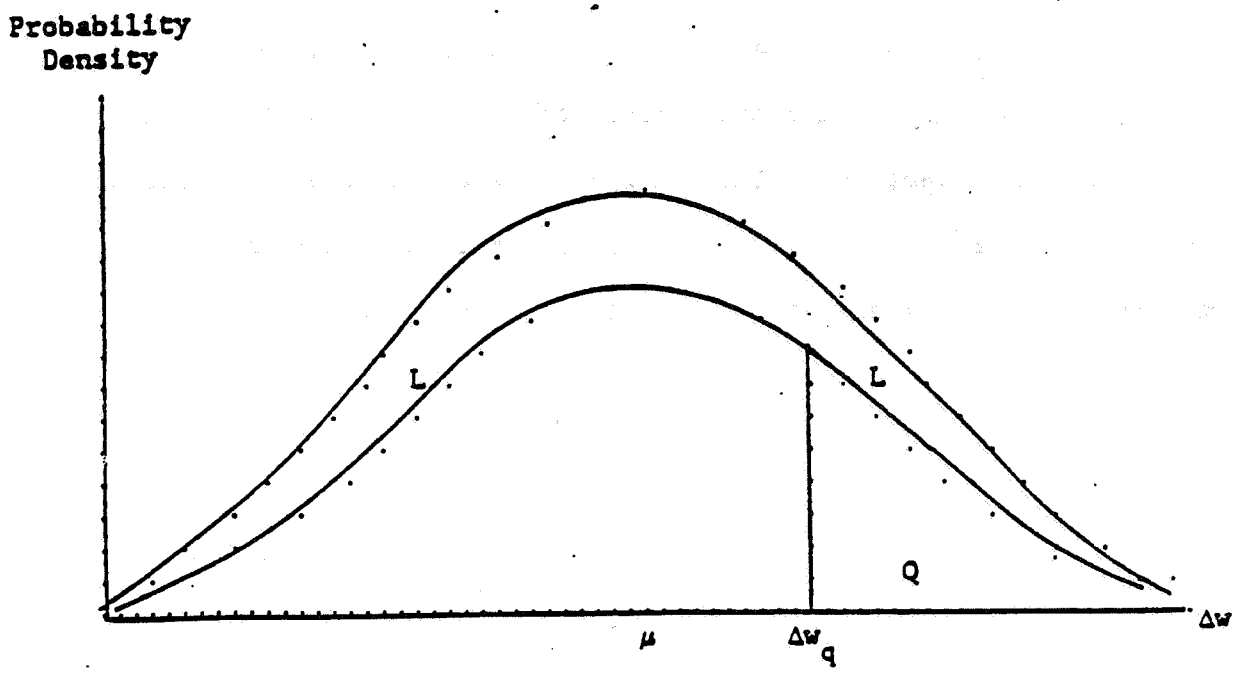
$$B = E(\Delta w \mid S) - \mu = [(1-L)/S]\ f(\Delta w_q)\ \sigma$$

For the non-pension group, $S = 0.195$ from Table 1. Incomplete information from the sixth interview of SIPP suggests that 59.0% of non-pension movers are voluntary movers, implying $Q = 0.115$ and $L = 0.080$.[1] Δw_q is hence 1.15 standard deviations above the mean, and the value of B is calculated as $0.972\ \sigma$, meaning that the mean of the observed wage changes of non-pension movers is 0.972 standard deviations above the potential wage change of a typical non-pension worker. A similar exercise for pension movers, of whom 43.2% appear to be voluntary movers, indicates that the mean of observed changes for pension movers is 0.980 standard deviations above the potential wage change of a typical pension worker. These results suggest that the observed wage gains for movers are above the potential wage gains to a typical worker by about the same amount for both pension and non-pension workers. Since non-pension movers fare about 13 percentage points better than pension movers, these calculations imply that the typical non-pension worker should face a potential wage change that is about 13 percentage points better than the potential wage change of a typical pension worker.

Footnote to Appendix A

1. Distinguishing quits from layoffs can be done only for part of the sample and is problematic even for these individuals, as described in Appendix D. Cause of separation statistics come from the topical module in the sixth interview. The Census Bureau regards these data as preliminary and requires the following statement as regards results using this topical module: "This report uses data from the Survey of Income and Program Participation 1984 Panel (Preliminary) Wave 6 Core plus Topical Module File, which was released by the Census Bureau for research to improve understanding and analysis of SIPP data. The data on the file are preliminary and should be analyzed and interpreted with caution. At the time the file was created, the Census Bureau was still exploring certain unresolved technical and methodological issues associated with the creation of this data set. The Census Bureau does not approve or endorse the use of these data for official estimates."

Figure A1
Distribution of Potential Wage Gains



Appendix B

Capital Loss Calculations

Consider a simple defined benefit plan which calculates benefits by multiplying a generosity factor times years of service times final salary. For such a pension, Ippolito defines capital loss as the loss in value of the pension if the current wage is used in the formula rather than the wage at retirement, holding years of service at its current value:

$$L = g\, T_t\, [W_R - W_t] \int_R^\infty S_{s,t}\, e^{-r(s-t)}\, ds$$

where g is the generosity factor of the plan, T is tenure, W is the wage, t is the current age, $S_{s,t}$ is the conditional survival probability to age s from age t, and R is the retirement age.

If wages grow at the same rate as the interest rate, this expression can be manipulated as follows:

$$L = g\, T_t\, W_R \int_R^\infty S_{s,t}\, e^{-r(s-t)}\, ds - g\, T_t\, W_t \int_R^\infty S_{s,t}\, e^{-r(s-t)}\, ds$$

$$= g^*\, T_t\, W_t - g\, T_t\, W_t \int_R^\infty S_{s,t}\, e^{-r(s-t)}\, ds$$

$$= g^* \int_H^t W_s\, e^{r(t-s)} ds - g\, T_t\, W_t \int_R^\infty S_{s,t}\, e^{-r(s-t)} ds$$

where $$g^* = g\, e^{r(R-t)} \int_R^\infty S_{s,t}\, e^{-r(s-t)}\, ds$$

and H is the age at hire. The first term of L in the last line is the current value of a defined contribution plan with a contribution rate g^*, and the second term is the present value of the defined benefit pension. Note that g^* satisfies the relationship

$$g^* \int_H^R W_s \, e^{r(t-s)} ds \;=\; g \, T_R \, W_R \int_R^{\infty} S_{s,t} \, e^{-r(s-t)} ds$$

Since the left side of this equation is the value at retirement of the defined contribution plan, discounted to age t, and the right side is the corresponding value of the defined benefit plan, g^* is the contribution rate which makes these two values equal. Thus, L is the measure of backloading used in this study, which is equal to Ippolito's definition of capital loss for a pension of this type.

This approach of comparing the current values of a defined benefit plan with that of a comparably valued (at retirement) defined contribution plan can be extended to more complicated pensions as well. For example, a pension may calculate benefits as equal to final salary times 1% times years of service up to 20 years plus 1.5% times years of service past 20 years. In this kind of pension, simply plugging the wage at retirement into the formula yields an understatement of the extent of backloading. Alternatively, many pensions make a more favorable formula available to individuals who work with the firm until the retirement. Again, simply plugging the retirement wage into the currently applicable formula understates backloading for individuals below the retirement age. In both these cases, comparing the current value of the pension with the value of a defined contribution pension which will reach the same value at retirement yields a value which better reflects the backloading due to features of the plan other than the use of current wages in the pension formula.

The pension values (inclusive of backloading losses) used in this study are also related to the pension "option values" used by Lazear and Moore (1988). Lazear and Moore effectively define the option value of a pension at time t as

$$P(R^*)/(1+r)^{R^*-t} - P(t)$$

where $P(t_o)$ is the present value of future benefits should the worker leave at t_o, R^* is the retirement date which maximizes the above expression, and r is the discount rate. The option value is simply the difference in pension value at the optimal retirement date, discounted back to the current date, and its current value. It is important because the value of many pensions jumps a sizable amount when eligibility for early retirement is reached, and part of the value of current work is the opportunity to continue work and realize this increment in pension value. The option value is essentially the same as the pension part of projected compensation used in this study, except that the measure here uses the age at which the individual indicates that he intends to retire rather than the age which maximizes the above expression. The notion behind this is that the option has value only to the extent that the individual intends to exercise it.

Appendix C

Table C1
Wage Equations

	Nonpension Jobs	Pension Jobs
Tenure & experience		
Experience (x 0.01)	0.910 (0.85)	0.103 (0.14)
Experience squared (x 0.001)	-0.179 (1.41)	-0.044 (0.54)
Experience * education (x0.001)	0.503 (0.70)	0.433 (0.94)
Tenure (x 0.01)	3.744 (2.43)	0.147 (0.18)
Tenure squared (x 0.001)	-0.649 (2.09)	-0.368 (2.55)
Tenure * education (x 0.001)	-1.278 (1.23)	1.318 (2.62)
Personal characteristics		
Education (x 0.1)	-0.434 (1.36)	-0.261 (1.33)
Education squared (x 0.01)	0.494 (4.50)	0.245 (3.60)
* Married	0.090 (2.26)	0.066 (2.45)
* Poor health	0.024 (0.34)	-0.194 (4.48)
* Black	-0.168 (2.60)	-0.187 (4.86)
Job characteristics		
* Union	0.173 (3.29)	0.001 (0.05)
* Firm size > 100	0.023 (0.68)	0.060 (2.39)
Industry:		
* Mining	0.039 (0.24)	0.078 (1.03)
* Construction	0.048 (0.76)	0.307 (7.16)
* Nondurable manufacturing	0.009 (0.15)	-0.068 (2.44)
* Transportation, communication & public utilities	0.000 (0.00)	0.037 (1.22)
* Wholesale trade	-0.038 (0.57)	-0.053 (1.39)
* Retail trade	-0.238 (4.31)	-0.206 (5.75)
* Finance, insurance & real estate	0.062 (0.79)	0.055 (1.26)
* Services	-0.165 (3.13)	-0.137 (3.95)
Region		
* North central	-0.041 (0.86)	-0.040 (1.62)
* South	-0.044 (0.99)	-0.026 (1.01)
* West	0.057 (1.13)	0.036 (1.25)
Constant	1.533 (5.74)	2.045 (11.69)
R^2	0.2619	0.2617
Number of observations	870	1677

Numbers in parentheses are t-statistics. Variables indicated by an asterisk are binary variables.

Table C2
Sample Statistics and Basic
Probit Estimates of Mobility Equation

	Sample Statistics		Probit Estimates	
Separation from 1984 Job	9.6%			
Constant			-2.121	(1.97)
* Pension coverage	65.9%		-0.527	(6.50)
* Manufacturing	39.8%		-0.055	(0.71)
* White Collar	11.0%		0.000	(0.00)
* Management/Professional	42.3%		-0.093	(0.96)
* Union Status	27.2%		-0.013	(0.13)
* Firm Size > 100	68.5%		-0.079	(0.98)
Years of Experience	19.7	(6.7)	-0.010	(1.21)
Years Until Retirement	23.1	(6.0)	0.025	(1.44)
Age	39.3	(5.6)	0.022	(1.22)
Education	13.1	(2.9)	0.003	(0.17)
* Race (Black)	6.6%		-0.393	(2.15)
* Married	83.7%		0.076	(0.64)
* Children Under 18	65.3%		0.079	(0.83)
* Home Ownership	77.3%		-0.273	(3.25)
* SMSA	54.7%		0.075	(0.99)
Log-likelihood			-748.34	
Number of Observations			2545	

Numbers in parentheses are standard errors (for the sample statistics) and asymptotic t-statistics (for the probit estimates). Dependent variable for the probit estimates is job separation. Variables indicated by an asterisk are binary variables.

Table C3
Full Model Estimates

	Mobility Equation	1984 Compensation Equation	Alternative Compensation Equation
Constant	-0.514 (0.48)	1.430 (14.80)	0.939 (1.43)
Compensation Premium	-1.724 (2.58)		
* Pension coverage		0.343 (17.80)	0.126 (0.74)
* Manufacturing	0.024 (0.17)	0.029 (1.45)	-0.006 (0.09)
* White Collar	0.143 (0.58)	0.073 (2.42)	-0.008 (0.07)
* Management/Professional	0.063 (0.37)	0.233 (10.28)	0.157 (1.57)
* Union Status	0.133 (0.63)	0.117 (4.79)	0.034 (0.32)
* Firm Size > 100	0.107 (0.65)	0.058 (3.03)	-0.038 (0.43)
Years of Experience	-0.010 (0.75)	0.000 (0.17)	0.002 (0.26)
Years Until Retirement	-0.006 (0.32)	-0.003 (1.37)	0.010 (1.03)
Age	0.013 (0.91)		
Education	-0.014 (0.45)	0.058 (16.66)	0.067 (4.19)
* Race (Black)	0.348 (0.63)	-0.190 (4.88)	-0.551 (1.85)
* Married	0.054 (0.61)		
* Children Under 18	0.053 (0.75)		
* Home Ownership	-0.193 (2.06)		
* SMSA	-0.144 (0.98)	0.061 (3.40)	0.177 (2.43)
Standard Deviation of Error terms		0.425 (92.53)	0.477 (7.62)
Correlation Matrix of Error Terms	1.000	0.707 (2.40) 1.000	0.409 (1.03) 0.355 (4.33) 1.000
Log-likelihood		-2304.57	
Number of Observations		2545	

Numbers in parentheses are asymptotic t-statistics. See text for descriptions of the dependent variables. Variables indicated by an asterisk are binary variables.

Appendix D

Data Derivations in the SIPP

This appendix describes the construction of the mobility variable, the pension compensation variable, and the cause of separation variable. The derivations are as follows:

Mobility. The interviewers were asked to assign a different employer number for each distinct employer throughout the survey. If the same employer appeared in multiple interviews, it was to be given the same employer number. With this coding, mobility is indicated if the employer numbers in the fourth and seventh interviews were different. However, the seventh interview topical module also inquired whether the individual had worked for the same employer during the months covered by the fourth interview. In many cases respondents answered yes to this question even though the employer numbers did not match, and in other cases respondents answered no even though a match occurred. Most respondents who answered yes to the question indicated continuous employment in the fourth, fifth and sixth interviews, while for many who answered no there is some indication in the intervening interviews of a break in employment. Since the employment patterns in the intervening interviews appear more often to be consistent with the respondent's direct answer than with the match or non-match of employer numbers, preference is given to the respondent's answer when constructing the mobility variable.

Thus, mobility is considered to have occurred if any of the following conditions are met: (i) The individual reported in the seventh survey that he was not employed by the same firm during the fourth survey. (ii) The job numbers do not match and, if the individual reported in the seventh survey that he had held the job during the fourth survey, no job in the

fourth survey was held during the entire four-month period. (iii) No job information is available for the seventh survey, but during the periods covered by the fourth, fifth and sixth surveys the individual clearly stopped working one job and started another.

Pension Compensation. Pension accruals are calculated for individuals who indicated that they were covered by a pension in a job. For any such job, the major occupation group (blue collar, white collar, or management), 3-digit industry, union status, and type of employer (public or private) are determined. The 1983 Survey of Consumer Finance (SCF) is then searched for an individual with a pension covered job matching these characteristics, and the corresponding pension record is drawn from the SCF pension provider file. These records, with over 18,000 characters of data each, contain detailed information on the pension in question. Values of the SCF pension are calculated for 1984 and for the expected date of retirement, using the wage path and date of hire corresponding to the SIPP worker.

This procedure in effect imputes pensions to a SIPP worker based on actual detailed pe.. ..ns from an SCF individual with the same type of job as regards industry, occupation, union status and type of employer. It thus allows the pension calculations to take account of the wide differences in plans across these characteristics. If there is more than one SCF individual with matching job characteristics, the values are calculated as an average, weighted by the SCF relative weights. If there are no SCF individuals with exact matching job characteristics, the categories are widened first to two-digit, and then to one-digit industries. When the category is wide enough that matching characteristics appear in the SCF, the previous procedure is applied.

Cause of Separation.

SIPP inquired about the cause of separation only in the topical module of the sixth interview, which was conducted in the middle of 1985. Unlike most of the questions in the SIPP, which pertain to a previous four month period, the questions about cause of separation pertain to job separations that occurred in calendar year 1984. No information is included to link these responses to specific jobs in the earlier interviews, creating matching problems if more than one separation was listed.

The following strategy is used to assign the cause of separation for individuals who moved. First, the fourth and fifth interviews are examined for evidence that movers left the original job during calendar 1984. For these movers, the sixth interview is examined. If all separations reported in that interview were of one type (voluntary or involuntary), the separation of interest is presumed to be of that type. If both types of separation are reported and there was more than one involuntary separation, the cause of the separation is indeterminate. If exactly one involuntary separation occurred, it is assumed that this separation came first. The total number of 1984 separations reported in the fourth and fifth interviews is counted and compared to the total number of voluntary separations reported in the topical module of the sixth interview. The separation from the job at the beginning of the fourth interview is considered to be voluntary, involuntary, or indeterminate according to whether the number of 1984 separations reported in the fourth and fifth interviews is less than or equal to, one more than, or two or more than the number of voluntary separations reported in the sixth interview.

Abstract

The evidence presented in this paper casts doubt on the proposition that pension backloading is responsible for the low job mobility rates observed for pension covered workers. It corroborates earlier findings by the authors, based on different data, that pension covered jobs offer higher levels of compensation than workers can obtain elsewhere, and it is this compensation premium, rather than non-portability, that accounts for lower turnover among pension covered workers. This evidence is further bolstered by the finding that defined contribution plans, which are not backloaded, and defined benefit plans, bear similar negative relations to mobility.

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