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## The Influence of Pensions on Behavior: How Much Do We Really Know?

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Economists have developed models to explain the impact of pensions and Social Security on various outcomes, such as retirement, worker turnover, and saving. However, some recent research has raised questions about these conventional models. This issue of *Research Dialogue* summarizes findings from our ongoing research on pensions and Social Security. Using data from the new longitudinal Health and Retirement Study that reports both the respondents' own knowledge about their pensions and the actual provisions of their pension plans, our research emphasizes how well the conventional model does in describing behavior, answers some of the questions raised by others, and raises some new questions. We also discuss the implications of our findings for researchers and policy makers.

### in this issue

Introduction .....	p 2
Outstanding Issues .....	p 2
Summary Findings of Our Research .....	p 3
Implications for Research and Policy .....	p 10

## >>> INTRODUCTION

The widely used life cycle model is based on the notion that individuals are forward-looking and well informed when making decisions about retirement and saving. In other words, when making these economic decisions, people take account of the effects such decisions may have on their standard of living while at work and in retirement, including any effect on their income from pensions and Social Security. Economists have accumulated a great deal of evidence that supports this conventional view. For many purposes, this model has provided accurate predictions and useful policy analysis.

Recent research has, however, raised questions about the conventional view and whether we fully understand how pensions affect saving, retirement, worker mobility, and other outcomes. As economists we are interested in having a correct understanding of individual behavior. Moreover, these questions must be resolved if we are to determine the need for and likely effects of commonly advocated pension and Social Security reforms. Many would like to encourage greater retirement planning, retirement saving, and employee education about pensions and Social Security. A widely discussed proposal would establish individual Social Security accounts. Another suggestion is to delay the earliest eligibility age for Social Security benefits. In the cases of these and related policies, many arguments pro and con presume market failures that the standard life cycle model does not address.

In the following sections, we first discuss some of the issues that have been raised about the life cycle model. We then bring together the findings from a number of our published and forthcoming papers on the subject of pensions, Social Security, retirement, worker turnover, and saving. We also discuss the implications of our findings for researchers and policy makers.

## >>> OUTSTANDING ISSUES

In this paper, we focus on three outstanding issues.

First, some researchers and policy makers argue that many people do not understand the benefits of saving early in a defined contribution pension, let alone the more subtle effects of pensions on the size and variation in retirement income. Such concerns raise questions about models of

retirement and saving behavior that assume well-informed and forward-looking decision makers.

Another issue concerns incentive effects from pensions. It has been well documented that certain pension plan features strongly affect the relative reward to retiring at different ages. Some researchers, however, are concerned that the effects of pension incentives on retirement have been mismeasured. Rather than causality running exclusively from pension incentives to retirement, they argue that those who wish to retire early select pensions that disproportionately reward earlier retirement. This would most likely cause the effects of pensions on retirement to be overstated in conventional retirement equations.

A third issue concerns both the general relation of pensions and Social Security to the adequacy of retirement saving, and a particular aspect of conventional theory, which posits that covered workers treat pensions essentially as a tax-favored saving device. Thus, other things the same, the more valuable the pension, the lower the non-pension saving should be. Yet, some econometric analysis suggests that people may not reduce their other saving in accordance with the value of their pension, raising questions about how pensions affect saving.

Some would argue that these are not serious problems. For example, people may familiarize themselves with their retirement plans only when they need to; they may not gather information when it is irrelevant to their decisions. Consequently, those whose pensions and Social Security will provide an adequate income in retirement may feel no need to keep themselves well informed about their retirement benefits. Because many people are adequately covered by pensions and Social Security, a survey may find that many are not very knowledgeable; however, this lack of knowledge may not have any great effect on outcomes of interest. Whenever it is time to retire, they will leave their employer knowing that their retirement income will be adequate. In addition, if most are adequately covered by their retirement benefits, there would be little need for policies advocating increased retirement saving by all.

What is the best approach to determining whether these are important issues or whether current models do a good job of describing retirement and saving? Social scientists usually do not have the luxury of designing social experiments with random assignment, where, for example,

some people might be given a particular treatment and others assigned to a control group. Rather, they collect new data and adopt statistical techniques that help in examining outstanding issues. The Health and Retirement Study (HRS), a longitudinal survey first fielded in 1992 with 12,650 respondents who were born from 1931 to 1941, is a major survey that allows us to address a number of these outstanding issues.<sup>1</sup> Thus, for example, the HRS collects information about pensions not only from survey respondents, but also from their employers, allowing us to determine directly how well-informed people are about their pensions and similarly about their Social Security benefits and retirement prospects. (See the box at the lower right.)

## >>> SUMMARY FINDINGS OF OUR RESEARCH

Our research addresses the questions described above about behaviors related to and influenced by pensions and social security, as well as a number of other related questions.

### What People Don't Know About Their Pensions<sup>4</sup>

The first two studies we discuss examine directly the question of how well people understand their pensions. Our findings suggest that many of those approaching retirement age are poorly informed about their pensions. As can be seen in Table 1, only half of HRS respondents with linked pension data correctly identify their pension plan type (27% + 11% + 11%), that is, whether their plans are defined benefit or defined contribution. Table 2 indicates that fewer than half of HRS respondents with defined benefit plans and linked pension records can identify, within one year, their date of eligibility for early retirement benefits. According to the employer-provided data, two-thirds of respondents will be able to retire early by the time they reach age 55 (138 + 168 + 36 + ...); but less than half of respondents think they will be able to retire early by age 55. Those who are within three years of retiring and who have the most incentive to know the terms of their pensions, do report their eligibility date for early retirement benefits somewhat more accurately than the sample as a whole, but not by much. Moreover, eighty percent of respondents with a defined benefit plan do not know how much their pensions will be reduced for early retirement, or do not think they will be eligible for early retirement at all.

**Table 1: Percentages with Self-reported versus Employer-provided Plan Types**

PROVIDER-REPORTED	SELF-REPORTED				Total %
	DB %	DC %	Both %	Don't Know (DK) %	
DB	27	7	13	1	48
DC	6	11	4	0	21
Both	14	6	11	1	31
Total	46	24	28	2	100

Source: Gustman and Steinmeier (forthcoming). Reprinted with permission by the Brookings Institution Press.

## Linked employer-provided pension data

Our studies utilize nationally representative surveys that ask respondents about their financial circumstances, labor market activities, health and family status, and also details about their pensions. In the course of the survey, respondents are asked for the name and address of their employer. The survey then collects from these employers booklets, called Summary Plan Descriptions (SPDs), which describe each plan in detail.<sup>2</sup> The most important plan feature is whether the plan is defined benefit, so that yearly benefits are paid in accordance with a formula that relates benefits to past earnings, experience, and age of retirement; or whether the plan is defined contribution, like TIAA-CREF, so that the contributions of the worker and the employer are accumulated in an account, which is invested to increase the pension value by retirement age. The rules are most complicated for a defined benefit plan, prescribing eligibility requirements for early retirement (reduced) benefits, eligibility requirements for normal retirement (unreduced) benefits, the benefit reduction rate associated with early retirement, and other key features of the pension. These rules are entered into a template and, in turn, are transformed into algebraic expressions. A program then combines each covered respondent's demographic data and earnings history at the employer, together with the plan rules, to determine the value of the plan to the covered individual at alternative dates of separation from the employer.<sup>3</sup>

**Table 2 : Self-reported versus Employer-provider Reported Dates of Early Retirement for Plans Reported as Defined Benefit by Both the Respondent and the Employer**

PROVIDER-REPORTED	SELF-REPORTED																			Total
	<50	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	>65	DK	
<50	19	5	5	3	5	2	54	1	2	2		7		23		1	2		7	138
50	7	24	6	3	4	1	65	3	4	4	5	8	1	14		1	1		17	168
51	3	6		2	1		5	1	2	2	2	3		5			1		3	36
52	1	3	2				11		1		1	7		1					4	31
53	2		1	8	1	1	9				2	3	1	1			1		2	32
54				3	1	2	8	1		1	2	5		4			1		3	31
55	15	11	4	6	9	12	314	22	22	22	28	37	2	160	5	4	46	7	43	769
56	3	2		2			20	2	2	1	1	6	2	9	1		5	2	4	62
57	3		1	1			11	4		3	3	6	2	9	2		1		7	53
58		1				1	6	1	8	6	3	3	1	9			3		4	46
59	1				2	1	11		3	4	3	9	1	6			5		6	52
60	9	5	1	3	1	6	26	8	4	7	8	40	5	68		2	17	1	25	236
61		1					4	1		1		7	4	7	1		1		2	29
62	2	1			1		13	1	3	3	3	7	3	28	2	2	11	1	7	88
63							1					1		6	2			2	1	13
64	1						1		1			1		8	2		1		3	18
65							2							21	4	1	8		8	44
>65							1	2				1		3	1		5	1	3	17
DK								1		2		1		8			2	1	3	18
Total	66	59	20	31	25	26	562	48	52	58	61	152	22	390	20	11	111	15	152	1,881

Source: Gustman and Steinmeier (forthcoming). Reprinted with permission by the Brookings Institution Press.

Table 3 arrays the relationship between self-estimated and employer-provided plan values for those with defined benefit pensions. Forty percent of respondents report they do not know what their pensions are worth. This indicates that respondents are poorly informed. Pension benefit amounts are in rough agreement between respondent and employer-based calculations for only 44 percent of the remaining cases. In addition, respondents are pessimistic in evaluating their defined benefit pensions. On average, respondents report that their defined benefit pensions are worth about \$148,000 in present value. However, when evaluated using employer-provided plan descriptions, the pensions have an average present value of about \$168,000.

We find that although there are some identifiable differences, those who understand their pensions and Social

Security are similar in many ways to those who do not. In addition, those who are least well informed about their pensions are those whose pensions represent the smallest share of their total Social Security, pension, and other wealth (who will be least dependent on their pensions in retirement). This result is consistent with the view that those who need to be well informed acquire the information they need. In contrast, those who are least well informed about their Social Security are those who will be most dependent on their Social Security benefits in retirement. Surprisingly, although those who participated in planning activities are better informed than those who did not, they are not much better informed.

Moreover, those who are too optimistic, overestimating their pension and Social Security benefits, do not seem to significantly alter their retirement behavior as they

**Table 3: Self-reported versus Provider-reported Amounts Accumulated in Defined Benefit Plans**

PROVIDER-REPORTED	SELF-REPORTED											Total
	0	0-5K	5-10K	10-20K	20-50K	50-100K	100-200K	200-500K	500K-1M	>1M	DK	
0		6	3	3	5	4	6	5	1		157	190
0-5K			2	1	1			1			7	12
5-10K		3	2	2	1	1	3	2			6	20
10-20K		5	13	7	6	3	3	1			42	80
20-50K		3	19	31	65	38	25	9	1		133	324
50-100K		2	3	8	51	91	55	14			141	365
100-200K	1	1	5	3	21	63	131	62	1		113	401
200-500K				6	7	16	84	147	2		63	325
500K-1M		1			3		5	43	7	2	6	67
> 1M								2	2			4
DK		1			5	2	2	1			82	93
Total	1	22	47	61	165	218	314	287	14	2	750	1,881

Source: Gustman and Steinmeier (forthcoming). Reprinted with permission by the Brookings Institution Press.

approach the retirement date. Even though they presumably realize they are going to have fewer resources in retirement than they at first expected, they do not decide to work any longer than they initially planned. Similar results are also found for saving behavior. Those who over-estimated their benefits have not saved less. Also surprisingly, whether or not measures of imperfect information about pensions and Social Security are included in the traditional reduced form retirement equations makes little difference. Specifically, the estimated effects of variables measuring the relationship between changes in retirement benefits with postponed retirement, and observed retirement outcomes, change very little when measures of the difference between actual and expected benefits are added to the standard retirement and saving equations.

### Pensions Do Not Stand Still

To improve our understanding of how well people could have forecasted their age of eligibility for early retirement benefits or other features of their pensions, we have written a number of papers that examine the facts about changes in continuing pension plans over time. If plans changed a great deal over time, it would be difficult at the time people joined their employers to do a good job in forecasting pension benefits and plan char-

acteristics at retirement. Thus, if pensions have changed a great deal over time, it is more likely in retirement equations, in which retirement outcomes are related to incentives from pensions, that causality runs from pension plan features to retirement outcomes, rather than the other way around.

Consider the many changes that have taken place in pensions over the past few decades. Between 1969 and 1983, the age of eligibility for early retirement pension benefits reported by those approaching retirement fell from 60.9 to 52.9 (Anderson, Gustman and Steinmeier, 1999). For a sample of respondents to the 1983 and 1989 Survey of Consumer Finances, who were covered by defined benefit pensions in both years, between 1983 and 1989, the early retirement date declined by a year. Three-fourths of those in the 1992 HRS with a defined benefit (DB) plan will qualify for early retirement benefits by age 55 (Gustman and Steinmeier, 2000b). Between 1969 and 1992, changes in coverage and plan generosity alone more than doubled the value of pensions held by older households, increasing the real value of pensions by 145 percent (Gustman and Steinmeier, 2000c). There also were fundamental changes in other pension characteristics over time

**Table 4: Components of Mean Wealth and Wealth for Median Ten Percent of Wealth-holding Households: HRS 1 (\$1992)**

SOURCE OF WEALTH	MEAN		MEAN FOR THE MEDIAN TEN PERCENT OF WEALTH-HOLDING HOUSEHOLDS	
	Value (\$)	Percent of Total (%)	Value (\$)	Percent of Total (%)
Total	491,821	100	335,009	100
House Value	78,826	16.0	63,389	18.9
Real Estate	39,227	8.0	9,484	2.8
Business Assets	39,724	8.1	6,776	2.0
Financial Assets	42,140	8.6	19,687	5.9
IRA Assets	19,613	4.0	10,259	3.1
Social Security	116,455	23.7	128,084	38.2
Pension Value	124,991	25.4	73,571	22.0
Retiree Health Insurance	8,461	1.7	9,122	2.7
Other	22,383	4.6	14,638	4.4
Observations	7,607		7,607	

Source: Gustman and Steinmeier (1999b). Net wealth is defined as net worth, assets less liabilities. Pension value is based on SPD data, and is calculated by prorating projected pension values obtained from employer-provided plan descriptions for DB plans and contributions for DC plans. Median ten percent of households are those with net wealth in the 45th to 55th percentiles. All data are weighted by HRS sample weights. Reprinted with permission by Elsevier Science.

(Gustman and Steinmeier, 1992). Today, a typical covered worker is more likely to have a defined contribution plan, that is, a pension held in the form of an account, whereas a worker hired decades ago was more likely to be covered by a defined benefit plan.

Using the data from Watson Wyatt on the pensions offered by 39 of the 50 largest companies, we find similar evidence of important changes over the period 1990 to 1995. Again, a sizable minority of employers experienced very large changes in their plans. Based on this evidence, it seems reasonable to assume that if those approaching retirement age today held their jobs for many decades (an issue we address below), it is very unlikely they could have reliably predicted their pension benefit levels at retirement, the incentives their pensions would create around retirement age, and when they would be eligible for enhanced early retirement benefits. Because their crystal ball was so very cloudy, it seems unlikely they selected their current jobs for the benefit structure seen today. Therefore, when retirement plans are found to have a relationship to retirement behavior, we conclude that causality most likely runs from the plan to the retirement outcome.

The sharp trend to defined contribution plans also raises questions about how well informed individuals are

about financial instruments that theory tells us should be of value to retirees. In contrast to most defined benefit plans, with the notable exception of TIAA-CREF, most defined contribution plans do not offer annuitized benefits. With the trend to defined contribution plans, an increasing share of pension assets is held by individuals who have access only to the annuity provided by Social Security. Yet, theory tells us that annuities should be very valuable to retirees, allowing them to insure against uncertain life spans. Nevertheless, the U.S. has not had a private annuity market of any size for very long, and the market is still very small. The facts that there is such a weak demand for annuities, and that private annuities are not widespread despite the growing importance of primary (not just supplemental) defined contribution plans, raise serious questions about how well informed individuals are about financial instruments.

### Pensions, the Adequacy of Retirement Saving and Saving Behavior<sup>5</sup>

It is remarkable that, although many economists study the determinants of saving, most studies of saving ignore pensions and Social Security. Yet, as seen in Table 4, for the HRS cohort, those 51 to 61 years old in 1992, pensions and Social Security together account for about

half of the wealth of all households, and 60 percent of the wealth of the median ten percent of households (ordered by their wealth). Moreover, pension coverage is very widespread among households approaching retirement age. Although pension coverage figures often focus on the employed individual, three-fourths of households nearing retirement age have been covered by a pension at one time or another, and two-thirds are receiving or are entitled to benefits from a pension.

Although policy makers have been concerned that those who leave their jobs lose pension entitlements, or cash out their pension plans before retirement, which would be another sign of lack of foresight, less than ten percent of the current value of pensions has been lost by HRS respondents as a direct result of having left a pension-covered job. The expected pension value per individual in the HRS from current, last and previous jobs totals \$74,461 (measured in 1992 dollars). Of this amount, \$9,214, or 12.4 percent, is no longer held in the form of a pension, of which 7.9 percent was cashed out, and 2.8 percent was rolled over into another pension or IRA vehicle. To the extent that any cash settlements were saved, that sum might still be available in some form during retirement. The remaining 1.7 percent was lost when the respondent left the pension-covered job.

Contrary to the general impression of many academics and many in the press, a majority in the HRS is well prepared for retirement. As Table 4 shows, on average, households in the HRS had accumulated about half a million dollars in total wealth by 1992 (including all assets and the expected value of Social Security and pension payments). In 1992, HRS respondents were about seven years away from retirement. The assets accumulated by this cohort by the time they reach their mid-fifties, when augmented by the saving over the remaining seven or so years of work-life, appear adequate for a majority of HRS respondents to replace an appropriate share of their incomes enjoyed throughout their lifetimes. Although a minority will experience a serious decline in their living standard after retirement, as long as the government delivers on promised Social Security benefits, most in this cohort are well on their way to financing an adequate retirement experience.

Annuitying all of their wealth (including pensions, Social Security, housing and other assets) on the assumption of a two-thirds joint and survivor annuity, at their expected

retirement age, the median nominal replacement rate for HRS households will be 96 percent of final earnings, while the median real replacement rate will be 62 percent of final earnings. When measured against a standard of adequacy based on average yearly earnings over the work-life, with adjustments made for the absence of pre-retirement savings, children, taxes, work-related expenses, and other factors, these replacement rates appear adequate. They appear adequate even if the 16 percent of their wealth represented by owner-occupied housing were not counted, a debatable adjustment. Only those with the lowest quarter of replacement rates appear to be in significant trouble. This raises questions about the extent of the retirement savings problem, at least for members of the cohort now on the verge of retirement, and provides some evidence in favor of a model that posits well-informed agents who are saving adequately for their retirement.

For the HRS cohort, in 1992 as they approach retirement, pension wealth is most important to those in the 25th to 95th percentiles of the distribution of lifetime earnings. Except for those in the bottom and very top of the lifetime earnings distribution, total wealth including the present value of pensions, Social Security, housing and other forms of wealth, is equal to about 40 percent of the present value of the individual's total earnings over their lifetime. Specifically, when pensions and Social Security are counted in total wealth, the ratio of wealth to lifetime earnings declines from high levels in the bottom ten percent of the earnings distribution, to roughly 40 percent from the 25th through 95th

**Table 5: Decomposition of Average Hourly Compensation Until Retirement For Those With DB Plans**

	COMPENSATION LEVEL	PERCENT OF COMPENSATION
<b>Amount due to:</b>		
Wage	\$ 12.58	87.1%
Pension without backloading	1.49	10.3
Backloading	.38	2.6
Total	14.45	100.0

Source: Gustman and Steinmeier (1995). Authors' calculations of 1978 base period earnings based on the 1983 Survey of Consumer Finances. Reprinted with permission by Upjohn Institute for Employment Research.

**Table 6: Pension Coefficients From Mobility Equations Using SIPP Panel Data**

PENSION EXPLANATORY VARIABLES:	EQUATION 1	EQUATION 2	EQUATION 3
Pension	-0.090 (6.50)		
Defined Benefit Pension		-0.092 (5.87)	-0.092 (5.86)
Defined Contribution Pension		-0.087 (4.93)	
Profit-Sharing Pension			-0.090 (4.51)
Non-Profit-Sharing Pension			-0.080 (2.70)
Log Likelihood	-748.34	-748.31	-748.25
Number of Observations	2,545	2,545	2,545

Source: Gustman and Steinmeier (1995).

Notes: The dependent variable is job separation. Entries are marginal responses in probit estimates. Numbers in parentheses are asymptotic t-statistics. 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 a Standard Metropolitan Statistical Area.

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percentile of the lifetime earnings distribution, and then falls to 32 percent for those in the top five percent of the earnings distribution. Moreover, pensions and Social Security are complementary. The share of wealth from Social Security declines with higher lifetime income, while the share of wealth from pensions increases, so that the share of total wealth represented by the sum of the value of pensions and Social Security is relatively constant as we move throughout the earnings distribution, until we reach the very top layer of earners.

The widely used life cycle model of retirement and saving assumes that individuals' retirement decisions are based not only on payment for work in the current period, but also on any returns to be realized in the future. According to this model, if people are well informed about the need for retirement saving, and wish to smooth their consumption so that their living standard does not drop a great deal once they retire, then in the absence of unforeseen events, those nearing retirement age should have accumulated sufficient assets to maintain their consumption, net of costs of working, once they retire. In such a model, the tax structure and the risks to investments and employment will influence whether retirement saving takes place in pensions or outside of the pension system. But tax saving and risks aside, a person should find pensions and Social Security to be close substitutes for other forms of retirement saving.

Thus a prediction of the life cycle model is that those who have very valuable employer-provided pensions are likely to save correspondingly less in other forms. To be

sure, different people will have different relative preferences for present over future income. But, other things the same, total wealth should not vary with the value of the pension, and non-pension wealth should be lower for those with a more valuable pension. Yet, the data indicate that when we hold constant the effects of a large number of variables that theory suggests influence desired saving, pensions add to total wealth by at least half the value of the pension and, in most specifications, by a good deal more. Those with higher pensions do not correspondingly reduce their holdings of other wealth.

This implied lack of substitutability between pensions and other forms of wealth is not consistent with a simple life cycle explanation for saving. It raises questions about accepted explanations for saving behavior, and about what accounts for the demand for pensions by workers. It also raises questions about the extent to which people value their pensions as a tax-favored saving device, allowing substitution of pensions for non-pension savings. In addition, although our findings suggest that, at least for the cohort now on the verge of retirement, wealth accumulation appears adequate for many, they also suggest that policies that encourage pension coverage will increase total retirement wealth.

One may try to link our findings on imperfect information about pensions with the finding that pensions increase total saving. Perhaps people with pensions are better informed by their employers and others about the need for retirement saving, and their increased under-



standing of retirement issues leads them to save more. Our other findings are inconsistent with this argument, however. Direct measures of knowledge about pensions bear little relation to the amount saved by HRS respondents (Gustman and Steinmeier, 2001).

### **Pensions and Mobility**<sup>6</sup>

As mentioned above, if workers who have pensions are attached to their employer for a long period of time, given the changes we found in pension plans, young people would have a very hard time predicting what their pensions would look like or what they would be worth by the time they reached retirement age. We do know that those covered by pensions are less likely to leave their jobs than are workers without pensions. For example, in the Survey of Income and Program Participation (SIPP), over a one year period from 1984 to 1985, the rate of job change among male workers without pension coverage was almost 20 percent, while only six percent of pension-covered workers switched employers.

Many thought (and some still think) that the reason for lower turnover from pension jobs is that pensions, especially defined benefit plans, help the employer to regulate quits among younger workers by affecting the reward to continued work. The argument is that a central purpose of pensions, especially of defined benefit plans, is to reduce worker mobility, with forward-looking workers heavily valuing the large bonus to be paid to those who stay until reaching the age of retirement. This bonus was thought to be generated by the defined benefit pension formula, which determines that benefits increase with age, years of service, and final salary. The combined effect of these factors, together with special benefits paid to those who leave at the early retirement age, means that a disproportionate share of the pension's value accrues in the last decade of employment before retirement. Thus the defined benefit pension is said to be "backloaded". To enjoy the additional value of the pension from backloading, workers of all ages were presumed to be less likely to leave pension-covered jobs. Backloading of pensions was said to be in the interest of the employer because, by reducing turnover, backloading reduced hiring and training costs.

But if this hypothesis were true, then younger workers should be well informed about their subsequent retirement benefits. They would be in a position where they or their friends turned down job offers or alternative

employment opportunities simply because they did not wish to lose the extra value of their pension that would be paid if they stayed until they were eligible for early retirement. Accordingly, they would be knowledgeable about their pensions and how they varied at retirement age, and thus quite forward-looking. Yet, we have found that workers who are approaching retirement age are not very well informed about their pensions. So how can one reconcile the idea that employers adopt defined benefit plans because these plans reduce the turnover of well-informed workers, with our recent findings that many workers are poorly informed about their pensions?

In a book we wrote in 1995, we addressed this issue. The evidence we developed suggests that although workers with pensions are attached to employers for a long period of time, the reason for this attachment is not the pension. When we examined pension formulas, we found that defined benefit pensions do not provide a strong incentive against mobility in the years following hire and initial training. For a male worker in his thirties or forties, the loss from terminating employment on a job offering a defined benefit pension amounts to a little more than half a year's pay. Indeed, the incentive is really quite weak. It would take a wage increase of just a few percentage points to offset the effects of pension backloading. Thus, as seen in Table 5, although a sample of individuals from the 1983 Survey of Consumer Finances had a total hourly compensation of \$14.45, only 38 cents, or 2.6 percent of total compensation, is due to pension backloading. The penalty to mobility from defined benefit plans is especially small for young workers. Moreover, the incentives against quitting are weakest during those ages when the employer has the largest share of unrealized returns on its training investment. Until the individual approaches within a decade or so of retirement age, benefit formulas do not create a substantial penalty to leaving the employer.

As this finding would lead us to expect, in an analysis of the relationship between pensions and mobility, we found that backloading of pensions had little effect on mobility. To see why, consider the data in Table 6. Column 1 reports on the relationship between mobility of 30- to 50-year-old workers and pension coverage. Clearly, mobility is lower on jobs that offer pensions than on jobs that do not. However, columns 2 and 3 indicate that a reduction in mobility of the same

magnitude is found whether the pension is defined benefit, and backloaded, or whether it is a defined contribution plan, which is not significantly backloaded. It does not appear to be the special features of the defined benefit pension that reduce worker mobility. Perhaps that is why workers who are not within a few years of retirement are very poorly informed about the features of their pensions, and a number cannot accurately identify what type of pension they are covered by.

An alternative explanation for low turnover from pension-covered jobs is suggested by an examination of total compensation. Those on jobs offering pensions receive higher compensation than they can command elsewhere, and the difference is larger between current and alternative compensation for those with pensions than for those without them. A fear of losing their higher wage may account for the lower mobility of persons from jobs offering pensions. We found that this hypothesis works well in a model in which mobility is related both to pension backloading and to the difference in compensation between jobs offering pensions and those that do not, and it may explain the lower mobility from jobs offering defined contribution, as well as defined benefit plans.

### ➤➤➤ **IMPLICATIONS FOR RESEARCH AND POLICY**

A major theme of our discussion is the tension between evidence that supports the predictions of the maximizing models, and other evidence raising questions about how well these models are working. Very often we find that what appear to be problems or puzzles can be resolved through more careful examination of the data. But other puzzles remain.

Until we have more reliable behavioral models capable of explaining the range of outcomes we have observed in our research, it will be difficult to determine the effects of new government programs that are designed to increase information about the need for retirement saving, and the role of pensions and social security in meeting these needs. Our finding that total accumulated wealth including pension savings are adequate for the majority of those now on the verge of retirement suggests that some of the calls for major policy changes to increase retirement saving may be too shrill.

Our findings also allow us to say more about other pension policies, such as those that have reduced the age for crediting a pension, and vesting. These policies would appear to be particularly ineffective in increasing assets in retirement. Certain concerns, once strongly held, appear to be misplaced. We find that defined benefit pensions do not seem to reduce turnover of prime age workers. Nor do they discourage workers who are more than a decade from retirement from leaving declining industries. In view of the weak disincentives to turnover created by defined benefit plans, it seems unlikely that incentives from defined benefit pensions have major adverse effects on productivity, as once feared.

To improve the basis for policy analysis, models are needed that fully reflect the dimensions of behaviors we have observed. This is not a simple task. The basic problem of modeling the joint determination of saving and retirement is by itself quite challenging. We know that certain assumptions in the simple model, such as an assumption that the capital market allows lending and borrowing at constant interest rates, are unrealistic. Even more difficult is the problem of determining why different people accumulate different amounts of wealth.

Because the information in the HRS is so rich, reporting both what people think they know about their pensions and provisions of their actual pension plans, we are in a position to resolve some of the remaining puzzles. Nevertheless, the challenges to behavioral analyses presented by some of the unresolved puzzles discussed in this article are formidable. Until they are resolved, we will continue to have questions about the likely effects of current or contemplated government policies aimed at influencing retirement and retirement saving.

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## ENDNOTES

- <sup>1</sup> Gustman and Steinmeier are Co-Principal Investigators of the HRS. The study was designed by a team headed by Tom Juster, and is now directed by Robert Willis. The other ten Co-Principal investigators come from medicine, sociology, demography and economics.
- <sup>2</sup> Three surveys have provided linked employer-provided pension plan descriptions. They are the 1983 and 1989 Surveys of Consumer Finances, financed by the Federal Reserve; the HRS, financed primarily by the National Institute on Aging, with additional support from the Social Security Administration and others; and the National Longitudinal Survey of Mature Women, supported by the U.S. Department of Labor. The Panel Study on Income Dynamics, supported by the National Science Foundation, with additional support from the National Institute on Aging and other agencies, will soon have linked pension data. We have used all of these surveys in our research, but the results described here are mainly based on the HRS.
- <sup>3</sup> Robert Peticolas has supervised the coding of pension documents over the last decade for the University of Michigan's Institute for Social Research.
- <sup>4</sup> This section is taken from two studies. Gustman and Steinmeier (forthcoming) was funded by a grant from the National Institute on Aging, R03 AG 15224-01. Gustman and Steinmeier (2001) was funded by a grant from the Michigan Retirement Research Center, which is supported by the Social Security Administration. Both studies are part of the National Bureau of Economic Research Program on Aging.
- <sup>5</sup> This section is taken from Gustman and Steinmeier (1999b), a study supported by the National Institute on Aging and by the U.S. Department of Labor, Pension and Welfare Benefits Administration.
- <sup>6</sup> This section is taken from Gustman and Steinmeier (1993, 1995). These studies were funded by the U.S. Department of Labor, Pension and Welfare Benefits Administration, by the Upjohn Institute for Employment Research, and by a Martin Segal Fellowship from Dartmouth College.

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