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Imperfect Knowledge of Pension Plan Type

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ABSTRACT

This paper investigates the reasons for discrepancies between the pension plan type reported by respondents to the Health and Retirement Study (HRS) and pension plan type obtained from documents produced by their employers, called Summary Plan Descriptions (SPDs). The analysis suggests the discrepancies are sizable and are mainly due to misreports by respondents. Discrepancies between respondent and firm reports of plan type are first documented for different years and from different data sources. Changes over time in respondent and firm reports are analyzed for those who say their plans did not change. Plan type from payroll data produced by Watson Wyatt, a pension consulting company, is examined and compared to respondent reports for employees covered by Watson Wyatt plans. The Watson Wyatt payroll data report plan type without error, and yet we find the patterns of discrepancies between respondent and firm provided data are the same as for the HRS employer and respondent data. We also explore other evidence gathered by the HRS in the course of interviews and various experiments. Our findings that errors are mainly the result of misreporting by respondents, together with findings from experiments, suggest a number of changes in survey design that can help to reduce reporting error. They also suggest that models of retirement and saving behavior should allow for imperfect knowledge by decision makers.

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Introduction

To understand the role of pensions in retirement and saving, surveys have gathered data from respondents as well as their employers. Evidence continues to accumulate that there are substantial differences between pension outcomes reported by some pension covered workers and the corresponding outcomes gleaned from employer produced data.¹ Our aim in this paper is to understand the reasons for differences in one key outcome, pension plan type. Most importantly, we would like to know whether differences between respondent and firm reports of pension plan type are the result of respondents' imperfect knowledge and understanding of their pensions, or whether there are other reasons for these differences.

If respondent errors are common, and are the main cause of discrepancies between respondent reported pension outcomes and outcomes obtained from employer plan descriptions, then there are important implications for analyses of retirement and saving behavior. Respondent errors would call into question the assumption in standard models that retirement and saving decisions are made by well informed agents. For example, questions would be raised about how well people do in determining the adequacy of their retirement saving; whether covered workers understand the choice set created by the complex rules governing retirement plans²; and whether people appropriately value the pension plans their employers provide as part of their compensation packages.

We will focus on whether the plan is defined benefit (DB), defined contribution (DC), or some other type of plan. With a defined benefit (DB) plan, a formula determines the benefit based on past earnings, experience and age of retirement. Defined benefit plans typically pay a stream of benefits beginning at retirement and lasting for as long as the covered worker (or the worker and

¹ Mitchell (1988), Gustman and Steinmeier (1989), Gustman and Steinmeier (2004), Chan and Huff Stevens (2006).

² It appears that retirement behavior conforms to the incentives from pensions only for those who understand how their pensions work (Chan and Huff Stevens, 2005).

spouse) live. There may be a bonus for retiring early and other differences in the total value of the pension that depend on when a person retires.³ A defined contribution (DC) plan is essentially an account that will be turned over to the covered worker upon separation (assuming the worker has stayed long enough for the pension to be vested), or upon retirement. Contributions by the employer and/or the employee are accumulated and invested, and the employee is entitled to the contributions plus the returns. Unless the defined contribution plan is one of the few offering benefits in the form of an annuity, the pace and size of withdrawals from the plan are determined by the retiree. Hybrid plans combine features of DB and DC plans. For example, a common type of hybrid plan called a cash balance plan creates a notional account with a prespecified return, with the firm funding the implied liability from these accounts as they would fund the liabilities from a defined benefit plan.

Plan type is a key piece of information required to understand a person's pension plan. It is a major determinant of the value and incentives created by a pension. Thus surveys asking respondents about their pensions often begin by asking about plan type.⁴

Once plan type is determined, surveys ask other detailed questions about benefits and the features of a worker's pension. Which question is asked often depends on what plan type was reported. For example, those with a defined benefit plan are typically asked when they expect to retire and what their yearly benefit will be. Holders of defined contribution plans are often asked to report the current balance in their plan account. If plan type is incorrectly reported, questions may be asked that are not appropriate for the plan held. We will show that respondents who are

³ Gustman and Steinmeier (1989) provide a detailed discussion of how the various features of pensions affect the present value of the plan.

⁴ The Health and Retirement Study indicates it is interested in finding out what type of pension the respondent has. "In some retirement plans, call them Type A, benefits are usually based on a formula involving age, years of service and salary. In other plans, call them Type B, money is accumulated in an account for you." The respondent is then asked whether their plan is Type A, Type B, or Both.

questioned about a plan type other than the one they hold may become confused and provide answers that make little sense. Moreover, respondents who misreport plan type may not be asked questions that are important for determining the value and properties of their pension.

This paper measures discrepancies in reported pension plan type between respondents and firms. It presents evidence suggesting the extent to which plan type is misreported by respondents. The data are taken from three different sources, the Health and Retirement Study (HRS), the Survey of Consumer Finances (SCF) and a survey conducted by the Watson Wyatt Company. Most of the evidence is from the Health and Retirement Study (HRS), a longitudinal survey of the older population that began in 1992. The HRS matches respondent reports about their pension plans to plan descriptions obtained from their employers.⁵ In addition to information from the core survey and from employers, we introduce information from a number of experimental questions in the HRS pertaining to plan characteristics and plan type. Recordings of interviews also help to pinpoint reasons for misreporting. Data from the Survey of Consumer Finances are used to document the relationship between employer and respondent reports about pensions in 1983, so that a very rough time series of discrepancies can be created. Watson Wyatt Company has made a sample available that includes employer payroll data as well as respondent reports of their pensions. Differences between employer and respondent pension reports are sometimes attributed to the failure to match an employee with the appropriate pension offered by the firm. Plan descriptions from payroll data are perfectly matched to the respondents, so that *all* discrepancies are due to errors in information provided by the respondent.

⁵ The HRS collects detailed, employer produced plan descriptions, called Summary Plan Descriptions (SPDs), directly from employers, Department of Labor files, from the net, and from respondents themselves who request the plan descriptions from their employers. This information allows us to determine the degree of consistency or inconsistency between the respondents' answers and indications of plan type gleaned from firm produced plan descriptions. It also allows us to explore the importance of various reasons for any inconsistency in answers, and potential remedies in terms of survey design.

Taking all of this evidence together, it appears that discrepancies between respondent and firm reports of plan type are mainly due to errors in respondent data.

Section II lists a number of reasons why firm and respondent reports may contain errors. Section III compares reports of pension plan type from respondent data with reports from employer produced plan descriptions. In Section IV consistencies and inconsistencies in firm and respondent reports of plan type over time are documented for those reporting their plans have not changed. Section V explores survey and matched payroll data from Watson Wyatt. In Section VI we analyze variation in self reported plan type in seven waves of the HRS panel for those members of the original HRS cohort who reported they were covered by a pension, and who also reported their pension plans were unchanged over time. Section VII compares plan type reported by respondents at different times, including the time a respondent leaves a pension covered job, to the firm report collected just before leaving the firm. Section VIII reports findings from listening to interview tapes, as well as findings from an experimental module that asked respondents whether they know the technical name of their plan. Section IX reports the results of an experiment where those who reported a DB plan were asked questions relevant to a DC plan and vice versa. This suggests the nature of errors that would arise should questions not be conditioned on plan type, so that people with one type of pension are asked about pension characteristics for a plan type they did not report. Section X concludes.

II. Reasons for differences between firm and respondent reports.

As we will document extensively, workers' reports of their pension plan types often differ from the information obtained from their employers. A few of the possible reasons for these differences are listed here.

The fault may lie with the respondent or the respondent's knowledge (see Gustman and Steinmeier, 2005).

1. Some respondents may be badly informed about their pensions because their plans are too complex for them to understand. Other respondents may be able to understand their pensions after some effort, but may choose not to exert the effort because the benefits are not worth the costs (Lusardi, 1999). Either the costs may be high because of the difficulty of the calculation, or the benefits may be low. Low benefits may reflect a low dollar value of the pension, or a good pension that, together with Social Security, will provide a good replacement rate, so that further investigation will not affect either retirement or savings decisions.

2. When there is more than one plan, respondents may be confused when asked in the HRS and other surveys to talk about their *most important* plan. In most cases, the DB plan is the most important plan. Nevertheless, some respondents may think the DC plan is the most important of his/her plans. Even worse, the respondent may report one plan is more important in some waves, and that the other is more important in other waves. This confusion as to which plan is most important may be the result of the complexity of the pension calculation.

3. If some respondents do not participate in a plan, and do not report being eligible for the plan, these respondents may report being covered by fewer plans than are listed by the firm. This could be a particular problem for those with a DC plan who do not contribute each year, and consider themselves not to be covered by the plan in years they do not contribute.

4. Respondents may misreport whether their plan has changed over time, affecting plan type reported in different waves.

The fault may lie with the survey questions and design.

5. Survey questions that attempt to distinguish plan type may be poorly crafted. For example, the survey may present definitions of DB and DC plans, and describe the properties of different plans, noting that a defined benefit plan provides a benefit that is determined by salary and years of

service, while a defined contribution plan provides an account. These descriptions may be unclear to the respondent.

The fault may lie with process of collecting and matching employer provider plan descriptions to a particular respondent (Rohwedder, 2003).

6. A firm may offer a large number of plans of different types, and may have submitted many plan descriptions. Summary Plan Descriptions list the characteristics of those workers who are covered by the particular plan being described – e.g., union workers, full time, hired in a specified window, say from 1990 to 2000. Still, the characteristics of the respondent and of the covered workers may not be precisely enough stated. As a result, the wrong plan description may be selected from the group of plans submitted by the firm to the HRS.

7. In some cases, the firm may not have sent in all the available plan descriptions for its employees; or the full set of plan descriptions may not have been available from the supplementary sources used by HRS when collecting plan documents.⁶

8. There may be some matching problems based on the date of the SPD, whether received from the firm or from other sources.⁷

Public pension plans may be a particular source of confusion as to plan type. First, defined benefit plans offered by government entities commonly require a contribution by the covered worker, while most private sector defined benefit plan do not. Second, there is a separate accounting for the employee's contribution. Third, at time of job termination, instead of waiting for

⁶ In the next round of matches, HRS pension coders have been instructed to create an index indicating the degree of certainty or uncertainty they hold as to the quality of the match; that is, how well a particular plan description applies to a given HRS respondent.

⁷ In 2005, HRS is collecting employer produced pension plan descriptions from a number of sources. Respondents are collecting the descriptions directly from their employers. Presumably, if these respondents sent in all their plans, matching would be exact and up to date. Comparisons of plans submitted by respondents with those obtained from other sources should indicate the extent to which collection of outdated SPDs accounts for discrepancies between firm and respondent provided plan descriptions.

a payment from the DB plan, government employees are often given the opportunity to cash out or roll over an account holding only the employee's contribution. About 43% (1000/2325) of all respondents to the Health and Retirement Study with matched plan documents are government employees. Those respondents usually have a DB plan, or both a DB and a DC plan. Only about 3% of them have a DC plan only.

III. Consistency between employer and respondent reports.

The period we will be examining for consistency between respondent and firm reports runs from the early 1980s through 2004. The early data are from the 1983 Survey of Consumer Finances (SCF); the later data from the Health and Retirement Study. The intervening period is characterized by a sharp trend in pension plan type, with the share of respondents reporting a defined benefit plan falling from 91.6 percent in the 1983 SCF to 38 percent in the 2004 HRS. Each of the two surveys provides information both from respondents and from employers, and both sets of data are consistent with other data highlighting the trend to defined contribution plans. Remember, however, that all tables in this section include only observations where respondent reports have been matched to employer reports. In dealing only with matched data, we are analyzing a selected sample that should not be used to measure the overall size of the trend to DC plans.⁸

The SCF affords an opportunity to document for the period of the 1980s the extent of agreement between respondent reports of pension plan type and reports from firms indicating the type of pension covering the workers in the sample. It is based on a sample of all households of all ages, and obtains detailed pension plan descriptions for those respondents who report they are covered by a pension.

⁸ Although the SCF covers a younger age group than the HRS, the trend in reported plan type is obvious in any data set, and has been documented extensively in the literature. See Gustman and Steinmeier (1992) for early results.

Despite the overwhelming dominance of DB plans in the early 1980s, 40.3 percent of SCF respondents report either that they do not know the plan type, or report a plan type that does not correspond to the plan type reported by the employer. Net differences between the reports of respondents and firms can be seen from Table 1A by comparing the column totals with the row totals. Although 88.1 percent of firm reports in the 1983 SCF indicate coverage by a *DB plan only*, 58.9 percent of respondent reports indicate coverage by a *DB plan only*. Even adjusting for the DKs, dividing 58.9 by .836, the fraction with a DB plan only is lower in the respondent data at 70.5 percent. Moreover, the fraction with both types of plans is also much higher in the respondent data, with 17.3 percent of respondents (20.7 percent of respondents who identified a plan type) suggesting they are covered by both types of plans, but only 3.5 percent of firm documents indicating coverage by both types of plans.

The number of respondents who thought they had a *DC plan only* corresponds rather well with firm reports of *DC plan only*. Adjusting the 7.4 percent figure in column 2, row 4 of Table 1A for the fraction who answered DK, 8.9 percent of respondents who answered said they had a *DC plan only*. According to matched employer reports, as seen in row 2, column 5, 8.5 percent had a *DC plan only*. Moreover, adding the total of respondents who said they had a DB plan, either because they had a *DB plan only* or both types, the fraction of respondents who report a plan type who have a DB plan $[(58.9 + 17.3)/.836 = 91.1]$ is very close to the fraction whose employers reported they had a DB plan (91.6). The major difference is that the number of respondents who report any DC plan $[(7.4 + 17.3)/.836 = 29.5]$ greatly exceeds the 12 percent with a DC plan in the firm data. The source of the discrepancy is the very high number with both types of plans in the respondent data compared to the firm reports.

Table 1: Pension Plan Type as Reported by the Respondent and the Firm, for Current Job Held in 1983, Including Only Those Respondents with a Matched Pension Plan
1A: Percentages with Self Reported vs. Firm Provided Plan Types
(Data From The Survey of Consumer Finances, 1983)

Provider Report in 1983	Self Reported in 1983				
	1-DB	2-DC	3-Both	4-DK	5-Total
	%	%	%	%	%
1- DB	55.2	4.0	15.1	13.8	88.1
2- DC	2.4	3.1	0.9	2.1	8.5
3- Both	1.2	0.3	1.4	0.5	3.5
4- Total	58.9	7.4	17.3	16.4	100.0
5- Number of Observations	341	43	100	95	579

Note: Agreements between firm and respondent reports are along the main diagonal. Disagreements between reports are reflected in the cells from rows 1, 2 and 3 and columns 1, 2 and 3 that are off the main diagonal.

1B: Percentages with Self Reported Plan Type Conditional on Firm Report of Plan Type
(Percent of Row Total)
(Data From The Survey of Consumer Finances, 1983)

Provider Report in 1983	Self Reported in 1983				
	1-DB	2-DC	3-Both	4-DK	5- Total
	%	%	%	%	%
1- DB	62.7	4.5	17.1	15.7	100
2- DC	28.6	36.7	10.2	24.5	100
3- Both	35.0	10.0	40.0	15.0	100
4- Total	58.9	7.4	17.3	16.4	100

Source: Gustman and Steinmeier (1989, Table 6)

The diagonal of Table 1A includes those cases where the respondent and firm both report the same plan type. Along the diagonal, plan type reported in respondent data matches plan type in firm data for 59.7 percent of observations. The response is don't know (DK) for 16.4 percent of respondents (row 4, column 4 of Table 1A). Numbers that are off the diagonal are associated with

some type of disagreement between the two indicators of plan type. Summing the remaining off diagonal elements of the table, 23.9 percent of the cases have misidentified their plan type.⁹

As seen in Table 1B, at a time when most people had a DB plan, most people who could answer questions about plan type told interviewers they had a DB plan when their employer said they had one, and told interviewers they had a DC plan when employer data suggested they had one. Thus in Table 1B, only 4.5 percent of those whose employers' documents said they had a *DB plan only* reported they had a *DC plan only*. Of the 8.5 percent of respondents whose employer documents said they had a *DC plan only*, as seen in column 2, row 2, 36.7 percent of them agreed, with another 10.2 of them suggesting they had both a DB and a DC plan. Although 28.6 percent (column 1, row 2) of those whose employers reported they had a *DC plan only* reported having a *DB plan only*, that difference represents only 2.4 percent of all those with a pension.

Now consider more recent data from the Health and Retirement Study. We begin with HRS data from 1992, covering a population born from 1931 to 1941 during a period where there has been an obvious decline in the prevalence of defined benefit plans. Comparing Tables 1A and 2A, the growth in defined contribution plans is obvious. According to the employer data from 1992, 52 percent (column 5 of Table 2A, sum of rows 2 and 3) of all respondents reported a DC plan, either held alone or in combination with a DB plan. This compares to 12 percent with a DC plan (Table 1A, column 5, rows 2 plus 3) in 1983. Note that the over fifty HRS population, with greater union and manufacturing employment, would be expected to have a larger fraction of its population with a DB plan, and a smaller fraction of its population with a DC plan. Nevertheless, the strong trend to

⁹ Even though a large number of observations fall off the main diagonal, the instrument asks most of those with a DB plan about the details of the plan, and asks many of those with a DC plan about the details of a DC plan. So 91.6 percent (88.1 +3.5) of employer documents reported coverage by a DB plan, while 72.9 (55.2+1.2+15.1+1.4) percent of respondents whose employer reported a DB plan also reported coverage by a DB plan, amounting to 87.2 (72.9/.836) percent of those who reported a plan type.

DC plans is obvious even given a comparison with the earlier SCF data covering the full age range of pension covered workers.

In 1992 the fraction of DK responses in the HRS was 2 percent. This compares with a DK level of 16.4 percent recorded in the SCF survey from nine years earlier. One reason for the higher DK frequency in the SCF data may be its younger population.

Comparing row with column totals in Table 1A and then Table 2A, while in 1983 there were systematic discrepancies between the frequencies of reports of different plan types by respondents and employers, in 1992 there are no such discrepancies. In 1983, self reports of DB plans fell below firm reports, and self reports of coverage by both types of plans exceeded firm reports. In the 1992 HRS data, the overall distributions of plan type, DB only, DC only and both, are similar whether reported by respondents or firms. Shares with any DB or any DC are also similar.¹⁰

Table 2: Pension Plan Type as Reported by the Respondent and the Firm, for Current Job Held in 1992, Including Only Those Respondents with a Matched Pension Plan
Table 2A: Percentages with Self Reported vs. Firm Provided Plan Types
Data From The Health and Retirement Study, 1992

Provider Report in 1992	Self Reported in 1992				
	1-DB	2-DC	3-Both	4-DK	5- Total
	%	%	%	%	%
1- DB	27	7	13	1	48
2- DC	6	11	4	0	21
3- Both	14	6	11	1	31
4- Total	46	24	28	2	100
5- Number of Observations	1342	699	806	60	2907

¹⁰ There appears to be little overall disagreement in the average plan type reported by respondents and their employers in 1992. In Table 2A, 48 percent of provider reports indicate a DB plan only (row 1, column 5), roughly the same total (46 percent) as in respondent reports (row 4, column 1). The fraction with a DC plan only (row 2, column 5) is 21 percent in the firm data, and 24 percent (column 2, row 4) in the respondent data. The fraction found with any DC plan in the employer data in 1992 (column 5, rows 2 plus 3) is the same as the fraction found in respondent reports (row 4, columns 2 plus 3). Similarly, 79 percent of employer reports indicate coverage by a DB plan, either via coverage by a DB plan only (row 1, column 5), or by both a DB and a DC plan (row 3, column 5), while 74 percent of respondent reports suggest coverage by a DB plan either alone or in addition to a DC plan (row 4, column 1 plus column 3).

**2B: Percentages with Self Reported Plan Type Conditional on Firm Report of Plan Type
(Percent of Row Total)**

Data From The Health and Retirement Study, 1992

Provider Report in 1992	Self Reported in 1992				
	1-DB	2-DC	3-Both	4-DK	5- Total
	%	%	%	%	%
1- DB	56	15	27	2	100
2- DC	26	54	18	2	100
3- Both	45	18	35	2	100
4- Total	46	24	28	2	100

Source: Gustman and Steinmeier (2004, Table 6)

Turning to the question of how often the respondent and employer reports of plan type agree for a given respondent, a larger number of responses fall in off diagonal elements in 1992 than in 1983, signaled less agreement in each matched pair of reports in the latter year. Thus from Table 2A, only 49 percent of responses lie along the main diagonal in 1992, vs. 60 percent in 1983.

The extent of overall disagreement in 1992 between employers and respondents appears noticeable when we condition on provider (employer) responses, and ask how well respondents' answers agree. From Table 2B, row 1, column 2, among those whose firm report indicates a DB plan only, 15 percent of respondents report a DC plan only. Among those with a firm report of a DC plan only, 26 percent report a DB plan only (row 2, column 1). In row 2, column 2, 18 percent of respondents whose employer documents report both types of plans instead report having a DC plan only. Most of the rest reported a DB plan only, with only 35 percent of those respondents whose firms reported both a DB and a DC plan reporting having both a DB and a DC plan, in row 3, column 3.

Moving to a more recent date when DC pensions have become even more prevalent, Table 3 shows the distribution of plan type reported in 2004 by respondents in the core of the HRS and gleaned from firm documents. By 2004, employer provided plan descriptions, which as of this writing are only available for 790 cases working in the private sector, reflect the very strong trend to

defined contribution plans.¹¹ Only thirty eight percent of the private sector cases with at least one plan description and/or a statement from respondents' current pension plan(s) are defined benefit, either held as DB plans alone (17 percent, from row 1, column 5), or in combination with a DC plan (21 percent, from row 3, column 5).¹²

From Table 3A, in 2004, as in 1983, we observe systematic differences in the average plan type reported between respondents and their employers. In total, from column 5, row 1, 17 percent of provider reports indicate a DB plan only, while 25 percent of respondent reports (column 1, row 4) indicate coverage by a DB plan only. Although 62 percent of provider reports (row 2, column 5) suggest coverage by a DC plan only, 52 percent of respondents (row 4, column 2) indicate coverage by a DC plan only. Since 20 percent of the respondent reports (row 4, column 3), and 21 percent of the firm reports (row 3, column 5), indicate coverage by both types of plans, the difference between respondent and firm reports lies in the overstatement of those with a DB plan, and corresponding understatement of the fraction with a DC plan, by respondents. Altogether, 38 percent of firm reports indicate coverage by a DB plan, either exclusively (row 1, column 5) or in combination with a DC plan (row 3, column 5), while 45 percent of respondent reports indicate coverage by a DB plan (row 4, column 1 plus row 4, column 3).

¹¹ In the 2004 survey, there are 3685 cases who reported being included in one or more pension plan(s) through their current employment. As of the present time, employer plan descriptions and respondent's statements or plan descriptions have been roughly matched for 797 (523+329-55) of those respondents. Thus, this exercise begins with about 22% (797/3685) of respondents reporting a pension in the current job. Plans for government employees are not included in the data.

¹² Although half the plans held by members of retirement age cohorts who are working full time are still defined benefit, fully half of all defined benefit plans are held by public employees. Once the pension plans for government workers are matched, we expect that almost half the respondents with a pension in 2004 will be covered by a DB plan, corresponding to the share of plans that are DB reported by respondents.

Table 3: Pension Plan Type as Reported by the Respondent and the Firm, for Current Job Held in 2004, Including Only *Private Sector* Respondents with a Matched Pension Plan Data From The Health and Retirement Study, 2004

**3A. Percent of Total Responses
Data From The Health and Retirement Study, 1992**

Provider Report in 2004	Self -Report in 2004				
	1- DB	2- DC	3- Both	4- DK	5- Total
	%	%	%	%	%
1- DB	11	2	3	0	17
2- DC	9	43	8	2	62
3- Both	6	7	8	0	21
4- Total	25	52	20	3	100
5- Number of Observations	201	412	155	22	790

**3B. Percent of Row Total
Data From The Health and Retirement Study, 1992**

Provider Report in 2004	Self -Report in 2004				
	1- DB	2- DC	3- Both	4- DK	5- Total
	%	%	%	%	%
1- DB	65	13	20	2	100
2- DC	14	70	14	3	100
3- Both	28	32	37	2	100
4- Total	25	52	20	3	100

* Employer data includes plans processed as of May, 2006.

In 2004, almost two thirds (62 percent) of the observations lie along the main diagonal, indicating a higher number of cases where respondents and their employers agree as to the plan type. This is somewhat better than the situation in 1983, and much better than the situation with HRS data in the first year of the survey, 1992. Only 3 percent of respondents report they do not know their plan type.

Other discrepancies are reported in Table 3B. Of those whose firm reports coverage by a *DC plan only*, 14 percent of respondents report coverage by a *DB plan only*, and 14 percent report coverage by both a DB and a DC plan (row 2, columns 1 plus 3). Among those whose firm reports

a *DB plan only*, 13 percent report coverage by a *DC plan only* (row 1, column 2), while 20 percent report coverage by both types of plans (row 1, column 3).

Table 4 summarizes a number of the key findings over the three surveys.

1. The trend from defined benefit to defined contribution plans is reflected in the values from employer produced plan descriptions seen for those respondents who report having a pension and have matched employer pension plan descriptions. Row 1 indicates the decline in the proportion of respondents with matched plan descriptions holding defined benefit plans only, from 88.1 percent of plans held by pension covered workers of all ages in the 1983 Survey of Consumer Finances, to 48 percent and 17 percent of all pension covered workers with matched employer plans in the Health and Retirement Study in 1992 and 2004 respectively. Row 2 shows the corresponding increase in the proportion of respondents with defined contribution plans from 8.5 percent in the 1983 Survey of Consumer Finances to 62 percent in the 2004 Health and Retirement Study, while Row 3 shows the fraction holding both a DB and a DC plan, with an increase from 3.5 percent to 21 percent between the 1983 sample of all ages, and the 2004 HRS sample of older workers only. Again, because these samples are selected to include only those respondents with matched employer data, and because the SCF and HRS contain respondents of different ages, these figures are meant to provide baseline indications of reports, rather than the basis for calculating trends over these years.

2. The fraction of respondents who don't know their plan type is lower in later years (Table 4, line 4). Some of the difference probably reflects the younger age of the population in the 1983 SCF data than in the HRS data collected in later years.

Table 4: Summary of Respondent and Firm Reports Over Time.

	1983	1992	2004
1. DB only: employer data	88.1	48	17
2. DC only: employer data	8.5	21	62
3. Both: employer data	3.5	31	21
4. DK: respondent data	16.4	2	3
5. Share on diagonal: employee and respondent agree.	59.7 percentage points on diagonal (despite high DK).	49 percentage points on diagonal.	62 percentage points.
6. Frequency of DB only in respondent compared to employer data.	Badly understated (17.6 percentage points) in respondent report, after excluding DKs.	Understated by 1 percentage point in respondent report, after excluding DKs.	Overstated 8.8 percentage points in respondent report, after excluding DKs.
7. Frequency of DC only in respondent compared to employer data.	Overstated by .4 percentage points, after excluding DKs.	Overstated 3.5 percentage points in respondent data after excluding DKs.	Understated 8.8 percentage points in respondent data, after excluding DKs.
8. Frequency of both in respondent compared to employer data.	Overstated 17.2 percentage points, after excluding DKs.	Understated 2.5 percentage points in respondent data after excluding DKs.	Not overstated or understated in respondent data, after excluding DKs..
9. Conditional on firm reporting DB only, respondent reporting DC only.	4.5	15	13
10. Conditional on firm reporting DB only, respondent reporting both.	17.1	27	20
11. Conditional on firm reporting DC only, respondent reporting DB.	28.6	26	14
12. Conditional on firm reporting DC only, respondent reporting both.	10.2	18	14
13. Conditional on firm reporting both, respondent reporting DB only.	35	45	28
14. Conditional on firm reporting both, respondent reporting DC only.	10	18	32

3. The fraction of respondents who correctly identify their plan type has no strong trend over time, running about 60 percent in 1983 and about 62 percent in 2004 (Table 4, line 5). These numbers

reflect the share of the sample that falls along the main diagonal of Tables 1A, 2A and 3A, where respondent and firm reports for a given observation agree. Although the fraction saying they do not know their plan type is much lower in the HRS than in the SCF, the frequency of other errors appears to increase over time. The findings from 1983 through 2004 raise questions about one hypothesis for explaining systematic disagreement between respondent and firm reports of plan type. To the extent that secondary DC plans are more difficult to collect from employers than DB plans, it might be argued that the frequency of DC plans is systematically understated in employer data. But the patterns of discrepancies are uneven. Moreover, in 2004 we find that coverage by DB plans is over-reported by *respondents*, while coverage by DC plans is under-reported by *respondents*, relative to the distributions in employer produced plan descriptions.

4. Rows 6, 7 and 8 take the report from the employer pension plan description as correct, and compare the probability of DB only, DC only and Both plan types being reported by the respondent with the corresponding probability from firm reports. There are no consistent patterns in these data indicating either that the degree of over or understatement is consistent over time. Rather, when DB plans are the dominant plan, as in 1983, the frequency of DB only is understated by respondents, while in the period when DC is the dominant plan type, the frequency of DC only is understated, as in 2004.

5. Those whose firm reported they had a DB plan were less likely to claim erroneously that they had a DC plan in 1983 (column 1, rows 9 and 10) than in 2004. In 2004, with the DC as the dominant type of plan, those whose firm reported a DB plan only reported with greater frequency (in column 3, rows 9 and 10), they had a DC plan only or both types of plans than were reported in 1983.

6. In 1983, when DB was the dominant type of plan, those who worked for firms reporting their plan was DC only were much more likely to report that they had a DB plan (column 1, row 11) than

was the case for those who worked for a firm reporting DC only in 2004 (column 3, row 11), when DC was the dominant type of plan.

These respondent errors in reporting are substantial. They are sufficiently complex, and vary enough over time, that they are not easy to characterize or remove. The complexity of the misclassifications by respondents does suggest important changes for the HRS. There will be an increased effort to collect employer provided pension plan descriptions, and beginning with the 2008 respondent survey there will be an increased effort to condition as few questions as possible on respondent reports of pension plan type.

IV. Difference over time in respondent and firm reports

One way to address reporting consistency is to consider reports over time only by those who indicate there has been no change in their plan. Accordingly, we turn to HRS respondents who reported in 1994, 1996 and 1998 that their pension plans did not change from the previous wave. Thus according to these respondents, their plans were identical in 1992 and 1998, two years when employer plan reports are also available. Here we examine both changes in self reports of plan type, and in firm reports of plan type over the 1992 to 1998 period.

For this exercise, it is important to determine whether those who report their plans are unchanged over time between 1992 and 1998 have a similar distribution of plan type to all those with a pension in 1992. Comparisons indicate there is a close similarity in the fractions with DB only, DC only and both types of plans in the two samples.¹³

¹³ In Table 2A, where data for 1992 were reported, the percentages of respondents reporting a DB, DC and both types of plans was 46, 24 and 28 percent respectively. In Table 5A, where plan type is reported among respondents who reported their plan type has not changed between 1992 and 1998, the proportions of respondents with DB, DC and both types of plans in 1992 are 45, 25 and 28 percent respectively. Also note that the sub-sample of employer reported plan types for respondents who reported the same pension in 1992 and 1998 in Table 5C matches the distribution of employer reported plan types in Table 2A for the larger sample of all respondents with matched pensions in 1992. Thus in Table 2A, the percentages reported in employer data of DB, DC and both types of

If respondent reports were correct and plans matched correctly, there should be no change in plan type for anyone in this sample. Given the discrepancies we found in the previous section, it is not surprising to find that reported plan types vary over time for a significant minority of respondents who report no change in their plan. Moreover, when respondents report a different plan type from the one reported in 1992, they often misreport the nature of the change.

There are a number of possible reasons why the reported plan type changed even though a respondent said there was no change. The respondent may be wrong about the plan not having changed. Or despite reporting correctly that the plan has not changed, the respondent may misidentify the plan type in one or another of the two years. A third possibility is that the respondent may have a defined contribution plan, but may participate in some years and not in others, failing to report plan type as DC in a year when not participating.

To avoid problems where the report of the most important plan changes over time because the respondent does not consistently value the plans, that is, in one year considers the DB plan to be the most important, and in another year considers the DC plan to be the most important, we classify plans as DB only, DC only and both. So if a person has both types of plans in different periods, but considers the defined benefit plan to be the most important in one period and the DC plan to be the most important in the other, we tabulate whether the respondent has reported on two plans, and do not take account of which one was listed as most important in each period.

By contrasting the changes for the respondent sample and the firm sample, the evidence suggests that plans have changed in many more cases than respondents think. Table 5A shows the distribution of self reported plan types between 1992 and 1998 for those who report no change in plan type. Along the diagonal, we see that 58 percent of respondents report the same plan type in 1998 as they did in 1992 (32+16+10). From row 1 of Table 5B, among those who reported having plans in 1992 are 48, 21 and 31 percent respectively. In Table 5C, the corresponding figures are 48, 19, and 33 percent.

a DB only in 1992, 72 percent continue to report a DB only in 1998, 16 percent report a DC plan only, and 11 percent report both. Thus there is a reported gain in DC plans only, replacing DB plans only, and an 11 percent increase in the frequency of both types of plans.

**Table 5A: Percentage distribution of self reported plan type for respondents reporting the same pension plan from 1992 to 1998 and with matched 92 and 98 plan data
Data From The Health and Retirement Study, 1992**

Self -Report In 1992	Self -Report in 1998				
	1-DB	2-DC	3-Both	4-DK	5-Total
	%	%	%	%	%
1-DB	32	7	5	0	45
2-DC	6	16	4	0	25
3-Both	14	4	10	0	28
4-Total	52	28	19	0	100
5-Number of Observations	235	128	85	2	450

Table 5B: Distribution of self reported plan type in 1998 by self reported plan type in 1992, for respondents reporting the same pension plan from 1992 to 1998 and with matched 92 and 98 plan data

Data From The Health and Retirement Study, 1992

Self -Report In 1992	Self -Report in 1998				
	1-DB	2-DC	3-Both	4-DK	5-Total
	%	%	%	%	%
1-DB	72	16	11	1	100
2-DC	22	64	14	0	100
3-Both	50	15	35	0	100
4-Total	52	28	19	0	100

Since these changes are in the direction of trends in plan type, they cannot be dismissed out of hand. However, for the 25 percent of respondents reporting a plan type who reported a DC plan only in 1992, as seen from Table 5B, row 2, 22 percent of respondents report that their plan type switched back to a DB plan only, and another 14 percent claim that they gained a DB plan as their firm adopted both types of plans. Yet we know there was almost no adoption of new DB pension plans after the mid-1980s (Ippolito and Thompson, 2000). Similarly, from row 3 of Table 5B, 50

percent of those who claimed to have both a DB and a DC plan in 1992, claim to have lost the DC plan in the intervening six years, while 15 percent of those with both types of plans claim to have lost their DB plan over the intervening period.

Now consider the changes in employer reported plan type for this sample, who claim their plans were unchanged over the period. From Table 5C, only 55 percent (14+16+25) of the observations lie along the diagonal, suggesting that plan type changed for the remaining 45 percent of the sample. The changes found in this table, and examined further in Table 5D, are much more consistent with what is known about trends in pensions over the period. Thus while only 30 percent of those with a *DB plan only* in 1992 have employer reports suggesting they are covered by a *DB plan only* in 1998, the reason is that 64 percent of them now are covered by both types of plans. More importantly, among those with a *DC plan only* in 1992, their employer provided data suggests they are covered by a *DC plan only* in 83 percent of the cases. In sharp contrast with the self reported data in Table 5B, where 36 percent of respondents with a *DC plan only* reported gaining a DB plan over the intervening period, only 18 percent (5+13) of those whose employer reported they had a *DC plan only* in 1992 were seen to gain a DB plan over the six years. Although more in line with known trends, the gain in DB plans in the private sector among the employer data does suggest some difference in matching procedures over time, or in the number of plan descriptions provided by employers over time. Of perhaps greater interest, according to this sample of respondents, there was no change in their plans between 1992 and 1998, yet the changes observed in employer reported plan types mirror the strong changes observed among general holders of pensions.

We also find discrepancies when we consider results for a sample of 48 *respondents* who reported no change in their pension for the entire period between 1992 and 2004 and have matched plan data for both 1992 and 2004 surveys, and for a comparable sample between 1998 and 2004.

Table 5C: Percentage distribution of firm reported plan type for respondents reporting the same pension plan from 1992 to 1998 and with matched 92 and 98 plan data
Data From The Health and Retirement Study, 1992

Provider Report in 1992	Provider Report in 1998			
	1-DB	2-DC	3-Both	4-Total
	%	%	%	%
1-DB	14	3	31	48
2-DC	1	16	2	19
3-Both	6	2	25	33
4-Total	21	21	58	100
5-Number of observations	95	94	261	450

Table 5D: Distribution of firm reported plan type in 1998 by firm reported plan type in 1992, for respondents reporting the same pension plan from 1992 to 1998 and with matched 92 and 98 plan data

Data From The Health and Retirement Study, 1992

Provider Report in 1992	Provider Report in 1998			
	1-DB	2-DC	3-Both	4-Total
	%	%	%	%
1-DB	30	6	64	100
2-DC	5	83	13	100
3-Both	18	7	76	100
4-Total	21	22	58	100

To summarize, we find misreporting by respondents on two fronts. They report their plan types have not changed when they have, and respondents misreport the types of plans that they hold. Of the respondents who reported no change in their pension for the period of 1992 to 1998 and have matched plan documents, 58 percent of *respondent reports* indicate the same plan type(s)

in those two periods. According to their *plan documents*, 55 percent of them had the same plan type in both years. Moreover, the changes observed in the employer sample correspond more closely to trends in pensions in the 1990s found in administrative data such as Form 5500 data from the Department of Labor, while those reported by respondents do not.

For the corresponding periods 1992 to 2004 and 1998 to 2004, the matches were better. For the *respondent reported* plan types, among those who reported no change in their pensions, the plan types are the same over the period in 62 percent and 68 percent of the cases respectively. For the *plan documents*, the same plan types are reported in 72 percent and 63 percent of the cases over the two time periods respectively.¹⁴

V. Comparison with *Payroll* data from a sample produced by Watson Wyatt

There are a number of potential problems that may result from the process of matching firm reports of plan type to the covered workers in the HRS sample. Although the Summary Plan Descriptions (SPDs) describe the characteristics of covered workers, and HRS asks respondents about these characteristics, e.g., hourly or weekly employee, union member, white collar or blue collar, history of employment and coverage at the firm, there is always a chance for slippage in matching a plan to an individual. Moreover, despite requests that firms send HRS all their plans, they may not have supplied a full set of matched plans.¹⁵

Using payroll data matched with respondent reports of plan type can help to determine whether there are strong consequences from these limitations on the pension matching process used

¹⁴ Percentages are not additive due to varying sample sizes over the periods.

¹⁵ Even if the matches obtained were perfect, plan matches are obtained for only two thirds of HRS respondents who indicate they are covered by a pension. This means that when generating descriptive data that apply to the overall population, pension plan type has to be imputed for one third of respondents. Moreover, a major reason for trying to improve identification of plan type is to ensure that the respondent is being asked questions that are appropriate for whatever plan type is covering the individual. Employer data cannot help with the matching process. They are not obtained until a year after the respondent survey, and thus cannot be used to determine which plan type to quiz the respondent about.

by the HRS. HRS does not have payroll data for its covered respondents. But the Watson Wyatt Company has made available a matched sample with both payroll and respondent survey data. Because the payroll data reveal the worker's pension plans with certainty, comparisons of respondent reports of plan type with the plan types reported in the payroll data provides a reliable indication of the extent of misreporting of plan type by respondents. Since we find the same degree of misreporting by respondents whether the baseline from employer data is taken to be Summary Plan Descriptions collected from respondent employers, or the payroll data collected by Watson Wyatt, the suggestion is that most of the discrepancy between respondent and firm produced data is due to misreports by the respondent.

Steve Nyce (2005) of Watson Wyatt has followed this methodology by matching payroll data from the Human Resource Departments of a number of firms with data from pension questionnaires administered to workers covered by those plans. Moreover, he has at our request reformatted his findings to allow a direct comparison with Tables 3 above, which relates employer and respondent data for the 2004 HRS.¹⁶

¹⁶ Some differences between the Watson Wyatt data and the HRS data should be noted. Although some analysis with the Watson Wyatt data suggests that age is not a dominating factor, the Watson Wyatt data cover a full age range while the HRS data cover those over the age of 50. With regard to the definitions of coverage, there is only a slight difference between the Watson Wyatt and HRS data. We classify the following two cases as DK, while Watson Wyatt data classify them as DC or DB respectively.

Have DB Have DC

1. DK Yes

2. Yes DK

Our categories for HRS data are DB *only*, DC *only* and both. So if a person says DK to either DB or DC, we can't tell whether they have both or not, and classify the response as DK.

The two data sets also treat cash balance plans differently, and cash balance plans are more likely to be found in the Watson Wyatt sample of large firms. HRS treats hybrid plans as DC (they involve an account) while the Watson Wyatt data separate out 401k and 403b, call them DC, and classify hybrid plans as DB. Thus in the Watson Wyatt sample, according to Appendix Table A.1, 73 percent of respondents have a DB plan, which includes hybrid plans, while 28 percent of the sample has a hybrid plan. So 38 percent of Wyatt DB plans are hybrid. It is clear that there are more DB plans in the Watson Wyatt sample of firms than in the HRS, and that the HRS is much less successful in identifying hybrid plans in its sample. Note the possibility that with respondents

In Table 3A, 62 percent of HRS observations are on the main diagonal where respondent reports match firm reports. In Table 6A, the comparable figure for the Watson Wyatt sample is 65 percent.¹⁷ Because there are overall differences in the samples of covered workers, it is useful to focus on respondent reports of plan type conditional on the plan type reported in firm provided data. When we do that, the two tables match remarkably well.

Table 6: Firm vs. Respondent reports of plan type using Watson Wyatt data purged of those with no pension coverage – 20 to 64.

Table 6A: Percent of total responses

Provider Report (Watson Wyatt data)	Respondent Report (Watson Wyatt data)				
	1-DB	2-DC	3-Both	4-DK	5-Total
	%	%	%	%	%
1-DB	2	0	0	0	3
2-DC	0	18	6	2	26
3-Both	2	21	45	2	70
4-Total	5	40	52	4	100
Number of Observations	344	2958	3876	253	7471

in the HRS sample all over the age of 50, many more in the HRS will have been grandfathered into their old DB plans than would be the case for the younger Watson Wyatt sample.

There also are other differences between the populations surveyed. The Watson Wyatt sample is not nationally representative. Moreover, voluntary respondent participation is lower in the Watson Wyatt sample than in the HRS. Those who participate may be better informed about their pensions than those who refuse to take part in the survey, creating another source of bias.

¹⁷ In the HRS data, 17 percent of the respondent matched, firm reported plan types are DB only, 62 percent are DC only, and 21 percent are both. In the Watson Wyatt sample, 3 percent of respondent matched plan types from payroll data are DB only, 26 percent are DC only, and 70 percent are both. Thus 38 percent of the HRS firm reports indicate coverage by any DB plan, while for 73 percent of the respondents in the Wyatt sample, the payroll data suggest coverage by any DB plan. Hybrid plans are not nearly numerous enough to account for this difference. Similarly, in the HRS sample, 83 percent of firm reports involve any DC, while in the Wyatt sample, 96 percent of reports involve any DC.

Table 6B: Percent of Row Total

Provider Report (Watson Wyatt data)	Respondent Report (Watson Wyatt data)				
	1-DB	2-DC	3-Both	4-DK	5-Total
	%	%	%	%	%
1-DB	62	16	10	13	100
2-DC	2	68	24	7	100
3-Both	3	30	64	2	100
4-Total	5	40	52	4	100

Table 6C: Comparison of Selected Plan Type Outcomes Between HRS and Watson Wyatt Data

Percent on Main Diagonal	2004 HRS	2003 Watson Wyatt
Firm reports DB only		
R says DB only	65	62
R says DC only	13	16
R says Both only	20	10
Firm reports DC only		
R says DB only	14	2
R says DC only	70	68
R says Both only	14	24

For convenience the comparisons are summarized in Table 6C. The bottom line from this table is that when respondents' reports of pension plan type disagree with the reports by their employers, the error is in the respondents' reports. Among those with a firm report of a DB only, in the HRS, the percentages of respondents reporting DB, DC and both are 65, 13 and 20. In the Watson Wyatt data, the percentages reporting DB, DC and both are 62, 16 and 10, which when adjusted for the additional 10 percent DK in the Watson Wyatt sample, come relatively close to the HRS values. For those whose firms report DC only, the comparable fractions in the HRS are 14, 70 and 14, while the corresponding figures in the Wyatt sample are 2, 68 and 24. There is a larger tendency in the Watson Wyatt sample to mistakenly pick DC only, rather than to mistakenly pick

DB only, as in the HRS. The largest discrepancy is in the fraction whose employers say they have both types of plans who report coverage by both. In the HRS, 37 percent of those whose employers report both also report both. In the Watson Wyatt data, when the employer reports both, 64 percent of respondents report both.

It is obvious that the findings from the HRS and Watson Wyatt survey are highly complementary. Much of the discrepancy remains between respondent and firm identification of plan type, even when the match is perfect between the respondent and the employer provided plan description. The comparisons between the Watson Wyatt and HRS findings indicate that most of the discrepancy between firm and respondent reported data results from errors or misunderstanding by respondents. This suggests that findings to date with HRS data are valid. Accordingly, findings with Watson Wyatt payroll data suggest that HRS data can be used to estimate and model the effects of imperfect knowledge in analyses of retirement and saving.

For the first time, results based on Watson Wyatt data also provide an indication of underreporting of pension coverage. HRS does not try to collect plan descriptions from those who report not having a pension. Findings with Watson Wyatt data suggest that under reporting of pension coverage amounts to about 5 percent. (The tables above remove this 5 percent.)

VI. Plan type in the full respondent panel.

In this section we use the HRS panel to expand our analysis of changes in reported plan type by respondents who report their plans have remained unchanged.¹⁸ The data allow us to consider

¹⁸ Changes in plan type observed in panel data among those who report no change in their pensions tell us how those in relatively stable employment situations perceive their plan type over time. The remainder of pension covered workers, those with pensions that change between waves, may be in less stable employment, may be located in firms that have switched to cash balance or other hybrid plans, may be covered by plans that are more suitable for job changers, or their plans may differ for other reasons from the plans of those who remain the same job with an unchanging pension. There also is a question about how knowledge or learning about one's pensions is affected by having experienced a recent plan change. Those whose plans are unchanged from period to period may

both consistency across adjoining waves, as well as cumulative consistency over a number of waves. Once again it will be apparent that many people who claim to have unchanging pension plans nevertheless change their reported plan types over time.

**Table 7: Number of Respondents Reporting the Same Pension Across Waves, but Reporting Different Plan Numbers and Plan Types
Data From The Health and Retirement Study 1992 to 2004**

Respondents With The Same Pension	1- Same Pension	2- Number of Plans*	3- At Least One DB Plan	4- At Least One DC Plan
1- Wave 2 Wave 1 diff from Wave 2	2786	2771 752 (27%)	1790 329 (18%)	1110 251 (23%)
2- Wave 3 Wave 2 diff from Wave 3	2378	2369 566 (24%)	1303 267 (20%)	1048 356 (34%)
3- Wave 4 Wave 3 diff from Wave 4	2125	2098 599 (29%)	1019 299 (29%)	983 308 (31%)
4- Wave 5 Wave 4 diff from Wave 5	2227	2215 559 (25%)	1132 317 (28%)	1126 268 (24%)
5- Wave 6 Wave 5 diff from Wave 6	1817	1809 519 (29%)	875 260 (30%)	862 230 (27%)
6- Wave 7 Wave 6 diff from Wave 7	1548	1548 443 (29%)	696 217 (31%)	835 229 (27%)
7- Wave 8 Wave 7 diff from Wave 8	2144	2135 635 (30%)	959 268 (28%)	1165 220 (19%)

* Don't knows and refusals are excluded.

have a longer period to learn about their pension. On the other hand, those with a recent pension change may have just recently been made more aware of their plan type by their employer.

Table 7 documents some of the inconsistencies that arise in the panel among respondent reports of number of plans and plan type, for a sample that reports their pension plans have not changed since their previous interview. In this table we see differences over two consecutive interviews. Comparing adjoining waves, typically a fifth to a third of those reporting no change in their pensions nevertheless report a different number of plans or plan type than they reported in the previous wave. For example, row 1, column 2 of Table 7 indicates that there were 2,771 cases who reported how many pensions they held in Wave 2 of the HRS. Out of this group, there were 752 cases (27%) who reported a different number of plans from the number they had reported in their Wave 1 interview. Similarly, row 1, column 3 shows that there were 1,790 cases who reported having at least one DB plan in Wave 2. Of those, 329 (18 percent) reported not having any DB plans in Wave 1. Row 1, column 4 shows the number of respondents (1,110 cases) reporting at least one DC plan in Wave 2. There were 251 cases out of the 1,110 (or 23 percent) who did not report any DC plans in Wave 1, even though they reported their plan was unchanged since Wave 1.

Cumulative changes since Wave 1 are reported in Table 8. For example, row 5, column 3 indicates 383 respondents in Wave 6 were working at the same employment since Wave 1, reporting each period there had been no change in their pension since the last period. Out of this group, 206 cases reported having at least one DB plan in Wave 6 (excluding DK/RFs) and 125 of them (61%) reported a plan type that did not include a DB plan in at least one previous wave. Row 5, column 4 shows the number of respondents (174) with at least one DC plan in Wave 6 who reported no change in their pension since Wave 1. Out of this group, there are 112 cases (64%) who did not report any DC plans in one or more of the previous waves.

**Table 8: Those with Cumulative Inconsistencies in Respondent Reports of Number of Plans and Plan Type for Those Reporting No Change in their Pensions Since Wave 1
Data From The Health and Retirement Study 1992 to 2004**

Respondents With The Same Pension*	1- Same Pension	2- Number of Plans**	3- At Least One DB Plan	4- At Least One DC Plan
1- Wave 2 Wave 2 diff from Wave 1	2786	2771 752 (27%)	1790 329 (18%)	1110 251 (23%)
2- Wave 3 Wave 3 diff from Wave 2 or Wave 1	1776	1768 635 (36%)	1030 303 (29%)	757 353 (47%)
3- Wave 4 Wave 4 diff from Wave 3, Wave2, or Wave 1	1120	1113 473 (42%)	609 241 (40%)	511 282 (55%)
4- Wave 5 Wave 5 diff from Wave 4, Wave 3, Wave 2, or Wave 1	663	660 298 (45%)	362 193 (53%)	323 195 (60%)
5- Wave 6 Wave 6 diff from Wave 5, Wave 4, Wave 3, Wave 2, or Wave 1	383	381 157 (41%)	206 125 (61%)	174 112 (64%)
6- Wave 7 Wave 7 diff from Wave 6, Wave 5, Wave 4, Wave 3, Wave 2, or Wave 1	213	213 92 (43%)	108 69 (64%)	107 78 (73%)
7- Wave 8 Wave 8 diff from Wave 7, Wave 6, Wave 5, Wave 4, Wave 3, Wave 2, or Wave 1	119	119 51 (43%)	55 36 (65%)	53 40 (75%)

*Note1: The sample in each wave includes respondents who were interviewed and reported the same pension since Wave 1. E.g. the Wave 5 sample includes respondents who reported the same pension in Wave 2, Wave 3, Wave 4, and Wave 5. Respondents who have skipped an interview are not included in the samples.

**Note 2: Don't know and refusals are excluded. Zero number of plans is not excluded.

The cumulative results show the extent of misreporting in the panel. By Wave 8, despite having reported no change from Wave 1 to Wave 8, two thirds to three quarters of respondents who consistently report no change in their plans over the entire period nevertheless are reporting a different plan type in at least one previous wave than they reported in Wave 8, and 43 percent are reporting a different number of plans. One simply cannot take a report that the plan has not changed at face value, especially if trying to understand the evolution of a respondent's pension over the life cycle.

To generalize the results in the panel, we have compared respondents' reports of certain pension characteristics as they vary across seams. A seam is defined as a connection between two waves, starting with Wave 1, over which respondents report no change in their employment and in their pension plans' rules. One seam is reported if there is no change in the pension between Wave 1 (respondent's first interview) and Wave 2 or respondent's next interview if Wave 2's interview was skipped. Over two seams there is no change in the pension from Wave 1 through the next two interviews. For three seams there is no change from Wave 1 through the next three interviews; four seams from Wave 1 through the next four interviews; five seams from Wave 1 through the next five interviews; six seams from Wave 1 through the next six interviews; and seven seams from Wave 1 through the next seven interviews.

The number of seams could be 0, 1, 2, 3, 4, 5, 6, or 7, where 0 indicates a respondent reported a change in plan rules or change in the job after the Wave 1 interview; 1 indicates no plan change between the first and second interview, but that the third wave differs from the first, and 7 indicates the plan did not change over the life of the survey; from Wave 1 to Wave 8.

Each cell in Table 9 indicates the percent of observations with a given number of seams who reported the indicated number of matches in plan type across those seams. The overall sample for the table includes 4345 respondents who reported coverage by a pension in Wave 1. The

number of seams is the number of waves starting in 1992 over which the respondent reported no change in pension plan.

The first row of the table indicates the zero seam category, where 1491 out of 4345 cases did not report having the same pension in the next interview after Wave 1. Therefore, all (100%) of the cases had a zero match for their plan type. An observation fell in the one seam category if respondents reported the same pension and no change in the pensions across first two waves. Two seams are reported if the respondent had the same pension in the first three interviews, and the pension remained unchanged. In 683 out of 4345 cases the respondent reported the same pension in three consecutive interviews. i.e. reported their plan did not change from the last interview in Wave 2 and Wave 3. About half of this group (49%) consistently reported the same plan type in all 3 interviews and about 31% in 2 interviews. About 19% reported a different plan type each of the three times they were interviewed.

The six seams category includes those who were interviewed in all seven waves and had reported no pension change in any of the interviews. About 24% of this group consistently reported the same plan type in all seven waves and another 14% across five of the six seams from Wave 1 to Wave 7. About 2% of the respondents did not have a match in reported plan type across any seam, although they may have reported the same plan type in different waves that were not adjoining.

These inconsistencies buttress the evidence from comparisons between plan types reported by respondents and in matched SPDs obtained from employers that there is considerable error in reported plan type, so that one cannot rely solely on respondent reports of plan type as an error free indicator of what type of plan is held by the respondent. While they add to the weight of the evidence, they are not sufficient to establish that the respondent is responsible for any discrepancy.

A question arises because the plan type used for any wave is the type of the most important plan reported in each interview. DB plans in the HRS are more valuable than DC plans in about

four fifths of the cases. Nevertheless, if the respondent with two plans is well aware of the plan type, but feels that a plan that was once considered secondary is now of greater value than the primary plan, one can see the reported plan type of the most important plan change between waves even though the respondent correctly reports there has been no change in the pension.

Table 9: Percent of Respondents with a Given Number of Seams Reporting the Indicated Number of Matches for Plan Type for their Most Important Plan: DKs/RFs are Excluded.

Number of Seams	Number of Respondents	Number of Matches									
		0	1	2	3	4	5	6	7	% of Total	
Zero Seam	1491	100%									34%
One Seam	1021	31%	69%								23%
Two Seams	683	19%	31%	49%							16%
Three Seams	468	8%	28%	22%	42%						11%
Four Seams	287	4%	22%	22%	16%	36%					7%
Five Seams	182	2%	23%	22%	12%	15%	27%				4%
Six Seams	109	2%	17%	22%	12%	10%	14%	24%			3%
Seven Seams	104	0%	13%	15%	12%	13%	12%	6%	27%		2%
% of Total	4345	46%	27%	13%	7%	4%	2%	1%	1%		100%

The plan type is the type of the most important plan reported in each interview.

VII. Reliability of respondent reports before retirement and at retirement.

Chan and Huff Stevens (2006) and Hurd and Rohwedder (2006) examine respondent knowledge, and impute values for missing pensions respectively. The key assumption made by each study is that people know the most about their pensions right after they leave their jobs. According to this assumption, the closer a person is to retirement, the higher the expected level of agreement that should be found between respondent and firm reports. Chan and Huff Stevens find “Among those reporting pensions on a job that has just ended, almost one quarter indicated in the previous wave that they did not have a pension on this job, while another 30 percent are inconsistent in their pension type reports, didn’t know their pension type, or refused to answer the question.” They also find that consistency in answering the plan type question increases by only one percentage point between the ages of 50 and 60. Comparing reports of plan type between the wave following job termination and each wave preceding job termination, they also find that “... individuals are not likely to be more consistent in the wave immediately preceding job termination.”¹⁹

¹⁹ Much of the analysis in Chan and Huff Stevens refers to measures of the value of the pension. One can, however, question the accuracy of reported pension values obtained from respondents just after they leave their job. Pension benefits reported by respondents before they retire typically are estimated using the standard formula for a single annuity. For those who annuitize benefits, typically those with a DB plan, pension value in retirement depends on the type of annuity chosen. The amounts vary a great deal between a joint and survivor benefit, which for married persons is required by law, compared to the single annuity reported when the benefit is not yet in receipt. This may generate some of the differences observed between values reported pre- and post- retirement. Moreover, annuities may differ for other reasons from those expected before retirement, or analogously from the stated benefit contained in the SPD. For example, a person may ask for a 10 or 20 year certain payment, which will reduce the benefit payments in retirement.

Table 10: Comparisons of Plan Type Reported in Panel, and at Time of Job Termination, With Plan Type from Firm Plan Descriptions (Number reported is percentage of observations where plan type from both sources agree, or where the respondent reports and firm reports are DB only, DC only, or both/combination only.)

Core	Firm 1992 %	Firm 1998 %	Sample
Core 1992	47	42	The sample includes respondents who reported no change in the rules of their pension in 1994, 1996, and 1998. They left that pension job between 1998 and 2000. Number of observations: about 190 in the 1992 sample and about 150 in the 1998 sample.
Core 1994	50	34	
Core 1996	51	36	
Core 1998	51	41	
Pension plan type at job termination between 1998 and 2000.	51	40	
Core 1998		45	The sample includes respondents who reported no change in the rules of their pension in 2000 and 2002. They left that job between 2002 and 2004. Number of observations: about 150*
Core 2000		39	
Core 2002		44	
Pension plan type at job termination between 2002 and 2004.		43	
Core 1992	44		
Core 1994	56		The sample includes respondents who reported no change in the rules of their pension in 1994, 1996, 1998, 2000, and 2002. They left that job between 2002 and 2004. Number of observations: about 90*
Core 1996	50		
Core 1998	51		
Core 2000	46		
Core 2002	49		
Pension plan type at job termination between 2002 and 2004.	50		

*These are respondents who reported the same pension over the reported period and have all required information available.

To further examine this hypothesis, we use HRS data to compare respondent descriptions of their plan upon leaving with corresponding employer plan descriptions. Comparisons are confined to those who left their job between the time the plan description was collected from the firm and the wave following that year.²⁰ We use employer provided plan descriptions for the years 1992, 1998 and 2004. The sample of pension leavers is limited to those who left their jobs between 1992 and 1994, 1998 and 2000, and 2004 and 2006.

In contrast to the assumption made by Chan and Huff Stevens and Hurd and Rohwedder, the data in Table 10 suggest that the respondent does not do any better in identifying plan type in the survey taken just after job termination than in previous surveys. That is, the percentage of cases where the respondent's report of plan type agrees with the employer's report does not increase as the job leaver approaches the date of leaving the plan. Nor is there greater agreement just after the job leaver has terminated employment.

VIII. Further Evidence from Interview Tapes and-Module 6/7

Evidence From the Interview Tapes

To further our understanding of the problems in reported plan type, we listened to 44 HRS interviews covering the pension section, selected randomly. Our impressions from the tape reinforce the conclusions reached from examining the data in the preceding sections, and provide further insight into the reasons for respondent errors in reported plan type, and in other information pertaining to their pensions. Some generalizations follow.

²⁰ If the firm reports were collected at a different time than the respondent reports, and the plan had changed in the mean time, this would reduce the degree of correspondence between respondent and firm reports. Given the short period between respondent and firm reports, this should have only a limited effect.

Respondents seemed to fall into three groups based on their knowledge of pension and consistency in reporting their plan type. Well informed respondents knew their plan type/name consistently in all three plan type questions and most of the other features of their plan. They accounted for 26 percent of the interviews. We would call about 49 percent of the respondents informed. Some of them knew the plan type and/or some of their plan features. The poorly informed group accounted for 26 percent of the interviews and did not know their plan, or they made contradictory responses or guessed answers.

In general, respondents are more likely to know their plan name if it is a 401k. When respondents know the name of their plan such as 401k, 403b, etc., it is not in terms of “DB/Type A” or “DC/Type B”. Respondents who do not know their plan type may know other features of that plan. A majority of respondents with a DB plan can identify it as a DB plan if a DB plan is defined for them. Respondents may be confused about the number of their plans. This is true especially for cases where there was both an own and an employer contribution. Respondents may be confused about their coverage. Respondents whose company is being merged, whose plan is being frozen, or who are not making any contributions may not answer they are included in a plan. Respondents do their best to answer a question even if it is not relevant. A respondent with a DC plan may give a value that s/he expects to receive at retirement.

We also considered the quality of the interview. A majority of interviewers are well informed. They know how to ask questions and how to probe when it’s needed. However, there are some infrequent errors. In a couple of cases, the interviewer showed a lack of knowledge about the name of plans. A few interviewers also had problems in deciding how to deal with the situation when a respondent made contradictory responses. In one case, the interviewer clicked on a wrong plan type, as evidenced by a discrepancy between the respondents answer and the recorded plan type in the data for that observation.

Evidence from the HRS Pension Module

With an eye toward developing a procedure to improve identification of plan type, in 2004 the HRS administered a special supplement/module to the core survey inquiring about detailed pension plan characteristics including their plan's type or name²¹. In this module, in contrast to the core, plan types were not defined, but respondents were asked if they knew the technical name or the type of their plan.

Table 11: Respondents with Reported Plan Type in the Pension Characteristics Module

Respondents	Most Important Plan	Second Most Important Plan
Know the plan name/type Reported:	2255 (73%)	707 (81%)
401k	1108 (49%)	253 (36%)
403b, 457, Thrift/savings, SRA, etc.	458 (20%)	286 (40%)
DB	280 (12%)	44 (6%)
Something else	351 (16%)	104 (15%)
DK	58 (3%)	20 (3%)
Do not know the plan name/type Selected from the list:	847 (27%)	167 (17%)
401k	57 (7%)	13 (8%)
403b, 457, Thrift/savings, SRA, etc.	206 (24%)	49 (28%)
DB	112 (13%)	11 (7%)
Something else	163 (19%)	28 (17%)
DK	309 (36%)	66 (40%)
Asked of Rs with DK if a DB plan:	334	81
Yes	191 (57%)	48 (59%)
Something else	53 (16%)	12 (15%)
DK	90 (27%)	21 (26%)

If the response was affirmative, they were asked to name it. If the response was negative they were presented a list of plan names to choose from. Those respondents who did not know the name

²¹ These questions were contained in the Pension Characteristics Module, and administered to all those in the survey who reported having a pension.

of their plan and could not identify it from the list were read the definition of Defined Benefits plan and asked if their plan is a DB.

Seventy three percent of respondents reported they knew the plan name or the type of their most important plan. About 49% of respondents (Table 11) who reported they know their most important plan type, reported a 401k. For about 84% of respondents (Table 12) who reported having a 401k only and had a matched plan, the plan document was DC only. Among respondents with a matched DC plan only, about 80% of them (Table 13) reported a DC only. Among respondents who had a matched DB plan only, about 42% of them (Table 13) reported a DB plan only. About 20% of respondents with a matched DB plan only answer DK when asked their plan type. In contrast 5% of respondents with a matched DC only answer DK when asked their plan type.

Table 12: Percent of Respondents with Various Firm Reported Plan Types Conditioned on the Plan Types Reported by Respondents

Respondents' Report in the Module	Plan Documents				
	DB only %	DC only %	Both only %	Total	Number of Observations
401k only	3	84	13	100	231
Other DCs only	15	73	11	100	105
401k & other DCs only	4	75	21	100	76
DB only	52	28	20	100	90
Both only	30	25	45	100	44
DK only	38	33	28	100	60
Other combinations	7	43	50	100	42

Table 13: Percent of Respondents with Various Firm Reported Plan Types Conditioned on the Plan Types from Documents

Respondents' Report in the Module	Plan Documents		
	DB only %	DC only %	Both only %
401k only	6	47	22
Other DCs only	14	19	9
401k and other DCs only	3	14	12
Both only	12	3	14
DB only	42	6	13
DK only	20	5	12
Other combinations	6	6	15
Total	100	100	100
Number of observations	113	408	139

Table 14: Respondents with Reported Plan Type in the Pension Characteristics Module with Matched Plan Documents (Statements and/or SPDs)

Respondents	Most Important Plan	Second Most Important Plan
Know the plan name/type Reported:	532 (77%)	171 (81%)
401k	302 (57%)	61 (36%)
403b, 457, Thrift/savings, SRA, etc.	112 (21%)	62 (37%)
DB	56 (11%)	9 (5%)
Something else	52 (10%)	38 (22%)
DK	10 (2%)	1 (1%)
Do not know the plan name/type Selected from the list:	161 (23%)	40 (23%)
401k	13 (8%)	1 (5%)
403b, 457, Thrift/savings, SRA, etc.	43 (27%)	16 (40%)
DB	20 (12%)	2 (10%)
Something else	21 (13%)	5 (12%)
DK	64 (40%)	16 (40%)
Asked of Rs with DK if a DB plan:	71	19
Yes	43 (61%)	11 (58%)
Something else	13 (18%)	4 (21%)
DK	15 (21%)	4 (21%)

These findings again suggest that respondents have a good deal of information about their pensions, but that a number do not know their plan type. The method used in the module may improve the accuracy of respondent answers. Nevertheless, it appears that respondent reports of plan type will continue to be characterized by errors.

IX. Effects of asking questions pertaining to the wrong plan type.

Much of this study has focused on the reasons for discrepancies between respondent and firm reports of pension plan types, with a majority of the evidence pointing to reporting errors by respondents. Before concluding, we wish to consider the consequences of this finding for one approach to redesigning surveys such as the Health and Retirement Study. In particular, one might ask whether it is possible to skip the step of identifying plan type altogether. Why shouldn't surveys simply ask all respondents all questions about pensions, whether the preponderance of evidence suggests they have an account, or a DB plan?

One answer is contained in Table 15, which is based on an experiment HRS conducted in 2006. People were deliberately asked questions appropriate for plan types they didn't have. It looks like respondents will move outside the current sequence to provide an answer, whether appropriate or not.

When respondents who report their plan is DB are asked for the account balance, 62 percent of them provide an account balance, either directly, or indirectly in the form of brackets. To further understand just what it means when someone who says they have a DB plan reports a plan balance, we did a preliminary analysis for three groups.

1. Respondents who have both a DB and DC. Among the respondents who reported their plan was DB, the balance some of them supplied was appropriate for their second plan, which was DC. More specifically, 14 out of 82 in the selected sample report the amount in their secondary DC account when asked what their balance is in their primary DB account.

**Table 15: Respondents with DB Plans Answering to DC Questions and Vice Versa in 2006
Data From The Health and Retirement Study, 2006***

Questions	Respondents
Rs with DB: Receiving quarterly report	Yes: 40% (466/1153)
Rs with DB/Both/DK: Receiving quarterly report	Yes: 43% (595/1382)
Rs with DB: Account Balances	Reported: No account: 5% (61/1138) Zero balance: 1% (12/1138) An amount: 27% (300/1138) Thru brackets: 36% (410/1138) Total: 62% (714/1138)
Rs with DC: Had automatic enrollment	30% (451/1497)
Rs with DC: Expecting life time benefits	49% (727/1497)
Rs with DC: Expected amount of benefits	Reported: an amount: 36% (534/1497) thru brackets: 19% (281/1497) Total: 55% (809/1497)

* The 2006 data is from the early release version.

2. Comparing the expected value of the benefit in 2006 with the value of the account balances when a person with a DB is asked how much is in the account, we would expect to see the account balance somewhere between ten and twenty times the expected yearly benefit. Again in a

selected sample, the ratios of account balance to expected yearly benefit range from less than 1 to 50. Many ratios are in the low single digits.

3. Respondents who report different plan types in 2004 and 2006. 17 out of 59 of them report a DB balance in 2006 that is very close to their DC balance in 2004.

Should surveys ask all pension covered workers about their plan balance, users are going to find it very difficult to interpret what the respondent is reporting when he reports a DB plan and then a balance. In many cases, the report will simply reflect a misunderstanding, or will be the result of the respondent assuming that a question that is not appropriate for a person having their plan type really does make sense.

As seen in Table 15, other responses are also likely to be error ridden when respondents are asked questions appropriate for plan types they do not hold. Forty percent of respondents who report they have a DB plan also report they receive quarterly reports on their pension when asked. But quarterly reports are common for those who hold a DC plan, and much less common for those with a DB plan. Forty nine percent of those who report their plan is DC indicate they will receive lifetime benefits when asked, even though annuities are rare for DC plans and most benefits take the form of an account balance that becomes available upon retirement. Fifty five percent even reported an expected amount for the benefit (either directly or through brackets).

Thus a survey that is designed to very carefully separate the question sequences between different plans, trying hard to avoid any double counting, may hopelessly entangle certain answers pertaining to different plans if plans are not separated according to plan type. Moreover, some of the answers provided to irrelevant questions may simply be erroneous. Although many questions can be asked regardless of plan type, one cannot entirely skip the process of determining plan type before asking certain questions. By asking a respondent certain questions about the plan type s/he did not report, one is inviting error in the response.

X. Summary and Conclusions

Respondent reports contain a good deal of useful information about their pensions. Watson Wyatt data suggest that underreporting of plan coverage is not too severe a problem. Moreover, on average, respondent reports do a good job of describing the overall distribution of pension plan type. Thus respondent reports of plan type often indicate the same frequency of occurrence for those with DB only, DC only or both plans as do employer data.

However, our findings suggest there is a great deal of error in respondents' reports of plan type. Although much of this error is offsetting in the aggregate, so that the overall frequencies of plan type are close to the values reported by employers, the errors have serious implications for respondent knowledge and understanding of their pensions.

Discrepancies between respondent and firm reports are found in cross section data, over time, in panel data, and are confirmed to be present in a number of surveys. Thus we find that reports by a third or more of respondents disagree with their employers' reports as to what type of pension they hold.

Evidence developed in this paper shows that many people approaching retirement do not understand what type of pension plan they have. Discrepancies between respondent and firm reports might arise from errors in the firm reports. However, the evidence presented here suggests that while the process of matching employer produced pension plan descriptions to survey respondents is not error free, the employer provided data is a much more accurate indicator of pension plan type than is respondent provided data.

Findings for respondents who report that their plans have not changed run counter to the well known trend toward defined contribution plans, and well documented evidence that firms have not been adopting defined benefit plans. Our results also suggest that respondents have some difficulty in determining which is their most important plan.

As DB plans take on more of the features of DC plans, morphing through cash balance or related plans, and DC plans take on more of the characteristics of DB plans, offering opportunities for annuitizing benefits, imposing defaults and participation requirements, it will be much harder for analysts to clearly determine plan type, and less likely that respondents will understand and correctly categorize their plans.

Implications for survey design.

Our findings suggest certain modifications in the design of surveys to reduce reporting error. One suggestion arises from our finding that respondents misreport whether their plans have changed over time. To save survey time, the Health and Retirement Study has conditioned the set of pension questions asked in particular waves on whether the respondent reports a pension change since the last wave of the survey. When the respondent reports no pension change, the set of questions asked is truncated, and some responses from the previous wave are used. But if some of these plans have changed, it is inappropriate to use answers from a previous wave.

Another implication concerns the way that information about plan type is elicited. Plan type will be more accurately identified by those who have defined contribution pensions if they are simply asked what type of pension they have. In contrast, respondents with a DB plan will be more accurate in reporting their plan type when the characteristics of a defined benefit plan are read to them before they are asked about plan type. As a result of these findings, the 2008 version of the Health and Retirement Study will ask respondents first if they know the name or type of plan they have, and if so what it is. Then the definition of each plan type will be read to respondents and they will be asked to identify plan type.

Although respondent reports of plan type are subject to errors, and these errors sometimes create systematic bias, we have also shown that respondent reports do contain a good deal of useful information. Given the information content of respondent answers, alternative approaches to

identifying plan type within surveys become less attractive. For example, we have shown elsewhere (Gustman and Tabatabai, 2006) that it would not help the situation much to try to identify plan type from respondent reports of characteristics that are disproportionately associated with either a DB or with a DC plan – e.g., whether a respondent receives a report about the plan on a quarterly basis, whether the plan pays lifetime benefits, and others.

The evidence also shows that providing a person with the opportunity to report on the wrong plan type will invite the individual to present erroneous information. That means one cannot simply ask every person all questions, those pertaining to the plan type they have, and those pertaining to the plan type they do not have. Each time a person is asked a question pertaining to a different plan type from their own, the effect is to introduce complex errors that are difficult to unscramble.

One might suggest that survey questions should use information on plan type from firm reported data. However, firm reported pension data are available with a lag. They can only be collected from firms or the web once the main survey is completed. If they are to be collected indirectly from government sources such as Department of Labor files containing attachments to form 5500 data, an additional lag is created by any delays in the release of the government data. Moreover, once plan descriptions are obtained, it takes time to process them. Consequently, firm reported data are not available on a timely basis for use in a survey.

Implications for further research on pensions.

This paper has focused only on issues pertaining to plan type. One next step is to build on our earlier work (Gustman and Steinmeier, 1989, 2004) and recent contributions by Rohwedder (2003), Chan and Huff Stevens (2006) and others to consider the quality of self reported vs. firm reported information on plan features, such as ages of eligibility for retirement, and various measures of plan value and plan incentives.

Respondent reporting error is a major concern, but there are more important implications of our findings than just the existence of misreporting of pension plan type. To the extent that the misreporting results because respondents do not understand their pension plans, models of pension plan determination, saving and retirement would have to be modified to explain who does and who does not understand their pension, what form misunderstanding takes, and what misunderstanding implies for behavior. Thus to fully understanding retirement and saving behavior, knowledge must be treated as an endogenous outcome. Having to jointly explain knowledge, retirement and saving greatly complicates life cycle and related models, but the evidence presented here and related evidence suggests that we must understand the role of imperfect knowledge if we are to understand the behavior and policies influencing retirement and saving.

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Appendix 1. HRS Data

Employer Plan Documents- 2004 Survey.

Employer plan documents were collected from three different sources. Respondents who reported having a pension provided the names and addresses of their employers. These employers were contacted, or plan descriptions were collected from postings on the web for government employees. In addition, in 2004 respondents requested pension documents from their employer (Experiment Y).

Private and Public Employers:

For respondents working for private employers, the employers were contacted directly and their summary plan descriptions were requested. In total, employers of 582 respondents who work for private employers sent in at least one plan description. Out of this group, 523 cases are matched with at least one plan and 36 cases could not be matched right away. They will be addressed by HRS staff at a later time. The remaining 23 cases had at least one plan description, but were not matched.

The plan descriptions for workers employed by the federal, state, and many local government agencies are now available on the web. The federal and state plans and plans that state governments maintain for workers employed by their local governments are downloaded. Then these employers are contacted to confirm which of the plans obtained from the web are relevant to the particular public employer and if they are offering any additional plans that are not on their website. In cases where additional plans (mainly a DC) were offered those plans are requested also. At this point, none of the government employees are matched with a high degree of accuracy and they are not included in the data.

Appendix 2: Findings for pension changes between 1992 and 2004, and 1998 and 2004.

This appendix provides additional results to those reported in Section IV. In that section, findings on changes in plan type in respondent and firm reports were analyzed for respondents who indicated their plans had not changed between 1992 and 1998. This section provides additional results covering the periods 1998 to 2004 and 1992 to 2004.

Appendix Table 1A begins with respondent reports in 1992 and 2004 for respondents who reported no change in plan type over that period. In Appendix Table 1A, 62 percent of the observations lie along the main diagonal. That means that plan type changed for the remaining 38 percent of the sample even though they had reported no change in their pension. Of the plan types identified in the 2004 *plan documents*, 72 percent of the sample was in agreement with the plan type reported in the provider reports in 1992 (Appendix Table 1C). Among respondents who had reported DC only in 1992, in 2004, in Appendix Table 1B, 19 percent of them reported their plan is DB only, again an unlikely outcome given the trend from DB to DC plans. Another 5 percent gained a DB plan because their plan was converted from a DC plan in 1992 to a combination plan in 2004. In contrast, in Appendix Table 1D, no set of provider reports indicated a transition from DC only to DB only between 1992 and 2004, and only 6 percent of observations imply a transition from DC only to both over that period.

Next Table 1E considers *respondent* reports of plan type for a sample that includes observations where respondents reported the same pension between 1998 and 2004. About 68% of them reported the same plan type in both survey years. Appendix Table 1G reports analogous results for the sample's employer plan documents. According to the plan documents, 63 percent of respondents had the same plan type in 1998 and 2004, so that there was a disagreement in plan type from the plan document in about 37 percent of the cases in this sample. Appendix Table 1H shows that 19 percent of the sample who had a DB plan only in 1998 had plan documents that showed in

2004 they had a DC plan only. According to their plan documents, another 37 percent appeared to gain an additional DC plan. Among respondents whose employer plans had indicated DC only in 1998, for an overwhelming majority of them (95% of them), their employer plans also indicated a DC plan only in 2004. Their plan documents suggested a gain in DB coverage for only 5 percent of respondents, with the entire gain resulting from the conversion of a DC to a combination type of plan. In contrast, Appendix Table 1F, based on respondent reports as to plan type, indicates that of those with a DC only plan in 1998, 22 percent gained a DB plan by 2004, either by having DB only in 2004, or by having both types of plans in 2004.

Table 1A: Percentage distribution of self reported plan type for respondents reporting the same pension plan from 1992 to 2004 and with matched 1992 and 2004 plan data

Self -Report In 1992	Self -Report in 2004				
	1-DB	2-DC	3-Both	4-DK	5-Total
	%	%	%	%	%
1-DB	25	6	4	0	35
2-DC	8	31	2	2	44
3-Both	12	2	6	0	21
4-Total	46	40	12	2	100
5-Number of Observations	22	19	6	1	48

Table 1B: Distribution of self reported plan type in 2004 by self reported plan type in 1998, for respondents reporting the same pension plan from 1992 to 2004 and with matched 1992 and 2004 plan data

Self -Report In 1992	Self -Report in 2004				
	1-DB	2-DC	3-Both	4-DK	5-Total
	%	%	%	%	%
1-DB	71	18	12	0	100
2-DC	19	71	5	5	100
3-Both	60	10	30	0	100
4-Total	46	40	12	2	100

Table 1C: Percentage distribution of firm reported plan type for respondents reporting the same pension plan from 1992 to 2004 and with matched 1992 and 2004 plan data

Provider Report in 1992	Provider Report in 2004			
	1-DB	2-DC	3-Both	4-Total
	%	%	%	%
1-DB	27	4	6	37
2-DC	0	33	2	35
3-Both	12	2	12	27
4-Total	40	40	21	100
5-Number of observations	19	19	10	48

Table 1D: Distribution of firm reported plan type in 2004 by firm reported plan type in 1992, for respondents reporting the same pension plan from 1992 to 2004 and with matched 1992 to 2004 plan data

Provider Report in 1992	Provider Report in 2004			
	1-DB	2-DC	3-Both	4-Total
	%	%	%	%
1-DB	72	11	17	100
2-DC	0	94	6	100
3-Both	46	8	46	100
4-Total	40	40	21	100

Table 1E: Percentage distribution of self reported plan type for respondents reporting the same pension plan from 1998 to 2004 and with matched 1998 and 2004 plan data

Self -Report In 1998	Self -Report in 2004				
	1-DB	2-DC	3-Both	4-DK	5-Total
	%	%	%	%	%
1-DB	28	4	4	1	36
2-DC	5	32	5	3	45
3-Both	8	2	8	1	18
4- DK	0	2	0	0	2
5-Total	40	40	16	4	100
6-Number of Observations	48	47	19	5	119

Table 1F: Distribution of self reported plan type in 2004 by self reported plan type in 1998, for respondents reporting the same pension plan from 1998 to 2004 and with matched 1998 and 2004 plan data

Self -Report In 1998	Self -Report in 2004				
	1-DB	2-DC	3-Both	4-DK	5-Total
	%	%	%	%	%
1-DB	77	12	9	2	100
2-DC	11	72	11	6	100
3-Both	43	10	43	5	100
4- DK	0	100	0	0	100
4-Total	40	40	16	4	100

Table 1G: Percentage distribution of firm reported plan type for respondents reporting the same pension plan from 1998 to 2004 and with matched 1998 and 2004 plan data

Provider Report in 1998	Provider Report in 2004			
	1-DB	2-DC	3-Both	4-Total
	%	%	%	%
1-DB	6	2	5	13
2-DC	0	44	2	47
3-Both	19	7	13	40
4-Total	25	54	21	100
5-Number of observations	30	65	25	120

Table 1H: Distribution of firm reported plan type in 2004 by firm reported plan type in 1998, for respondents reporting the same pension plan from 1998 to 2004

Provider Report in 1998	Provider Report in 2004			
	1-DB	2-DC	3-Both	4-Total
	%	%	%	%
1-DB	44	19	37	100
2-DC	0	95	5	100
3-Both	48	19	33	100
4-Total	25	54	21	100

Appendix 3: Experimental Pension Characteristics Module

This is a set of questions about plan characteristics distributed to all those within the survey who have a current pension. The questions pertain to various characteristics of DB and DC pensions. These plan features include whether enrollment is automatic, whether the individual receives periodic (quarterly) reports indicating an account balance; whether the employer contributes to the plan; whether the individual can guide the investment of own and of the firm's contributions; whether the individual can borrow on the plan; whether R would be eligible for a lump sum payment upon leaving the firm before reaching the early retirement age; whether at retirement the respondent would receive periodic payments for as long as the respondent lives; as well as the technical name for the plan.

Appendix Table 2 presents the percentage of responses indicating plan characteristics in the Pension Characteristics Module arrayed by plan type, DB, DC, or combination. In this table, the plan types from matched 2004/2005 plan documents are used for classifying the responses. This table includes all cases who have gone through the module and have a matched document. Questions such as whether there is automatic enrollment in the plan (59% of those with a matched DB plan, 38% of those with a matched DC plan), having the ability to make choices in the account's investment (37% of those with a DB plan, 72% of those with a DC plan), being able to choose how one's own contributions are invested (36% of those with a DB plan, 70% of those with a DC plan), and if benefits are paid for the lifetime (83% of those with a DB plan, 53% of those with a DC plan²²), are the characteristics that best discriminate among types of pension plan.

²² The 53 percent of respondents reporting an annuity type of benefit from a DC plan seems to be too high. This number agrees with responses to a similar question in the core (62 percent). However, according to Department of Labor's figures, fewer than 20% of 401k plans offer an annuity option. There is some confusion among respondents as to the form that payouts will take.

Appendix Table 2. Number and percent of responses reporting indicated plan characteristics in the Plan Characteristics Module, arrayed by plan type reported in the plan documents collected in 2004/2005

Question	DB Plan	DC Plan	Combination
Number of observations	260	428	2
Automatically enrolled	59%	38%	100%
Get Statement	60%	82%	50%
Employer Contributes	84%	92%	100%
Have Choice on How Account Invested	7%	72%	50%
Have Choice on How Own Contribution invested	36%	70%	50%
Allowed to borrow	32%	47%	50%
Lump-sum Allowed	58%	74%	50%
Expecting lifetime benefits	83%	53%	100%
Plan Type in the Module	32%	81%	0

Note 1: The DB and DC plan types are the plan types from matched 2004/2005 plan documents.

Note 2: It's assumed the DB plan is the most important plan if the employer offered it and it was matched with the respondent.