DEFINED CONTRIBUTION PLAN EMPLOYER MATCH SUSPENSIONS DURING THE FINANCIAL CRISIS

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SUMMARY

This report documents employer contributions to defined contribution (DC) plans based on *Form 5500 Annual Return/Report of Employee Benefit Plan* ("Form 5500") filings from 2005 through 2011. The focus is on changes in employer contributions following the financial crisis that began in late 2008 and the subsequent recession.

Participants experienced reductions in median employer contributions of 2% between 2007 and 2008 and another 13% from 2008 to 2009. Employer contributions generally rebounded in 2011, but remained below pre-crisis levels. Substantial differences existed by plan size and by industry. Very small plans with fewer than 10 participants reduced their employer contributions the most, but remained more generous than larger plans.

The report shows trends over time in aggregate employer contributions and three other metrics that capture alternative aspects of employer contributions: per-participant employer contributions, ratio of employer-to-participant contributions, and the incidence of suspensions or reinstatements of employer contributions. Regardless of the metric under study, the results consistently show a reduction in employer contributions in 2009. The 2010 figures were generally similar to those in 2009, and we find some evidence for rebounding employer contributions in 2011.

Employer contributions may have decreased due to reductions in match rates or in participants' own contributions. We find evidence for both; participants' own contributions also dipped in 2009 and 2010 and remained relatively stable in 2011.

Contribution reductions did not apply evenly. Employer contributions dropped in the lower portion of their distribution, up to roughly the 80th percentile (about $4,000 per participant per year); above that level employer contributions remained fairly stable from 2005 through 2011. Participant contributions fell in the upper portion of their distribution, above roughly the 30th percentile (about $2,000 per participant per year); below that level participants generally increased their contributions.

The report considers several plan subpopulations of potential interest. Not surprisingly, the changes in employer contributions most clearly manifested themselves among plans of companies that are known to have suspended or reduced their contributions. Separately, we hypothesized that companies that sponsor both defined benefit (DB) and DC plans would reduce their DC contributions more than other companies because of the combination of stricter DB contribution requirements of the Pension Protection Act of 2006 (which generally became effective in 2008) and the recession. However, employer contributions of DB plan sponsors displayed a similar or more muted reduction in 2009 as those of other plans, and were generally recovering in 2010 and 2011.

Employer contributions in some industry sectors changed more than in others. Employers in construction and transportation reduced their contributions by the most. These sectors also experienced the largest drops in participant contributions to their own accounts. In addition, the employer contributions as a fraction of participant contributions of the transportation sector reduced substantially from their already-low level, albeit exhibiting signs of a significant recovery in 2011. At the other end of the spectrum, both employer and participant contributions in the mining and utilities sectors increased from 2008 to 2009.

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1. INTRODUCTION

Retirement plans can be generally categorized as either defined benefit plans (DB) or defined contribution plans (DC).[1] While traditionally the pension landscape was dominated by DB plans, considerable evidence indicates that DC pension plans have become an increasingly important part of American workers' retirement assets. For example, the Employee Benefit Research Institute (EBRI) estimated that 31% of private-sector workers participated in only a DC plan in 2011. Another 3% participated in only a DB plan and 11% participated in both a DC and a DB plan. Three decades earlier, the DC and DB prevalence were almost exactly reversed. In 1979, 7% of private-sector workers were in a DC plan only, 28% were in a DB plan only, and 10% had both.[2]

Employer contributions form a potentially important part of DC plans. In general, employers can provide non-elective contributions, that is, contributions that do not depend on the level of employee contributions (often in the form of profit-sharing), or matching contributions, that is, the employer matches a certain percentage of the employee's contribution. A recent survey of 401(k) plans indicates that 94% of plan sponsors offer some sort of profit sharing or matching contribution.[3] While 401(k) plans frequently offer only matching contributions or a mix of matching contributions and profit sharing, they rarely offer only the latter.[4] Employers, of course, are not required to make any such contributions, and during adverse economic conditions they may elect to decrease or suspend those altogether. For example, according to the Plan Sponsor Council of America, company contributions to 401(k) plans as a percentage of eligible participants' total annual payroll declined from 2.9% in 2008 to 2.1% in 2009.[5] Although this figure climbed back to 2.5% in 2011 (the latest year for which data are available), it is still below historical levels.

This report supports an effort by the Employee Benefits Security Administration (EBSA) of the U.S. Department of Labor (DOL) to analyze employer match contributions and changes in participant contribution behavior during and immediately following the recent financial crisis. To conduct this analysis we used data from *Form 5500 Annual Return/Report of Employee Benefit Plan* ("Form 5500") filings for 2005-2011. These data are augmented with external sources that have

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[1] The main differences between a DB plan and a DC plan are two-fold. First, a DB plan provides a stream of income until the beneficiary deceases, while the money in a DC plan is restricted to individualized contributions and the investment returns on those contributions. Second, the worker-participant in a DC plan faces investment risks which in a DB plan are borne by the plan sponsor.

[2] "Pension Plan Participation," *Fast Facts* 225, 28 March 2013. Accessed at http://www.ebri.org/pdf/FF.225.DB-DC.28Mar13.pdf.

[3] Deloitte Annual 401(k) Benchmarking Survey 2012, p. 13.

[4] The Plan Sponsor Council of America's 55th Annual Survey of Profit Sharing and 401(k) Plans (p.3) finds only 17 (or 2%) such plans, out of 840 plans surveyed; 54% of the plans offered a combination of profit sharing and matching, while 44% of remaining plans offered matching contributions only. Also note that these figures are very close to the study cited in footnote 3 (http://www.psca.org/55th_survey).

[5] 55th Annual Survey of Profit Sharing and 401(k) Plans, p. 23.

identified organizations that have suspended or decreased the employer match. Specifically, we seek to address the following questions:

- How has the rate at which companies match DC contributions by employees changed over time?
- What is the incidence of changes in employer contributions, match suspensions, reductions, and reinstatements over this time period?
- For companies that publicly announced reducing or suspending their DC plan matches during the financial crisis, how does that information compare with the data?
- How have aggregate employer and employee contributions changed over time?
- How does the timing of an announced match reduction or suspension correspond to changes in DC matching, participation, and accumulations in regulatory filings?
- How has participant behavior responded to changes in the employer match?
- How do these changes over time differ by such plan characteristics as plan size and industry?
- How do plans that reduced or suspended their DC matches compare to plans that did not?

The remainder of this report contains the following. Section 2 describes the source data of Form 5500 DC pension plan filings. Section 3 discusses results and Section 4 concludes.

2. THE DATA

The analysis in this report is primarily based on Form 5500 DC pension plan filings. We use the 2005-2011 Form 5500 Private Pension Plan Research Files ("Pension Research Files").[6] It is our understanding that these differ from the raw Form 5500 data in that they address incorrect EINs, participant counts, contribution amounts, and other data issues.[7] Through 2009, the Pension Research Files were designed to contain all filings of pension plans with 100 or more participants and a 5% sample of smaller plans. The 5% sample was selected on the basis of digit patterns in the sponsor's EIN. So long as a sponsor's EIN did not change from year to year, the sample thus permits longitudinal plan matching. Starting in 2010, the Pension Research Files were designed to contain all pension plan filings, regardless of size.

Unless otherwise stated, all results in this report are weighted by the sampling weight on the Pension Research Files ("plan-weighted") or by the number of participants that each record represents ("participant-weighted").[8]

Analysis Sample

In light of this report's focus on per-participant contributions, the analysis sample excludes plans with reportedly zero participants or with inconsistencies in the number of reported participants. The restrictions are based on reported active participants, total participants, and participants with a non-zero plan balance. The first column of Table 1 shows the number of filings in which any of these counts is reported as zero. The table's middle panel indicates that this affected approximately 10% of filings in 2005-08 and 6%-7% of filings in 2009-11, when Forms 5500 were generally filed electronically. Participant counts could be inconsistent if, for example, the reported number of total participants was lower than the number of active participants. After having removed plans with reportedly zero participants, approximately 1% of plan filings were excluded because of inconsistent participant counts. As indicated in the bottom panel of Table 1, the fraction of participants that were excluded from the sample was between 1% and 4%.

A relatively small number of plans were excluded because their reported contributions were implausibly high. Section 415(c) of the Internal Revenue Code limits combined employer and participant contributions to qualified retirement plans. For example, the combined contribution limit for 2011 was $49,000. For participants who are at least 50 years old at the end of the calendar year, the limit was $54,500. The analysis excludes plans with reported per-participant contributions in excess of the annual limits for participants age 50 or older. After having removed plans with

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[6] The Pension Research Files are available at http://www.dol.gov/ebsa/publications/form5500dataresearch.html.

[7] In addition, Pension Research Files exclude filings by direct filing entities (DFEs) and one-participant plans.

[8] More precisely, participant weights are equal to plan weights times the number of participants. The applicable participant count is the number of active participants with a non-zero account balance, as defined below.

zero or inconsistent participants counts, this affected between 0.1% and 0.2% of plans—see Table 1.

Table 1. Form 5500 DC Plan Sample Selection (2005-2011)

Year	Zero participants	Inconsistent participant counts	Excess contributions	In analysis sample	Total
2005	6,283	967	162	89,524	96,936
2006	6,112	936	176	91,899	99,123
2007	6,128	948	186	93,926	101,188
2008	6,452	1,004	173	95,203	102,832
2009	5,110	1,277	126	99,345	105,858
2010	44,893	9,072	447	590,458	644,870
2011	39,077	5,499	516	584,480	629,572
Plan-weighted row percentages:					
2005	10.5%	1.1%	0.2%	88.2%	100.0%
2006	10.1%	1.0%	0.1%	88.7%	100.0%
2007	10.0%	1.0%	0.2%	88.8%	100.0%
2008	10.5%	1.0%	0.2%	88.3%	100.0%
2009	7.5%	1.7%	0.1%	90.8%	100.0%
2010	7.0%	1.4%	0.1%	91.6%	100.0%
2011	6.2%	0.9%	0.1%	92.8%	100.0%
Participant-weighted row percentages:					
2005	0.1%	1.1%	0.0%	98.7%	100.0%
2006	0.1%	2.1%	0.0%	97.8%	100.0%
2007	0.2%	1.9%	0.0%	97.9%	100.0%
2008	0.2%	1.4%	0.0%	98.3%	100.0%
2009	0.2%	1.2%	0.0%	98.5%	100.0%
2010	0.0%	3.8%	0.0%	96.2%	100.0%
2011	0.1%	3.1%	0.0%	96.8%	100.0%

Source: Form 5500 Research Files.

The analysis sample contained approximately 585,000 plans and 590,000 plans in 2011 and 2010, respectively, and between 89,000 and 100,000 in 2005-09, when the Pension Research Files included only a subset of plans with fewer than 100 participants.

Aggregate Number of Participants and Plan Contributions

To provide context for the upcoming analysis of employer contributions, we present the aggregate weighted number of participants in the plans under analysis (Table 2) and the aggregate weighted dollar contributions (Table 3) for each year from 2005 through 2011.[9]

[9] Throughout this report, years refer to the year in which a Form 5500 reporting period ended ("statistical year"). For example, figures for 2011 are based on filings

Table 2. Number of Participants in Sample of DC Plans (2005-2011)

	Participants (millions)				
Year	Active (A)	Total (B)	With DC balance (C)	Active with balance (D=C-(B-A))	Take-up rate (D/A)
2005	60.4	73.0	53.1	40.5	67.1%
2006	63.9	77.4	56.3	42.7	66.9%
2007	64.6	78.7	57.5	43.5	67.3%
2008	65.1	79.8	59.1	44.4	68.2%
2009	70.1	84.8	62.5	47.8	68.2%
2010	71.2	85.6	63.6	49.2	69.1%
2011	72.0	86.6	64.4	49.8	69.1%

Source: Form 5500 Research Files.

The number of active participants in DC plans increased from 60 million in 2005 to 72 million in 2011 and the number of total participants from 73 million in 2005 to 87 million in 2011. According to the 2011 Instructions for Form 5500, active participants are currently in employment covered by the plan and are earning or retaining credited service under the plan. They include eligible workers even if they do not actually contribute to the plan or receive contributions from their employer. Table 2 also shows that the number of participants with a non-zero plan balance increased from 53 million in 2005 to 64 million in 2011; these may be individuals who are actively participating or individuals who have separated from the plan sponsor.

In 2011, there were 72 million active participants and 87 million total participants. In other words, there were 15 million retired, separated, or otherwise inactive participants. According to the 2011 Instructions for Form 5500, inactive participants are individuals who were receiving benefits or were entitled to future benefits, i.e., they had a balance in their account. Removing those 15 million inactive participants from the 64 million participants with a balance leaves 50 million active participants with a balance, as shown in Column D of Table 2. The number of active participants with a balance grew from 41 million in 2005 to 50 million in 2011. Active participants with a balance provide a more meaningful measure than (all) active participants, as the former excludes active participants without prior or current DC plan contributions even though they were eligible to participate—their inclusion would bias per-participant contribution measures. Therefore, the remainder of this report is based on this measure of the number of active participants with a balance.

The ratio of active participants with a balance (Column D) to active participants (Column A) may be interpreted as the plan take-up rate. That rate was 69% in 2011. For comparison, the 2012 National Compensation Survey reported a 70% take-up rate of DC plans.[10]

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that reported on periods ending in 2011; part of the reporting period may have been in 2010.

[10] National Compensation Survey, March 2012, Table 2. Accessed in September 2013 at http://www.bls.gov/ncs/ebs/benefits/2012/ownership/private/table02a.htm.

Table 3 shows aggregate contributions to the plans, separately for employer contributions, participant contributions, and "other contributions," which include roll-overs and non-cash contributions. All dollar amounts have been inflated into 2011 dollars using the Consumer Price Index for All Urban Consumers (CPI-U). Aggregate employer contributions increased from $99 billion in 2005 to $112 billion in 2008 before falling to $110 billion in 2009 and recovering to $118 billion in 2011. This pattern provides the first evidence of reduced employer contributions around 2009. Participant contributions increased from $156 billion in 2005 to $176 billion in 2007 and remained at approximately the 2007 level through 2010, then increased to $181 billion in 2011. Put differently, at the aggregate level there is little or no evidence that workers compensated for reduced contributions by their employers. In fact, participant contributions decreased slightly in 2008 and remained below their pre-crisis level through 2009. We will revisit this issue below.

Table 3. Aggregate Contributions to Sample of DC Plans (2005-2011)

	Contributions ($ billions)			
Year	Employer	Participant	Other	Total
2005	98.7	155.5	18.0	272.3
2006	107.0	169.5	20.9	297.4
2007	111.8	176.0	22.5	310.3
2008	112.0	174.6	19.3	305.9
2009	109.7	175.4	16.2	301.4
2010	114.0	177.1	20.3	311.4
2011	117.7	180.9	21.8	320.4

Source: Form 5500 Research Files.
Note: Contributions in 2011 dollars.

Plan Subpopulations of Potential Interest

Our analysis will compare various measures of employer contributions for all plans to those of four subpopulations of potential interest.

1. *Plans known to have suspended or reduced employer contributions*. Based on news articles, corporate press releases, and other sources, the Pension Rights Center compiled a list of plan sponsors that are known to have suspended or reduced their employer contributions to DC plans.[11] The list contains 329 unique sponsor names. Several appeared to be public entities that were exempt from filing a Form 5500. We identified the Form 5500 filings for 280 sponsors; one was excluded from the analysis because its only Form 5500 filing reported zero participants.
2. *DB Plan sponsors*. This subpopulation consists of DC plans sponsored by a company that also sponsored a DB plan.[12] The Pension Protection Act of 2006 (PPA) increased contribution requirements for DB pensions plans. These rules generally took effect in 2008 and, in combination with the recession, may

[11] See http://www.pensionrights.org/publications/fact-sheet/companies-have-changed-or-temporarily-suspended-their-401k-matching-contribu, accessed in March 2013.
[12] The Pension Research Files also contain DB plans. Sponsors that also sponsor a DB plan (in the same statistical year) are identified as such via their EIN.

have exacerbated pressures on companies that sponsored both DB and DC plans to preserve cash by reducing their employer contributions to DC plans.
3. *401(k) Plans*, that is, DC plans with a 401(k) feature.
4. *Auto-enrollment plans*, that is, DC plans that provide for automatic enrollment and have employee contributions deducted from payroll. This feature has been reported on the Form 5500 since 2009.

For the first subpopulation of potential interest, the Pension Rights Center provided an announcement date and an effective date of the policy change. However, the effective date was often unknown or close to the announcement date. Table 4 tabulates the announcement dates for the subset of sponsors for which we located Form 5500 filings. Almost four-out-of-five announcements took place in the first half of 2009 and 88% were made in 2009.

Table 4. Quarter during Which Companies Announced DC Match Suspensions

Quarter	Freq.	Percent
2008 Q1	2	0.7%
2008 Q2	1	0.4%
2008 Q4	26	9.3%
2009 Q1	135	48.2%
2009 Q2	84	30.0%
2009 Q3	15	5.4%
2009 Q4	11	3.9%
2010 Q1	2	0.7%
2010 Q2	3	1.1%
2011 Q1	1	0.4%
Total	280	100.0%

Source: Pension Rights Center.

Table 5 shows the number of plans and participants in the subpopulations of potential interest in 2011. The 280 sponsors that are known to have suspended or reduced their employer contributions sponsored 358 DC plans covering 1.8 million participants in 2011.

Table 5. Numbers of Plans in Subpopulations of Potential Interest (2011)

Subpopulation	Plans	Participants (millions)
All Plans	584,480	49.8
Plans known to have suspended or reduced employer contributions	358	1.8
DB Plan sponsors	28,277	17.0
401(k) Plans	477,221	40.9
Auto-enrollment plans	22,655	12.7

Source: Form 5500 Research Files, Pension Rights Center.

3. ANALYSIS

This section focuses on three metrics of employer contributions: per-participant employer contributions, employer contributions as a fraction of participant contributions ("employer contribution ratio"), and the share of companies that did not make contributions among those that had contributed in the previous year ("suspension rate").

Theoretically we expect to find employers to lower their contributions to DC plans during an economic downturn as they try to cut costs in general.[13] In addition, there are reasons why one may also expect to see a reduction of participant contributions during a recession. From a macroeconomic perspective, a reduction in employment, caused by layoffs and by under-employment—both of which have been witnessed during the recent financial crisis—can arguably lead to lower overall participant contributions.[14] This prediction appears to be corroborated by the figures displayed in Table 3 above. On a microeconomic level, reductions in employers' matching contributions may lead employees to adjust their DC contribution amounts in either direction—participants could lower their contributions in response to lower effective rates of return, or they could increase their personal contributions in order to compensate for the reduced employer contributions.[15]

We start with per-participant employer contributions and show that they were generally lower in 2009-11 than in 2005-08. Such reductions in the data may in general be due to three different causes. First, employers may decide to cut non-elective contributions, such as profit sharing. Second, employers can lower their match rate, resulting in lower absolute employer contributions, if employee contributions are stable. Third, even if the employer contribution ratio remains constant, their absolute contributions may (mechanically) shrink if participants' own contributions are reduced.

The Form 5500 data mask certain potentially important aspects of DC plan funding. First, there is no information on the formula, if any, used by plan sponsors to determine their contributions; only total employer contributions and total participant contributions are observed. Practically, we cannot differentiate between non-elective employer contributions and employer contributions that follow a match rate formula. In other words, one drawback of the data at hand is that we cannot distinguish

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[13] A recent study links Form 5500 data and Capital IQ data for a small set of known suspenders to detect common characteristics of these suspenders. The authors find that liquidity constraints rather than profitability concerns appear to be the reason for suspending contributions. A.H. Munnell and L. Quinby, "Why Did Some Employers Suspend Their 401(k) Match?" Center for Retirement Research, No. 10-2, September 2010.

[14] I. Dushi, H.M. Iams, and C.R. Tamborini, "Contribution Dynamics in Defined Contribution Pension Plans During the Great Recession of 2007–2009," *Social Security Bulletin*, Vol. 73, No. 2, 2013.

[15] Other channels, such as changes in household wealth, may also have led to changes in participants' behavior during the financial crisis, see the reference in footnote 14 for a detailed discussion.

between cuts in non-elective contributions and cuts in contributions due to reduced matching. In consequence, this report focuses not on "match rates" but on "employer contribution ratios," agnostically defined as employer contributions as a fraction of participant contributions. Second, the fact that Form 5500 information is aggregated to the plan level may mask any non-linearities in match formulas. For example, a plan where half the participants reduced their contributions by $1,000 and the other half increased their contributions by $1,000 will look the same in terms of average participant contributions as a plan in which no one changed anything. Depending on where participants are on a match formula curve, it is unclear what will happen to the employer contributions or the employer contribution ratio. This is important for the reader to keep in mind when interpreting the analysis results.

As demonstrated next, employer contributions, participant contributions, and employer contribution ratios all diminished following the financial crisis of 2008. Notable differences existed by plan size, across industries, and across the subpopulations of potential interest identified earlier. In the interest of parsimony, the text highlights only the more pertinent findings and the Appendix contains additional details.

Per-Participant Employer Contributions

Figure 1 shows the cumulative distributions of employer contributions per active participant with a balance for each of the years from 2005 through 2011. On the horizontal axis are per-participant employer contributions, ranging from $0 to $10,000. The intercept reflects the fraction of plans for which the employer did not contribute anything. For example, the intercept is 0.266 for 2011 (gray curve), indicating that 26.6% of plans did not receive an employer contribution in that year. The 2011 curve rises to 0.926 at an employer contribution of $10,000 per participant, indicating that 7.4% of plans contributed more than $10,000 per participant. The horizontal dashed line points to median contributions. For example, the 2011 curve crosses the dashed line at $1,268, i.e., the median contribution was $1,268 per participant in 2011. The graph's legend documents each distribution's intercept (fraction with zero contributions) and median contribution; see Appendix Table A.1 for additional percentiles.[16] The farther a curve is positioned to the left or up, the less employers contributed.

The 2005, 2006, and 2007 distributions of per-participant employer contributions were close to one another. In 2008, employer contributions generally started decreasing. The fraction that contributed $0 remained approximately the same as in 2005-07, but the median contribution fell by roughly $200 and the reductions were greater in the upper half of the distribution. Larger reductions came in 2009. The fraction of plans that contributed $0 increased by 3 percentage points and the median contribution fell to $1,273 per participant, down from $1,689 the year before and $1,871 in 2007. Employer contributions slightly decreased further in 2010 before rebounding in 2011 to approximately their 2009 level. In sum, employer contributions were approximately stable in 2005-07, decreased some in 2008,

[16] The Appendix contains tables with summary statistics for every text figure. The figures and Appendix tables are numbered consistently. For example, Appendix Table A.3 corresponds to text Figure 3.

decreased more sharply in 2009, and remained approximately constant through 2011.

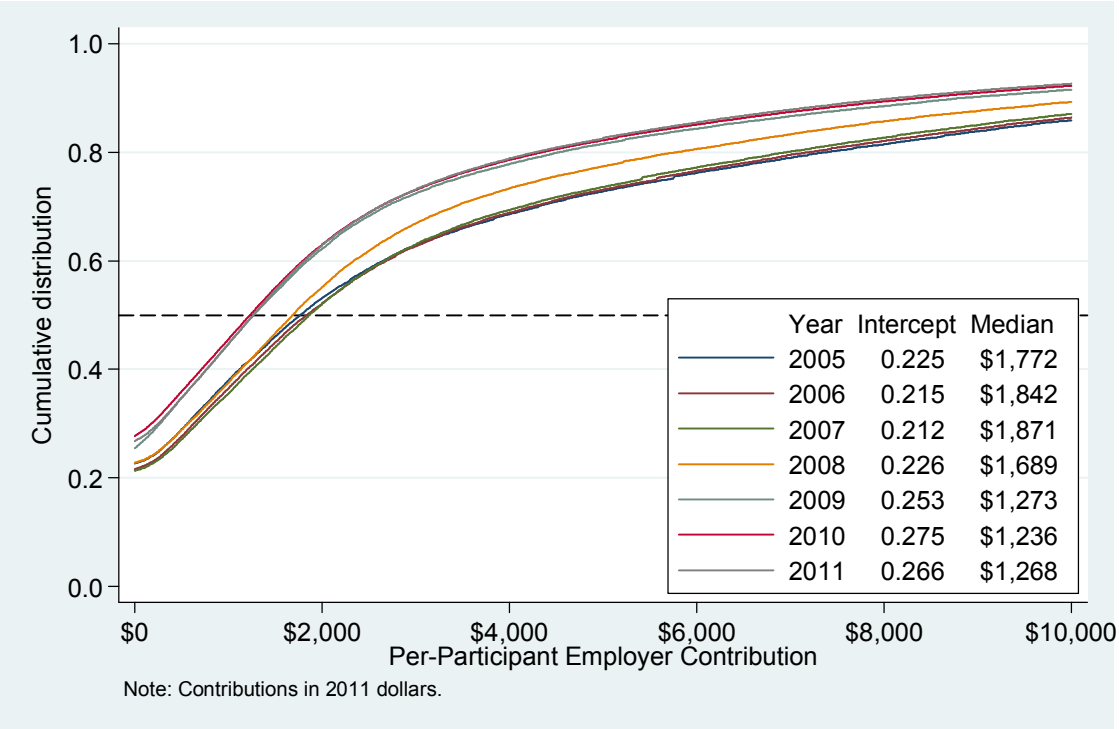

Figure 1. 2005-2011 Distributions of Per-Participant Employer Contributions (Plan-Weighted)

Figure 1 is plan-weighted, i.e., small and large plans contribute equally to the distribution. However, there are substantial differences by plan size. Figure 2 shows distributions of per-participant employer contributions for plans with 1-9 participants ("micro plans"), and Figure 3 through Figure 6 show their counterparts for plans with 10-99, 100-499, 500-4,999 and 5,000 or more participants. Figure 7 shows participant-weighted distributions of per-participant employer contributions.

The general pattern of small changes in 2005-2007, larger reductions in 2008-2009, and small changes in 2010-2011 surfaces in plans of all sizes. However, the changes were unevenly distributed by plan size and the level of employer contributions also differed by plan size. Micro plans reduced employer contributions as early as at least 2006 (Figure 2). The magnitude of the reductions was larger than that at larger plans, but the median level of contributions was also higher than that at larger plans. Employer contributions to plans with 10-99 participants were generally stable through 2008 and then declined (Figure 3). The same holds for plans with 100-499, 500-4,999, and 5,000 or more participants, but the reduction in 2009 was mostly limited to the lower portion of the distribution (Figure 4, Figure 5, Figure 6). At the median, employers of plans with 10-99 or 100-499 participants were generally less generous than those of smaller or larger plans. In sum, the 2009 reductions in employer contributions applied across the entire distribution for plans up to 99 participants, whereas they were generally limited to the lower portions of the distributions for plans with 100 or more participants. This finding is in line with the

literature, which generally concludes that employer contributions of smaller plans were more likely to be negatively affected during the financial crisis.[17]
More than 90% of plans had fewer than 100 participants, and they dominate plan-weighted distributions (Figure 1 above). Weighted by participants, however, the larger plans dominate (Figure 7).

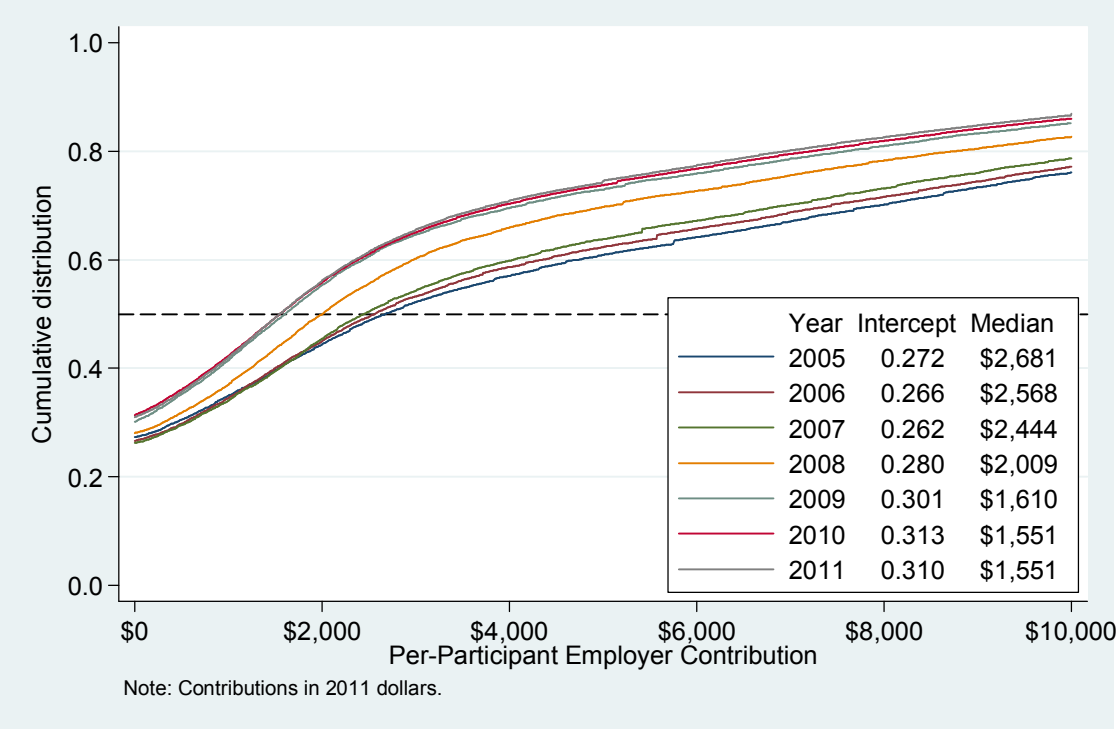

Figure 2. 2005-2011 Distributions of Per-Participant Employer Contributions for Plans with 1-9 Participants (Plan-Weighted)

[17] C. R. Tamborini, P. Purcell, and H. M. Iams, "The relationship between job characteristics and retirement savings in defined contribution plans during the 2007–2009 recession", *Monthly Labor Review*, May 2013.

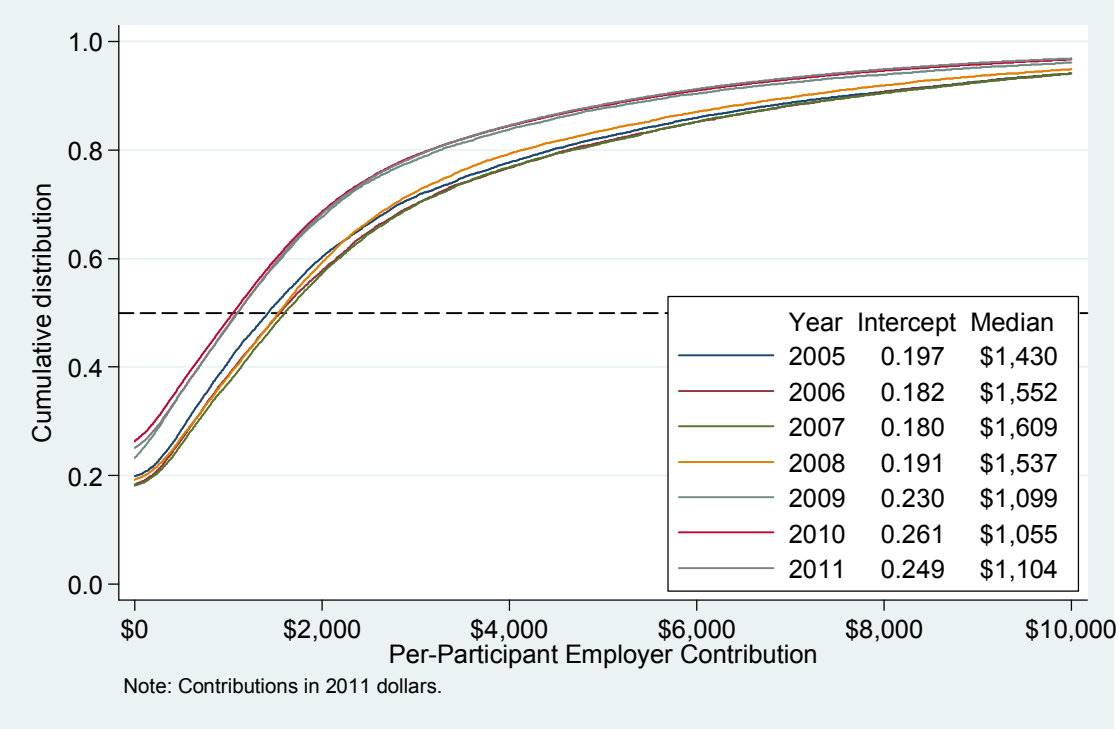

Figure 3. 2005-2011 Distributions of Per-Participant Employer Contributions for Plans with 10-99 Participants (Plan-Weighted)

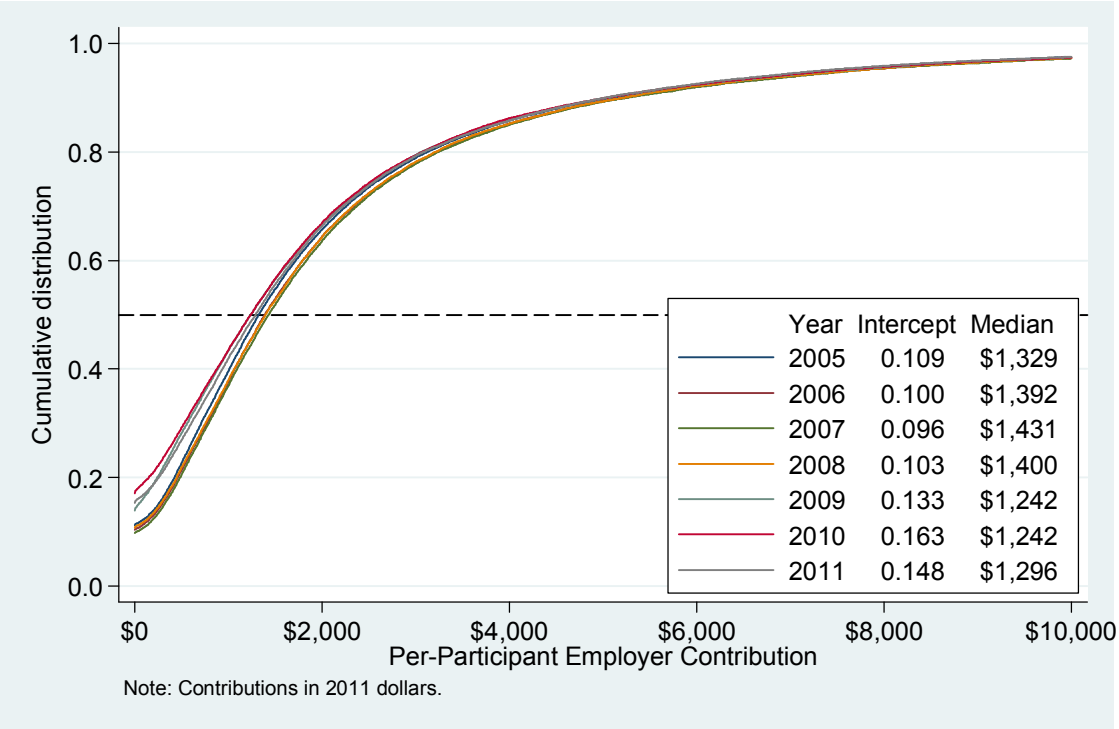

Figure 4. 2005-2011 Distributions of Per-Participant Employer Contributions for Plans with 100-499 Participants (Plan-Weighted)

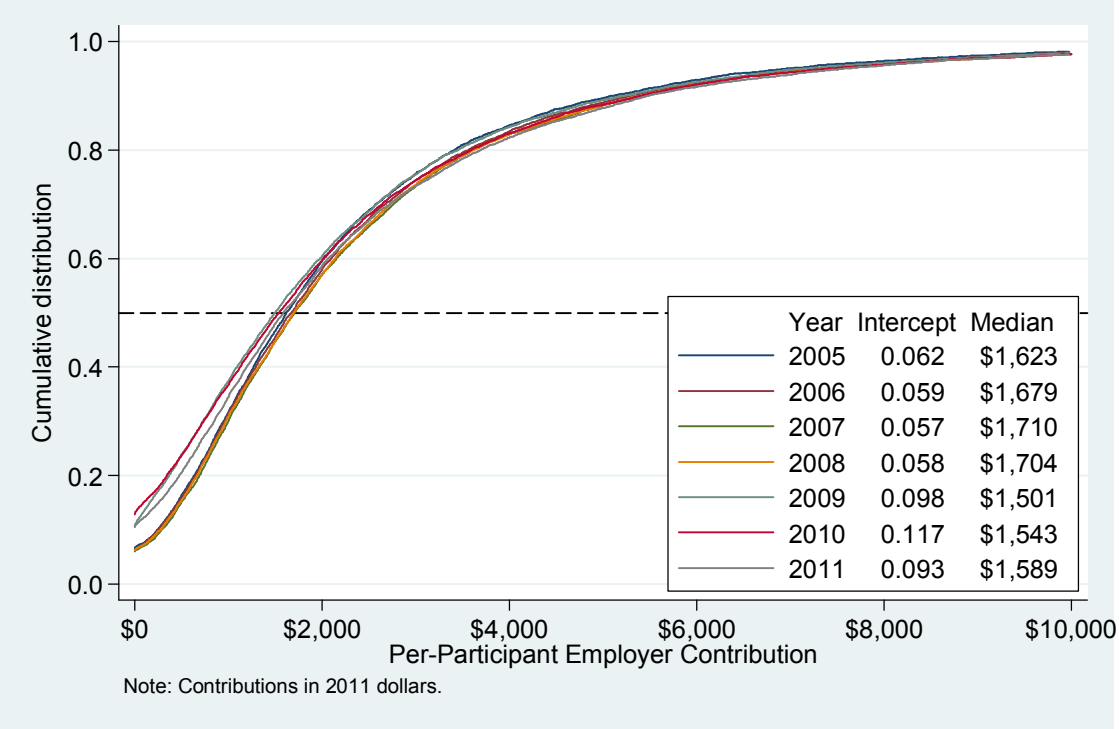

Figure 5. 2005-2011 Distributions of Per-Participant Employer Contributions for Plans with 500-4,999 Participants (Plan-Weighted)

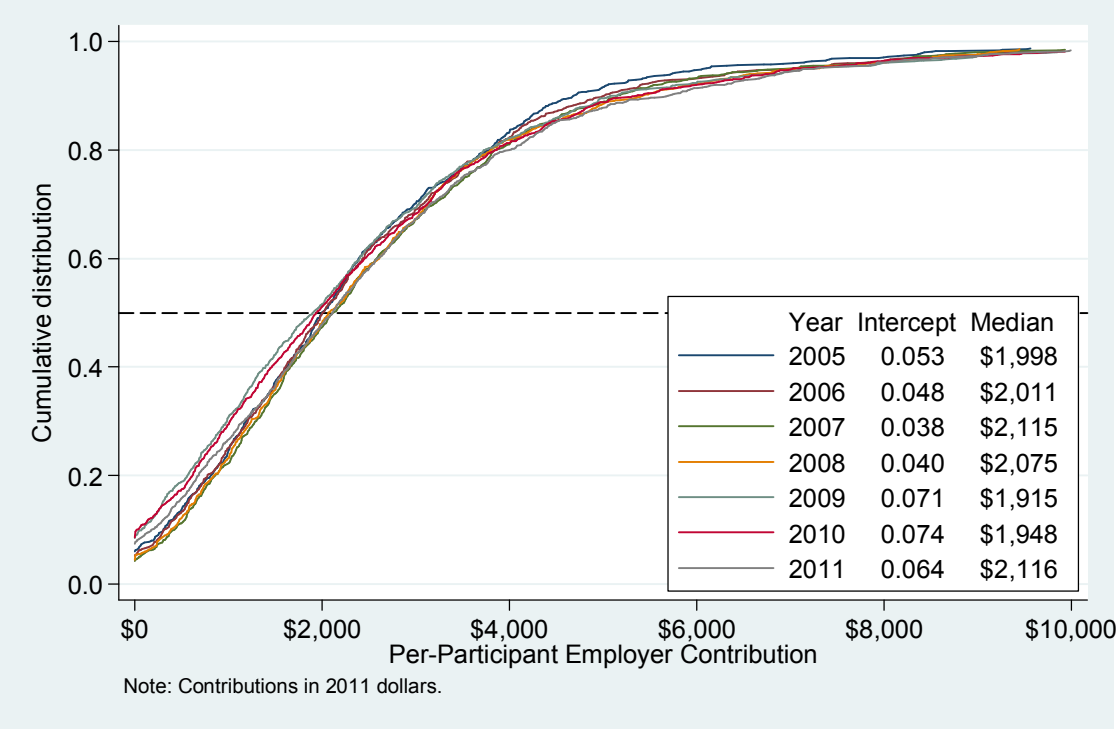

Figure 6. 2005-2011 Distributions of Per-Participant Employer Contributions for Plans with 5,000 or More Participants (Plan-Weighted)

The participant-weighted distributions of per-participant employer contributions in Figure 7 provide a nationwide worker-participant perspective. Employer contributions grew slightly between 2005 and 2007, with more participants receiving a contribution from their employers and the median contribution moving upward. The 2008 distribution of employer contributions remained close to that of 2007. In 2009, however, participants started receiving less from their employers, at least up to about the 80th percentile, or roughly $4,000 per participant. The 2011 distribution shows a recovery from the 2009 level, though not to the level of 2008.

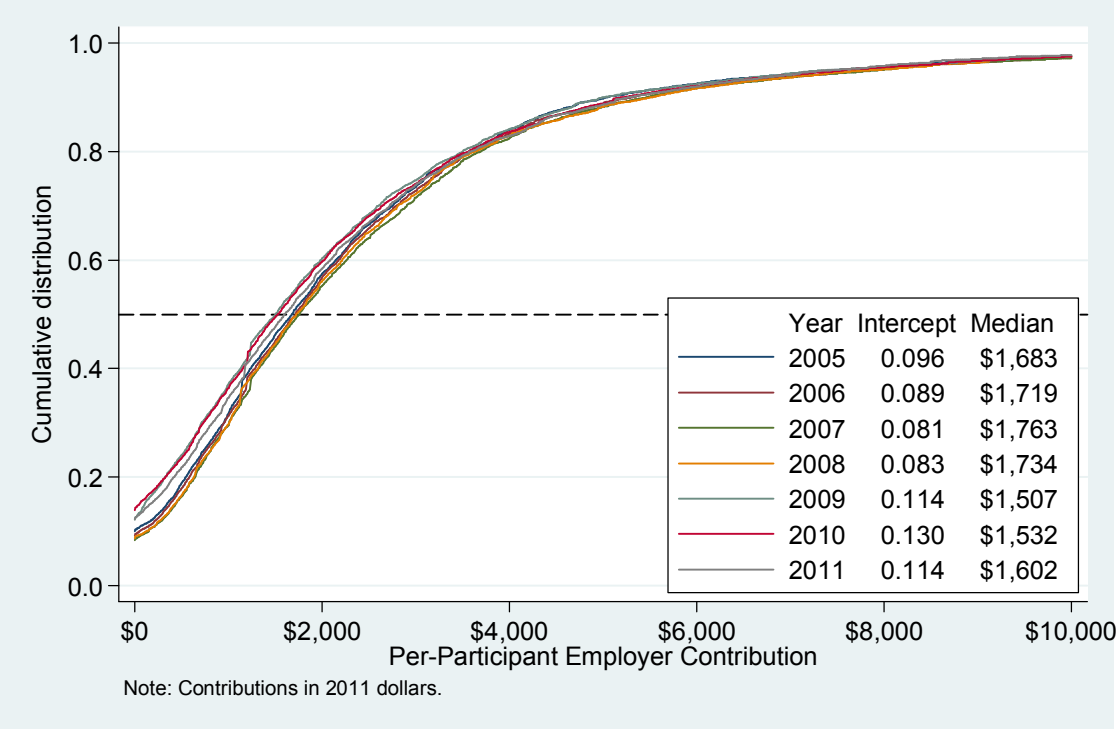

Figure 7. 2005-2011 Distributions of Per-Participant Employer Contributions (Participant-Weighted)

Employer Contribution Ratios

Lower employer contributions may have resulted from lower employer contribution ratios or from lower contributions by participants to their own accounts. Figure 8 shows participant-weighted distributions of employer contribution ratios[18] and Figure 9 depicts participant-weighted average participant contributions. See the Appendix for plan-weighted distributions and distributions by plan size.

[18] The employer contribution ratio of plans with both zero employer contributions and zero participant contributions is indeterminate. Such plans are therefore excluded from figures and tables of employer contribution ratios. Separately, weighted by participants, 9% of plans with nonzero employer contributions had zero participant contributions in 2011. The employer contribution ratio of such plans is infinity and the asymptotic value of the 2011 curve in Figure 8 is therefore 0.91.

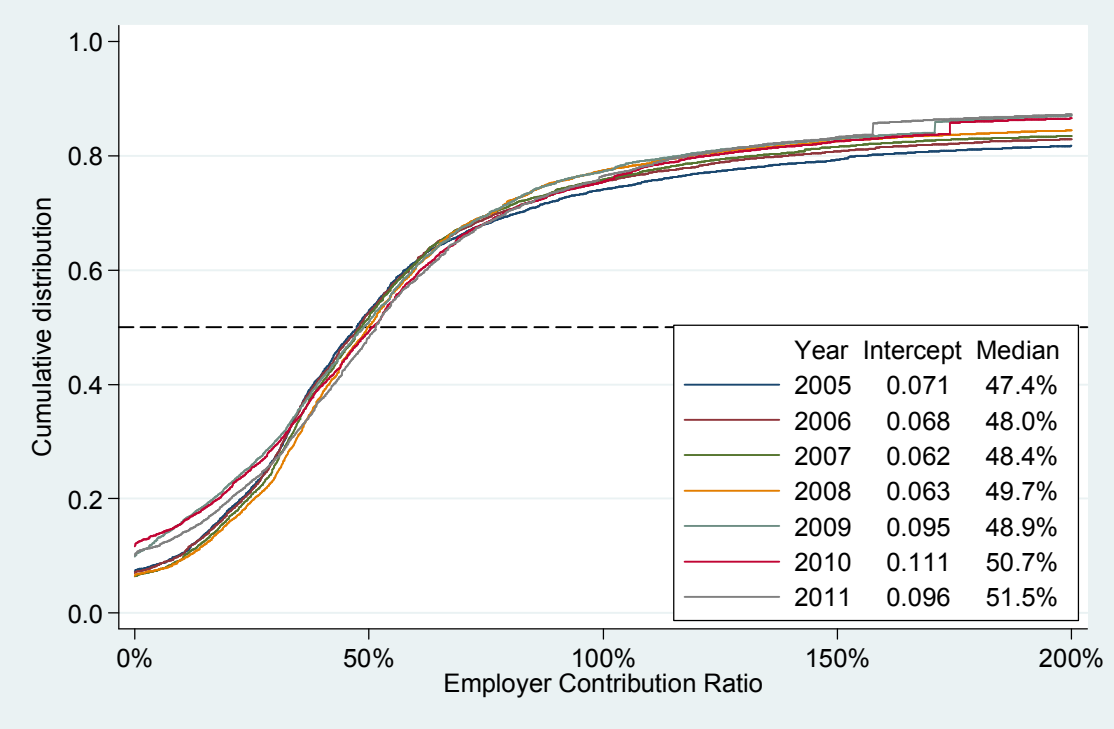

Figure 8. 2005-2011 Distributions of Employer Contribution Ratios (Participant-Weighted)

The main change in employer contribution ratios was a reduction between 2008 and 2009 in the lower portion of the distribution (Figure 8). The fraction of participants who contributed to their own accounts but were in plans without employer contributions increased from 6% in 2008 to 10% in 2009 and 11% in 2010, before dropping to 10% in 2011. Employers contributed less, relative to participants, up to about the 30th percentile, or an employer contribution ratio of roughly 40%.[19]

Keep in mind that individual plans need not be on the same portions of distributions of employer contributions (e.g., Figure 8) and employer contribution ratios (Figure 9). For example, an employer may contribute only a small dollar amount (bottom left portion of Figure 8) but have a high employer contribution ratio (upper right portion of Figure 9), because its participants contribute very little.

As shown in Figure 9, participants also reduced their contributions, at least above approximately the 30th percentile, or roughly $2,000 per participant. Among the potential explanations for this reduction is a decline in employer match rates, which effectively decreases the rate of return that participants receive on their contributions. Participants may have responded to such lower returns by reducing

[19] The notches in 2009, 2010, and 2011 at employer contribution ratios of about 170% reflect a single large plan. Its employer contribution ratios exceeded 200% in 2005-08. The notches in Figure 7 and Figure 9 reflect the same plan.

their own contributions.[20] We attempted to quantify participant responses to changes in employer match rates.

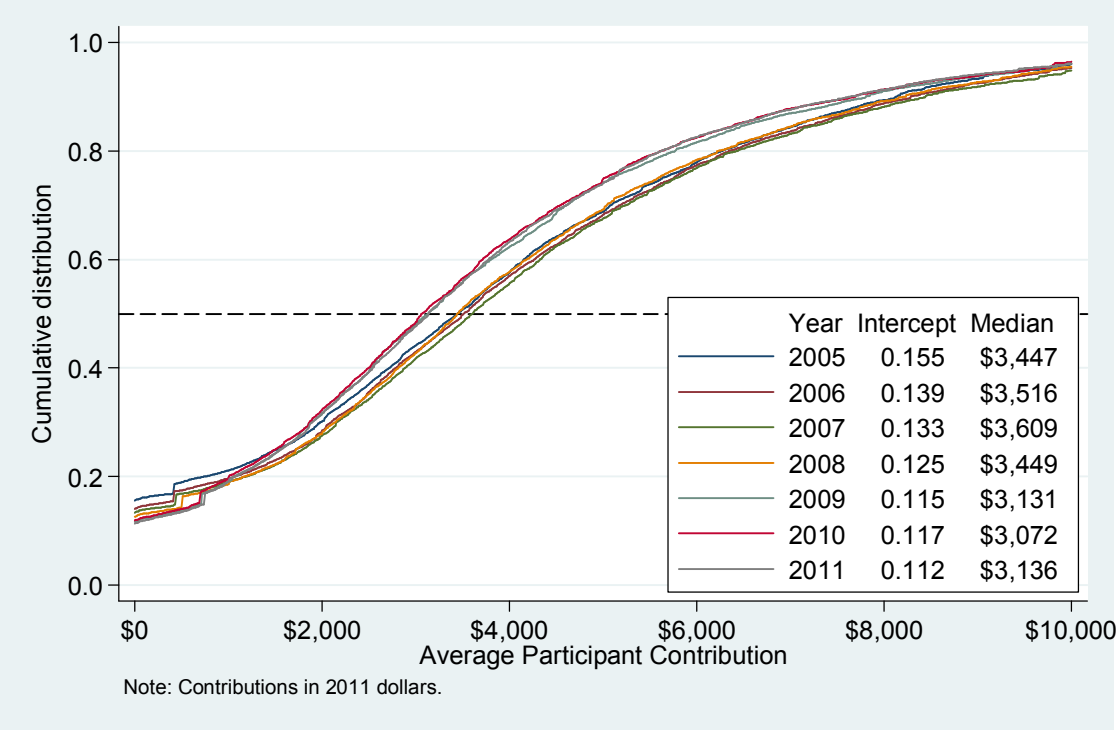

Figure 9. 2005-2011 Distributions of Average Participant Contributions (Participant-Weighted)

Table 6 shows the results of regression models to explain average participant contributions on the basis of variations in employer contribution ratios. The unit of observation is a plan year. Plans with employer and participant contributions both zero are excluded from the model, as are plans with employer contributions that exceeded 100% of participant contributions. The outcome is the logarithm of the plan's average participant contribution, plus $1. The explanatory variables are an indicator for zero-employer contributions and the logarithm of the employer contribution ratio; if that ratio is zero, its log is set to zero. We present two specifications. The first is an ordinary least squares model; the second includes plan fixed effects. All observations are weighted by the number of active participants with a balance at the end of the most recently reported plan year.

[20] Especially during a recession, there could have been other reasons for reduced participant contributions, such as a cut in hours and compensation or spousal unemployment.

Table 6. Regression Results of a Log-Log Model to Explain Participant Contributions (t-Statistics in parentheses)

Outcome: log($1+average participant contribution)	Ordinary Least Squares (1)	Plan Fixed Effects (2)
Zero employer contribution ratio	-.2334	-.1334
	(-104.55)	(-59.83)
Log(employer contribution ratio)	.0081	.0147
	(12.33)	(31.85)
Intercept	8.2872	8.2836
	(8,556.94)	(12,867.70)
Number of observations	1,116,176	1,116,176
Number of plans		473,609

The results are qualitatively the same in the two models. We focus the discussion on the plan fixed effects model, which accounts for unobserved plan features. The effect of the indicator for zero employer contributions is -0.1334, suggesting that participants contributed about 13% more if their employer made at least some contribution than if their employer did not contribute anything. Conditional on the employer making plan contributions, the effect of the employer contribution ratio is 0.0147. This coefficient captures the effect between logarithmic transformations of two variables and may therefore be interpreted as an elasticity. A 10% increase in employer contribution ratio is thus associated with a 0.147% increase in participant contributions. Based on these results, it appears that participants do not respond strongly to employer match rates.[21] In addition we find that this small positive effect seems to be largely driven by the responsiveness of participants in plans with a lower match rate (that is, consistently smaller than 50%), while the effect diminishes when restricting to plans that exhibit a larger match rate (not shown).

We point out that even though these effects tend to be of small size, they appear to confirm findings in the existing literature. For example Munnell et al (2001) find that, given the existence of an employer match, "the level of the match does not appear particularly important [to the participant's contribution decision]", whereas Mitchell et al. even describe 401(k) participants as "relatively immune to savings incentives offered by their employers."[22,23]

In sum, per-participant employer contributions were approximately stable from 2005 through 2008 and declined in 2009 for the bottom 80% of the distribution. This coincided with declining employer contribution ratios in the bottom 30% of that distribution (see Figure 8) and with declining participant contributions in the top 80% of that distribution (see Figure 9). The distributions of employer contributions,

[21] As a robustness check we ran a variety of alternative specifications, such as including year dummies as additional explanatory variables as well as a quadratic specification of the match-ratio, and find this result to be remarkably stable.
[22] A.H. Munnell, A. Sundén, and C. Taylor, "What Determines 401(k) Participation and Contributions?" *Social Security Bulletin*, Vol. 64 No. 3, 2001/2002.
[23] O. Mitchell, S.P. Utkus, and T. Yang "Turning Workers into Savers? Incentives, Liquidity, and Choice in 401(k) Plan Design," *National Tax Journal* Vol. LX, No. 3, September 2007.

participant contributions, and their ratio remained approximately the same in 2010 and 2011 as they were in 2009.

Changes over Time in Employer Contributions of Individual Sponsors

While the analysis above provides insights into the evolution of distributions of employer contributions, it does not shed light on movements along the distributions of individual plan sponsors. For example, the distributions in two years may be similar, but that stability may obscure substantial mobility of some employers contributing much more and other much less than the year before. This section aims to quantify changes over time by individual employers.

Restricting the analysis to plans whose filings could be linked over multiple years, Figure 10 and Figure 11 show plan-weighted and participant-weighted year-on-year changes in per-participant employer contributions, respectively.

More than one-half of plans changed its per-participant employer contributions by less than 15% year-on-year, with the exception of the change from 2008 to 2009, when 45% of plans changed by less than 15%. Indeed, in all years except 2008-09, the distributions of changes were similar, which is broadly consistent with the stability of distributions of per-participant employer contributions in the 2005-2008 and the 2009-2011 periods. From 2008 to 2009, 22% of plans reduced their per-participant employer contributions by 15%-49% and 12% reduced them by 50%-99% (also see Appendix Table A.10).

Weighted by participants, year-on-year changes are generally smaller than at the plan level (Figure 11 and Appendix Table A.11). The fraction of participants in plans that changed their per-participant employer contributions by less than 15% was between 62% and 66% in all years except from 2008 to 2009, when it was 56%. Greater stability aside, the qualitative patterns were the same at the participant as at the plan level.

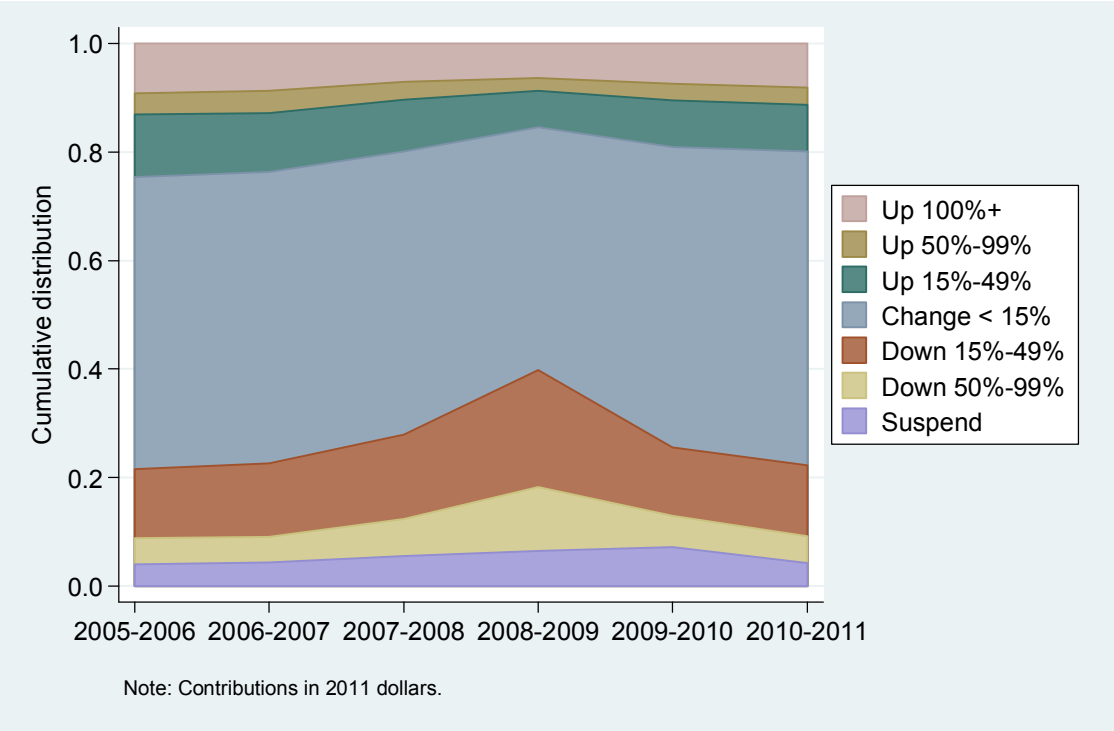

Figure 10. Plan-Weighted Year-on-Year Changes in Per-Participant Employer Contribution (2006-2011)

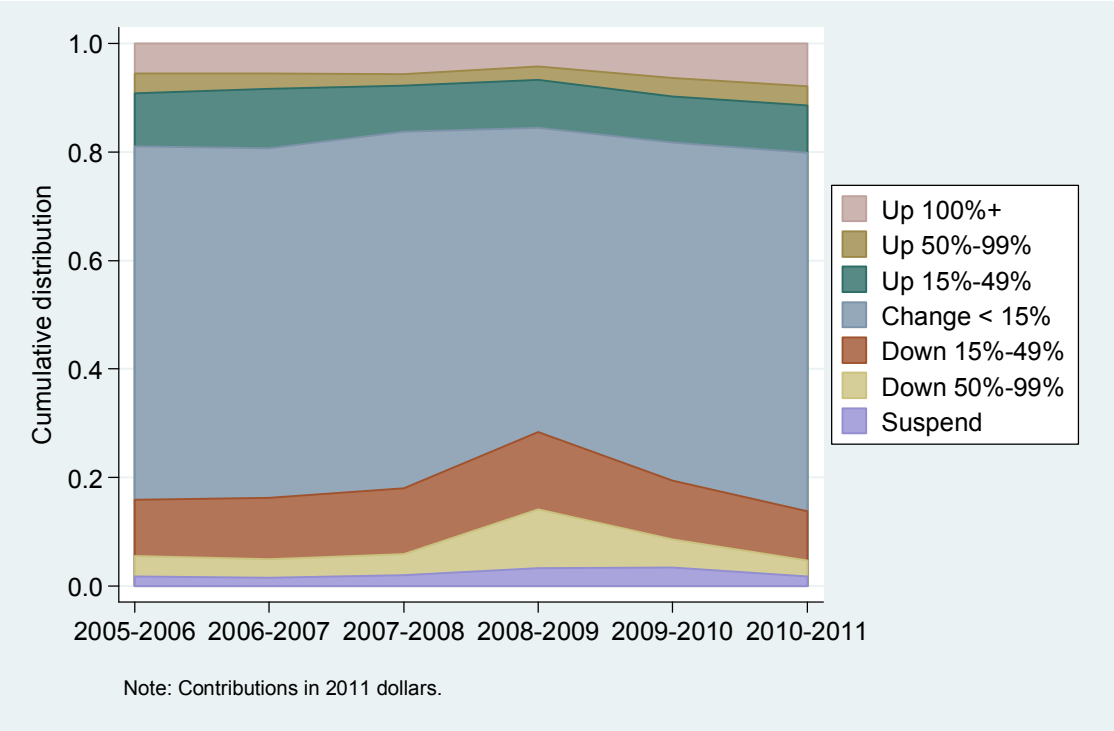

Figure 11. Participant-Weighted Year-on-Year Changes in Per-Participant Employer Contribution (2006-2011)

Focusing on the top and bottom segments of Figure 10 and Figure 11, Table 7 shows the incidence of plan sponsors suspending or reinstating contributions. The table is again based on plans for which filings were observed in multiple years. The first two columns show the fraction of plans for which the employer contributed funds in the previous year but not the current year. For example, 9% of plans to which employers contributed funds in 2009 did not receive employer contributions in 2010.[24] Weighted by participants, 4% of plans completely suspended employer contributions in 2010.[25] By 2011, this number had dropped to the pre-crisis level of 2%.

Table 7. Fractions of Plans That Suspended or Reinstated Employer Contributions (2006-2011)

	Employer contributed last year but not this year		Employer did not contribute last year, but did this year	
Year	Plan-weighted	Participant-weighted	Plan-weighted	Participant-weighted
2006	5.1%	1.9%	20.0%	23.7%
2007	5.4%	1.6%	17.9%	22.1%
2008	6.9%	2.2%	15.8%	17.5%
2009	8.1%	3.6%	15.2%	20.7%
2010	9.0%	3.8%	15.2%	19.3%
2011	5.8%	2.0%	15.1%	24.6%

Source: Form 5500 Research Files.

The employer suspension rate increased monotonically from 5% in 2006 to 9% in 2010, before dropping to 6% in 2011. Suspensions were more common among small plans than among large plans, because in every single year the participant-weighted percentage is less than half of the corresponding plan-weighted figure.

The third and fourth columns of Table 7 show rates at which plans that had not received an employer contribution in the previous year did receive employer contributions in the current year. For example, 15% of plans that received no employer contribution in 2010 did receive an employer contribution in 2011. These could represent reinstatements or first-time employer contributions to existing plans. Reinstatements were more common among large plans than among small plans, because the 15% reinstating plans in 2011 represented 25% of plan participants. Reinstatement rates generally declined over the period under consideration, but upticks in the participant-weighted reinstatement rate for 2009 and 2011 suggest that large plans became particularly likely to restore their contributions. Bear in mind that reinstatement rates apply to the relatively few plans that did not receive an employer contribution in the previous year. For example, there were roughly four times as many plans in 2009 with employer contributions in 2008 than without.

[24] The corresponding percentage in Figure 10 is 7% (also see Appendix Table A.10). This percentage is less than 9% (Table 7), because the population in Figure 10 includes plans without employer contributions in the prior year.

[25] The suspensions may have begun earlier, but 2010 was the first full year with zero employer contributions.

Differences across Industries

Table 8 displays participant-weighted median per-participant employer contributions by industry. There are substantial differences, with employers in the mining and utilities contributing the most and their counterparts in the transportation, agriculture, and retail trade contributing the least. From 2008 to 2009, worker-participants in the transportation industry experienced the largest reduction in employer contributions, by $508 (46%) at the median from $1,101 to $593—which however rebounded to $1,038 in 2011. Participants in the construction and manufacturing industries also faced large reductions in employer contributions. In some industries, median employer contributions increased in 2009.

Table 9 shows participant-weighted median contributions by participants to their own accounts.[26] Again, there are substantial differences across industries in the median participant contributions, with below-average contributions in the construction, agriculture, and retail trade industries. In 2009 or 2010, worker-participants in the construction and transportation reduced their contributions by more than those in other industries. The correlation between industry-level changes from 2008 to 2009 in employer contributions (Table 8) and participant contributions (Table 9) is 0.79, suggesting that much of the reduction in employer contributions may have been driven by reductions in participant contributions.

Table 10 presents participant-weighted median employer contribution ratios by industry. The construction industry stands out for its employer contribution ratios that are much greater than those in other industries—on the order of 180%, compared with the nationwide average on the order of 50% (see Figure 8). In seven industries, the employer contribution ratio was lower in 2009 than in 2008, and in four industries it went up. The largest decline—from 39% to 28%—took place in the transportation sector, which already had the lowest ratio in 2008. This is consistent with the finding that employer contribution ratios were generally stable, except among the bottom 30% of the distribution, where they became lower yet (see Figure 8). From 2010 to 2011 the employer contribution ratios increased for every sector (except for the financial sector, where it remained constant).

[26] More precisely, Table 9 shows participant-weighted median values calculated over plan averages.

Table 8. Median Per-Participant Employer Contributions by Industry (Participant-Weighted, 2005-2011)

Year	Agriculture	Mining	Construction	Manufacturing	Transportation	Communications & information	Utilities	Wholesale trade	Retail trade	Finance, ins & real estate	Services
2005	1,179	3,113	1,918	1,805	807	2,036	2,568	1,532	1,137	2,095	1,771
2006	1,074	3,438	2,083	1,870	908	1,969	2,659	1,515	1,144	2,228	1,774
2007	1,113	3,492	2,243	2,026	1,003	2,273	2,740	1,574	1,122	2,290	1,795
2008	1,117	3,416	2,150	2,048	1,101	2,178	2,801	1,566	1,047	2,265	1,776
2009	995	3,579	1,802	1,677	591	2,229	3,068	1,348	973	2,243	1,527
2010	1,104	3,508	1,674	1,756	650	2,036	3,084	1,321	984	2,349	1,518
2011	1,113	3,998	1,677	2,039	1,038	1,936	3,080	1,473	1,019	2,254	1,509

Source: Form 5500 Research Files.

Table 9. Median Average Participant Contributions by Industry (Participant-Weighted, 2005-2011)

Year	Agriculture	Mining	Construction	Manufacturing	Transportation	Communications & information	Utilities	Wholesale trade	Retail trade	Finance, ins & real estate	Services
2005	1,763	4,988	1,120	4,028	3,370	4,249	6,637	3,432	2,032	4,281	3,469
2006	1,869	5,449	1,248	4,114	3,266	4,085	7,148	3,384	2,044	4,605	3,528
2007	1,921	5,351	1,499	4,172	3,368	4,544	6,373	3,519	2,084	4,739	3,725
2008	1,793	5,098	1,494	4,078	3,183	4,526	6,715	3,451	1,766	4,419	3,555
2009	1,750	5,163	1,061	3,831	2,743	4,214	7,041	3,218	1,773	4,159	3,208
2010	1,822	4,928	946	3,719	3,021	4,110	6,964	3,080	1,798	4,104	3,172
2011	1,857	4,983	949	3,915	3,136	4,048	7,052	3,118	1,828	4,188	3,154

Source: Form 5500 Research Files.

Table 10. Median Employer Contribution Ratios by Industry (Participant-Weighted, 2005-2011)

Year	Agriculture	Mining	Construction	Manufacturing	Transportation	Communications & information	Utilities	Wholesale trade	Retail trade	Finance, ins & real estate	Services
2005	76.2%	65.5%	166.7%	41.2%	33.5%	46.6%	42.7%	44.2%	54.0%	49.7%	49.9%
2006	63.2%	64.0%	161.1%	43.1%	32.3%	47.1%	42.5%	46.8%	53.2%	49.0%	48.8%
2007	65.3%	63.6%	146.5%	44.3%	36.8%	49.9%	42.5%	45.9%	48.7%	50.3%	47.7%
2008	62.1%	70.3%	119.0%	45.7%	38.8%	47.3%	44.3%	45.0%	53.3%	52.0%	49.3%
2009	57.7%	67.1%	144.9%	43.7%	28.4%	47.1%	47.6%	41.3%	57.1%	54.5%	47.5%
2010	60.6%	70.0%	152.5%	45.8%	30.9%	45.4%	47.8%	40.5%	60.0%	53.9%	49.0%
2011	57.1%	75.3%	182.3%	47.9%	42.0%	49.8%	48.6%	43.8%	60.5%	53.9%	49.3%

Source: Form 5500 Research Files.

Differences across Subpopulations of Potential Interest

As discussed in the Data section, we compare employer contribution metrics of the overall population to those of four subpopulations: Plans known to have suspended or reduced employer contributions, plans sponsored by companies that also sponsor a DB plan, 401(k) plans, and auto-enrollment plans.

Table 11 and Table 12 present summary statistics of per-participant contributions for all plans in the analysis sample and for the four subpopulations. Specifically, for employer contributions, they show the fraction of plans with $0 employer contributions and the 25th, 50th, and 75th percentiles. For participant contributions, they show only the median. Table 11 is plan-weighted and Table 12 participant-weighted.

As already discussed (at Figure 1), the first panel of Table 11 demonstrates that per-participant employer contributions were relatively stable in 2005-2007, declined some in 2008, declined more in 2009, and remained relatively stable through 2011. Weighted by participants, the first panel of Table 12 indicates that per-participant employer contributions were relatively stable from 2005 through 2008, declined in 2009, remained relatively stable in 2010 (also see Figure 7), and show some signs of recovery in 2011. These first panels serve as benchmarks for comparisons of subpopulations of potential interest.

Plans That Are Known To Have Suspended or Reduced Employer Contributions: As expected, the changes over time are sharpest among plans that are known to have suspended or reduced employer contributions. At the median, employers in such plans contributed only $372 per participant in 2009, or only $253 when weighted by participants. The fractions of plans with zero employer contributions rose sharply in 2009 and 2010 (Table 11), before dropping again in 2011. This drop in 2011 is even more visible in the participant-weighted series (Table 12). This suggests that complete suspensions took place mostly among relatively small plans. Median participant contributions also dropped substantially in 2008 or 2009, before recovering in 2011.

Plans Sponsored by Companies That Also Sponsored a DB Plan: The third panels of Table 11 and Table 12 show summary statistics of plans that were sponsored by companies that also sponsored a DB plan. As discussed earlier, we hypothesized that such plans reduced employer contributions to DC plans more than other plans because the combination of the financial crisis and stricter DB funding rules imposed by the PPA could have led to large increases in contributions to DB plans for many sponsors. That hypothesis does not appear to hold true. The reductions in employer contributions in 2009 were generally more muted than those in the full analysis sample, and most statistics suggest a recovery of employer contributions from DB sponsors in 2010 and 2011.[27]

[27] One possible explanation for this finding is that DB plan sponsors are substantially different from the rest of the population. Therefore one has to be cautious when interpreting these direct comparisons. Munnell and Quinby (see footnote 13 on page 8) also found that DB plan sponsors were less likely to suspend their DC plan, although they determined this effect was not statistically significant.

401(k) Plans: The patterns among 401(k) plans are very similar to those among all plans in the analysis sample. This may be the result of the fact that most DC plans are 401(k) plans—in 2010, out of 584,480 DC plans, 477,221 (82%) were 401(k) plans (see Table 5).

Auto-Enrollment Plans: The auto-enrollment feature was added to the Form 5500 in 2009, so no pre-crisis figures are available to inform about any trends. At the plan level, auto-enrollment plans contribute less to participant accounts than the full analysis sample (Table 11). However, the reverse holds at the participant level (Table 12), suggesting that larger auto-enrollment plans are more generous than smaller ones. Despite the fact that participants are automatically enrolled (unless they opt out), the median participant contributions in auto-enrollment plans are higher than those in the full analysis sample.

For the entire population of DC plans in the data and across all subpopulations for which time series are available, median participant contributions fell from 2008 to 2009. The data thus show no evidence of compensating behavior by plan participants, at least not in the short run and inside of DC plans.[28] It is, of course, possible that workers diverted a portion of their DC plan contributions to after-tax accounts, which are generally more readily available in case of future job losses or other financial shocks. Also, reduced DC plan contributions during times of reduced incomes (such as from reduced year-end bonuses) may be consistent with the life cycle perspective on optimal saving and consumption behavior. Unfortunately, Form 5500 filings offer insufficient information on such factors.

[28] Formulas with lower employer match rates may trigger participants to contribute more (namely to compensate for lower employer contributions) or less (namely as a response to the implicit reduction in the rate of return on their contributions).

Table 11. Summary Statistics of Per-Participant Contributions, by Subpopulation (Plan-Weighted, 2005-2011)

	Employer Contribution				Median participant
Year	% Zero	25th pctl	Median	75th pctl	contribution
All Plans in Analysis Sample					
2005	22.5%	268	1,772	5,698	2,805
2006	21.5%	345	1,842	5,579	3,057
2007	21.2%	376	1,871	5,412	3,281
2008	22.6%	262	1,689	4,361	3,243
2009	25.3%	0	1,273	3,425	2,590
2010	27.5%	0	1,236	3,301	2,503
2011	26.6%	0	1,268	3,276	2,547
Plans Known To Have Suspended or Reduced Employer Contributions					
2005	13.1%	831	1,393	2,428	3,832
2006	9.2%	913	1,460	2,298	3,904
2007	5.6%	862	1,623	2,672	4,065
2008	12.7%	792	1,596	2,700	3,654
2009	31.5%	0	372	1,267	2,724
2010	30.7%	0	508	1,799	3,293
2011	22.9%	33	1,061	2,286	3,385
Plans of DB Plan Sponsors					
2005	29.6%	0	1,350	4,008	3,241
2006	23.4%	139	1,776	4,916	3,519
2007	20.9%	396	2,133	5,535	3,927
2008	20.0%	531	2,298	5,339	3,648
2009	21.1%	367	1,972	4,777	3,498
2010	20.8%	403	2,094	4,902	3,228
2011	19.1%	577	2,244	5,030	3,242
401(k) Plans					
2005	20.9%	319	1,462	3,652	4,000
2006	19.9%	388	1,575	3,792	4,132
2007	19.2%	448	1,673	3,922	4,277
2008	19.9%	401	1,603	3,487	4,079
2009	22.4%	134	1,231	2,860	3,280
2010	25.3%	0	1,204	2,848	3,168
2011	24.4%	36	1,246	2,881	3,161
Auto-Enrollment Plans					
2009	20.8%	132	915	2,032	3,195
2010	24.0%	7	937	2,091	3,211
2011	22.0%	138	999	2,156	3,194

Source: Form 5500 Research Files, Pension Rights Center.

Table 12. Summary Statistics of Per-Participant Contributions, by Subpopulation (Participant-Weighted, 2005-2011)

	Employer Contribution				Median participant
Year	% Zero	25th pctl	Median	75th pctl	contribution
All Plans in Analysis Sample					
2005	9.6%	747	1,683	3,095	3,447
2006	8.9%	769	1,719	3,169	3,516
2007	8.1%	819	1,763	3,259	3,609
2008	8.3%	814	1,734	3,189	3,449
2009	11.4%	545	1,507	3,032	3,131
2010	13.0%	577	1,532	3,092	3,072
2011	11.4%	649	1,602	3,101	3,136
Plans Known To Have Suspended or Reduced Employer Contributions					
2005	18.6%	438	1,348	2,314	4,410
2006	20.7%	427	1,371	2,543	4,561
2007	14.8%	618	1,588	2,664	4,358
2008	13.8%	656	1,479	2,337	3,591
2009	15.5%	75	253	1,586	3,626
2010	20.6%	2	635	1,907	3,635
2011	13.8%	102	1,319	2,160	3,720
Plans of DB Plan Sponsors					
2005	8.1%	1,024	1,998	3,294	4,820
2006	7.8%	1,008	2,052	3,341	4,835
2007	6.2%	1,081	2,192	3,482	4,785
2008	5.5%	1,233	2,230	3,460	4,797
2009	7.8%	875	2,048	3,552	4,446
2010	8.2%	948	2,111	3,691	4,290
2011	6.9%	1,098	2,187	3,821	4,321
401(k) Plans					
2005	9.0%	762	1,611	2,894	3,953
2006	8.3%	777	1,647	2,983	3,956
2007	7.6%	822	1,688	3,088	4,041
2008	7.6%	829	1,672	3,050	3,831
2009	9.4%	594	1,494	2,887	3,497
2010	11.5%	607	1,519	2,977	3,460
2011	9.8%	675	1,591	3,013	3,500
Auto-Enrollment Plans					
2009	5.4%	718	1,761	3,371	4,017
2010	7.8%	661	1,642	3,214	3,752
2011	6.4%	783	1,793	3,259	3,792

Source: Form 5500 Research Files, Pension Rights Center.

Table 13 presents a comparison of subpopulations on contribution suspension and reinstatement rates. The first panel, for the full analysis sample, is identical to Table 7. As expected, plans that are known to have suspended or reduced employer contributions suspended their contributions more often than those in the full analysis sample. In contrast, plans sponsored by companies that also sponsored a DB Plan were less likely to suspend contributions than those in the full analysis sample. As noted earlier, most DC plans are 401(k) plans, and the suspension and reinstatement rates of 401(k) plans are approximately the same as those in the full analysis sample. Finally, auto-enrollment plans were less likely to suspend contributions and, once suspended, more likely to reinstate them.

Table 13. Fractions of Plans That Suspended or Reinstated Employer Contributions (Plan- and Participant-Weighted, 2006-2011)

	Employer contributed last year but not this year		Employer did not contribute last year, but did this year	
Year	Plan-weighted	Participant-weighted	Plan-weighted	Participant-weighted
All Plans in Pension Research Files				
2006	5.1%	1.9%	20.0%	23.7%
2007	5.4%	1.6%	17.9%	22.1%
2008	6.9%	2.2%	15.8%	17.5%
2009	8.1%	3.6%	15.2%	20.7%
2010	9.0%	3.8%	15.2%	19.3%
2011	5.8%	2.0%	15.1%	24.6%
Plans Known To Have Suspended or Reduced Employer Contributions				
2006	2.0%	5.9%	21.5%	6.3%
2007	0.7%	0.1%	36.0%	23.9%
2008	1.8%	0.7%	5.8%	3.9%
2009	11.6%	8.0%	4.7%	33.0%
2010	20.6%	13.5%	36.2%	39.2%
2011	5.8%	1.4%	38.4%	40.4%
Plans of DB Plan Sponsors				
2006	5.1%	1.7%	22.9%	18.8%
2007	4.8%	0.9%	16.3%	19.9%
2008	6.1%	0.8%	20.0%	13.5%
2009	7.2%	1.3%	22.1%	27.7%
2010	4.5%	2.0%	16.3%	19.3%
2011	4.7%	0.8%	17.7%	29.6%
401(k) Plans				
2006	3.8%	1.7%	20.9%	25.5%
2007	4.0%	1.4%	19.4%	23.3%
2008	5.2%	1.9%	17.3%	18.4%
2009	7.0%	3.3%	15.8%	21.6%
2010	9.3%	3.8%	15.5%	23.2%
2011	5.1%	1.8%	16.0%	28.2%
Auto-Enrollment Plans				
2009	6.3%	1.8%	25.9%	27.2%
2010	8.6%	3.1%	21.3%	24.9%
2011	4.3%	1.2%	23.2%	41.3%

Source: Form 5500 Research Files, Pension Rights Center.

4. CONCLUSION

This report documents employer contributions to DC plans from 2005 to 2011. We present summary statistics of several alternative measures of employer contributions and find that employer contributions generally fell in real terms around 2009, when the United States economy was in a recession. Per-participant employer contributions in 2010 were distributed approximately the same as those in 2009, but showed signs of recovery in 2011. The reduction in employer contributions coincided with both lower employer contribution ratios and lower participant contributions, though the changes manifested themselves in different ranges of the distribution. Substantial differences existed across industries, with the transportation and construction sectors experiencing the largest reductions in employer (and participant) contributions. Despite potential additional contributions to DB plans triggered by the combination of the financial crisis and stricter DB plan contribution requirements in the PPA, the employer contributions of plans of companies that also sponsored a DB plan decreased less than those of the full analysis sample.

This report is based on Form 5500 filings through 2011, i.e., including a period in which the U.S. economy recovered from a recession. Employer and participant contributions have started to recover but have not yet reached pre-crisis levels. The period under study saw substantial variation in employer contribution ratios and thus an opportunity to analyze the responsiveness of participant contributions to employer contribution ratios. Based on the evidence in this report and that of others in the literature, that responsiveness appears limited. Employer contributions do appear to encourage participants to also contribute, but the additional incentives from more generous employer contributions appear muted.

APPENDIX

This Appendix contains summary statistics of distributions shown in graphs throughout the body of this report. Table A.1 corresponds to text Figure 1, Table A.2 corresponds to Figure 2, et cetera. Starting with Table A.12, it also shows additional distributions.

Table A.1. 2005-2011 Distributions of Per-Participant Employer Contributions (Plan-Weighted)

Year	Freq.	% Zero	25th pctl	Median	75th pctl
2005	89,524	22.5%	268	1,772	5,698
2006	91,899	21.5%	345	1,842	5,579
2007	93,926	21.2%	376	1,871	5,412
2008	95,203	22.6%	262	1,689	4,361
2009	99,345	25.3%	0	1,273	3,425
2010	590,458	27.5%	0	1,236	3,301
2011	584,480	26.6%	0	1,268	3,276

Source: Form 5500 Research Files.

Table A.2. 2005-2011 Distributions of Per-Participant Employer Contributions for Plans with 1-9 Participants (Plan-Weighted)

Year	Freq.	% Zero	25th pctl	Median	75th pctl
2005	13,009	27.2%	0	2,681	9,598
2006	13,296	26.6%	0	2,568	9,207
2007	13,688	26.2%	0	2,444	8,598
2008	13,960	28.0%	0	2,009	6,818
2009	13,040	30.1%	0	1,610	5,658
2010	248,372	31.3%	0	1,551	5,347
2011	245,476	31.0%	0	1,551	5,161

Source: Form 5500 Research Files.

Table A.3. 2005-2011 Distributions of Per-Participant Employer Contributions for Plans with 10-99 Participants (Plan-Weighted)

Year	Freq.	% Zero	25th pctl	Median	75th pctl
2005	37,543	19.7%	364	1,430	3,526
2006	38,753	18.2%	431	1,552	3,701
2007	39,602	18.0%	470	1,609	3,674
2008	40,410	19.1%	418	1,537	3,339
2009	42,785	23.0%	92	1,099	2,604
2010	296,516	26.1%	0	1,055	2,528
2011	293,253	24.9%	2	1,104	2,544

Source: Form 5500 Research Files.

Table A.4. 2005-2011 Distributions of Per-Participant Employer Contributions for Plans with 100-499 Participants (Plan-Weighted)

Year	Freq.	% Zero	25th pctl	Median	75th pctl
2005	30,445	10.9%	573	1,329	2,632
2006	31,051	10.0%	616	1,392	2,718
2007	31,556	9.6%	639	1,431	2,746
2008	31,602	10.3%	604	1,400	2,704
2009	33,561	13.3%	404	1,242	2,579
2010	35,328	16.3%	360	1,242	2,561
2011	35,337	14.8%	442	1,296	2,601

Source: Form 5500 Research Files.

Table A.5. 2005-2011 Distributions of Per-Participant Employer Contributions for Plans with 500-4,999 Participants (Plan-Weighted)

Year	Freq.	% Zero	25th pctl	Median	75th pctl
2005	7,599	6.2%	804	1,623	2,961
2006	7,818	5.9%	812	1,679	3,057
2007	8,066	5.7%	844	1,710	3,126
2008	8,193	5.8%	822	1,704	3,115
2009	8,851	9.8%	551	1,501	2,958
2010	9,087	11.7%	557	1,543	3,057
2011	9,226	9.3%	670	1,589	3,178

Source: Form 5500 Research Files.

Table A.6. 2005-2011 Distributions of Per-Participant Employer Contributions for Plans with 5,000 or More Participants (Plan-Weighted)

Year	Freq.	% Zero	25th pctl	Median	75th pctl
2005	928	5.3%	1,015	1,998	3,383
2006	981	4.8%	994	2,011	3,438
2007	1,014	3.8%	1,090	2,115	3,541
2008	1,038	4.0%	1,045	2,075	3,414
2009	1,108	7.1%	771	1,915	3,335
2010	1,155	7.4%	811	1,948	3,394
2011	1,188	6.4%	935	2,116	3,505

Source: Form 5500 Research Files.

Table A.7. 2005-2011 Distributions of Per-Participant Employer Contributions (Participant-Weighted)

Year	Freq.	% Zero	25th pctl	Median	75th pctl
2005	89,524	9.6%	747	1,683	3,095
2006	91,899	8.9%	769	1,719	3,169
2007	93,926	8.1%	819	1,763	3,259
2008	95,203	8.3%	814	1,734	3,189
2009	99,345	11.4%	545	1,507	3,032
2010	590,458	13.0%	577	1,532	3,092
2011	584,480	11.4%	649	1,602	3,101

Source: Form 5500 Research Files.

Table A.8. 2005-2011 Distributions of Employer Contribution Ratios (Participant-Weighted)

Year	Freq.	% Zero	25th pctl	Median	75th pctl
2005	85,796	7.1%	28.0%	47.4%	106.9%
2006	88,415	6.8%	28.4%	48.0%	97.3%
2007	90,473	6.2%	29.4%	48.4%	94.9%
2008	91,194	6.3%	30.8%	49.7%	88.2%
2009	95,242	9.5%	23.6%	48.9%	89.0%
2010	535,525	11.1%	24.7%	50.7%	97.9%
2011	531,804	9.6%	27.7%	51.5%	95.5%

Source: Form 5500 Research Files.

Table A.9. 2005-2011 Distributions of Average Participant Contributions (Participant-Weighted)

Year	Freq.	% Zero	25th pctl	Median	75th pctl
2005	89,524	15.5%	1,525	3,447	5,637
2006	91,899	13.9%	1,723	3,516	5,758
2007	93,926	13.3%	1,797	3,609	5,780
2008	95,203	12.5%	1,722	3,449	5,589
2009	99,345	11.5%	1,552	3,131	5,076
2010	590,458	11.7%	1,503	3,072	5,012
2011	584,481	11.2%	1,572	3,136	5,120

Source: Form 5500 Research Files.

Table A.10. Plan-Weighted Year-on-Year Changes in Per-Participant Employer Contribution (2006-2011)

Year-on-year change	2005-2006	2006-2007	2007-2008	2008-2009	2009-2010	2010-2011	2007-2011
Up 100%+	9.1%	8.8%	7.1%	6.4%	7.4%	8.2%	7.4%
Up 50%-99%	4.0%	4.0%	3.3%	2.3%	3.0%	3.1%	3.3%
Up 15%-49%	11.5%	10.9%	9.5%	6.7%	8.6%	8.6%	8.4%
Change < 15%	53.7%	53.7%	52.2%	44.8%	55.4%	57.8%	36.6%
Down 15%-49%	12.8%	13.5%	15.5%	21.5%	12.6%	13.1%	19.7%
Down 50%-99%	4.8%	4.8%	6.9%	11.9%	5.7%	4.9%	12.2%
Suspend	4.0%	4.3%	5.6%	6.4%	7.2%	4.3%	12.5%
Total	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

Source: Form 5500 Research Files.
Note: Contribution changes based on 2011 dollars.

Table A.11. Participant-Weighted Year-on-Year Changes in Per-Participant Employer Contribution (2006-2011)

Year-on-year change	2005-2006	2006-2007	2007-2008	2008-2009	2009-2010	2010-2011	2007-2011
Up 100%+	5.6%	5.6%	5.6%	4.2%	6.4%	7.9%	8.8%
Up 50%-99%	3.6%	2.8%	2.2%	2.5%	3.4%	3.6%	4.9%
Up 15%-49%	9.8%	10.9%	8.4%	8.8%	8.5%	8.8%	13.5%
Change < 15%	65.1%	64.5%	65.7%	56.0%	62.3%	66.1%	44.7%
Down 15%-49%	10.4%	11.3%	12.1%	14.3%	10.8%	9.0%	16.0%
Down 50%-99%	3.8%	3.4%	3.9%	10.8%	5.2%	2.9%	8.2%
Suspend	1.7%	1.5%	2.0%	3.3%	3.5%	1.8%	3.8%
Total	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

Source: Form 5500 Research Files.

The following graphs and tables present additional detail on participant contributions and employer contribution ratios. Figure 12 (and Table A.12) show plan-level employer contribution ratios; Figure 13 (and Table A.13) show plan-level participant contributions. Subsequent pairs of graphs and tables show the same by plan size. For participant-weighted employer contribution ratios refer to Figure 8 in the body of the report and for participant-weighted average participant contributions see Figure 9 in the body.

As before, keep in mind that individual plans need not be on the same portions of distributions on pairs of figures. For example, an employer may match only a small percentage of participant contributions (lower left portion of Figure 12) while its participants may contribute large amounts (upper right portion of Figure 13).

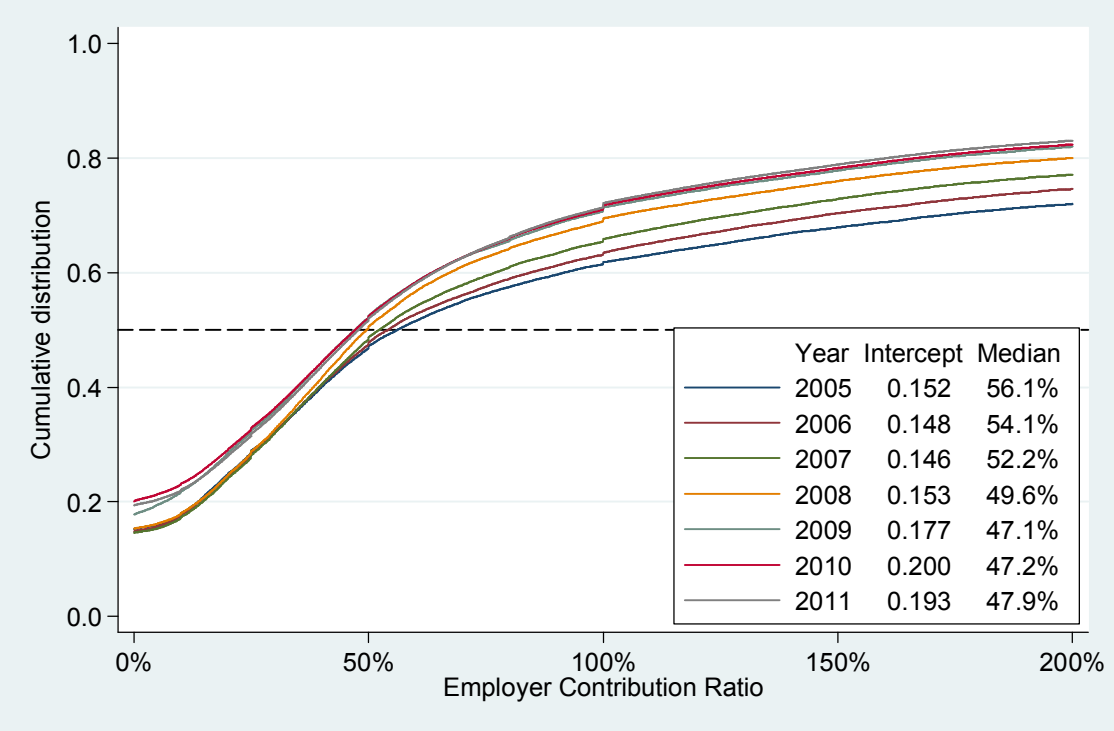

Figure 12. 2005-2011 Distributions of Employer Contribution Ratios (Plan-Weighted)

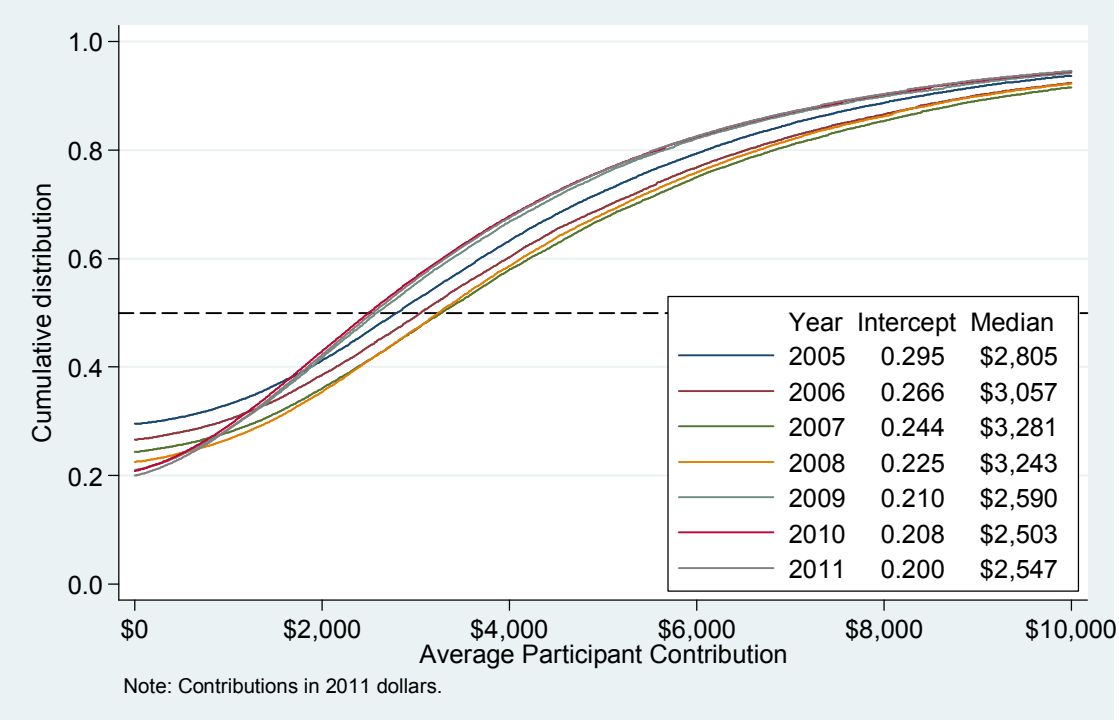

Figure 13. 2005-2011 Distributions of Average Participant Contributions (Plan-Weighted)

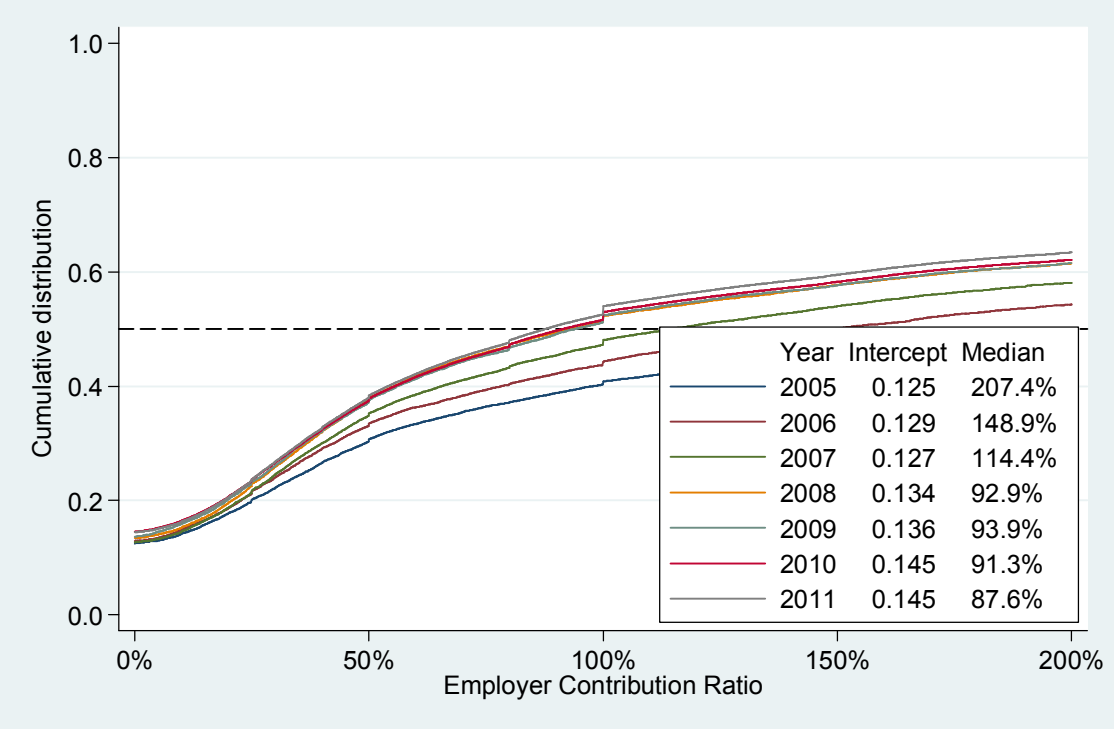

Figure 14. 2005-2011 Distributions of Employer Contribution Ratios for Plans with 1-9 Participants (Plan-Weighted)

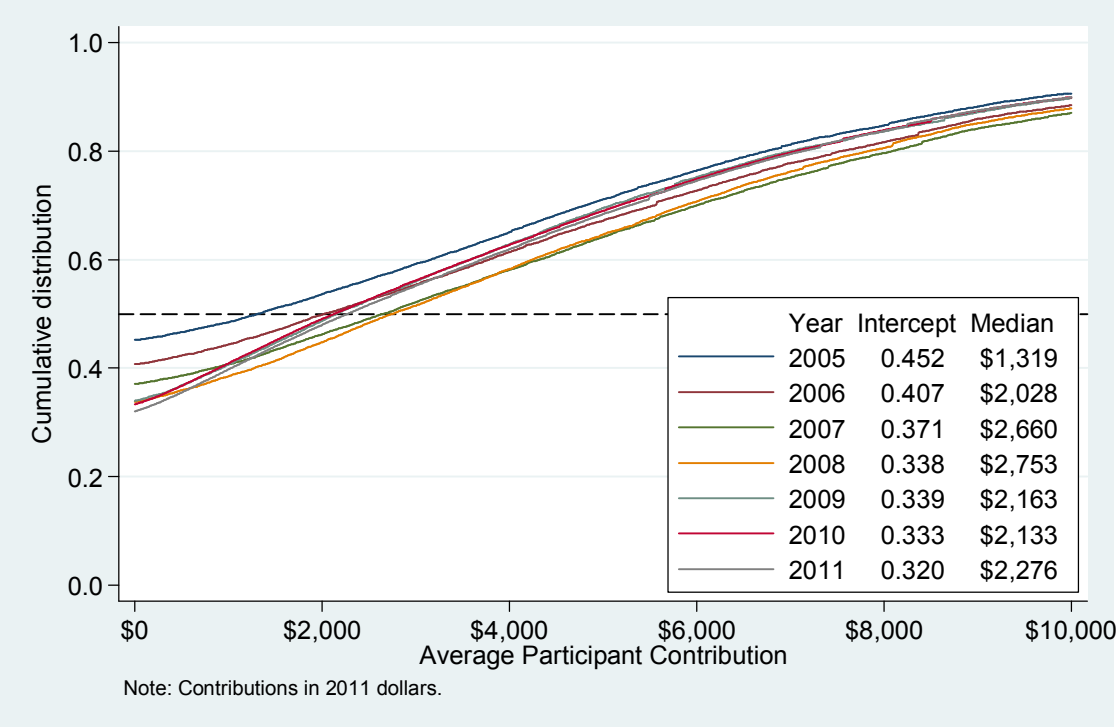

Figure 15. 2005-2011 Distributions of Average Participant Contributions for Plans with 1-9 Participants (Plan-Weighted)

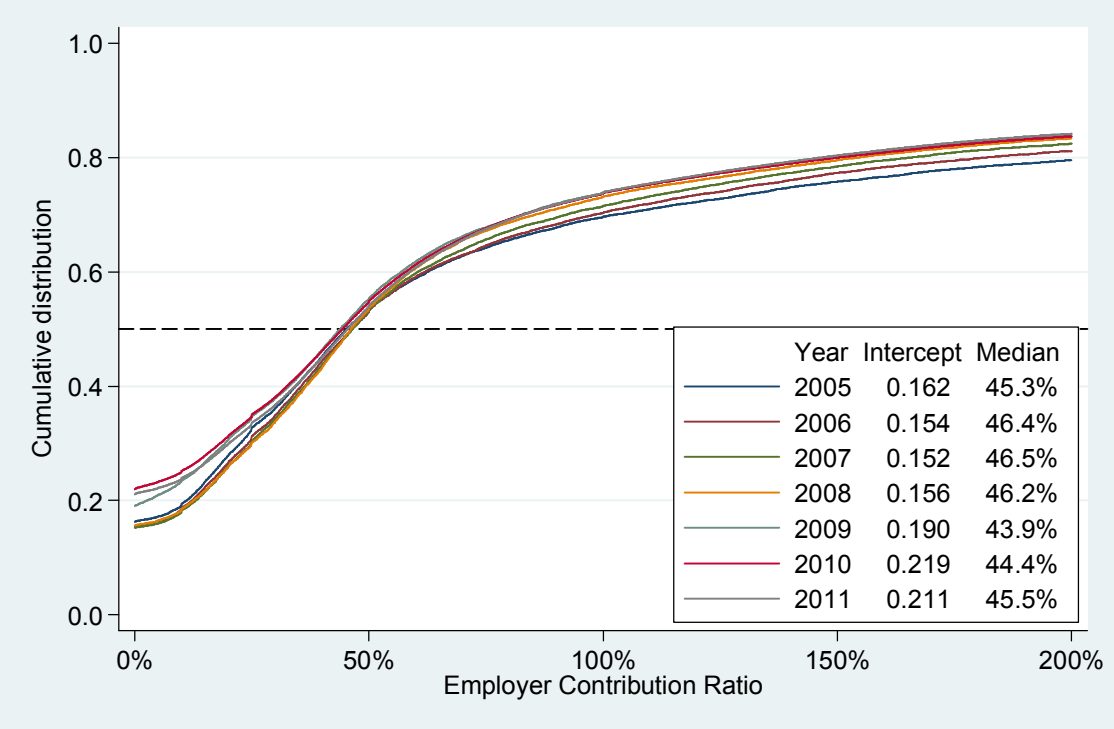

Figure 16. 2005-2011 Distributions of Employer Contribution Ratios for Plans with 10-99 Participants (Plan-Weighted)

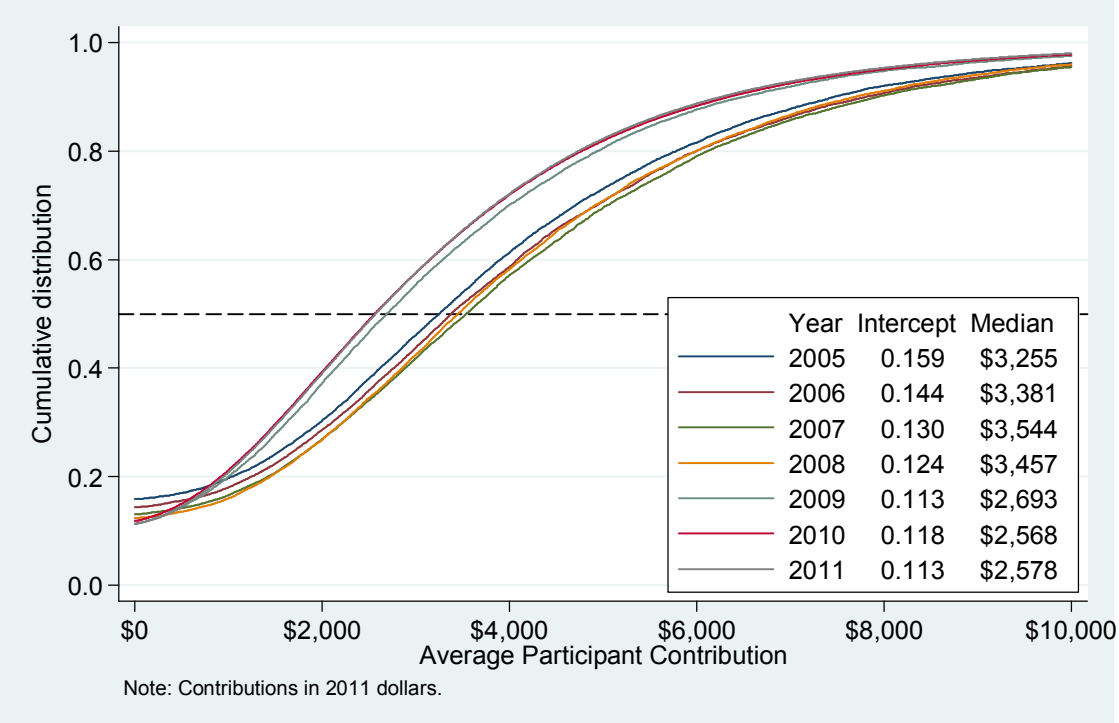

Figure 17. 2005-2011 Distributions of Average Participant Contributions for Plans with 10-99 Participants (Plan-Weighted)

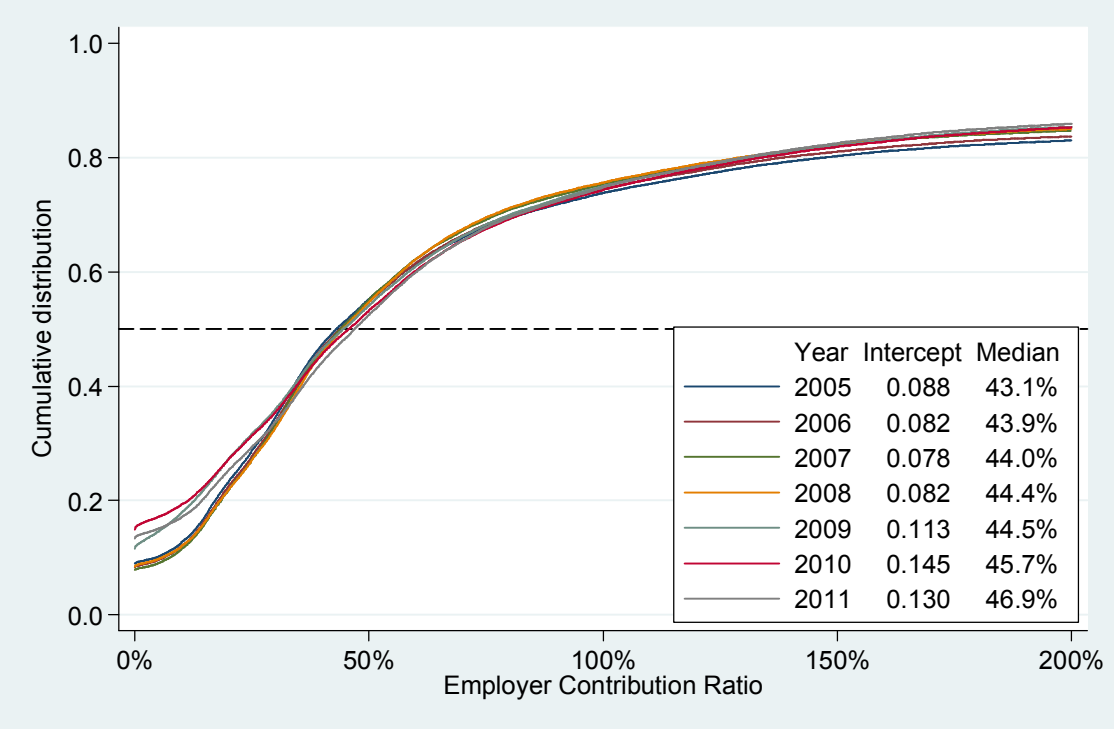

Figure 18. 2005-2011 Distributions of Employer Contribution Ratios for Plans with 100-499 Participants (Plan-Weighted)

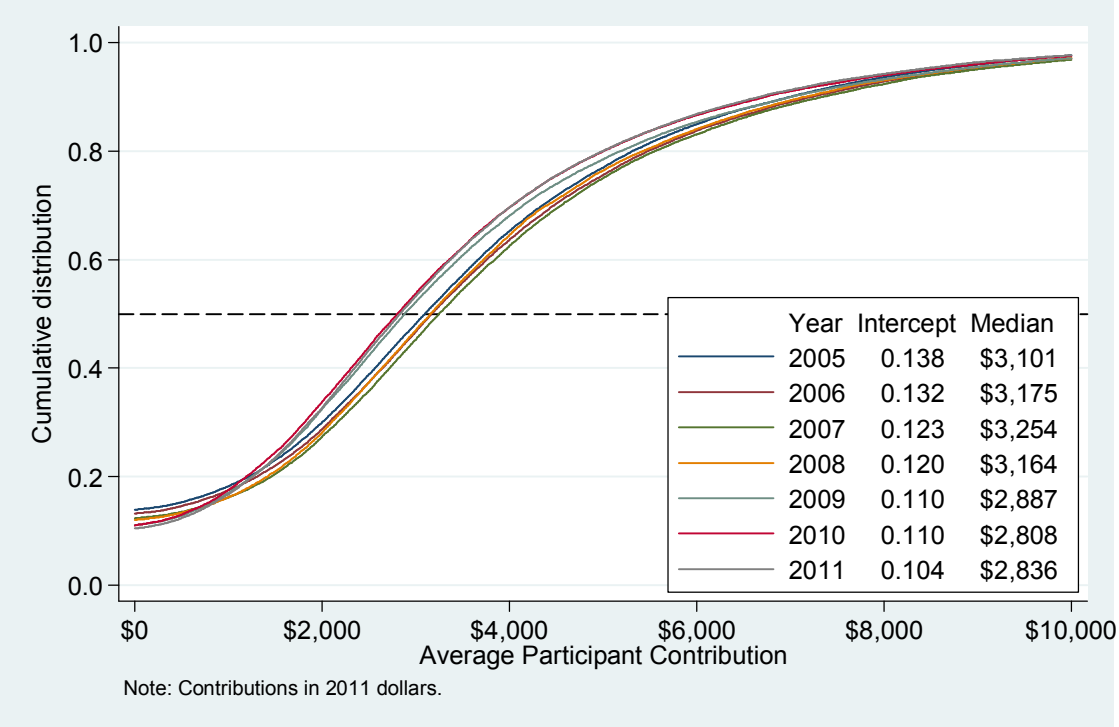

Figure 19. 2005-2011 Distributions of Average Participant Contributions for Plans with 100-499 Participants (Plan-Weighted)

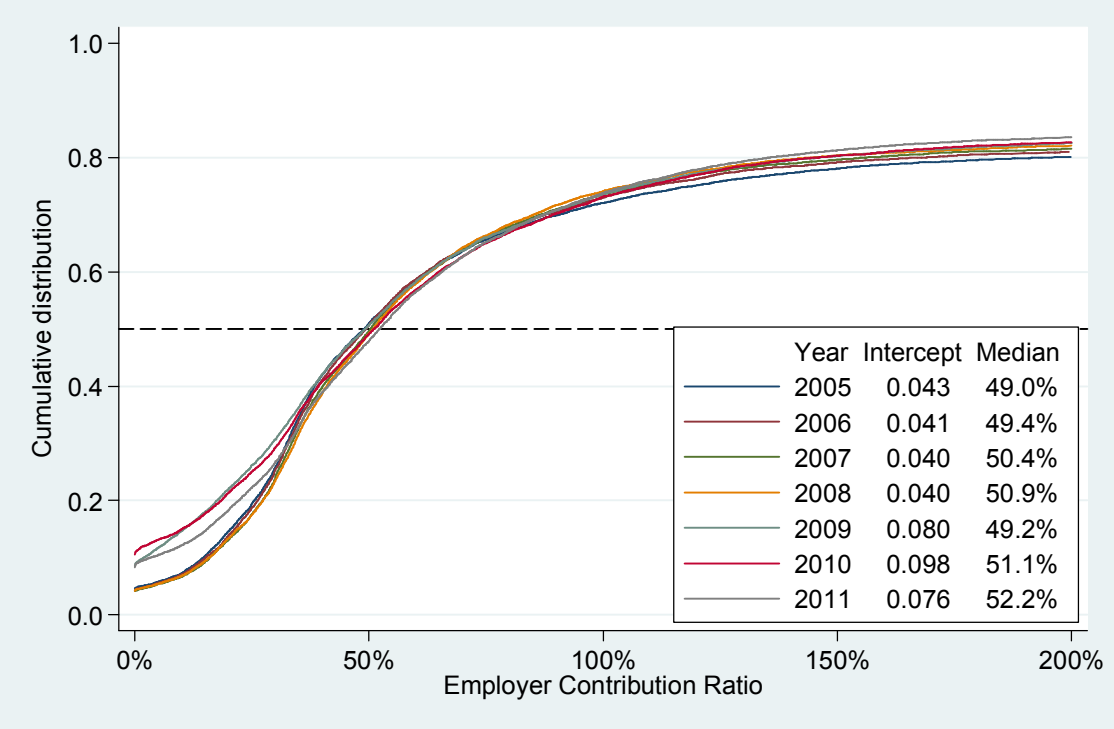

Figure 20. 2005-2011 Distributions of Employer Contribution Ratios for Plans with 500-4,999 Participants (Plan-Weighted)

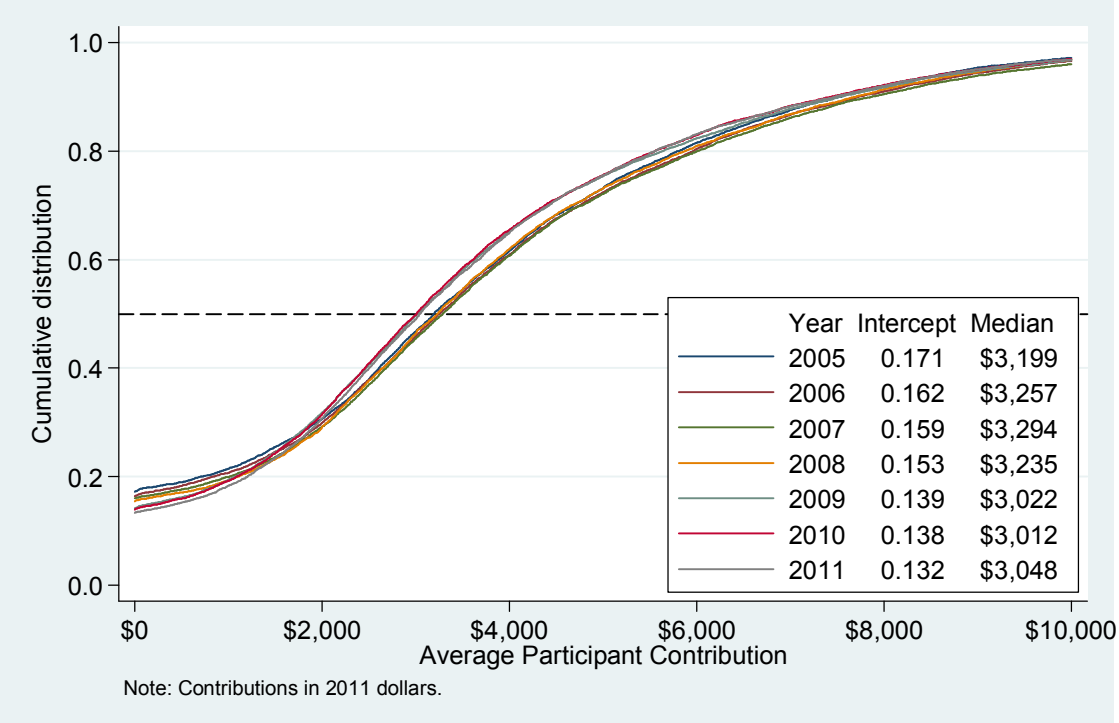

Figure 21. 2005-2011 Distributions of Average Participant Contributions for Plans with 500-4,999 Participants (Plan-Weighted)

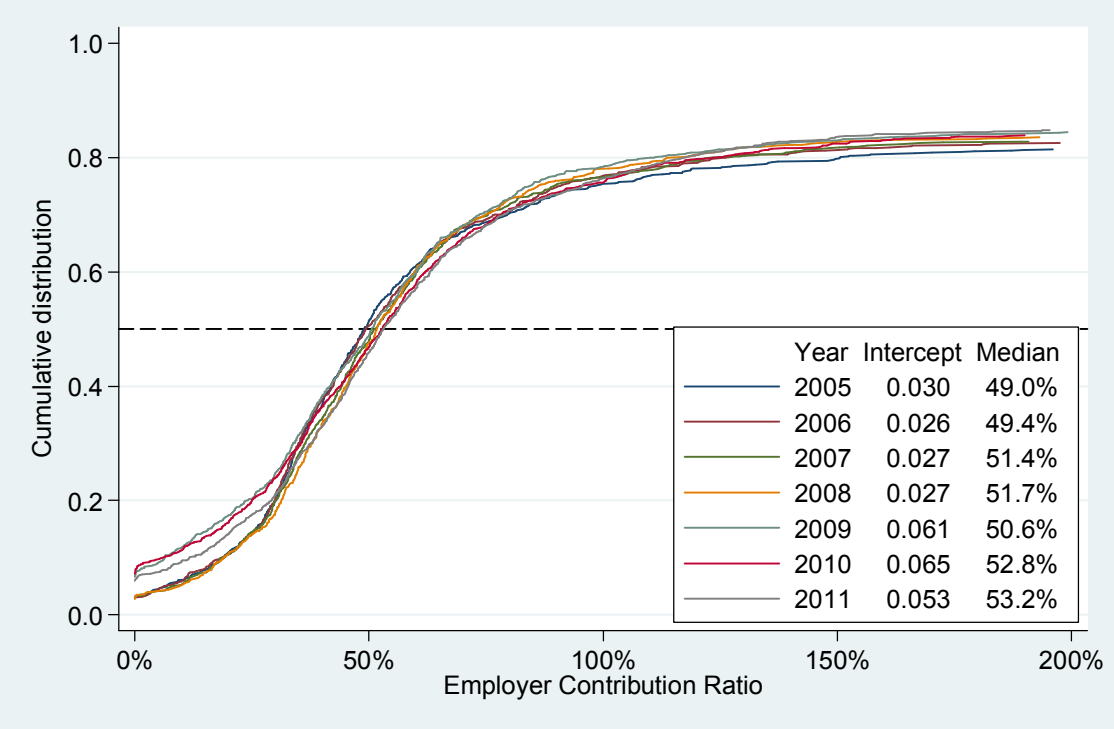

Figure 22. 2005-2011 Distributions of Employer Contribution Ratios for Plans with 5,000 or More Participants (Plan-Weighted)

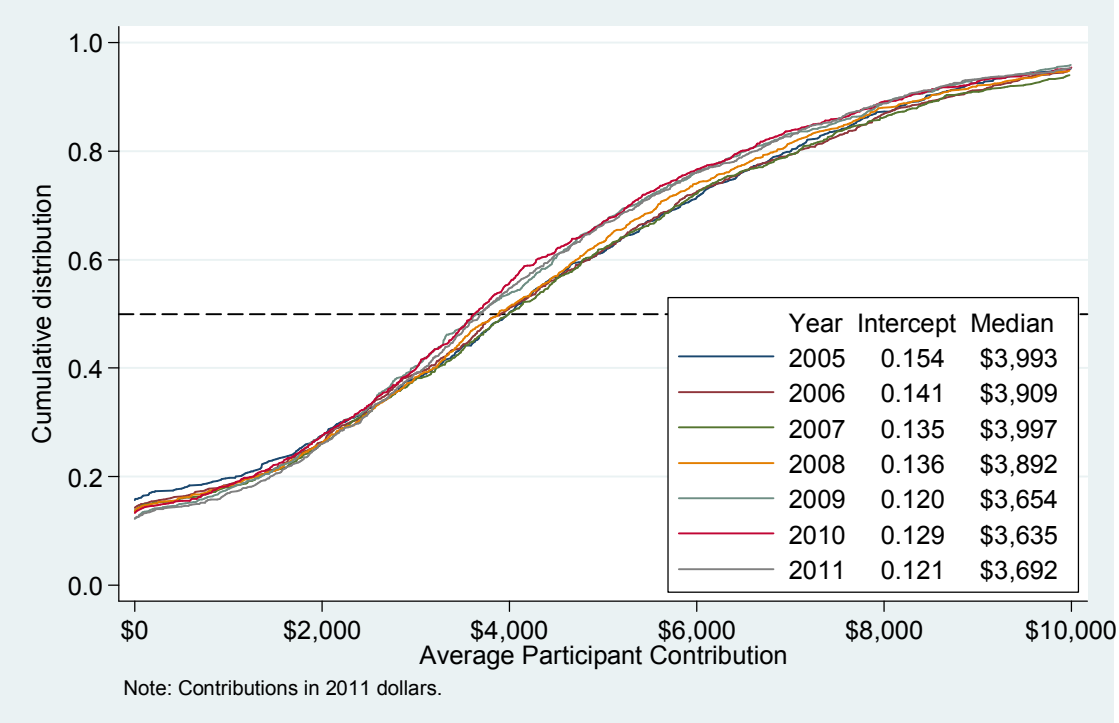

Figure 23. 2005-2011 Distributions of Average Participant Contributions for Plans with 5,000 or More Participants (Plan-Weighted)

Table A.12. 2005-2011 Distributions of Employer Contribution Ratios (Plan-Weighted)

Year	Freq.	% Zero	25th pctl	Median	75th pctl
2005	85,796	15.2%	20.2%	56.1%	312.2%
2006	88,415	14.8%	20.8%	54.1%	207.1%
2007	90,473	14.6%	21.3%	52.2%	170.5%
2008	91,194	15.3%	20.4%	49.6%	142.0%
2009	95,242	17.7%	15.4%	47.1%	125.2%
2010	535,525	20.0%	13.8%	47.2%	122.1%
2011	531,804	19.3%	15.6%	47.9%	118.7%

Source: Form 5500 Research Files.

Table A.13. 2005-2011 Distributions of Average Participant Contributions (Plan-Weighted)

Year	Freq.	% Zero	25th pctl	Median	75th pctl
2005	89,524	29.5%	0	2,805	5,359
2006	91,899	26.6%	0	3,057	5,730
2007	93,926	24.4%	265	3,281	6,004
2008	95,203	22.5%	695	3,243	5,880
2009	99,345	21.0%	635	2,590	4,931
2010	590,458	20.8%	610	2,503	4,838
2011	584,480	20.0%	690	2,547	4,849

Source: Form 5500 Research Files.

Table A.14. 2005-2011 Distributions of Employer Contribution Ratios for Plans with 1-9 Participants (Plan-Weighted)

Year	Freq.	% Zero	25th pctl	Median	75th pctl
2005	11,068	14.7%	28.1%	117.6%	Infinity
2006	11,449	15.0%	25.0%	95.7%	Infinity
2007	11,826	14.7%	25.0%	79.9%	Infinity
2008	11,890	15.7%	23.3%	62.6%	292.3%
2009	10,916	16.3%	21.3%	61.4%	223.3%
2010	206,604	17.5%	20.2%	60.0%	204.7%
2011	204,883	17.3%	20.5%	58.9%	186.3%

Source: Form 5500 Research Files.

Table A.15. 2005-2011 Distributions of Average Participant Contributions for Plans with 1-9 Participants (Plan-Weighted)

Year	Freq.	% Zero	25th pctl	Median	75th pctl
2005	13,009	45.2%	0	1,319	5,740
2006	13,296	40.7%	0	2,028	6,441
2007	13,688	37.1%	0	2,660	6,976
2008	13,960	33.8%	0	2,753	6,769
2009	13,040	33.9%	0	2,163	5,973
2010	248,372	33.3%	0	2,133	6,029
2011	245,476	32.0%	0	2,276	6,093

Source: Form 5500 Research Files.

Table A.16. 2005-2011 Distributions of Employer Contribution Ratios for Plans with 10-99 Participants (Plan-Weighted)

Year	Freq.	% Zero	25th pctl	Median	75th pctl
2005	36,562	16.8%	16.0%	43.3%	121.0%
2006	37,852	15.8%	17.5%	44.8%	115.6%
2007	38,733	15.6%	18.2%	45.1%	108.0%
2008	39,288	16.1%	17.9%	44.6%	96.3%
2009	41,639	19.8%	11.0%	41.7%	90.0%
2010	284,189	22.9%	7.4%	42.0%	90.8%
2011	281,959	21.9%	10.2%	43.4%	91.6%

Source: Form 5500 Research Files.

Table A.17. 2005-2011 Distributions of Average Participant Contributions for Plans with 10-99 Participants (Plan-Weighted)

Year	Freq.	% Zero	25th pctl	Median	75th pctl
2005	37,543	15.9%	1,579	3,255	5,212
2006	38,753	14.4%	1,724	3,381	5,432
2007	39,602	13.0%	1,861	3,544	5,577
2008	40,410	12.4%	1,863	3,457	5,401
2009	42,785	11.3%	1,348	2,693	4,451
2010	296,516	11.8%	1,243	2,568	4,271
2011	293,253	11.3%	1,263	2,578	4,252

Source: Form 5500 Research Files.

Table A.18. 2005-2011 Distributions of Employer Contribution Ratios for Plans with 100-499 Participants (Plan-Weighted)

Year	Freq.	% Zero	25th pctl	Median	75th pctl
2005	29,806	9.0%	21.2%	41.9%	97.9%
2006	30,476	8.3%	22.1%	42.7%	95.8%
2007	30,988	7.9%	22.7%	43.0%	91.7%
2008	30,945	8.4%	22.7%	43.3%	88.8%
2009	32,893	11.5%	17.4%	43.2%	93.3%
2010	34,674	14.7%	17.2%	44.4%	96.8%
2011	34,715	13.2%	19.2%	46.0%	95.6%

Source: Form 5500 Research Files.

Table A.19. 2005-2011 Distributions of Average Participant Contributions for Plans with 100-499 Participants (Plan-Weighted)

Year	Freq.	% Zero	25th pctl	Median	75th pctl
2005	30,445	13.8%	1,667	3,101	4,802
2006	31,051	13.2%	1,745	3,175	4,948
2007	31,556	12.3%	1,858	3,254	5,002
2008	31,602	12.0%	1,806	3,164	4,860
2009	33,561	11.0%	1,606	2,887	4,611
2010	35,328	11.0%	1,540	2,808	4,458
2011	35,337	10.4%	1,589	2,836	4,458

Source: Form 5500 Research Files.

Table A.20. 2005-2011 Distributions of Employer Contribution Ratios for Plans with 500-4,999 Participants (Plan-Weighted)

Year	Freq.	% Zero	25th pctl	Median	75th pctl
2005	7,453	4.4%	29.3%	47.8%	108.2%
2006	7,678	4.1%	29.7%	48.4%	102.8%
2007	7,924	4.0%	30.3%	49.5%	100.4%
2008	8,047	4.1%	30.7%	50.0%	98.1%
2009	8,697	8.2%	23.3%	48.2%	100.5%
2010	8,914	9.9%	24.3%	50.0%	102.4%
2011	9,072	7.7%	28.0%	51.4%	100.0%

Source: Form 5500 Research Files.

Table A.21. 2005-2011 Distributions of Average Participant Contributions for Plans with 500-4,999 Participants (Plan-Weighted)

Year	Freq.	% Zero	25th pctl	Median	75th pctl
2005	7,599	17.1%	1,446	3,199	5,175
2006	7,818	16.2%	1,563	3,257	5,312
2007	8,066	15.9%	1,657	3,294	5,339
2008	8,193	15.3%	1,671	3,235	5,226
2009	8,851	13.9%	1,539	3,022	4,968
2010	9,087	13.8%	1,552	3,012	4,935
2011	9,226	13.2%	1,631	3,048	4,941

Source: Form 5500 Research Files.

Table A.22. 2005-2011 Distributions of Employer Contribution Ratios for Plans with 5,000 or More Participants (Plan-Weighted)

Year	Freq.	% Zero	25th pctl	Median	75th pctl
2005	907	3.1%	32.4%	48.2%	89.8%
2006	960	2.7%	32.1%	48.8%	86.3%
2007	1,002	2.7%	33.5%	50.8%	87.5%
2008	1,024	2.7%	34.6%	51.5%	83.9%
2009	1,097	6.2%	30.0%	50.3%	82.6%
2010	1,144	6.6%	31.0%	52.5%	91.9%
2011	1,175	5.4%	32.9%	52.7%	92.9%

Source: Form 5500 Research Files.

Table A.23. 2005-2011 Distributions of Average Participant Contributions for Plans with 5,000 or More Participants (Plan-Weighted)

Year	Freq.	% Zero	25th pctl	Median	75th pctl
2005	928	15.4%	1,753	3,993	6,421
2006	981	14.1%	1,869	3,909	6,352
2007	1,014	13.5%	1,932	3,997	6,293
2008	1,038	13.6%	1,897	3,892	6,180
2009	1,108	12.0%	1,806	3,654	5,906
2010	1,155	12.9%	1,808	3,635	5,800
2011	1,188	12.1%	1,918	3,692	5,879

Source: Form 5500 Research Files.

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