

Data Points

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This is the sixth in a series of features on “Data Points” in the Journal of Legal Economics. This series focuses on empirical data, Internet sites, computer software, and other such resources useful in the practice of forensic economics. If you have an idea for a topic or paper submission relevant to the “Data Points” section, please contact Tom Hale (tom.hale@ssa.gov) or David Tucek (david.tucek@valueeconomics.com).

Historical Net Discount Rates—An Update Through 2009

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I. Introduction

The following eight tables are updated versions of the eight tables that were presented in publications by Ireland containing calculations through 1999 (Ireland, 2000) and updates through 2001 (Ireland, 2000-01), 2003 (Ireland, 2002), 2005 (Ireland 2006) and 2007 (Ireland 2008). A basic rule for all calculations provided in this series has been that the data used to make the calculations must come from the Economic Report of the President (henceforth ERP). Tables 1 to 4 have been prepared on the same basis as were all three previous versions of this paper except that the current tables include data for 2008 and 2009. Tables 1 to 4 begin with 1960 and end with 2009, allowing 50 yearly comparisons to be made between various discount rates and both the CPI (Consumer Price Index) and the MCPI (Medical Consumer Price Index). Tables 5 to 8 begin with 1970 and end with 2009, allowing 40 yearly comparisons to be made between various discount rates and average weekly earnings for private

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nonagricultural and non supervisory workers. Table 5 contains data from 1981 to 2009 from the total compensation series of the Employer Cost Index (ECI), allowing comparisons to be made between that series and various discount rates for the past 29 years. (As a note of caution, averages for any period longer than 25 years are never applicable, given regime changes in the American economy.)

With respect to Tables 5 to 7, the 2004 ERP revised its data series for “average weekly earnings for private nonagricultural and non supervisory workers” from 1965 through 2003. Versions of the tables through 2003 had included the older data. Subsequently, the 2006 ERP dropped data for that series from 1965 through 1969. Based on that change in years of ERP reported data, Tables 5 to 7 cover periods beginning with 1970, whereas previous versions of the tables (through the 2005 version) had included data beginning with the earlier periods. Use of a 1970 starting point has allowed calculations for Tables 5 to 8 of up to 40 years for periods ending in 2009. The 2010 ERP contained only data for the total compensation series of the ECI from 1995 through 2009. Figures for 1984-1994 for the Total Compensation series of the ECI were retained from the 2006 ERP. A reader would need to consult the 2003 ERP to find figures for 1981-83 and the 2006 ERP to find figures for 1984-94. With one exception noted below, the methods used in compiling these tables in the five previous publications cited above have been maintained.

II. Explanation of the Tables

The original purpose of these tables was to provide forensic economists with values for net discount rates and the real interest rate that were varied and flexible. The original version had data for the 30 year U.S. Treasury Bond rate. That information was discontinued because the U.S. Treasury stopped issuing those bonds several years ago. The U.S. Treasury has recently begun to reissue 30 year bonds, but the four-year hiatus in data for those bonds precludes adding them back into the tables. The tables still provide data for the 91 Day Treasury Bill, the Three Year Treasury Note, the Ten Year Treasury Note, the Corporate Aaa rate, and the High Grade Municipal bond rate. Those rates are compared year by year with the CPI and the MCPI in Tables 1 to 4, and with the “average weekly earnings” series of earnings increases and the annual rates of change in the total compensation series of the ECI in Tables 5 to 8. In that sense, the eight tables provided should be understood as two sets of four tables each. Tables 1 and 5 provide basic data as it is presented in the ERP, with the exception that data for the 3-month Treasury Bill rate as reported in the ERP has been modified to reflect annual yield rather than bank discount rate, as per the method explained by Fjeldsted [2000].

Table 1 includes data for the interest rates indicated above, and for the CPI and MCPI by year from 1960 through 2009. Table 5 replicates data for the same interest rates as Table 1, but replaces data for the CPI and MCPI with data for average weekly earnings for the private nonagricultural and non supervisory workers series and for the total compensation series of the ECI. Tables 5 to 8 are shorter than Tables 1 to 4 because the longest wage increase series, average weekly earnings for private nonagricultural and non supervisory workers, only goes back to 1970. The total compensation series for the ECI only goes back to 1980, so the corresponding entries are shorter still.

Tables 2 and 6 provide a series of multi-year average growth rates for each variable for periods ending in 2009. This results in up to 50 yearly averages for the CPI and MCPI, and up to 40 year averages for the earnings growth rates to interest rate comparisons. Table 2, for example, shows that the arithmetic average rate of effective yields on 91 Day Treasury Bills from 1960 through 2009 was 5.67 percent, and that the average rate of increase in the CPI over that same 50 year period was 4.11 percent¹. Table 3 provides calculations of the real interest rate based on comparing each of the interest rates with the growth rate in the CPI for each of 50 possible time periods ending in 2009. Table 4 provides the same comparisons with the growth rate in the MCPI for up to 50 year periods. Table 7 provides calculations of the net discount rate based on comparing each of the interest rates with the growth rate in the average weekly earnings series for the 40 possible periods from 1970 through 2009. Table 8 provides calculations of the net discount rate based on comparing each of the interest rates with the annual growth rate in the total compensation series of the ECI for the 29 possible periods from 1981 through 2009.

III. Avoiding Chronological Confusion

The structure of the tables can be chronologically confusing. Data in Tables 1 and 5 are presented in chronological order. As a result, 1960 and 1970 appear at the top of Tables 1 and 5, respectively, and 2009 appears at the bottom of each table. In the other six tables, that chronological order is effectively reversed. In Tables 2 and 6, the first period that appears is the “1 Year Average Rate.” The “1 Year Average Rate” for a period ending in 2009 is the value for the year 2009 divided by 1, or the same figure that appears for the rate at the bottom of Tables 1 and 5 for the year 2009. “2 Year Average Rate” refers to the average of the rates at the bottom of Tables 1 and 5 for the years 2008 and 2009. “3 Year Average Rate” refers to the average of the rates at the bottom of Tables 1 and 5 for the years 2007, 2008 and 2009, and so forth. Thus only Tables 1 and 5 start with the past and move forward to the present. The other six

tables start from the present and move further into the past as more years are included in the calculated averages being developed and in net rates based on those averages.

IV. Uses of the Tables

These tables were compiled to make it easier for a qualified forensic economist to counter claims made by unqualified forensic economic “experts” that various net discount rates are justified by historical experience. For example, claims are made in the reports of various would-be experts that purport to justify total offset or more than offset net discount rates. These claims may identify periods or interest rates that a qualified economist does not regularly use. As such, the qualified economist may have difficulty proving that the claims of the opposing economist are inconsistent with actual history. Having tables that employ multiple discount rates, multiple projections of growth rates and multiple periods over which projections are made provides a useful tool to counter such claims.

These tables continue to provide little comfort for persons advocating total offset for anything but net rates based on the MCPI. For the past nine years, one can find values close to total offset based on the 91 Day Treasury Bill for net discount rates based on average weekly earnings or the total compensation series for the ECI. For the ECI measure only, the same is true for the Three Year Treasury Bill rate. For all other discount rates, there is no justification for total offset with either wage series.²

Tables

Table 1
Annual Values for Various Interest Rates and Growth Rates in the CPI and
the MCPI for the Number of Years Shown as Ending in 2009

Year	3-month	3-year	10-year	Corp Aaa	Municipal	CPI Incr.	Med CPI
1960	3.025	3.98	4.12	4.41	3.73	1.7	4.3
1961	2.448	3.54	3.88	4.35	3.73	1.0	3.6
1962	2.867	3.47	3.88	4.33	3.18	1.0	3.5
1963	3.266	3.67	4.00	4.26	3.23	1.3	2.9
1964	3.681	4.03	4.19	4.40	3.22	1.3	2.3
1965	4.111	4.22	4.28	4.49	3.27	1.6	3.2
1966	5.106	5.23	4.92	5.13	3.82	2.9	5.3
1967	4.504	5.03	5.07	5.51	3.98	3.1	8.8
1968	5.601	5.68	5.65	6.18	6.94	4.2	7.3
1969	7.066	7.02	6.67	7.03	5.81	5.5	8.2
1970	6.825	7.29	7.35	8.04	6.51	5.7	7.0
1971	4.533	5.65	6.16	7.39	5.70	4.4	7.4
1972	4.236	5.72	6.21	7.21	5.27	3.2	3.5
1973	7.469	6.95	6.84	7.44	5.18	6.2	4.5
1974	8.411	7.82	7.56	8.57	6.09	11.0	10.4
1975	6.145	7.49	7.99	8.83	6.89	9.1	12.6
1976	5.222	6.77	7.61	8.43	6.49	5.8	10.1
1977	5.521	6.69	7.42	8.02	5.56	6.5	9.6
1978	7.669	8.29	8.41	8.73	5.90	7.6	8.4
1979	10.862	9.71	9.44	9.63	6.39	11.3	9.2
1980	12.568	11.55	11.46	11.94	8.51	13.5	11.0
1981	15.583	14.44	13.91	14.17	11.23	10.3	10.7
1982	11.609	12.92	13.00	13.79	11.57	6.2	11.6
1983	9.250	10.45	11.10	12.04	9.47	3.2	8.8
1984	10.332	11.89	12.44	12.71	10.15	4.3	6.2
1985	7.957	9.64	10.62	11.37	9.18	3.6	6.3
1986	6.300	7.06	7.68	9.02	7.38	1.9	7.5
1987	6.125	7.68	7.68	9.38	7.73	3.6	6.6
1988	7.080	8.26	8.85	9.71	7.76	4.1	6.5
1989	8.674	8.55	8.49	9.26	7.24	4.8	7.7
1990	7.991	8.26	8.55	9.32	7.25	5.4	9.0
1991	5.689	6.82	7.85	8.77	6.89	4.2	8.7
1992	3.576	5.30	7.01	8.14	6.41	3.0	7.4
1993	3.121	4.44	5.87	7.22	5.63	3.0	5.9
1994	4.470	6.27	7.09	7.96	6.19	2.6	4.8
1995	5.787	6.25	6.57	7.59	5.95	2.8	4.5
1996	5.256	5.99	6.44	7.37	5.75	3.0	3.5
1997	5.310	6.10	6.35	7.87	5.55	2.3	2.8
1998	5.029	5.14	5.26	6.53	5.12	1.6	3.2
1999	4.868	5.49	5.65	7.04	5.43	2.2	3.5
2000	6.158	6.22	6.03	7.62	5.77	3.4	4.1
2001	3.576	4.09	5.02	7.08	5.19	2.8	4.6
2002	1.659	3.10	4.61	6.49	5.05	1.6	4.7
2003	1.041	2.10	4.01	5.67	4.73	2.3	4.0
2004	1.411	2.78	4.27	5.63	4.63	2.7	4.4
2005	3.269	3.93	4.29	5.24	4.29	3.4	4.2
2006	4.943	4.77	4.80	5.59	4.42	3.2	4.0
2007	4.599	4.35	4.63	5.56	4.42	2.8	4.4
2008	1.515	2.24	3.66	5.63	4.80	3.8	3.7
2009	0.162	1.43	3.26	5.31	4.64	-0.4	3.2

“3-Month” refers to the 91 Day U.S. Treasury Bill, “3-Year” refers to a constant maturity U.S. Treasury three year note, “10 Year” refers to a 10 Year U.S. Treasury Note, “Corp. Aaa” refers to the Corporate Aaa rate, “Muni” refers to the High Grade Municipal rate, “CPI” refers to the Consumer Price Index, and “MCPI” refers to the medical component of the CPI.

Table 2
Average Values for Various Interest Rates and Growth Rates in the CPI
and the MCPI for the Number of Years Shown as Ending in 2009

Number of Years to 2009	3-month	3-year	10-year	Corp Aaa	Municipal	CPI Incr.	Med CPI
1 Year Average Rate	0.16	1.43	3.26	5.31	4.64	-0.40	3.20
2 Year Average Rate	0.84	1.84	3.46	5.47	4.72	1.70	3.45
3 Year Average Rate	2.09	2.67	3.85	5.50	4.62	2.07	3.77
4 Year Average Rate	2.80	3.20	4.09	5.52	4.57	2.35	3.83
5 Year Average Rate	2.90	3.34	4.13	5.47	4.51	2.56	3.90
6 Year Average Rate	2.65	3.25	4.15	5.49	4.53	2.58	3.98
7 Year Average Rate	2.42	3.09	4.13	5.52	4.56	2.54	3.99
8 Year Average Rate	2.32	3.09	4.19	5.64	4.62	2.43	4.08
9 Year Average Rate	2.46	3.20	4.28	5.80	4.69	2.47	4.13
10 Year Average Rate	2.83	3.50	4.46	5.98	4.79	2.56	4.13
11 Year Average Rate	3.02	3.68	4.57	6.08	4.85	2.53	4.07
12 Year Average Rate	3.19	3.80	4.62	6.12	4.87	2.45	4.00
13 Year Average Rate	3.35	3.98	4.76	6.25	4.93	2.44	3.91
14 Year Average Rate	3.49	4.12	4.88	6.33	4.99	2.48	3.88
15 Year Average Rate	3.64	4.27	4.99	6.41	5.05	2.50	3.92
16 Year Average Rate	3.69	4.39	5.12	6.51	5.12	2.51	3.98
17 Year Average Rate	3.66	4.39	5.17	6.55	5.15	2.54	4.09
18 Year Average Rate	3.65	4.44	5.27	6.64	5.22	2.56	4.27
19 Year Average Rate	3.76	4.57	5.40	6.75	5.31	2.65	4.51
20 Year Average Rate	3.97	4.75	5.56	6.88	5.41	2.79	4.73
21 Year Average Rate	4.20	4.93	5.70	6.99	5.49	2.88	4.87
22 Year Average Rate	4.33	5.09	5.84	7.12	5.60	2.94	4.95
23 Year Average Rate	4.40	5.20	5.92	7.22	5.69	2.97	5.02
24 Year Average Rate	4.48	5.28	6.00	7.29	5.76	2.92	5.12
25 Year Average Rate	4.62	5.45	6.18	7.45	5.90	2.95	5.17
26 Year Average Rate	4.84	5.70	6.42	7.66	6.06	3.00	5.21
27 Year Average Rate	5.01	5.87	6.60	7.82	6.19	3.01	5.34
28 Year Average Rate	5.24	6.13	6.82	8.03	6.38	3.12	5.56
29 Year Average Rate	5.60	6.41	7.07	8.24	6.55	3.37	5.74
30 Year Average Rate	5.83	6.58	7.21	8.37	6.61	3.71	5.92
31 Year Average Rate	5.99	6.68	7.29	8.41	6.60	3.95	6.02
32 Year Average Rate	6.05	6.73	7.32	8.42	6.58	4.07	6.10
33 Year Average Rate	6.03	6.73	7.32	8.41	6.55	4.14	6.20
34 Year Average Rate	6.01	6.73	7.33	8.41	6.55	4.19	6.32
35 Year Average Rate	6.01	6.76	7.35	8.42	6.56	4.33	6.50
36 Year Average Rate	6.08	6.79	7.36	8.42	6.55	4.51	6.61
37 Year Average Rate	6.11	6.79	7.34	8.40	6.51	4.56	6.55
38 Year Average Rate	6.06	6.76	7.31	8.37	6.48	4.52	6.47
39 Year Average Rate	6.03	6.73	7.28	8.34	6.46	4.52	6.49
40 Year Average Rate	6.05	6.75	7.29	8.33	6.46	4.55	6.50
41 Year Average Rate	6.07	6.75	7.27	8.30	6.44	4.57	6.55
42 Year Average Rate	6.06	6.73	7.23	8.25	6.45	4.56	6.56
43 Year Average Rate	6.02	6.69	7.18	8.19	6.40	4.53	6.62
44 Year Average Rate	6.00	6.66	7.13	8.12	6.34	4.49	6.59
45 Year Average Rate	5.96	6.60	7.07	8.04	6.27	4.43	6.51
46 Year Average Rate	5.91	6.55	7.00	7.96	6.20	4.36	6.42
47 Year Average Rate	5.85	6.48	6.94	7.88	6.14	4.30	6.34
48 Year Average Rate	5.79	6.42	6.88	7.80	6.08	4.23	6.29
49 Year Average Rate	5.72	6.36	6.82	7.73	6.03	4.16	6.23
50 Year Average Rate	5.67	6.32	6.76	7.67	5.98	4.11	6.19

Table 3
Real Interest Rates based on Various Interest Rates and the Growth Rate
in the CPI for Numbers of Years Ending in 2009

Number of Years Ending in 2009	3-month	3-year	10-year	Corp. Aaa	Municipal	CPI Incr.	Med CPI
1 Year Real Discount Rate	0.56	1.84	3.67	5.73	5.06	0.00	3.61
2 Year Real Discount Rate	-0.85	0.13	1.73	3.71	2.97	0.00	1.72
3 Year Real Discount Rate	0.02	0.59	1.75	3.36	2.50	0.00	1.67
4 Year Real Discount Rate	0.44	0.83	1.70	3.10	2.17	0.00	1.44
5 Year Real Discount Rate	0.33	0.76	1.53	2.83	1.91	0.00	1.31
6 Year Real Discount Rate	0.06	0.65	1.53	2.84	1.90	0.00	1.36
7 Year Real Discount Rate	-0.12	0.53	1.55	2.90	1.97	0.00	1.41
8 Year Real Discount Rate	-0.10	0.65	1.72	3.14	2.15	0.00	1.61
9 Year Real Discount Rate	-0.00	0.71	1.77	3.25	2.17	0.00	1.63
10 Year Real Discount Rate	0.27	0.92	1.85	3.34	2.18	0.00	1.53
11 Year Real Discount Rate	0.48	1.13	1.99	3.46	2.27	0.00	1.51
12 Year Real Discount Rate	0.72	1.32	2.12	3.58	2.37	0.00	1.51
13 Year Real Discount Rate	0.89	1.50	2.26	3.72	2.43	0.00	1.43
14 Year Real Discount Rate	0.98	1.61	2.34	3.76	2.45	0.00	1.37
15 Year Real Discount Rate	1.11	1.72	2.43	3.82	2.49	0.00	1.39
16 Year Real Discount Rate	1.16	1.84	2.55	3.91	2.55	0.00	1.43
17 Year Real Discount Rate	1.09	1.81	2.56	3.92	2.55	0.00	1.51
18 Year Real Discount Rate	1.06	1.84	2.64	3.98	2.59	0.00	1.67
19 Year Real Discount Rate	1.08	1.87	2.69	4.00	2.59	0.00	1.81
20 Year Real Discount Rate	1.15	1.92	2.70	3.99	2.55	0.00	1.89
21 Year Real Discount Rate	1.28	2.00	2.74	4.00	2.54	0.00	1.93
22 Year Real Discount Rate	1.35	2.09	2.82	4.06	2.58	0.00	1.95
23 Year Real Discount Rate	1.40	2.17	2.87	4.13	2.65	0.00	1.99
24 Year Real Discount Rate	1.52	2.29	2.99	4.25	2.76	0.00	2.14
25 Year Real Discount Rate	1.63	2.43	3.14	4.38	2.86	0.00	2.16
26 Year Real Discount Rate	1.79	2.62	3.32	4.52	2.97	0.00	2.14
27 Year Real Discount Rate	1.94	2.78	3.48	4.67	3.09	0.00	2.27
28 Year Real Discount Rate	2.06	2.91	3.59	4.76	3.16	0.00	2.37
29 Year Real Discount Rate	2.16	2.94	3.58	4.72	3.07	0.00	2.30
30 Year Real Discount Rate	2.05	2.77	3.38	4.49	2.80	0.00	2.13
31 Year Real Discount Rate	1.96	2.63	3.21	4.29	2.55	0.00	1.99
32 Year Real Discount Rate	1.90	2.56	3.13	4.18	2.42	0.00	1.95
33 Year Real Discount Rate	1.81	2.49	3.06	4.10	2.32	0.00	1.98
34 Year Real Discount Rate	1.74	2.44	3.02	4.05	2.27	0.00	2.04
35 Year Real Discount Rate	1.61	2.33	2.90	3.92	2.14	0.00	2.08
36 Year Real Discount Rate	1.49	2.17	2.72	3.74	1.94	0.00	2.00
37 Year Real Discount Rate	1.49	2.13	2.66	3.67	1.86	0.00	1.90
38 Year Real Discount Rate	1.47	2.14	2.67	3.68	1.87	0.00	1.86
39 Year Real Discount Rate	1.44	2.12	2.64	3.65	1.85	0.00	1.89
40 Year Real Discount Rate	1.43	2.10	2.62	3.62	1.82	0.00	1.87
41 Year Real Discount Rate	1.43	2.09	2.58	3.56	1.79	0.00	1.89
42 Year Real Discount Rate	1.43	2.07	2.55	3.53	1.81	0.00	1.91
43 Year Real Discount Rate	1.43	2.07	2.54	3.50	1.79	0.00	2.00
44 Year Real Discount Rate	1.44	2.07	2.52	3.47	1.77	0.00	2.00
45 Year Real Discount Rate	1.47	2.08	2.53	3.45	1.76	0.00	1.99
46 Year Real Discount Rate	1.48	2.09	2.53	3.45	1.77	0.00	1.97
47 Year Real Discount Rate	1.49	2.10	2.54	3.44	1.77	0.00	1.96
48 Year Real Discount Rate	1.50	2.11	2.54	3.43	1.78	0.00	1.97
49 Year Real Discount Rate	1.50	2.11	2.55	3.43	1.79	0.00	1.99
50 Year Real Discount Rate	1.50	2.12	2.55	3.42	1.80	0.00	2.00

Table 4
Net Medical Discount Rates based on Various Interest Rates and the
Growth Rate in the MCPI for Numbers of Years Ending in 2009

Number of Years Ending in 2009	3-month	3-year	10-year	Corp. Aaa	Municipal	CPI Incr	Med CPI
1 Year Medical Discount Rate	-2.94	-1.72	0.06	2.04	1.40	-3.49	0.00
2 Year Medical Discount Rate	-2.52	-1.56	0.01	1.95	1.23	-1.69	0.00
3 Year Medical Discount Rate	-1.61	-1.05	0.08	1.67	0.82	-1.64	0.00
4 Year Medical Discount Rate	-0.98	-0.60	0.25	1.63	0.72	-1.42	0.00
5 Year Medical Discount Rate	-0.96	-0.54	0.22	1.51	0.59	-1.29	0.00
6 Year Medical Discount Rate	-1.28	-0.71	0.16	1.45	0.53	-1.35	0.00
7 Year Medical Discount Rate	-1.51	-0.87	0.14	1.47	0.55	-1.39	0.00
8 Year Medical Discount Rate	-1.68	-0.95	0.11	1.50	0.53	-1.59	0.00
9 Year Medical Discount Rate	-1.60	-0.90	0.14	1.60	0.53	-1.60	0.00
10 Year Medical Discount Rate	-1.25	-0.60	0.31	1.78	0.64	-1.51	0.00
11 Year Medical Discount Rate	-1.01	-0.38	0.47	1.93	0.75	-1.48	0.00
12 Year Medical Discount Rate	-0.78	-0.19	0.60	2.03	0.84	-1.49	0.00
13 Year Medical Discount Rate	-0.54	0.07	0.82	2.25	0.98	-1.41	0.00
14 Year Medical Discount Rate	-0.38	0.24	0.96	2.36	1.07	-1.35	0.00
15 Year Medical Discount Rate	-0.27	0.33	1.03	2.40	1.09	-1.37	0.00
16 Year Medical Discount Rate	-0.27	0.40	1.10	2.44	1.10	-1.41	0.00
17 Year Medical Discount Rate	-0.41	0.29	1.03	2.37	1.02	-1.49	0.00
18 Year Medical Discount Rate	-0.59	0.16	0.95	2.27	0.91	-1.64	0.00
19 Year Medical Discount Rate	-0.71	0.06	0.86	2.15	0.77	-1.78	0.00
20 Year Medical Discount Rate	-0.72	0.02	0.79	2.05	0.64	-1.86	0.00
21 Year Medical Discount Rate	-0.64	0.06	0.79	2.02	0.59	-1.90	0.00
22 Year Medical Discount Rate	-0.59	0.13	0.86	2.07	0.62	-1.91	0.00
23 Year Medical Discount Rate	-0.58	0.17	0.86	2.09	0.64	-1.95	0.00
24 Year Medical Discount Rate	-0.61	0.15	0.83	2.07	0.61	-2.09	0.00
25 Year Medical Discount Rate	-0.52	0.27	0.96	2.17	0.69	-2.11	0.00
26 Year Medical Discount Rate	-0.35	0.47	1.15	2.33	0.81	-2.10	0.00
27 Year Medical Discount Rate	-0.32	0.51	1.19	2.35	0.80	-2.22	0.00
28 Year Medical Discount Rate	-0.31	0.53	1.19	2.34	0.77	-2.31	0.00
29 Year Medical Discount Rate	-0.14	0.63	1.26	2.37	0.76	-2.24	0.00
30 Year Medical Discount Rate	-0.08	0.63	1.23	2.31	0.66	-2.09	0.00
31 Year Medical Discount Rate	-0.03	0.62	1.19	2.25	0.55	-1.95	0.00
32 Year Medical Discount Rate	-0.05	0.60	1.15	2.19	0.46	-1.91	0.00
33 Year Medical Discount Rate	-0.16	0.50	1.06	2.07	0.33	-1.94	0.00
34 Year Medical Discount Rate	-0.29	0.39	0.96	1.96	0.22	-2.00	0.00
35 Year Medical Discount Rate	-0.46	0.24	0.80	1.80	0.06	-2.04	0.00
36 Year Medical Discount Rate	-0.50	0.17	0.71	1.70	-0.06	-1.96	0.00
37 Year Medical Discount Rate	-0.41	0.23	0.75	1.73	-0.04	-1.87	0.00
38 Year Medical Discount Rate	-0.38	0.28	0.79	1.78	0.01	-1.83	0.00
39 Year Medical Discount Rate	-0.44	0.23	0.74	1.74	-0.03	-1.85	0.00
40 Year Medical Discount Rate	-0.43	0.23	0.73	1.72	-0.04	-1.84	0.00
41 Year Medical Discount Rate	-0.45	0.19	0.68	1.65	-0.10	-1.85	0.00
42 Year Medical Discount Rate	-0.47	0.15	0.63	1.58	-0.10	-1.88	0.00
43 Year Medical Discount Rate	-0.56	0.07	0.53	1.47	-0.21	-1.96	0.00
44 Year Medical Discount Rate	-0.55	0.07	0.51	1.44	-0.23	-1.96	0.00
45 Year Medical Discount Rate	-0.52	0.08	0.52	1.43	-0.23	-1.95	0.00
46 Year Medical Discount Rate	-0.48	0.12	0.55	1.45	-0.20	-1.93	0.00
47 Year Medical Discount Rate	-0.46	0.13	0.56	1.44	-0.19	-1.93	0.00
48 Year Medical Discount Rate	-0.46	0.13	0.56	1.43	-0.19	-1.94	0.00
49 Year Medical Discount Rate	-0.48	0.12	0.55	1.42	-0.19	-1.95	0.00
50 Year Medical Discount Rate	-0.49	0.12	0.54	1.39	-0.20	-1.96	0.00

Net Discount Rate calculated as $[(1 + i)/(1 + g) - 1]$, where i is the interest rate being used and g is the rate of increase in the medical component of the CPI.

Table 5
Annual Values for Various Interest Rates and Growth Rates in the
Average Weekly Earnings and in the Total Compensation Series of the
Employer Cost Index from 1970-2009

Year	3-month	3-year	10-year	Corp Aaa	Municipal	Av. Wk.%	E Cost %
1970	6.825	7.29	7.35	8.04	6.51	4.2	n.a
1971	4.533	5.65	6.16	7.39	5.70	6.2	n.a
1972	4.236	5.72	6.21	7.21	5.27	7.7	n.a
1973	7.469	6.95	6.84	7.44	5.18	6.2	n.a
1974	8.411	7.82	7.56	8.57	6.09	5.6	n.a
1975	6.145	7.49	7.99	8.83	6.89	5.6	n.a
1976	5.222	6.77	7.61	8.43	6.49	7.3	n.a
1977	5.521	6.69	7.42	8.02	5.56	6.9	n.a
1978	7.669	8.29	8.41	8.73	5.90	7.6	n.a
1979	10.862	9.71	9.44	9.63	6.39	7.2	n.a
1980	12.568	11.55	11.46	11.94	8.51	6.8	n.a
1981	15.583	14.44	13.91	14.17	11.23	8.6	9.9
1982	11.609	12.92	13.00	13.79	11.57	4.3	6.5
1983	9.250	10.45	11.10	12.04	9.47	4.8	5.7
1984	10.332	11.89	12.44	12.71	10.15	4.1	4.9
1985	7.957	9.64	10.62	11.37	9.18	2.4	3.9
1986	6.300	7.06	7.68	9.02	7.38	1.6	3.2
1987	6.125	7.68	7.68	9.38	7.73	2.4	3.3
1988	7.080	8.26	8.85	9.71	7.76	3.0	4.8
1989	8.674	8.55	8.49	9.26	7.24	3.6	4.8
1990	7.991	8.26	8.55	9.32	7.25	3.3	4.6
1991	5.689	6.82	7.85	8.77	6.89	2.5	4.4
1992	3.576	5.30	7.01	8.14	6.41	2.7	3.5
1993	3.121	4.44	5.87	7.22	5.63	2.9	3.6
1994	4.470	6.27	7.09	7.96	6.19	3.3	3.1
1995	5.787	6.25	6.57	7.59	5.95	2.3	2.6
1996	5.256	5.99	6.44	7.37	5.75	3.3	3.1
1997	5.310	6.10	6.35	7.87	5.55	4.5	3.4
1998	5.029	5.14	5.26	6.53	5.12	3.9	3.8
1999	4.868	5.49	5.65	7.04	5.43	3.2	3.3
2000	6.158	6.22	6.03	7.62	5.77	3.9	4.4
2001	3.576	4.09	5.02	7.08	5.19	2.7	4.0
2002	1.659	3.10	4.61	6.49	5.05	2.6	3.2
2003	1.041	2.10	4.01	5.67	4.73	2.6	3.8
2004	1.411	2.78	4.27	5.63	4.63	2.2	3.9
2005	3.269	3.93	4.29	5.24	4.29	2.9	3.2
2006	4.943	4.77	4.80	5.59	4.42	4.3	2.8
2007	4.599	4.35	4.63	5.56	4.42	3.8	3.2
2008	1.515	2.24	3.66	5.63	4.80	3.0	2.4
2009	0.162	1.43	3.26	5.31	4.64	1.4	1.2

"Av. Wk.%" is the percent increase in the average weekly earnings for private nonagricultural and non supervisory workers. "E Cost %" is the percent increase in the total compensation series of the Employer Cost Index. The remaining column headings are defined in the note to Table 1.

Table 6
Average Rates for Various Interest Rates, Growth Rates in the Average Weekly Earnings and Total Compensation Series in the Employer Cost Index for Number of Years Shown as Ending in 2009

Number of Years to 2009	3-month	3-year	10-year	Corp Aaa	Muni	Av.Wk.%	E Cost %
1 Year Average Rate	0.16	1.43	3.26	5.31	4.64	1.40	1.20
2 Year Average Rate	0.84	1.84	3.46	5.47	4.72	2.20	1.80
3 Year Average Rate	2.09	2.67	3.85	5.50	4.62	2.73	2.27
4 Year Average Rate	2.80	3.20	4.09	5.52	4.57	3.13	2.40
5 Year Average Rate	2.90	3.34	4.13	5.47	4.51	3.08	2.56
6 Year Average Rate	2.65	3.25	4.15	5.49	4.53	2.93	2.78
7 Year Average Rate	2.42	3.09	4.13	5.52	4.56	2.89	2.93
8 Year Average Rate	2.32	3.09	4.19	5.64	4.62	2.85	2.96
9 Year Average Rate	2.46	3.20	4.28	5.80	4.69	2.83	3.08
10 Year Average Rate	2.83	3.50	4.46	5.98	4.79	2.94	3.21
11 Year Average Rate	3.02	3.68	4.57	6.08	4.85	2.96	3.22
12 Year Average Rate	3.19	3.80	4.62	6.12	4.87	3.04	3.27
13 Year Average Rate	3.35	3.98	4.76	6.25	4.93	3.15	3.28
14 Year Average Rate	3.49	4.12	4.88	6.33	4.99	3.16	3.26
15 Year Average Rate	3.64	4.27	4.99	6.41	5.05	3.11	3.22
16 Year Average Rate	3.69	4.39	5.12	6.51	5.12	3.12	3.21
17 Year Average Rate	3.66	4.39	5.17	6.55	5.15	3.11	3.24
18 Year Average Rate	3.65	4.44	5.27	6.64	5.22	3.08	3.25
19 Year Average Rate	3.76	4.57	5.40	6.75	5.31	3.05	3.31
20 Year Average Rate	3.97	4.75	5.56	6.88	5.41	3.07	3.38
21 Year Average Rate	4.20	4.93	5.70	6.99	5.49	3.09	3.44
22 Year Average Rate	4.33	5.09	5.84	7.12	5.60	3.09	3.50
23 Year Average Rate	4.40	5.20	5.92	7.22	5.69	3.06	3.50
24 Year Average Rate	4.48	5.28	6.00	7.29	5.76	3.00	3.48
25 Year Average Rate	4.62	5.45	6.18	7.45	5.90	2.97	3.50
26 Year Average Rate	4.84	5.70	6.42	7.66	6.06	3.02	3.55
27 Year Average Rate	5.01	5.87	6.60	7.82	6.19	3.08	3.63
28 Year Average Rate	5.24	6.13	6.82	8.03	6.38	3.13	3.74
29 Year Average Rate	5.60	6.41	7.07	8.24	6.55	3.31	3.95
30 Year Average Rate	5.83	6.58	7.21	8.37	6.61	3.43	n.a
31 Year Average Rate	5.99	6.68	7.29	8.41	6.60	3.55	n.a
32 Year Average Rate	6.05	6.73	7.32	8.42	6.58	3.68	n.a
33 Year Average Rate	6.03	6.73	7.32	8.41	6.55	3.78	n.a
34 Year Average Rate	6.01	6.73	7.33	8.41	6.55	3.88	n.a
35 Year Average Rate	6.01	6.76	7.35	8.42	6.56	3.93	n.a
36 Year Average Rate	6.08	6.79	7.36	8.42	6.55	3.98	n.a
37 Year Average Rate	6.11	6.79	7.34	8.40	6.51	4.04	n.a
38 Year Average Rate	6.06	6.76	7.31	8.37	6.48	4.13	n.a
39 Year Average Rate	6.03	6.73	7.28	8.34	6.46	4.18	n.a
40 Year Average Rate	6.05	6.75	7.29	8.33	6.46	4.19	n.a

Table 7

Net Discount Rates Based on Average Weekly Earnings for Private
Nonagricultural and Non Supervisory Workers Compared with Various
Interest Rates for the Number of Years Ending in 2009

Number of Years to 2009	3-month	3-year	10-year	Corp. Aaa	Municipal	Av. Wk.%	E Cost %
1 Year Net Discount Rate	-1.22	0.03	1.83	3.86	3.20	0.00	-0.39
2 Year Net Discount Rate	-1.33	-0.36	1.23	3.20	2.47	0.00	-0.39
3 Year Net Discount Rate	-0.62	-0.06	1.09	2.69	1.84	0.00	-0.45
4 Year Net Discount Rate	-0.31	0.07	0.93	2.32	1.40	0.00	-0.70
5 Year Net Discount Rate	-0.18	0.26	1.02	2.31	1.39	0.00	-0.50
6 Year Net Discount Rate	-0.28	0.31	1.18	2.49	1.55	0.00	-0.15
7 Year Net Discount Rate	-0.45	0.19	1.21	2.56	1.63	0.00	0.04
8 Year Net Discount Rate	-0.51	0.23	1.30	2.71	1.72	0.00	0.11
9 Year Net Discount Rate	-0.36	0.36	1.41	2.88	1.80	0.00	0.24
10 Year Net Discount Rate	-0.10	0.54	1.47	2.96	1.80	0.00	0.26
11 Year Net Discount Rate	0.05	0.70	1.56	3.02	1.83	0.00	0.25
12 Year Net Discount Rate	0.14	0.74	1.54	2.98	1.78	0.00	0.22
13 Year Net Discount Rate	0.19	0.80	1.55	3.00	1.72	0.00	0.12
14 Year Net Discount Rate	0.31	0.93	1.66	3.07	1.76	0.00	0.10
15 Year Net Discount Rate	0.52	1.12	1.83	3.21	1.88	0.00	0.11
16 Year Net Discount Rate	0.55	1.23	1.94	3.29	1.94	0.00	0.09
17 Year Net Discount Rate	0.53	1.25	2.00	3.34	1.98	0.00	0.13
18 Year Net Discount Rate	0.55	1.32	2.12	3.45	2.07	0.00	0.16
19 Year Net Discount Rate	0.69	1.47	2.28	3.59	2.19	0.00	0.25
20 Year Net Discount Rate	0.88	1.64	2.42	3.70	2.27	0.00	0.30
21 Year Net Discount Rate	1.07	1.79	2.53	3.79	2.33	0.00	0.34
22 Year Net Discount Rate	1.20	1.94	2.67	3.91	2.43	0.00	0.41
23 Year Net Discount Rate	1.31	2.08	2.78	4.04	2.55	0.00	0.43
24 Year Net Discount Rate	1.44	2.21	2.91	4.17	2.68	0.00	0.47
25 Year Net Discount Rate	1.60	2.41	3.12	4.35	2.84	0.00	0.51
26 Year Net Discount Rate	1.77	2.60	3.31	4.51	2.96	0.00	0.52
27 Year Net Discount Rate	1.87	2.71	3.41	4.60	3.01	0.00	0.54
28 Year Net Discount Rate	2.05	2.91	3.59	4.76	3.15	0.00	0.59
29 Year Net Discount Rate	2.21	3.00	3.63	4.77	3.13	0.00	0.61
30 Year Net Discount Rate	2.32	3.05	3.66	4.77	3.08	0.00	n.a.
31 Year Net Discount Rate	2.36	3.03	3.61	4.69	2.95	0.00	n.a.
32 Year Net Discount Rate	2.28	2.95	3.51	4.57	2.80	0.00	n.a.
33 Year Net Discount Rate	2.17	2.85	3.42	4.46	2.67	0.00	n.a.
34 Year Net Discount Rate	2.05	2.75	3.32	4.36	2.57	0.00	n.a.
35 Year Net Discount Rate	2.00	2.72	3.29	4.32	2.53	0.00	n.a.
36 Year Net Discount Rate	2.02	2.70	3.25	4.28	2.47	0.00	n.a.
37 Year Net Discount Rate	2.00	2.65	3.18	4.19	2.38	0.00	n.a.
38 Year Net Discount Rate	1.86	2.53	3.06	4.07	2.25	0.00	n.a.
39 Year Net Discount Rate	1.77	2.45	2.98	3.99	2.18	0.00	n.a.
40 Year Net Discount Rate	1.79	2.46	2.98	3.98	2.18	0.00	n.a.

Net Discount Rate is calculated as $[(1 + i)/(1+g) - 1]$, where i is the interest rate being used and g is the rate of increase in Average Weekly Earnings.

Table 8
Net Discount Rates Based on the Total Compensation Series of the Employer Cost Index Compared with Various Interest Rates for the Number of Years Ending in 2009

Number of Years to 2009	3-month	3-year	10-year	Corp. Aaa	Municipal	Av. Wk.% E Cost %	
1 Year Net Discount Rate	-1.03	0.23	2.04	4.06	3.40	0.20	0.00
2 Year Net Discount Rate	-0.94	0.03	1.63	3.61	2.87	0.39	0.00
3 Year Net Discount Rate	-0.17	0.40	1.55	3.16	2.30	0.46	0.00
4 Year Net Discount Rate	0.40	0.78	1.65	3.05	2.12	0.71	0.00
5 Year Net Discount Rate	0.33	0.76	1.53	2.83	1.91	0.51	0.00
6 Year Net Discount Rate	-0.13	0.45	1.33	2.64	1.70	0.15	0.00
7 Year Net Discount Rate	-0.49	0.15	1.17	2.52	1.59	-0.04	0.00
8 Year Net Discount Rate	-0.62	0.12	1.19	2.60	1.61	-0.11	0.00
9 Year Net Discount Rate	-0.60	0.12	1.17	2.64	1.56	-0.24	0.00
10 Year Net Discount Rate	-0.36	0.28	1.21	2.69	1.53	-0.26	0.00
11 Year Net Discount Rate	-0.19	0.45	1.31	2.77	1.58	-0.25	0.00
12 Year Net Discount Rate	-0.08	0.52	1.31	2.76	1.56	-0.22	0.00
13 Year Net Discount Rate	0.07	0.68	1.43	2.88	1.60	-0.12	0.00
14 Year Net Discount Rate	0.21	0.83	1.56	2.97	1.67	-0.10	0.00
15 Year Net Discount Rate	0.41	1.01	1.71	3.10	1.77	-0.11	0.00
16 Year Net Discount Rate	0.46	1.14	1.85	3.20	1.85	-0.09	0.00
17 Year Net Discount Rate	0.41	1.12	1.87	3.21	1.86	-0.13	0.00
18 Year Net Discount Rate	0.39	1.16	1.95	3.28	1.91	-0.16	0.00
19 Year Net Discount Rate	0.44	1.22	2.03	3.33	1.93	-0.25	0.00
20 Year Net Discount Rate	0.58	1.33	2.11	3.39	1.96	-0.30	0.00
21 Year Net Discount Rate	0.73	1.44	2.18	3.43	1.98	-0.34	0.00
22 Year Net Discount Rate	0.79	1.53	2.26	3.49	2.02	-0.40	0.00
23 Year Net Discount Rate	0.88	1.65	2.35	3.60	2.12	-0.42	0.00
24 Year Net Discount Rate	0.97	1.73	2.43	3.68	2.20	-0.47	0.00
25 Year Net Discount Rate	1.08	1.88	2.59	3.82	2.31	-0.51	0.00
26 Year Net Discount Rate	1.24	2.07	2.77	3.96	2.42	-0.52	0.00
27 Year Net Discount Rate	1.32	2.16	2.86	4.04	2.46	-0.53	0.00
28 Year Net Discount Rate	1.45	2.30	2.98	4.14	2.55	-0.59	0.00
29 Year Net Discount Rate	1.59	2.37	3.00	4.13	2.50	-0.61	0.00

Net Discount Rate calculated as $[(1 + i)/(1+g) - 1]$, where i is the interest rate being used and g is the rate of increase in the total compensation series of the Employer Cost Index.

Endnotes

1. Theoretically, it may have been better to have used geometric average growth rates rather than arithmetic averages for interest rates and growth rates shown in those tables. Doing so would have resulted in differences no greater than 4 basis points in the results reported in Tables 3, 4, 7 and 8. Differences of three basis points or greater would have resulted in only a handful of cases. These findings are consistent with Ireland's experience in making such comparisons over the past 20 years.
2. The MCPI should not generally be used in calculating the costs of life care plans because many elements in those plans do not increase in tandem with hospitalizations, pharmaceuticals and skilled medical care.

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