

## Historical Net Discount Rates – An Update Through 2007

Thomas R. Ireland\*

### Introduction

The following eight tables are updated versions of the eight tables that were presented in publications by this author that contained calculations through 1999 [Ireland, 2000] and updates through 2001 [Ireland, 2000-01], 2003 [Ireland, 2002] and 2005 [Ireland 2006]. A basic rule for all calculations provided in this series has been that the data in making the calculations must come from the *Economic Report of the President* (henceforth ERP). Tables 1-4 have been prepared on the same basis as in all three previous versions of the table except that the tables now include data for the year 2007. Tables 1-4 begin with 1956 and end with 2007, allowing 50 year comparisons to be made between various discount rates and both the CPI (Consumer Price Index) and the MCPI (Medical Consumer Price Index). Tables 5-8 begin with 1965 and end with 2007, allowing 40 year comparisons to be made between various discount rates and Average Weekly Earnings for all American workers. Table 5 contains data from 1981 to the present for the total compensation series of the employer cost index, allowing comparisons to be made between that series and various discount rates for the past 27 years. [As a note of caution, averages for any period longer than 25 years are not applicable in any case, given regime changes in the American economy.]

With respect to Tables 5-8, the 2003 revision of these tables included revisions made by the Bureau of Labor Statistics to its "Average Weekly Earnings of All American Workers" series as of the *Economic Report of the President* (ERP) as of 2006. Those revisions went back to the beginning in 1965 for the data for that series provided in Tables 5-8 in the ERP for 2004. The 2008 ERP parallels the 2004 ERP in not including data for the "Average Weekly Earnings" series prior to 1965. Tables 5-8 therefore start with 1965 instead of 1959, as in the first two versions of these tables. Use of a 1965 starting point has allowed calculation for Tables 5 to 8 of up to 40 years of periods ending in 2004. The 2008 ERP contained only data for the Total Compensation series of the Employer Cost Index (ECI) from 1984 through

---

\* Thomas R. Ireland, Department of Economics, University of Missouri at St. Louis, 8001 Natural Bridge Road, St. Louis, MO 63121 (Office: 314-516-5558) Email: [Ireland@umsl.edu](mailto:Ireland@umsl.edu).

2007. Figures for 1981-1983 for the Total Compensation series of the Employer Cost Index were retained from the *Economic Report of the President: 2003*. A reader would need to consult the 2003 ERP to find figures for 1981-83. In other respects, the methods used in compiling these tables in the three previous publications cited above have been maintained.

### **Explanation of the Tables**

The original purpose of these tables was to provide forensic economics with values for net discount rates and the real interest rate that were varies and flexible. The original version had data for the 30 year U.S. Treasury Bond rate. That 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 Bond, 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 1-4 and with the Average Weekly Earning series of earnings increases and the annual rates of change in the total compensation measure in the Employer Cost Index in Tables 5-8. 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. The data has not been modified in any way in Tables 1 and 5, but simply replicates what is provided in the ERP.

Table 1 includes data for the interest rates indicated above and for the CPI and MCPI by year from 1953 through 2007. 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 of all American workers and the Total Compensation series for the Employer Cost Index. Tables 5-8 are shorter than Tables 1-4 because the longest wage increase series, Average Weekly Earnings of all American workers, only goes back to 1965. The Total Compensation series for the Employer Cost Index (ECI) only goes back to 1982, so it is shorter still.

Tables 2 and 6 provide a series of multi-year average growth rates for each variable for periods ending in 2007. This results in up to 50 year 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 1958 through 2007 was 5.72 percent and that the average rate of increase in the CPI over that same 50 year period was 4.12 percent.<sup>1</sup> 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 fifty possible time periods ending in 2007. 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 from for the 40 possible periods from 1965 through 2007. Table 8 provides calculations of the net discount rate based on comparing each of the interest rates with the annual growth rate in total compensation in the total compensation measure in the Employer Cost Index for the 26 possible periods from 1982 through 2007.

### **Avoiding Chronological Confusion**

The structure of the tables can be chronologically confusing. Data in Tables 1 and 5 is presented in chronological order. As a result, 1953 and 1965 appear at the top of Tables 1 and 5 respectively and 2007 appears at the bottom of the 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 "one year average rate" for a period ending in 2007 is the value for the year 2007 divided by 1, or the same figure that appears for the rate at the bottom of Tables 1 and 5 for the year 2006. "2 Year Average Rate" refers to the average of the rates at the bottom of Tables 1 and 5 for the years 2006 and 2007. "3 Year Average Rate" refers to the average of the rates at the bottom of Tables 1 and 5 for the years 2005, 2006 and 2007, and so forth. Thus only Tables 1 and 5 start with the past and move forward to the present, while the other six tables start from the present and move further and further into the past as more and more years are included in the calculated averages being developed and in net rates based on those averages.

### **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 Employer Cost Index. For the ECI 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.<sup>2</sup>

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 2007

Year	3-month	3-year	10-year	Corp	Aaa	Muni	Aaa	CPI	Incr.	Med	CPI
1956	2.741	3.19	3.18	3.36	2.93	1.5	3.8				
1957	3.382	3.98	3.65	3.89	3.60	3.3	4.2				
1958	1.886	2.84	3.32	3.79	3.56	2.8	4.6				
1959	3.528	4.46	4.33	4.38	3.95	0.7	4.4				
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				

Table 1 continued

Year	3-month	3-year	10-year	Corp	Aaa	Muni	Aaa	CPI Incr.	Med CPI
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	4.559	4.35	4.63	5.56	4.42			2.8	4.4

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 2007

Number of Years Ending in 2007	3-month	3-year	10-year	Corp. Aaa	Muni	CPI Incr.	Med CPI
1 Year Average Rate	4.94	4.77	4.80	5.59	4.42	3.20	4.00
2 Year Average Rate	4.11	4.35	4.55	5.42	4.36	3.30	4.10
3 Year Average Rate	3.21	3.83	4.45	5.49	4.45	3.10	4.20
4 Year Average Rate	2.67	3.40	4.34	5.53	4.52	2.90	4.15
5 Year Average Rate	2.46	3.34	4.40	5.72	4.62	2.64	4.26
6 Year Average Rate	2.65	3.46	4.50	5.95	4.72	2.67	4.32
7 Year Average Rate	3.15	3.86	4.72	6.19	4.87	2.77	4.29
8 Year Average Rate	3.37	4.06	4.84	6.30	4.94	2.70	4.19
9 Year Average Rate	3.55	4.18	4.88	6.32	4.96	2.58	4.08
10 Year Average Rate	3.73	4.37	5.03	6.48	5.02	2.55	3.95
11 Year Average Rate	3.87	4.52	5.16	6.56	5.08	2.59	3.91
12 Year Average Rate	4.03	4.66	5.28	6.64	5.16	2.61	3.96
13 Year Average Rate	4.06	4.79	5.41	6.74	5.24	2.61	4.02
14 Year Average Rate	3.99	4.76	5.45	6.78	5.26	2.64	4.16
15 Year Average Rate	3.96	4.80	5.55	6.87	5.34	2.66	4.37
16 Year Average Rate	4.07	4.92	5.70	6.99	5.44	2.76	4.64
17 Year Average Rate	4.30	5.12	5.86	7.13	5.54	2.91	4.90
18 Year Average Rate	4.55	5.31	6.01	7.24	5.64	3.02	5.06
19 Year Average Rate	4.68	5.47	6.16	7.37	5.75	3.07	5.13
20 Year Average Rate	4.75	5.58	6.23	7.47	5.85	3.10	5.21
21 Year Average Rate	4.83	5.65	6.30	7.55	5.92	3.04	5.31
22 Year Average Rate	4.97	5.83	6.50	7.72	6.07	3.07	5.36
23 Year Average Rate	5.20	6.09	6.76	7.94	6.25	3.12	5.40
24 Year Average Rate	5.37	6.27	6.94	8.11	6.38	3.13	5.54
25 Year Average Rate	5.62	6.54	7.18	8.34	6.59	3.25	5.78
26 Year Average Rate	6.00	6.84	7.44	8.56	6.77	3.52	5.97
27 Year Average Rate	6.25	7.02	7.59	8.69	6.83	3.89	6.16
28 Year Average Rate	6.41	7.11	7.66	8.72	6.82	4.15	6.26
29 Year Average Rate	6.45	7.15	7.68	8.72	6.78	4.27	6.34
30 Year Average Rate	6.42	7.14	7.67	8.70	6.74	4.35	6.45
31 Year Average Rate	6.38	7.13	7.67	8.69	6.74	4.39	6.56
32 Year Average Rate	6.38	7.14	7.68	8.69	6.74	4.54	6.75
33 Year Average Rate	6.44	7.16	7.68	8.69	6.72	4.74	6.86
34 Year Average Rate	6.47	7.15	7.65	8.65	6.68	4.78	6.79
35 Year Average Rate	6.40	7.11	7.61	8.61	6.64	4.73	6.70
36 Year Average Rate	6.35	7.07	7.57	8.58	6.61	4.73	6.72
37 Year Average Rate	6.37	7.08	7.56	8.56	6.61	4.75	6.73
38 Year Average Rate	6.38	7.08	7.54	8.52	6.59	4.77	6.77

Table 2 continued

Number of Years Ending in 2007	3- month	3-year	10-year	Corp. Aaa	Muni	CPI Incr.	Med CPI
39 Year Average Rate	6.36	7.04	7.49	8.46	6.59	4.76	6.78
40 Year Average Rate	6.32	6.99	7.43	8.39	6.53	4.72	6.83
41 Year Average Rate	6.29	6.95	7.37	8.31	6.46	4.67	6.79
42 Year Average Rate	6.24	6.88	7.30	8.22	6.39	4.60	6.71
43 Year Average Rate	6.18	6.82	7.22	8.13	6.31	4.52	6.60
44 Year Average Rate	6.11	6.74	7.15	8.04	6.24	4.45	6.52
45 Year Average Rate	6.04	6.67	7.08	7.96	6.18	4.37	6.45
46 Year Average Rate	5.96	6.60	7.01	7.88	6.12	4.30	6.39
47 Year Average Rate	5.90	6.55	6.95	7.81	6.07	4.24	6.35
48 Year Average Rate	5.85	6.50	6.89	7.73	6.03	4.17	6.31
49 Year Average Rate	5.77	6.43	6.82	7.65	5.98	4.14	6.27
50 Year Average Rate	5.72	6.38	6.76	7.58	5.93	4.12	6.23

“3-Month” refers to the 90 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 Bond, “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 3--Real Interest Rates Based on Various Interest Rates and the Growth Rate in the CPI for Numbers of Years Ending in 2007

Number of Years Ending in 2007	3-month	3-year	10-year	Corp. Aaa	Muni	CPI Incr.	Med CPI
1 Year Real Discount Rate	1.71	1.51	1.78	2.68	1.58	0.00	1.56
2 Year Real Discount Rate	1.70	1.51	1.67	2.50	1.38	0.00	1.17
3 Year Real Discount Rate	1.09	1.18	1.40	2.26	1.21	0.00	1.03
4 Year Real Discount Rate	0.51	0.91	1.43	2.41	1.37	0.00	1.19
5 Year Real Discount Rate	0.16	0.69	1.48	2.58	1.57	0.00	1.28
6 Year Real Discount Rate	0.14	0.82	1.72	2.95	1.87	0.00	1.57
7 Year Real Discount Rate	0.23	0.88	1.78	3.12	1.94	0.00	1.60
8 Year Real Discount Rate	0.54	1.11	1.88	3.24	1.98	0.00	1.48
9 Year Real Discount Rate	0.77	1.34	2.05	3.41	2.11	0.00	1.46
10 Year Real Discount Rate	1.02	1.56	2.20	3.55	2.25	0.00	1.47
11 Year Real Discount Rate	1.20	1.75	2.36	3.72	2.33	0.00	1.38
12 Year Real Discount Rate	1.28	1.85	2.44	3.77	2.36	0.00	1.31
13 Year Real Discount Rate	1.41	1.96	2.54	3.84	2.41	0.00	1.33
14 Year Real Discount Rate	1.31	1.83	2.36	3.57	2.25	0.00	1.24
15 Year Real Discount Rate	1.35	2.03	2.68	3.95	2.50	0.00	1.49
16 Year Real Discount Rate	1.30	2.05	2.75	4.01	2.55	0.00	1.66
17 Year Real Discount Rate	1.31	2.07	2.80	4.03	2.55	0.00	1.82
18 Year Real Discount Rate	1.37	2.11	2.81	4.02	2.50	0.00	1.91
19 Year Real Discount Rate	1.50	2.19	2.85	4.03	2.49	0.00	1.96
20 Year Real Discount Rate	1.57	2.28	2.93	4.10	2.55	0.00	1.97
21 Year Real Discount Rate	1.61	2.36	2.98	4.17	2.61	0.00	2.02
22 Year Real Discount Rate	1.73	2.48	3.10	4.30	2.74	0.00	2.17
23 Year Real Discount Rate	1.84	2.63	3.26	4.44	2.85	0.00	2.19
24 Year Real Discount Rate	2.00	2.82	3.45	4.59	2.97	0.00	2.18
25 Year Real Discount Rate	2.16	2.99	3.62	4.75	3.09	0.00	2.31
26 Year Real Discount Rate	2.27	3.12	3.73	4.84	3.17	0.00	2.42
27 Year Real Discount Rate	2.37	3.15	3.71	4.79	3.08	0.00	2.34
28 Year Real Discount Rate	2.25	2.96	3.50	4.55	2.79	0.00	2.16
29 Year Real Discount Rate	2.15	2.80	3.31	4.33	2.52	0.00	2.01
30 Year Real Discount Rate	2.08	2.72	3.22	4.21	2.38	0.00	1.97
31 Year Real Discount Rate	1.98	2.64	3.14	4.12	2.27	0.00	2.00
32 Year Real Discount Rate	1.90	2.58	3.10	4.07	2.22	0.00	2.06
33 Year Real Discount Rate	1.75	2.46	2.97	3.93	2.09	0.00	2.10
34 Year Real Discount Rate	1.63	2.29	2.78	3.74	1.89	0.00	2.02
35 Year Real Discount Rate	1.61	2.24	2.71	3.67	1.80	0.00	1.91
36 Year Real Discount Rate	1.60	2.25	2.72	3.67	1.81	0.00	1.87
37 Year Real Discount Rate	1.56	2.22	2.69	3.65	1.79	0.00	1.90
38 Year Real Discount Rate	1.55	2.20	2.66	3.61	1.77	0.00	1.88

Table 3 continued

Number of Years Ending in 2007	3-month	3-year	10-year	Corp. Aaa	Muni	CPI Incr.	Med CPI
39 Year Real Discount Rate	1.54	2.18	2.62	3.56	1.73	0.00	1.90
40 Year Real Discount Rate	1.54	2.16	2.59	3.52	1.75	0.00	1.92
41 Year Real Discount Rate	1.53	2.16	2.58	3.49	1.73	0.00	2.01
42 Year Real Discount Rate	1.55	2.16	2.56	3.46	1.71	0.00	2.02
43 Year Real Discount Rate	1.57	2.17	2.56	3.44	1.71	0.00	2.01
44 Year Real Discount Rate	1.59	2.18	2.57	3.43	1.71	0.00	1.98
45 Year Real Discount Rate	1.59	2.18	2.57	3.42	1.72	0.00	1.98
46 Year Real Discount Rate	1.60	2.19	2.58	3.42	1.73	0.00	1.99
47 Year Real Discount Rate	1.60	2.20	2.58	3.42	1.75	0.00	2.00
48 Year Real Discount Rate	1.59	2.20	2.58	3.40	1.75	0.00	2.01
49 Year Real Discount Rate	1.61	2.23	2.60	3.41	1.78	0.00	2.04
50 Year Real Discount Rate	1.53	2.17	2.53	3.32	1.73	0.00	2.02

Table 4--Net Medical Discount Rates based on Various Interest Rates and the Growth Rate in the MCPI for Numbers of Years Ending in 2007

Number of Years Ending in 2007	3- month	3- year	10- year	Corp. Aaa	Municipal	CPI Incr.	Med CPI
1 Year Medical Discount Rate	0.15	-0.05	0.22	1.11	0.02	-1.53	0.00
2 Year Medical Discount Rate	0.53	0.35	0.49	1.32	0.21	-1.15	0.00
3 Year Medical Discount Rate	0.05	0.14	0.36	1.21	0.17	-1.02	0.00
4 Year Medical Discount Rate	-0.68	-0.28	0.24	1.20	0.18	-1.18	0.00
5 Year Medical Discount Rate	-1.11	-0.59	0.19	1.28	0.29	-1.27	0.00
6 Year Medical Discount Rate	-1.41	-0.75	0.15	1.36	0.29	-1.55	0.00
7 Year Medical Discount Rate	-1.35	-0.71	0.18	1.50	0.33	-1.57	0.00
8 Year Medical Discount Rate	-0.93	-0.37	0.39	1.74	0.49	-1.46	0.00
9 Year Medical Discount Rate	-0.68	-0.11	0.58	1.92	0.64	-1.44	0.00
10 Year Medical Discount Rate	-0.44	0.08	0.72	2.05	0.76	-1.45	0.00
11 Year Medical Discount Rate	-0.18	0.36	0.96	2.31	0.94	-1.36	0.00
12 Year Medical Discount Rate	-0.03	0.53	1.12	2.43	1.04	-1.29	0.00
13 Year Medical Discount Rate	0.07	0.62	1.19	2.47	1.07	-1.32	0.00
14 Year Medical Discount Rate	0.07	0.58	1.10	2.30	0.99	-1.23	0.00
15 Year Medical Discount Rate	-0.14	0.54	1.17	2.42	0.99	-1.47	0.00
16 Year Medical Discount Rate	-0.36	0.38	1.07	2.31	0.87	-1.63	0.00
17 Year Medical Discount Rate	-0.50	0.25	0.96	2.17	0.72	-1.79	0.00
18 Year Medical Discount Rate	-0.53	0.20	0.88	2.07	0.58	-1.88	0.00
19 Year Medical Discount Rate	-0.45	0.23	0.87	2.03	0.53	-1.92	0.00
20 Year Medical Discount Rate	-0.40	0.30	0.94	2.08	0.56	-1.94	0.00
21 Year Medical Discount Rate	-0.40	0.33	0.94	2.11	0.58	-1.98	0.00
22 Year Medical Discount Rate	-0.44	0.30	0.91	2.08	0.55	-2.13	0.00
23 Year Medical Discount Rate	-0.35	0.42	1.05	2.19	0.65	-2.15	0.00
24 Year Medical Discount Rate	-0.17	0.63	1.25	2.36	0.78	-2.13	0.00
25 Year Medical Discount Rate	-0.15	0.67	1.28	2.38	0.77	-2.26	0.00
26 Year Medical Discount Rate	-0.14	0.69	1.28	2.37	0.74	-2.36	0.00
27 Year Medical Discount Rate	0.04	0.79	1.35	2.40	0.73	-2.28	0.00
28 Year Medical Discount Rate	0.09	0.78	1.31	2.34	0.62	-2.11	0.00
29 Year Medical Discount Rate	0.14	0.77	1.27	2.27	0.50	-1.97	0.00
30 Year Medical Discount Rate	0.11	0.74	1.23	2.20	0.41	-1.93	0.00
31 Year Medical Discount Rate	-0.02	0.63	1.12	2.08	0.27	-1.96	0.00
32 Year Medical Discount Rate	-0.16	0.51	1.01	1.97	0.16	-2.02	0.00
33 Year Medical Discount Rate	-0.34	0.35	0.85	1.80	-0.01	-2.06	0.00
34 Year Medical Discount Rate	-0.38	0.27	0.75	1.69	-0.13	-1.98	0.00
35 Year Medical Discount Rate	-0.29	0.33	0.79	1.72	-0.11	-1.88	0.00
36 Year Medical Discount Rate	-0.26	0.37	0.84	1.77	-0.06	-1.83	0.00
37 Year Medical Discount Rate	-0.33	0.32	0.78	1.72	-0.10	-1.86	0.00
38 Year Medical Discount Rate	-0.33	0.32	0.77	1.70	-0.11	-1.84	0.00
39 Year Medical Discount Rate	-0.34	0.28	0.71	1.63	-0.16	-1.86	0.00

Table 4 continued

Number of Years Ending in 2007	3- month	3- year	10- year	Corp. Municipal Aaa	CPI Incr.	Med CPI	
40 Year Medical Discount Rate	-0.38	0.24	0.66	1.56	-0.17	-1.89	0.00
41 Year Medical Discount Rate	-0.46	0.15	0.56	1.45	-0.27	-1.97	0.00
42 Year Medical Discount Rate	-0.46	0.14	0.53	1.41	-0.30	-1.98	0.00
43 Year Medical Discount Rate	-0.43	0.16	0.55	1.41	-0.29	-1.97	0.00
44 Year Medical Discount Rate	-0.39	0.19	0.57	1.42	-0.27	-1.95	0.00
45 Year Medical Discount Rate	-0.37	0.20	0.58	1.42	-0.25	-1.94	0.00
46 Year Medical Discount Rate	-0.38	0.20	0.58	1.41	-0.25	-1.95	0.00
47 Year Medical Discount Rate	-0.39	0.19	0.57	1.39	-0.25	-1.96	0.00
48 Year Medical Discount Rate	-0.41	0.18	0.56	1.37	-0.25	-1.97	0.00
49 Year Medical Discount Rate	-0.42	0.18	0.55	1.34	-0.26	-2.00	0.00
50 Year Medical Discount Rate	-0.48	0.14	0.50	1.27	-0.28	-1.98	0.00

Table 5--Annual Values for Various Interest Rates and Growth Rates in the Average Weekly Earnings and the Total Compensation Series of the Employer Cost Index from 1965-2007

Year	3-month	3-year	10-year	Corp	Aaa	Muni	Aaa	Av. Wk.%	E Cost %
1965	4.111	4.22	4.28	4.49	3.27	4.2	n.a		
1966	5.106	5.23	4.92	5.13	3.82	3.5	n.a		
1967	4.504	5.03	5.07	5.51	3.98	2.8	n.a		
1968	5.601	5.68	5.65	6.18	6.94	5.4	n.a		
1969	7.066	7.02	6.67	7.03	5.81	6.1	n.a		
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		

Table 5 continued

Year	3-month	3-year	10-year	Corp	Aaa	Muni	Aaa	Av. Wk.%	E Cost %
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	4.559	4.35	4.63	5.56	4.42	3.8	3.2		

Interest rates are taken from Table B-73 of the Economic Report of the President: 2008 Percentage increases in the CPI and the MCPI are taken from Table B-64 in the ERP 2003 and 2008 The Treasury Bill Rate is converted from "bank discount" to "effective yield." See the notes for Table 2 for other abbreviations.

Table 6--Average Rates for Various Interest Rates and Growth Rates in the Average Weekly Earnings and Total Compensation Series in the Employer Cost Index for the Number of Years Shown as Ending in 2007

Number of Years Ending in 2007	3-month	3-year	10-year	Corp. Aaa	Muni	Av. Wk.%	E-Cost %
1 Year Average Rate	4.56	4.35	4.63	5.56	4.42	3.80	3.20
2 Year Average Rate	4.75	4.56	4.72	5.58	4.42	4.05	3.00
3 Year Average Rate	4.26	4.35	4.57	5.46	4.38	3.67	3.07
4 Year Average Rate	3.55	3.96	4.50	5.51	4.44	3.30	3.28
5 Year Average Rate	3.04	3.59	4.40	5.54	4.50	3.16	3.38
6 Year Average Rate	2.81	3.51	4.44	5.70	4.59	3.07	3.35
7 Year Average Rate	2.92	3.59	4.52	5.89	4.68	3.01	3.44
8 Year Average Rate	3.33	3.92	4.71	6.11	4.81	3.13	3.56
9 Year Average Rate	3.50	4.09	4.81	6.21	4.88	3.13	3.53
10 Year Average Rate	3.65	4.20	4.86	6.25	4.91	3.21	3.56
11 Year Average Rate	3.80	4.37	4.99	6.39	4.96	3.33	3.55
12 Year Average Rate	3.92	4.51	5.11	6.47	5.03	3.33	3.51
13 Year Average Rate	4.07	4.64	5.23	6.56	5.10	3.25	3.44
14 Year Average Rate	4.10	4.76	5.36	6.66	5.18	3.25	3.41
15 Year Average Rate	4.03	4.73	5.39	6.70	5.21	3.23	3.43
<del>16 Year Average Rate</del>	<del>8.34</del>	<del>9.68</del>	<del>10.70</del>	<del>12.51</del>	<del>9.85</del>	<del>4.93</del>	<del>5.91</del>
17 Year Average Rate	4.10	4.89	5.63	6.90	5.38	3.15	3.49
18 Year Average Rate	4.32	5.08	5.79	7.04	5.48	3.16	3.55
19 Year Average Rate	4.55	5.26	5.94	7.16	5.57	3.18	3.62
20 Year Average Rate	4.67	5.41	6.08	7.28	5.68	3.18	3.68
21 Year Average Rate	4.74	5.52	6.16	7.38	5.78	3.14	3.66
22 Year Average Rate	4.81	5.59	6.23	7.46	5.85	3.07	3.64
23 Year Average Rate	4.95	5.76	6.42	7.63	6.00	3.04	3.65
24 Year Average Rate	5.17	6.02	6.67	7.84	6.17	3.08	3.70
25 Year Average Rate	5.34	6.20	6.85	8.01	6.30	3.15	3.78
26 Year Average Rate	5.58	6.46	7.08	8.23	6.51	3.20	3.88
27 Year Average Rate	5.95	6.75	7.34	8.45	6.68	3.40	n.a.
28 Year Average Rate	6.19	6.92	7.48	8.57	6.75	3.52	n.a.
29 Year Average Rate	6.35	7.02	7.55	8.61	6.73	3.64	n.a.
30 Year Average Rate	6.39	7.06	7.58	8.61	6.71	3.78	n.a.
31 Year Average Rate	6.36	7.05	7.57	8.60	6.67	3.88	n.a.
32 Year Average Rate	6.33	7.04	7.58	8.59	6.66	3.98	n.a.
33 Year Average Rate	6.32	7.05	7.59	8.60	6.67	4.03	n.a.
34 Year Average Rate	6.38	7.08	7.59	8.60	6.65	4.08	n.a.
35 Year Average Rate	6.41	7.07	7.57	8.56	6.61	4.14	n.a.

Table 6 continued

Number of Years Ending in 2007	3-month	3-year	10-year	Corp. Aaa	Muni	Av. Wk.%	E-Cost %
36 Year Average Rate	6.35	7.04	7.53	8.53	6.57	4.24	n.a.
37 Year Average Rate	6.30	7.00	7.49	8.50	6.55	4.29	n.a.
38 Year Average Rate	6.32	7.01	7.49	8.48	6.55	4.29	n.a.
39 Year Average Rate	6.34	7.01	7.47	8.45	6.53	4.34	n.a.
40 Year Average Rate	6.32	6.97	7.42	8.39	6.54	4.36	n.a.

The Employer Cost Index is Available in the *Economic Report of the President* 2008 only after 1984, but 1981-1983 were provided in the *Economic Report of the President* 2003 and were retained in this table, allowing 27 years of comparisons. Abbreviations are provided in the notes for Table 5.



Table 7--Net Discount Rates Based on Average Weekly Earnings of American Workers Compared with Various Interest Rates for the Number of Years Ending in 2007

Number of Years Ending in 2007	3-month	3-year	10- year	Corp Aaa	Muni	Av. E Wk.%	Cost %
1 Year Net Discount Rate	0.73	0.53	0.80	1.70	0.60	0.00	-1.01
2 Year Net Discount Rate	0.67	0.49	0.64	1.47	0.36	0.00	-1.01
3 Year Net Discount Rate	0.57	0.66	0.87	1.73	0.68	0.00	-0.58
4 Year Net Discount Rate	0.24	0.64	1.16	2.13	1.10	0.00	-0.02
5 Year Net Discount Rate	-0.11	0.41	1.20	2.31	1.30	0.00	0.21
6 Year Net Discount Rate	-0.25	0.43	1.33	2.55	1.48	0.00	0.27
7 Year Net Discount Rate	-0.09	0.56	1.46	2.80	1.61	0.00	0.42
8 Year Net Discount Rate	0.20	0.77	1.53	2.89	1.64	0.00	0.42
9 Year Net Discount Rate	0.35	0.93	1.63	2.99	1.69	0.00	0.39
10 Year Net Discount Rate	0.43	0.96	1.60	2.94	1.64	0.00	0.34
11 Year Net Discount Rate	0.46	1.01	1.61	2.97	1.58	0.00	0.21
12 Year Net Discount Rate	0.58	1.14	1.73	3.05	1.65	0.00	0.18
13 Year Net Discount Rate	0.79	1.35	1.92	3.21	1.80	0.00	0.19
14 Year Net Discount Rate	0.82	1.46	2.04	3.30	1.87	0.00	0.16
15 Year Net Discount Rate	0.78	1.46	2.10	3.36	1.92	0.00	0.19
<del>16 Year Net Discount Rate</del>	<del>3.25</del>	<del>4.53</del>	<del>5.50</del>	<del>7.23</del>	<del>4.69</del>	<del>0.00</del>	<del>0.94</del>
17 Year Net Discount Rate	0.92	1.68	2.40	3.64	2.16	0.00	0.33
18 Year Net Discount Rate	1.12	1.86	2.55	3.76	2.25	0.00	0.38
19 Year Net Discount Rate	1.32	2.01	2.67	3.85	2.32	0.00	0.42
20 Year Net Discount Rate	1.45	2.17	2.82	3.98	2.43	0.00	0.48
21 Year Net Discount Rate	1.56	2.31	2.93	4.12	2.56	0.00	0.50
22 Year Net Discount Rate	1.69	2.45	3.07	4.26	2.70	0.00	0.55
23 Year Net Discount Rate	1.85	2.65	3.28	4.45	2.87	0.00	0.59
24 Year Net Discount Rate	2.03	2.85	3.48	4.61	3.00	0.00	0.60
25 Year Net Discount Rate	2.12	2.95	3.58	4.71	3.05	0.00	0.61
26 Year Net Discount Rate	2.31	3.16	3.77	4.88	3.21	0.00	0.67
27 Year Net Discount Rate	2.47	3.24	3.81	4.89	3.18	0.00	n.a.
28 Year Net Discount Rate	2.58	3.29	3.83	4.88	3.12	0.00	n.a.
29 Year Net Discount Rate	2.61	3.26	3.77	4.79	2.98	0.00	n.a.
30 Year Net Discount Rate	2.52	3.17	3.66	4.66	2.82	0.00	n.a.
31 Year Net Discount Rate	2.39	3.05	3.56	4.54	2.69	0.00	n.a.
32 Year Net Discount Rate	2.25	2.94	3.45	4.43	2.58	0.00	n.a.
33 Year Net Discount Rate	2.20	2.90	3.42	4.39	2.53	0.00	n.a.
34 Year Net Discount Rate	2.21	2.88	3.37	4.34	2.47	0.00	n.a.
35 Year Net Discount Rate	2.18	2.82	3.29	4.25	2.37	0.00	n.a.
36 Year Net Discount Rate	2.03	2.68	3.16	4.11	2.24	0.00	n.a.

Table 7 continued

Number of Years Ending in 2007	3-month	3-year	10- year	Corp Aaa	Muni	Av. E Wk.%	Cost %
37 Year Net Discount Rate	1.93	2.59	3.07	4.03	2.17	0.00	n.a.
38 Year Net Discount Rate	1.95	2.60	3.07	4.02	2.17	0.00	n.a.
39 Year Net Discount Rate	1.92	2.56	3.00	3.94	2.10	0.00	n.a.
40 Year Net Discount Rate	1.87	2.50	2.93	3.86	2.09	0.00	n.a.

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

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 2007

Number of Years Ending in 2007	3- month	3- year	10- year	Corp Aaa	Munici pal	Av. Wk.%	E Cost %
1 Year Net Discount Rate	1.32	1.11	1.39	2.29	1.18	0.58	0.00
2 Year Net Discount Rate	1.70	1.51	1.67	2.50	1.38	1.02	0.00
3 Year Net Discount Rate	1.15	1.25	1.46	2.33	1.27	0.58	0.00
4 Year Net Discount Rate	0.26	0.66	1.18	2.16	1.13	0.02	0.00
5 Year Net Discount Rate	-0.32	0.20	0.99	2.09	1.08	-0.21	0.00
6 Year Net Discount Rate	-0.52	0.15	1.05	2.27	1.20	-0.27	0.00
7 Year Net Discount Rate	-0.50	0.14	1.04	2.37	1.19	-0.41	0.00
8 Year Net Discount Rate	-0.23	0.34	1.11	2.46	1.21	-0.42	0.00
9 Year Net Discount Rate	-0.03	0.54	1.24	2.59	1.30	-0.39	0.00
10 Year Net Discount Rate	0.09	0.62	1.25	2.59	1.30	-0.34	0.00
11 Year Net Discount Rate	0.25	0.80	1.40	2.75	1.37	-0.21	0.00
12 Year Net Discount Rate	0.40	0.96	1.55	2.87	1.47	-0.18	0.00
13 Year Net Discount Rate	0.61	1.16	1.73	3.02	1.61	-0.19	0.00
14 Year Net Discount Rate	0.66	1.30	1.88	3.14	1.71	-0.16	0.00
15 Year Net Discount Rate	0.58	1.26	1.90	3.16	1.72	-0.19	0.00
<del>16 Year Net Discount Rate</del>	<del>2.30</del>	<del>3.57</del>	<del>4.52</del>	<del>6.24</del>	<del>3.72</del>	<del>-0.93</del>	<del>0.00</del>
17 Year Net Discount Rate	0.59	1.36	2.07	3.30	1.83	-0.32	0.00
18 Year Net Discount Rate	0.74	1.48	2.17	3.37	1.87	-0.38	0.00
19 Year Net Discount Rate	0.90	1.59	2.24	3.42	1.89	-0.42	0.00
20 Year Net Discount Rate	0.96	1.67	2.32	3.48	1.94	-0.48	0.00
21 Year Net Discount Rate	1.05	1.80	2.41	3.59	2.05	-0.50	0.00
22 Year Net Discount Rate	1.14	1.88	2.50	3.69	2.14	-0.55	0.00
23 Year Net Discount Rate	1.26	2.04	2.67	3.84	2.27	-0.59	0.00
24 Year Net Discount Rate	1.42	2.24	2.86	3.99	2.38	-0.59	0.00
25 Year Net Discount Rate	1.50	2.33	2.95	4.07	2.43	-0.61	0.00
26 Year Net Discount Rate	1.63	2.48	3.08	4.18	2.52	-0.66	0.00

## Endnotes

---

1. Theoretically, it would have been better to have used geometrically average growth rates rather than arithmetic averages for interest rates and growth rates. However, after making a comparison over 20 years, this author determined that there is very little loss of accuracy with use of arithmetic averages. To have obtained geometric averages from interest rates over a 50 year period would have involves substantially more time spent in calculation for only a very small increase in accuracy. It would have been much easier to do so for growth rates, but consistency still dictated use of arithmetic rather than geometric averages. The author thanks Dave Tucek for checking to insure that use of geometric averages would have made no substantial difference in the calculations provided in this paper.

2. The MCPI should not generally be used in calculating the costs of life care plans since many elements in those plans do not increase in tandem with hospitalizations, pharmaceuticals and skilled medical care.

## References

*Economic Report of the President*. 2003 and 2008 editions.

Ireland, Thomas R. Spring/Summer 2000. "Historical Comparisons Between Various Interest Rates and Growth Rates in the CPI, MCPI, Average Weekly Earnings and Total Compensation in the Employer Cost Index." *Journal of Legal Economics*, 10(2):25-46.

..... Winter 2000-01. "Addendum: Historical Net Discount Rates – An Update through 2001," *Journal of Legal Economics*, 10(3):63-76.

..... Fall 2002. "Historical Net Discount Rates–An Update Through 2003." *Journal of Legal Economics*, 12(2):47-57.

..... 2006. "Historical Net Discount Rates – An Update through 2005. The Earnings Analyst, VIII:49-69