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SCALED FACTORS FOR HYPOTHETICAL EARNINGS EXAMPLES UNDER THE 2009 TRUSTEES REPORT ASSUMPTIONS

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1. Introduction

Hypothetical earnings histories have traditionally been used by the Office of the Chief Actuary to illustrate a range of benefit levels, replacement rates, money's worth measures, and internal rates of return under the Social Security program. These illustrations have long been used to evaluate the program under present law, but have increasingly been used to evaluate the effects of possible program changes.[1]

Prior to the development of *scaled factors*, hypothetical *steady workers* were generally used. Such steady workers are assumed to earn a constant percentage of SSA's national average wage index (AWI)[2] throughout their careers. These hypothetical steady earnings patterns tend to over-represent the proportion of actual lifetime earnings received at younger ages and under-represent the proportion received at prime working ages for most workers. Over-representing early earnings tends to bias downward estimates of the internal rate of return of the present-law program. To avoid this bias, the Office of the Chief Actuary developed *scaled worker* hypothetical earnings patterns in 2001. These patterns express earnings at levels relative to the AWI by age. These earnings levels reflect the average patterns of work and earnings of actual insured workers over their careers.

This note presents the three sets of scaled worker factors recently updated for the hypothetical low, medium, and high lifetime earnings examples used in table VI.F10 of the 2009 Trustees Report. In addition, this note presents a set of scaled worker factors for a hypothetical worker with "very low" lifetime earnings. Final scaled factors are presented in table 6.

In developing these four sets of factors, one set of *raw scaled factors* is initially developed using earnings from the Continuous Work History Sample (CWHS). A preliminary adjustment is made to these raw factors for ages 62 and over to account for the select nature of these workers who continue working at such ages. Then, these *preliminary adjusted scaled factors* are further adjusted so that the resulting *career-average earnings levels*[3] are 25 percent, 45 percent, 100 percent, and 160 percent of the AWI for the very low, low, medium, and high hypothetical workers, respectively. These career-average earnings levels have been selected in order to provide both a useful range of examples and continuity with previous estimates for hypothetical workers. A final hypothetical "maximum" earner with earnings equal to the OASDI maximum taxable earnings level for each year is also included in order to provide a fuller range of career taxable earnings levels under the Social Security program.

It is useful to see how overall earnings for these hypothetical workers compare to those of actual retiring workers. The Average Indexed Monthly Earnings[4] (AIME), which is calculated based on a worker's earnings, is a convenient measure of this. Table 1 shows the distribution of actual workers retiring in 2008 relative to the AIMEs of hypothetical scaled workers, based on a 1-percent sample of records from SSA's administrative records.

[1] Refer to Actuarial Note #2008.5 titled, *Internal Real Rates of Return under the OASDI Program for Hypothetical Workers*, for details. This note is located at the following internet site: http://www.socialsecurity.gov/OACT/NOTES/ran5/an2008-5.html.

[2] For more information on the national average wage index, including historical values, see the following internet site: http://www.socialsecurity.gov/OACT/COLA/AWI.html.

[3] *Career-average earnings levels* are defined as specified percentages of the AWI for the hypothetical workers described in this note. *Career-average earnings* are defined as the highest 35 years of earnings, indexed for growth in average wages to the year prior to benefit entitlement. See further discussion under the subsection 3.b. This revision was introduced with the 2003 Trustees Report.

[4] The AIME is used in the computation of Social Security benefits. See http://www.socialsecurity.gov/OACT/COLA/Benefits.html#aime for more details on how the AIME is calculated.

Table 1.—Distribution of AIMEs of Actual Workers Retiring in 2008, Relative to AIMEs for Hypothetical Workers Retiring in 2008

Hypothetical worker[1] (Career-average earnings)[2]		Percent with AIME less than AIME for hypothetical case: All males	All females	Total, all workers	Percent with AIME closest to AIME for hypothetical case[3]: All males	All females	Total, all workers
Very Low	($10,101)	6.2	19.1	12.3	10.0	28.9	19.0
Low	($18,182)	13.2	38.4	25.2	13.5	31.9	22.2
Medium	($40,406)	35.9	77.8	55.8	28.3	28.4	28.3
High	($64,649)	67.8	95.1	80.8	31.8	9.4	21.2
Maximum	($90,952)	100	100	100	16.4	1.5	9.3

[1] See text for definition of hypothetical workers.
[2] Career-average earnings of hypothetical scaled workers retiring at age 62 in 2008. Earnings are wage indexed to 2007 in this calculation.
[3] Rounded values do not necessarily sum to 100 percent.

Note: Worker distributions include individuals who are dually entitled, or may become dually entitled to a higher benefit in the future, based on another worker's account. See text for further discussion.

Table 1 shows that 38.4 percent of female workers retiring in 2008 have AIMEs below that of a hypothetical low wage scaled worker and that about 41 percent of all workers retiring in 2008 have AIMEs closest to that of hypothetical low or very low wage scaled workers. The level of earnings corresponding to the very low scaled factors was first included in 2004 and was initially chosen so that approximately half the retirees who were previously best represented by the hypothetical low scaled worker would now be best represented by the hypothetical very low scaled worker.

Dually entitled workers, though still insured for worker benefits, receive a larger benefit as a dependent on another worker's account (generally as a spouse or widow(er)) than they would as a worker beneficiary only. A significant proportion of entitled female workers, especially those with lower earnings, will receive higher benefits as aged spouse or aged widow beneficiaries. If such dually entitled workers were excluded from this analysis, the distributions would be concentrated more toward the higher-level hypothetical workers.

2. Developing Raw Scaled Factors from Earnings in the CWHS

Development of the raw scaled factors occurs in three steps:

a. Select workers in the CWHS for computing the factors,

b. Tabulate the earnings for these workers, and

c. Develop the raw scaled factors from the tabulated earnings.

a. Select Workers in the CWHS for Computing the Factors

The CWHS is a 1-percent sample of workers with some OASDI taxable earnings during their lifetime. It is updated annually by the Office of Systems based on specifications from the Office of Research, Evaluation, and Statistics. The factors in this actuarial note are developed using the CWHS containing earnings data through 2006. The CWHS contains earnings for all persons who have paid any Social Security taxes during their lifetime. It is important to limit analysis only to workers who are likely either to be eligible for retirement or disability benefits, or to have dependents eligible for survivors benefits. To include only those workers, we used the status of *fully insured.* A worker is considered fully insured if he or she has a total number of quarters of coverage (QCs)[5] at least equal to the number of years after attainment of age 21 through the last year considered in the analysis (in this case 2005). A further requirement is that the worker has a minimum of 6 QCs. Since *permanent insured status* is achieved with 40 QCs, any worker with 40 QCs is fully insured no matter how many years have elapsed since age 21. Any worker who is classified as fully insured is likely to become eligible for a Social Security retirement benefit if he or she survives to eligibility age.

[5] The QC is the basic unit for determining whether a worker is insured for Social Security benefits. In 2008, for example, a worker needed to have $1,050 in covered earnings to obtain a QC. Workers can earn up to 4 QCs per calendar year. Since 1978 the amount of covered earnings required to obtain a QC has been automatically indexed each year with the growth in SSA's national average wage index.
See http://www.socialsecurity.gov/OACT/COLA/QC.html for more information, including a list of historical QC amounts.

b. Tabulate Earnings for These Workers

The updated CWHS file contains taxable earnings for years 1951 through 2006. Due to posting delays, the earnings for 2006 in this file are less complete than for earlier years and were not used in our analysis. For each of the workers classified as fully insured as of 2005 (based on all earnings after 1950), our analysis includes earnings for the most recent 15-year period (1991 through 2005) for ages 21 and over. Each year of earnings is classified by age of worker, and is expressed as the ratio of the earnings to the AWI for the year.

Scaled factors were developed taking into account both the variations in earnings by age and the probabilities that workers may have years with zero earnings. Years with zero earnings are included among the earnings records selected. However, years in which the worker was deceased[6] or receiving a retired worker or disabled worker Social Security benefit are not included.

c. Develop Raw Scaled Factors from the Tabulated Earnings

To normalize earnings from different years, annual earnings amounts for each year are divided by the AWI for that year. For each fully insured worker, normalized earnings are tabulated by age for each age 21 and over for years 1991-2005, as described in the preceding paragraph. The normalized earnings are summed by age and a corresponding worker count is kept. The raw scaled factors are determined by dividing the tabulated sum for each age, including years at zero earnings, by the corresponding numbers of workers. The results are shown in table 2.

[6] Data concerning worker deaths appears in the CWHS. However, death data in the CWHS does not include all state-reported death data. Therefore, we also used Social Security's NUMIDENT file to identify deaths of individuals in the CWHS. The NUMIDENT file contains, among other things, death data including state-reported deaths.

Table 2.—Raw Scaled Worker Factors for the 2009 Trustees Report

Age	Factor
21	0.279
22	0.333
23	0.411
24	0.483
25	0.541
26	0.592
27	0.637
28	0.677
29	0.711
30	0.739
31	0.763
32	0.784
33	0.802
34	0.817
35	0.831
36	0.844
37	0.856
38	0.867
39	0.877
40	0.887
41	0.896
42	0.905
43	0.914
44	0.922
45	0.929
46	0.934
47	0.937
48	0.939
49	0.939
50	0.936
51	0.929
52	0.919
53	0.908
54	0.894
55	0.874
56	0.844
57	0.815
58	0.784
59	0.750
60	0.708
61	0.659
62	0.841
63	0.860
64	0.838

3. Adjust Raw Scaled Factors to Match Selected Career-Average Earnings Levels

Adjustment of the raw scaled factors occurs in three steps:

a. Calculate preliminary adjusted scaled factors from the raw scaled factors by overriding the scaled factors at ages 62-64;

b. Construct the earnings pattern and calculate the career-average earnings for a hypothetical scaled worker using the preliminary adjusted scaled factors; and

c. Calculate very low, low, medium, and high *final scaled factors* from the preliminary adjusted scaled factors such that the career-average earnings for these hypothetical workers match the selected percentages of the AWI in the year prior to entitlement (25, 45, 100 and 160 percent).

a. Calculate Preliminary Adjusted Scaled Factors from Raw Scaled Factors

The following values, based on table 2, show that there is an accelerating decline in raw factors at ages 60 and 61, followed by increases at ages 62 and 63:

Age	Raw Scaled Factor	Difference
55	0.874	---
56	0.844	-0.030
57	0.815	-0.029
58	0.784	-0.031
59	0.750	-0.034
60	0.708	-0.042
61	0.659	-0.049
62	0.841	+0.182
63	0.860	+0.019
64	0.838	-0.022

We do not have definitive information on the reasons for these changes after age 59. However, it seems reasonable to assume that some of the decline in the raw factors at ages 60 and 61 is due to the retirement (total or partial) of some workers before they became entitled to their OASDI retirement benefits at age 62. The increases in the raw factors at ages 62 and 63 may reasonably be attributed to the fact that healthier, higher-wage workers, and workers who have maintained consistent employment at older ages, are more likely to delay entitlement to OASDI benefits until after age 62. The earnings of many non-workers, low-wage workers, or less-healthy workers have been removed from the tabulated group starting at age 62 because they have started to receive retirement benefits under Social Security.

Due to the differences between the groups of workers represented in data for ages just-before versus just-after reaching age 62, a smoother set of "adjusted" raw factors is developed for ages 62-64. The factors are developed assuming that earnings for workers over age 61 will stay constant in nominal dollars, thus decreasing in dollars that are indexed by changes in the AWI.

The preliminary adjusted scaled factors are set equal to the raw scaled factors for ages up to 61. Factors for ages 62 and over are calculated so that earnings in nominal dollars stay constant at the level for age 61. For example, the preliminary adjusted factor for age 62 is calculated by dividing the factor for age 61 by the *ultimate* assumed annual increase in average wages under the intermediate assumptions of the 2009 Trustees Report. The calculation of the preliminary adjusted scaled factors for ages 62-64 is shown in table 3.

This approach, while providing an imperfect approximation for all types of workers, was adopted in order to avoid having different scales for workers who become entitled to OASDI benefits at different ages.

Table 3.—Scaled Factor Adjustments Made for Ages After 61

Age	61	62	63	64
Raw scaled factor	0.659	0.841	0.860	0.838
Ultimate AWI increase since age 61, based on 2009 Trustees Report, Intermediate Assumptions	1.000	1.039	$(1.039)^2$	$(1.039)^3$
Preliminary adjusted scaled factor (age 61 raw scaled factor) / (Ultimate AWI increase)	0.659	0.634	0.610	0.588

b. Construct the Earnings Pattern and Calculate the Career-Average Earnings for a Selected Hypothetical Scaled Worker Using the Preliminary Adjusted Scaled Factors

The hypothetical scaled worker that is selected (referred to as the *1950-born preliminary scaled worker*) is assumed to have been born on January 2, 1950, to have earnings from age 21 through 64, and to retire at age 65. Earnings for each year are calculated by multiplying the preliminary adjusted scaled factor for that age by the AWI value for the corresponding year. This worker turns age 22 in 1972. So the age 22 preliminary adjusted factor of 0.333 is multiplied by the 1972 AWI of $7,133.80 to obtain annual earnings of $2,375.56. Table 4 shows the preliminary adjusted scaled factors, AWI amounts, and corresponding hypothetical earnings for the 1950-born preliminary scaled worker.

The last line of table 4 shows career-average earnings of $42,847 (wage indexed to 2014) for the 1950-born preliminary scaled worker. This is a slightly different calculation than the AIME because (1) earnings are indexed to the year prior to entitlement rather than to two years prior to eligibility, and (2) earnings are averaged on an annual basis instead of a monthly one. For the 1950-born preliminary scaled worker, who retires at age 65 in 2015, the indexing year in computing career-average earnings is 2014.

Table 4.—Computation of the Earnings Record and the Career-Average Earnings for the 1950-Born Preliminary Scaled Worker Based on the Preliminary Adjusted Scaled Factors and the AWI Series

Year	Age	Preliminary adjusted scaled factors (1)	AWI for current year (2)	Estimated earnings for current year (1)*(2) (3)	Earnings wage indexed to 2014 (4)
1971	21	0.279	$6,497.08	$1,812.69	$14,218.56
1972	22	0.333	7,133.80	2,375.56	16,970.53
1973	23	0.411	7,580.16	3,115.45	20,945.60
1974	24	0.483	8,030.76	3,878.86	24,614.88
1975	25	0.541	8,630.92	4,669.33	27,570.70
1976	26	0.592	9,226.48	5,462.08	30,169.79
1977	27	0.637	9,779.44	6,229.50	32,463.06
1978	28	0.677	10,556.03	7,146.43	34,501.57
1979	29	0.711	11,479.46	8,161.90	36,234.32
1980	30	0.739	12,513.46	9,247.45	37,661.26
1981	31	0.763	13,773.10	10,508.88	38,884.37
1982	32	0.784	14,531.34	11,392.57	39,954.56
1983	33	0.802	15,239.24	12,221.87	40,871.88
1984	34	0.817	16,135.07	13,182.35	41,636.31
1985	35	0.831	16,822.51	13,979.51	42,349.81
1986	36	0.844	17,321.82	14,619.62	43,012.32
1987	37	0.856	18,426.51	15,773.09	43,623.85
1988	38	0.867	19,334.04	16,762.61	44,184.44
1989	39	0.877	20,099.55	17,627.31	44,694.08
1990	40	0.887	21,027.98	18,651.82	45,203.70
1991	41	0.896	21,811.60	19,543.19	45,662.35
1992	42	0.905	22,935.42	20,756.56	46,121.03
1993	43	0.914	23,132.67	21,143.26	46,579.68
1994	44	0.922	23,753.53	21,900.75	46,987.37
1995	45	0.929	24,705.66	22,951.56	47,344.12
1996	46	0.934	25,913.90	24,203.58	47,598.92
1997	47	0.937	27,426.00	25,698.16	47,751.81
1998	48	0.939	28,861.44	27,100.89	47,853.74
1999	49	0.939	30,469.84	28,611.18	47,853.74
2000	50	0.936	32,154.82	30,096.91	47,700.85
2001	51	0.929	32,921.92	30,584.46	47,344.11
2002	52	0.919	33,252.09	30,558.67	46,834.49
2003	53	0.908	34,064.95	30,930.97	46,273.90
2004	54	0.894	35,648.55	31,869.80	45,560.43
2005	55	0.874	36,952.94	32,296.87	44,541.18
2006	56	0.844	38,651.41	32,621.79	43,012.31
2007	57	0.815	40,405.48	32,930.47	41,534.40
2008	58	0.784	41,679.58	32,676.79	39,954.56
2009	59	0.750	42,041.84	31,531.38	38,221.84
2010	60	0.708	43,451.28	30,763.51	36,081.42
2011	61	0.659	45,194.92	29,783.45	33,584.25
2012	62	0.634	47,013.95	29,819.24	32,323.63
2013	63	0.610	48,969.10	29,893.48	31,110.33
2014	64	0.588	50,962.45	29,942.57	29,942.57
Career-Average Earnings					$42,847.00

Note: Career-average earnings is calculated from the highest 35 years of indexed earnings (column 4). Years 1971-76 and 2012-2014 are excluded because they are not among the highest 35 years of indexed earnings.

c. *Calculate Very Low, Low, Medium, and High Final Scaled Factors from the Preliminary Adjusted Scaled Factors such that Selected Hypothetical Scaled Workers with Earnings Based on These Factors Would Have Career-Average Earnings Equal to Selected Percentages of the AWI in the Year Prior to Entitlement.*

The selected career-average earnings level for the medium scaled worker is the AWI in the year prior to entitlement. Similarly, the selected career-average earnings levels for the very low, low, and high scaled workers are 25 percent, 45 percent and 160 percent of the AWI in the year prior to entitlement, respectively. As noted earlier, the career-average earnings for the 1950-born preliminary scaled worker is shown in table 4 as $42,847, wage indexed to 2014. By comparison, the average wage index for 2014 is $50,962.45[7]. Corresponding career-average earnings levels for a very low, low, and high earner are $12,741, $22,933, and $81,540, respectively. Table 5 summarizes this information, and also provides the ratio of the selected career-average earnings levels to the career-average earnings for the 1950-born preliminary scaled worker.

Two primary reasons for choosing the year prior to entitlement as the indexing year in computing the career-average earnings are:

- To maintain consistency with prior hypothetical steady workers[8] while simplifying calculations and
- To make the calculation of the hypothetical scaled worker factors independent of the prior hypothetical steady worker cases.

Furthermore, career-average earnings provide a reasonable denominator for replacement rate calculations that allow hypothetical scaled worker replacement rates to maintain consistency with the prior hypothetical steady worker replacement rates.

[7] The projected AWI value for 2014 is taken from the 2009 Trustees Report. See http://www.socialsecurity.gov/OACT/TR/2009/VI_OASDHI_dollars.html.

[8] Prior to 2001, the hypothetical workers used were all "steady" workers. Today, only the "steady maximum" worker has been retained. "Steady" workers were assumed to work steadily beginning at age 22, until retirement, death, or disability, and to have a steady amount of earnings relative to the AWI each year. For example, the "steady average" worker was assumed to earn the AWI for every working year. Similarly, the "steady low" worker was assumed to earn 45 percent of the AWI for every working year, and the "steady high" worker was assumed to earn 160 percent of the AWI for every working year.

Table 5.—Table of Key Ratios Used to Finalize Scaled Worker Calculations

Case	Selected career-average earnings levels for hypothetical scaled workers (1)	Career-average earnings of the 1950-born preliminary selected scaled worker (2)	Ratio (1) / (2) (3)
Very low earner	$12,741	$42,847	0.297
Low earner	22,933	42,847	0.535
Medium earner	50,962	42,847	1.189
High earner	81,540	42,847	1.903

The last step is to apply the ratios from table 5 to the preliminary adjusted scaled factors. This requires four separate calculations, one each for the very low, low, medium, and high scaled worker cases. For example, the scaled factors for the hypothetical medium scaled worker are determined by multiplying:

- The preliminary adjusted scaled factors for ages 21 through 64, by
- The ratio of 1.189 shown in tables 5 and 6.

Table 6 shows the calculation of the final scaled factors, combining the preliminary adjusted scaled factors with the adjustment factors.

Table 6.—Calculation of Final Scaled Factors

		Final Scaled Factors by Earnings level			
Adjustment factors		Very low	Low	Medium	High
Age	Preliminary adjusted scaled factors	0.297	0.535	1.189	1.903
21	0.279	0.083	0.149	0.332	0.531
22	0.333	0.099	0.178	0.396	0.634
23	0.411	0.122	0.220	0.489	0.782
24	0.483	0.144	0.259	0.574	0.919
25	0.541	0.161	0.290	0.643	1.030
26	0.592	0.176	0.317	0.704	1.127
27	0.637	0.189	0.341	0.758	1.212
28	0.677	0.201	0.362	0.805	1.288
29	0.711	0.211	0.381	0.846	1.353
30	0.739	0.220	0.396	0.879	1.406
31	0.763	0.227	0.408	0.908	1.452
32	0.784	0.233	0.420	0.932	1.492
33	0.802	0.238	0.429	0.954	1.526
34	0.817	0.243	0.437	0.972	1.555
35	0.831	0.247	0.445	0.988	1.581
36	0.844	0.251	0.452	1.004	1.606
37	0.856	0.255	0.458	1.018	1.629
38	0.867	0.258	0.464	1.031	1.650
39	0.877	0.261	0.469	1.043	1.669
40	0.887	0.264	0.475	1.055	1.688
41	0.896	0.266	0.480	1.066	1.705
42	0.905	0.269	0.484	1.076	1.722
43	0.914	0.272	0.489	1.087	1.739
44	0.922	0.274	0.493	1.097	1.755
45	0.929	0.276	0.497	1.105	1.768
46	0.934	0.278	0.500	1.111	1.777
47	0.937	0.279	0.502	1.114	1.783
48	0.939	0.279	0.503	1.117	1.787

Table 6.—Calculation of Final Scaled Factors (Cont.)

Adjustment factors............		Final Scaled Factors by Earnings level: Very low	Low	Medium	High
Age	Preliminary adjusted scaled factors	0.297	0.535	1.189	1.903
49	0.939	0.279	0.503	1.117	1.787
50	0.936	0.278	0.501	1.113	1.781
51	0.929	0.276	0.497	1.105	1.768
52	0.919	0.273	0.492	1.093	1.749
53	0.908	0.270	0.486	1.080	1.728
54	0.894	0.266	0.478	1.063	1.701
55	0.874	0.260	0.468	1.040	1.663
56	0.844	0.251	0.452	1.004	1.606
57	0.815	0.242	0.436	0.969	1.551
58	0.784	0.233	0.420	0.932	1.492
59	0.750	0.223	0.401	0.892	1.427
60	0.708	0.211	0.379	0.842	1.347
61	0.659	0.196	0.353	0.784	1.254
62	0.634	0.189	0.339	0.754	1.207
63	0.610	0.182	0.327	0.726	1.162
64	0.588	0.175	0.314	0.699	1.118

4. Developing Hypothetical Worker Earnings from Factors

Given a year of birth, and an earnings level for scaled workers, classified as either very low, low, medium, or high, annual earnings can be obtained by taking the relevant set of scaled factors and multiplying them by the AWIs in the corresponding years. Consider as an example a low earnings worker born in 1970. To determine earnings for this worker at age 22, the scaled factor for the low worker at age 22 would be multiplied by the AWI in 1992, the year in which the worker turns 22. Because the hypothetical workers are born in January, a year of age corresponds to a calendar year. Therefore, a worker born on January 2, 1970 would be age 22 throughout 1992. Earnings for other ages are determined in the same manner. In this manner, a series of very low, low, medium, and high scaled earnings can be developed for any hypothetical year of birth. Table 7 carries out the calculation of hypothetical scaled worker earnings for high earnings workers for the selected years of birth 1930, 1949, and 1997.

Table 7.—Example: Developing Earnings for the Hypothetical High Earners Born in 1930, 1949, and 1997

Year of birth		1930		1949		1997	
Age	Final scaled factors for high earner (1)	AWI (2)	Age-scaled earnings (1)*(2) (3)	AWI (4)	Age-scaled earnings (1)*(4) (5)	AWI (6)	Age-scaled earnings (1)*(6) (7)
21	0.531	$2,799.16	$1,486.22	$6,186.24	$3,284.59	$59,362.72	$31,518.67
22	0.634	2,973.32	1,884.24	6,497.08	4,117.30	61,643.78	39,064.60
23	0.782	3,139.44	2,455.52	7,133.80	5,579.72	64,015.44	50,069.86
24	0.919	3,155.64	2,900.58	7,580.16	6,967.47	66,483.55	61,109.85
25	1.030	3,301.44	3,399.00	8,030.76	8,268.06	69,037.10	71,077.09
26	1.127	3,532.36	3,979.57	8,630.92	9,723.64	71,677.11	80,751.77
27	1.212	3,641.72	4,414.65	9,226.48	11,184.73	74,436.76	90,235.36
28	1.288	3,673.80	4,733.19	9,779.44	12,599.48	77,313.68	99,608.15
29	1.353	3,855.80	5,217.16	10,556.03	14,283.02	80,303.57	108,656.15
30	1.406	4,007.12	5,635.42	11,479.46	16,144.17	83,418.72	117,316.16
31	1.452	4,086.76	5,934.08	12,513.46	18,169.87	86,653.14	125,822.61
32	1.492	4,291.40	6,402.73	13,773.10	20,549.33	90,015.51	134,302.24
33	1.526	4,396.64	6,710.35	14,531.34	22,178.38	93,515.03	142,726.84
34	1.555	4,576.32	7,115.22	15,239.24	23,693.83	97,160.67	151,064.50
35	1.581	4,658.72	7,367.46	16,135.07	25,516.54	100,961.69	159,664.18
36	1.606	4,938.36	7,931.86	16,822.51	27,019.86	104,918.94	168,517.96
37	1.629	5,213.44	8,492.74	17,321.82	28,217.41	109,031.60	177,613.52
38	1.650	5,571.76	9,193.09	18,426.51	30,402.69	113,303.44	186,944.23
39	1.669	5,893.76	9,836.53	19,334.04	32,268.00	117,742.49	196,509.10
40	1.688	6,186.24	10,442.40	20,099.55	33,928.12	122,362.79	206,548.88
41	1.705	6,497.08	11,078.38	21,027.98	35,855.47	127,169.84	216,841.30
42	1.722	7,133.80	12,286.25	21,811.60	37,565.22	132,167.68	227,626.96
43	1.739	7,580.16	13,184.83	22,935.42	39,893.56	137,360.95	238,923.76
44	1.755	8,030.76	14,090.86	23,132.67	40,588.83	142,757.80	250,484.37
45	1.768	8,630.92	15,258.88	23,753.53	41,994.63	148,364.51	262,298.38
46	1.777	9,226.48	16,399.58	24,705.66	43,913.01	154,188.44	274,061.83
47	1.783	9,779.44	17,438.27	25,913.90	46,208.54	160,238.64	285,730.57
48	1.787	10,556.03	18,863.23	27,426.00	49,009.24	166,519.95	297,564.92
49	1.787	11,479.46	20,513.37	28,861.44	51,574.31	173,043.13	309,221.59
50	1.781	12,513.46	22,289.64	30,469.84	54,274.51	179,816.75	320,299.20
51	1.768	13,773.10	24,349.91	32,154.82	56,847.54	186,849.96	330,338.04
52	1.749	14,531.34	25,413.88	32,921.92	57,577.20	194,155.50	339,558.86
53	1.728	15,239.24	26,332.92	33,252.09	57,458.55	201,741.66	348,603.14
54	1.701	16,135.07	27,451.00	34,064.95	57,955.56	209,615.40	356,624.00
55	1.663	16,822.51	27,980.28	35,648.55	59,292.96	217,792.70	362,246.85
56	1.606	17,321.82	27,821.84	36,952.94	59,352.81	226,288.67	363,458.74
57	1.551	18,426.51	28,579.23	38,651.41	59,947.74	235,110.37	364,652.55
58	1.492	19,334.04	28,846.20	40,405.48	60,284.57	244,272.24	364,451.75
59	1.427	20,099.55	28,687.81	41,679.58	59,488.70	253,789.30	362,230.01
60	1.347	21,027.98	28,332.22	42,041.84	56,645.42	263,673.11	355,262.17
61	1.254	21,811.60	27,354.12	43,451.28	54,492.64	273,946.36	343,558.59
62	1.207	22,935.42	27,683.85	45,194.92	54,551.83	284,626.73	343,554.32
63	1.162	23,132.67	26,873.85	47,013.95	54,617.39	295,727.43	343,554.62
64	1.118	23,753.53	26,559.31	48,969.10	54,753.36	307,268.85	343,563.62