# COMMENT TO THE DEPARTMENT OF LABOR


## Tax Consequences to Investors Resulting from Proposed Rules Relating to Financial Representative Fiduciary Status


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## I. BACKGROUND AND SUMMARY OF OPINIONS

1.      The Department of Labor ("DOL") has proposed amendments to the existing rule that defines when financial representatives are fiduciaries for purposes of ERISA and the Internal Revenue Code, including with respect to advice provided regarding IRA assets.[1]  We understand that much or all of the assistance currently provided to investors through commission-based accounts is not currently subject to fiduciary status, but arguably would be so under the proposed amendments.

2.      We understand participants in this rulemaking have stated that, if subjected to the changes in fiduciary status imposed by the proposed amendments, firms currently offering commission-based IRAs will no longer find it cost-effective to offer IRAs to small account holders, such as those with a balance below $25,000.  The impact on IRAs is particularly problematic because the IRS strictly limits annual deductions for IRA contributions.  For instance, in 2015, total contributions to all traditional and Roth IRAs cannot be more than $5,500 (or $6,500 for those 50 or older).[2]  As a consequence, there would be essentially no way for an investor to start a new IRA with one of these firms, unless the investor already had more than $25,000 in another retirement account that could be "rolled over."[3]

3.      We understand that the proposed amendments will only affect tax-qualified accounts such as IRAs and Roth IRAs; the proposed amendments will not change firms' ability to offer commission-based taxable accounts.  Obviously, taxable savings accounts lack the tax

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1.      80 FR 21927 (April 20, 2015).
2.      Internal Revenue Service, Publication 590-A (2014).
3.      Making the maximum $5,500 contributions, and earning 10 percent returns per year, it would take four years before a new IRA account achieved a $25,000 balance.  $\sum_{t=1}^{4} 5,500(1.07)^t = \$26,129$.  A "rollover" is a withdrawal from an existing retirement plan (such as a 401(k) or another IRA) that is reinvested within 60 days into an IRA.  If reinvested into a traditional IRA, the rollover amount will generally not be taxed, although it will incur taxes at the time of retirement.  Internal Revenue Service, "Rollovers of Retirement Plan and IRA Distributions," http://www.irs.gov/Retirement-Plans/Plan-Participant,-Employee/Rollovers-of-Retirement-Plan-and-IRA-Distributions [accessed July 13, 2015].

advantages of IRAs.  Therefore, if, as a consequence of the DOL's proposed amendments, an investor who would have opened an IRA instead opens a taxable savings account, the investor will experience lower retirement savings, all else equal.

4.     Compass Lexecon was asked by counsel for Primerica, Inc. ("Primerica") to analyze and quantify these reductions in retirement savings.[4]  The size of the reductions varies depending on a number of factors about an investor and his or her investment choices, such as the length of time the account is held and the investor's income (and hence, his or her tax rate).  As a consequence, for this study, we considered a range of possible values for these parameters.

5.     Nevertheless, as a general matter, we conclude that, for most investors, the loss associated with opening a taxable savings account instead of an IRA would be large.  For example, consider a 30-year-old investor who starts a new IRA, expects to hold it 35 years until retirement, and contributes 4.5 percent of his income annually.  The median outcome of our model for this investor involves an effective average tax rate on savings (relative to a totally untaxed account) of 23.8 percent for a Roth IRA and 15.0 percent for a traditional IRA, whereas the effective average tax rate on savings for the same investor making the same investment, but in a taxable savings account, is 38.7 percent.  In other words, the taxpayer in this case would see his effective tax rate rise by 62.6 percent relative to a Roth IRA, and 158.0 percent relative to a traditional IRA if the DOL's proposed amendments caused him to open a taxable savings account.

6.     The median effective tax increase due to the DOL's proposed amendments varies across investors who start saving at different ages, but in any case, the tax increases remain very substantial, with the median never below 32.9 percent.  Therefore, to the extent that the DOL's

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4.     Appendix A includes a brief description of Compass Lexecon.  Appendix B includes a list of materials relied upon in the preparation of this comment.

proposed amendments lead a substantial number of investors to open taxable savings accounts instead of IRAs, the amendments would in essence constitute a sizable tax increase on many Americans' retirement savings.

7.    To put these effective tax increases into perspective, we estimated their effect on the number of years of retirement an investor can fund at a desired level of annual retirement income.  As an example, consider again the 30-year-old new IRA investor described above who can fund annual retirement income equal to 60 percent of his expected final pre-retirement income.  We estimate that the effective tax increase to this investor from opening a taxable account reduces the number of retirement years funded at this level by about 2.7 years or 4.3 years, relative to if he had opened a Roth IRA or a traditional IRA, respectively.  For someone who expects 20 total retirement years, these reductions reflect between a 13.5 percent (Roth IRA) and 21.4 percent (traditional IRA) reduction in financially-secure retirement years.

8.    These examples above are illustrative, but this type of effective tax increase potentially affects any future investor who seeks to start an IRA with a commission-based professional through contributions or through a relatively small rollover.  Available evidence indicates that there are around 7.0 million existing households with these types of IRAs.  If 7.0 million future households experience the effective tax increases we estimate in our model, the total reduction in retirement savings would be between $147 billion and $372 billion.  This is a rough estimate of the potential impact, and, to the extent some investors do not switch to taxable accounts as a consequence of the proposed amendments, the actual impact may be lower.  But in any case, this calculation illustrates that the proposed amendments may have very substantial costs which nevertheless do not appear to have been considered in the DOL's cost-benefit study.

9.     For our model, we considered investors with typical values of key parameters, such as income and asset allocations.  Section II below describes in detail the assumptions about these and other parameters.

10.     Section III describes in detail how the model was run.  In brief, the model calculates effective tax rates for three different possible savings vehicles: a traditional IRA, a Roth IRA, and a taxable savings account, based on the after-tax value of each at the time of retirement, relative to the value of a hypothetical fully untaxed account.  The three types of accounts are assumed to include the same assets, which provide the same fundamental returns; nevertheless, the three types of accounts grow at different rates due to different tax treatments.

11.     Future returns to IRA assets are obviously not known in advance.  To estimate effective tax rates, we perform what is known as a "Monte Carlo" model.  First, we draw a set of returns at random for each year until retirement based on the historical distribution of returns to different types of assets.  We then calculate the resulting effective tax rates for each type of account based on the results of the model using these randomly-drawn returns.  We then repeat the entire process 10,000 times.  This allows us to report the median effective tax rates, as well as other statistics, such as the 95th percentile.

12.     Section IV reports the resulting effective tax rates and the potential tax impacts of the DOL's proposed amendments for investors starting accounts at various ages and with various income levels.  Section IV also describes in more detail the calculations noted above regarding the effect on the number of secure retirement years and the total potential tax impact on U.S. investors.

**II.     DESCRIPTION OF MODEL**

13.     We first describe the key parameters of the model, including the investor's age, income, tax rates, annual size and frequency of contributions to savings, and asset allocations. We then describe how investment returns are calculated each year.

**A.  Investor Characteristics**

14.      We considered an investor who plans to retire at age 65.  In order to understand the impact of the DOL's proposed amendments on different types of investors, we considered investors who begin a new retirement savings account today at ages ranging between 30 and 45.

15.     Available evidence indicates that IRA investors have somewhat higher income than the average household.  According to a recent large survey, the median household income of a household that contributed to an IRA in 2013 was $87,500 for traditional IRAs, and $95,000 for Roth IRAs.[5]  An average of these two is $91,250.  The same survey indicates a median age of 45 years for a household head contributing to an IRA.[6]  By contrast, U.S. Census data indicates that in 2013, median household income for a household with a 45-year-old head-of-household was $66,057.[7]  Therefore, the typical IRA-contributing household has an income level approximately 38 percent higher than the median U.S. household of the same age.[8]

16.     For our model, we assumed that a typical investor's household income when starting an IRA would be approximately 38 percent above the median U.S. household income for

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5.     Sarah Holden and Daniel Schrass (2015) "Appendix: Additional Data on IRA Ownership in 2014," *ICI Research Perspective* 21(1A), at 11.

6.     The median age of the household solo or co-decisionmaker for saving and investing was 47 years for a traditional IRA and 43 years for a Roth IRA.  *Id.*, at 11.

7.     Median household income for a household with a 35-44 year-old head-of-household was $64,973, and the similar figure for households with a 45-54 year-old head-of-household was $67,141.  $66,057 is the average of these two figures.  U.S. Census Historical Income Table H.10, http://www.census.gov/hhes/www/income/data/historical/household/index.html [accessed July 7, 2015].

8.     $91,250 / $66,057 = 1.38.

individuals of the same age.  For example, at age 30, household income of $72,729 is 38 percent above the median household income,[9] and at age 45, $91,159 is 38 percent above the median.[10] In 2011, these incomes would correspond to approximately the 70th percentile of U.S. household income for each age.[11]

17.     We also allow the investor's income to increase over the period of the investment in the model.  This happens for three reasons.  First, incomes rise with age due to increased human capital accumulation and other effects.  The U.S. Census data on household income described above indicates an average 1.3 percent higher household income per year of age in 2013.[12]  Second, our model is based on nominal dollars, and there is likely to be at least a moderate amount of inflation in the future.  The most recent long-term forecast for annual growth in inflation from the Philadelphia Federal Reserve's "Survey of Professional Forecasters" is 2.14 percent.[13]  Third, median household incomes have historically grown faster than inflation.  Between 1980 and 2013, median real household income for all U.S. households experienced a compound annual growth rate of 0.26 percent in constant dollars.[14]  Combining these three effects, we assumed annual income growth for the investor of 3.70 percent until retirement at age 65 ( = 1.30 percent + 2.14 percent + 0.26 percent).

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9.     In 2013, median household income for households with head-of-household aged 24-34 years was $52,702.  *Id*.  $72,729 = $52,702 x 1.38.

10.     In 2013, median household incomes for households with head-of-household aged 35-44 years and 45-54 years were $64,973 and $67,141, respectively.  *Id*.  $91,159 = (($64,973 + $67,141) / 2) x 1.38.

11.     U.S. Census Bureau, 2011 Annual Social and Economic (ASEC) Supplement, HINC-02, Total All Races, http://www.census.gov/hhes/www/cpstables/032012/hhinc/hinc02_000.htm [accessed July 17, 2015].

12.     Median household income for households with head-of-household aged 15-24 was $34,311, and the similar figure for households with head-of-household aged 55-64 was $57,538.  U.S. Census Historical Income Table H.10, *op. cit*.  1.30 percent = $(57,538 / 34,311)^{(1/(59.5 - 19.5))} - 1$.

13.     https://www.philadelphiafed.org/research-and-data/real-time-center/survey-of-professional-forecasters/2015/survq215 [accessed July 7, 2015].

14.     In 2013 dollars, median household income was $51,939 in 2013, and $47,668 in 1980.  U.S. Census Historical Income Table H.10, *op. cit*.  0.26 percent = $(51,939 / 47,668)^{(1/(2013 - 1980))} - 1$.

18.     Upon retirement, we assumed a reduction in income of 40 percent, relative to income in the prior year (in other words, an income replacement rate of 60 percent). This is consistent with findings in the academic literature,[15] as well as recent data from the Social Security Administration.[16]

19.     Federal income tax rates ranging between 10 percent and 39.6 percent were applied in each year based on the current marginal tax rates applicable to a married jointly-filing household with taxable income calculated as described above. The threshold incomes defining each income tax bracket are assumed to increase annually by 2.14 percent from their current (2015) levels based on the long-term forecasts published by the Philadelphia Federal Reserve described above. The current capital gains tax rates that correspond to each income tax bracket are assumed to maintain that same relationship in the future.[17] For investors with income above $250,000, the recently implemented Net Investment Income Tax of 3.8 percent was also applied.[18]

20.     As noted above, the median household income of an investor contributing to a traditional IRA is $87,500, and the median age of the head-of-household for traditional IRA contributors is 47.[19] The average annual contribution to a traditional IRA for a contributing

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15.     *See, e.g.*, B. Douglas Bernheim, Jonathan Skinner, and Steven Weinberg (1997) "What Accounts for the Variation in Retirement Wealth Among U.S. Households?" NBER Working Paper 6227, at 53 (indicating median income replacement rate of 0.60).

16.     Andrew G. Biggs and Glenn R. Springstead (2008) "Alternate Measures of Replacement Rates for Social Security Benefits and Retirement Income," *Social Security Bulletin* 68(2), at Table 3 (indicating replacement rate relative to final earnings of 69 percent for households in the 3rd highest quintile, and 52 percent for households in the 4th highest quintile).

17.     For taxpayers in the 10 or 15 percent income tax bracket, the capital gains tax rate is 0 percent. For taxpayers in the 25, 28, 33, or 35 percent income tax bracket, the capital gains tax rate is 15 percent. For taxpayers in the 39.6 percent income tax bracket, the capital gains tax rate is 20 percent. Internal Revenue Service, "Publication 17 (2014)," at Chapter 16.

18.     By law, the $250,000 threshold is not adjusted for inflation. *See* http://www.irs.gov/uac/Newsroom/Net-Investment-Income-Tax-FAQs [accessed July 10, 2015].

19.     Holden and Schrass (2015) *op. cit.*

household with head-of-household between 45 and 49 is $3,975.[20] This therefore corresponds to approximately 4.5 percent of household income. Hence, we assume that investors make a contribution to retirement savings equal to 4.5 percent of income (on a pre-tax basis), unless the contribution is limited, as described below. (Of course, investors may contribute additional amounts to other forms of retirement savings outside our model, such as company plans.)

21. Current contribution limits to an IRA are $5,500 per year ($6,500 for investors age 50 or above).[21] By statute, these limits increase according to a formula relating to the inflation rate, and we applied this formula to project contribution limits in each year over the period of investment until retirement.[22] If an investor's contribution of 4.5 percent of income exceeds these limits in any year, we assumed the investor contributed only the limited amount. In order to maintain comparability, we assumed the same limited contribution, whether the investment was made in an IRA or a taxable savings account.

22. Available evidence indicates that many investors who own IRA accounts nevertheless do not contribute to them every year.[23] Therefore, in our model we considered two possibilities for the investor: (a) contribute the amount described above every year, or (b) contribute the amount described above every other year.

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20. Craig Copeland (2014) "Individual Retirement Account Balances, Contributions, and Rollovers, 2013; With Longitudinal Results 2010-2013: The EBRI IRA Database," Employee Benefit Research Institute Issue Brief 414, at 17 (Figure 16).

21. Internal Revenue Service, "Retirement Topics – IRA Contribution Limits," http://www.irs.gov/Retirement-Plans/Plan-Participant,-Employee/Retirement-Topics-IRA-Contribution-Limits [accessed July 7, 2015].

22. The contribution limit for investors under age 50 is calculated as $5,000, multiplied by the ratio of the CPI for the relevant year and the CPI for 2007. 26 USC §§219(b)(D) & 1(f)(3). The contribution limit for investors age 50 and above is $1,000 higher than the limit for younger investors. 26 USC §§219(b)(B).

23. Craig Copeland (2014) "Individual Retirement Account Balances, Contributions, and Rollovers, 2013; With Longitudinal Results 2010-2013: The EBRI IRA Database," Employee Benefit Research Institute Issue Brief 414, at 1.

23.     A recent survey indicates the typical asset allocation held in IRAs, by the age of

the account owner.[24] While essentially any asset can be held in an IRA, the bulk of assets are

equities, bonds, and money / cash.[25] For instance, the typical IRA held by a 25-44 year-old

contained 66.3 percent equity, 12.9 percent bonds, 13.9 percent money, and 6.9 percent other

assets. For each age group, we allocated the "other" assets evenly across the equity, bonds, and

money categories, and then linearly extrapolated these asset allocations reported for age groups

to individual ages. We assume that the investor holds these age-specific allocations in their

retirement savings, rebalancing annually.[26]


### B. Investment Returns

24.     For each year until retirement, the model requires a set of four investment returns:

(a) equity appreciation; (b) dividends; (c) bond interest; and (d) bond appreciation. As proxies

for the equity appreciation and dividend returns, we calculated these returns for the S&P500 over

the past 38 years.[27] As proxies for the bond yield and appreciation, we calculated these returns

for the Barclay's U.S. Aggregate Bond Index, also over the past 38 years.[28] These returns are

gross of commissions paid to brokers or other fees, which will vary depending on the specific

asset an investor purchases, but because these commissions and fees would be paid in either an

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24.     Craig Copeland (2014) "IRA Asset Allocation, 2012, and Longitudinal Results, 2010 – 2012," *Employee Benefit Research Institute Notes* 35(10), at 8.
25.     Other assets account for between 5.7 and 11.1 percent of assets, depending on the age of the account holder. *Id*.
26.     Given the assumed annual contributions, as well as dividend, interest, and capital gains distributions (as described below), we assumed this rebalancing could be made without selling any current holdings (and thus potentially triggering capital gains tax liability).
27.     Both returns are calculated, assuming reinvestment (of capital gains or dividends, respectively). The mean annual S&P total return (including price appreciation and dividends) over this period is 12.6 percent, with a 16.7 percent standard deviation. The mean annual dividend return over this period is 2.8 percent, with a 1.3 percent standard deviation.
28.     The mean annual Barclay's Aggregate Bond Index total return (including coupons and price appreciation) over this period is 7.9 percent, with a 6.9 percent standard deviation. The mean annual coupon return over this period is 7.4 percent, with a 3.1 percent standard deviation.

IRA or a taxable savings account, a comparison of the value of the two accounts will likely not suffer a material bias due to this omission.

25.  For each year until retirement in our model, we selected at random (with replacement) one year from the past 38 years, and applied the four historical returns from that selected year.  Given the asset allocation described above, we can, for each year until retirement, calculate the gain in the value of the account.  We assume that all dividends and interest are reinvested in the account.  We also assume that a share of the equity portion of the portfolio is distributed each year as (long-term) realized capital gains, but then reinvested.  Over the last five years, the three largest U.S. load-bearing equity-only mutual funds distributed an average of 2.2 percent of fund value as long-term capital gains,[29] so we assume 2.2 percent of the equity held in the account is distributed as realized capital gains each year (and then reinvested).

### III.  MODEL OPERATION

26.  At the beginning of each year, the investor makes her annual contribution and draws a set of equity and bond returns, as described above.  For a taxable savings account or a Roth IRA, the annual contribution is made using after-tax dollars (*i.e.*, the contribution is reduced by the contemporaneous marginal tax rate), while for a traditional IRA, the annual contribution is made using pre-tax dollars.[30]  The portfolio then grows during the year according to the returns drawn, and at the end of the year, the investor pays any taxes due before the start of the next year.  In the case of IRAs, no taxes are paid at the end of each year.  In the case of a

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29.  According to Morningstar, the three largest equity-only load-bearing mutual funds are AGTHX, AIVSX, and CWGIX.  The calculation was performed over the years 2010 – 2014.  None of these funds distributed short-term capital gains in any of these years.

30.  In the case of a traditional IRA, the deduction that allows the contribution to be made in pre-tax dollars may not be realized until the end of the year, but we assume the deduction is available at the beginning of the year.

taxable savings account, ordinary income taxes are paid each year on interest and dividends received that year, and long-term capital gains taxes are paid on capital gains distributions. After taxes, the remaining interest, dividends, and capital gains are reinvested in the account.[31]

27.      At age 65, the investor retires and we value the account at that point. For a Roth IRA, no taxes are due on withdrawal. For a traditional IRA, taxes are paid on the full amount of the account at the point of retirement, based on the marginal income tax rate applicable in retirement, calculated as described above (40 percent below the last working year income). For a taxable savings account, taxes are paid at retirement on the gain in the account, relative to the cost basis, based on the long-term capital gains tax rate applicable in retirement, calculated as described above. The cost basis each year is calculated as the annual contributions made to the account, plus reinvested interest, dividends, and realized capital gains (net of taxes). The cost basis at retirement is the sum of the cost basis calculated each year.

28.      The values at retirement of the various accounts, and hence, the effective tax rates, depend on the investment returns experienced each year. As noted above, these are a random draw from historical returns. Hence, the results will differ in any given run of the model. We ran a Monte Carlo simulation of the model with 10,000 iterations.[32]

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31.      We do not allow for loss "harvesting" in the case of a taxable savings account, in which investors strategically realize capital losses on certain assets to offset any gains they may have. Some evidence indicates that such harvesting can, if performed rigorously, increase the value of a portfolio materially. Robert D. Arnott, Andrew L. Berkin, and Jia Ye (2001) "Loss Harvesting: What's It Worth to the Taxable Investor?" *First Quadrant Perspective*, No. 1, at 13 ("We have simulated returns for 500 assets over 25 years to examine the benefits of loss harvesting for taxable portfolios … Even after liquidation, net of all deferred taxes, this advantage is still an impressive 14%.") However, available evidence indicates that few investors actually realize gains through such a strategy. Brad M. Barber and Terrance Odean (2003) "Are individual investors tax savvy? Evidence from retail and discount brokerage accounts," *Journal of Public Economics* 88:419-42, at 440 ("both discount and retail households have a strong preference for realizing gains, rather than losses, in their taxable accounts.")

32.      *See* William H. Greene (2012) *Econometric Analysis* (7th ed.), Prentice Hall, at 615-7. Ten thousand iterations is relatively large compared with other Monte Carlo studies of tax behavior. *See, e.g*., Robert D. Arnott, Andrew L. Berkin, and Jia Ye (2001) *op. cit.*, at 6 (indicating 500 simulations).

## IV. RESULTS

### A. Effective Tax Rates

29.     Exhibit A summarizes the results of eight specifications of the model,

corresponding to different ages at account inception and different contribution frequencies.  The

results of each specification are based on a separate set of 10,000 runs of the model.  In the first

specification, an investor who starts contributing at age 30 makes a contribution to the account

every year.  In the second model, the same investor makes a contribution only every other year.

The remaining specifications increase the investor's age at account inception in five-year

increments up to age 45.  In each specification, we report the after-tax value at retirement of four

types of accounts that differ only in their tax treatment: a completely untaxed account (for

reference), a traditional IRA, a Roth IRA, and a taxable savings account.  We report the median

value for each of these (across all 10,000 runs), as well as the $5^{th}$ and $95^{th}$ percentiles.

30.     For an investor who begins an account at age 30 and contributes every year, the

median traditional IRA at retirement after taxes is worth $1,021,747, with a $5^{th}$ to $95^{th}$ percentile

range of $498,220 to $2,102,672 (these figures are in nominal 2050 dollars, when the investor in

question retires).  The median Roth IRA is worth $916,524, with a $5^{th}$ to $95^{th}$ percentile range of

$444,695 to $1,891,507.  The median taxable savings account is worth $736,068, with a $5^{th}$ to

$95^{th}$ percentile range of $364,754 to $1,495,796.  This demonstrates the substantial tax savings

generated by IRAs, relative to taxable savings accounts.  Unsurprisingly, Exhibit A also shows

that all account values diminish substantially for investors who either wait until later ages to

begin an account or who do not contribute every year; nevertheless, IRAs still have substantial

tax benefits in all cases.  (In part, the decline in value for investors who start accounts at later

ages is due to the fact that the account values are calculated in nominal dollars at the time of

retirement. Thus, the results for a 45-year-old investor are denominated in nominal 2035 dollars, whereas the results for a 30-year-old investor are denominated in nominal 2050 dollars.)

31.     We also report in Exhibit A the median, 5th, and 95th percentiles of the effective tax rates on each of the IRAs and the taxable savings account. The effective tax rate is calculated separately in each of the 10,000 runs of the model, based on the difference between the value of the IRA or taxable savings account, and the value of the completely untaxed account. For instance, if in a particular run, a completely untaxed account would be worth $500,000 in retirement, and an otherwise equivalent taxable savings account is only worth $350,000, then the effective tax rate is 30 percent ( = $150,000 / $500,000). (The median, 5th, and 95th percentile tax rate may not correspond to the same run of the model as the median, 5th, and 95th percentile account value; hence, the tax rates in Exhibit A cannot necessarily be calculated directly using the account values reported in Exhibit A.)

32.     For an investor who begins an account at age 30 and invests every year, the median effective tax rate for a traditional IRA is 15.0 percent, a Roth IRA is 23.8 percent, and a taxable savings account is 38.7 percent. The traditional IRA tax rate is based entirely on the tax bracket at retirement, while the Roth IRA tax rate reflects the various tax brackets throughout the working life. If the investor is in the same tax bracket at retirement as throughout his working life, then a Roth IRA and a traditional IRA have the same value at retirement. If the investor is in a lower tax bracket in retirement than during the working life, then the traditional IRA will have a higher value at retirement than a Roth IRA, and vice-versa if the investor is in a higher tax bracket at retirement. For the taxable account, taxes are paid both during the working life and at retirement, so the effective tax rate we calculate reflects both.

33.     While contributing only every other year substantially diminishes the value of any account at retirement, it has little impact on the effective tax rates. The age at which the investor

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begins contributing can affect the effective tax rates on each type of account. This reflects investors' movements between various tax brackets during the working life and at retirement. Investors' incomes rise over time, but the tax bracket thresholds also rise, although at a different rate. For this reason, investors of different ages today may end up retiring in different tax brackets.

34. Exhibit A also reports the lost retirement savings for an investor who opens a taxable savings account instead of an IRA. For an investor who begins an account at age 30 and contributes every year, the median loss is $179,541 relative to a Roth IRA, and $286,046 relative to a traditional IRA (again, these figures are in nominal 2050 dollars). The loss is so much larger for a traditional IRA because, in foregoing a traditional IRA, the investor in this case loses the advantage granted by his lower tax bracket in retirement. However, that additional advantage of traditional IRAs does not apply to all investors of different ages in our model, because, even assuming retirement income is 60 percent of pre-retirement income, some investors may nevertheless end up retiring in the same tax bracket as they spent most or all of their working life. In addition, starting to save at a later age (or contributing only every other year) reduces the loss from opening a taxable savings account instead of an IRA simply because the accounts are worth less.

35. The last statistic in Exhibit A is the effective tax increase in percent imposed by placing IRA investors into taxable savings accounts. For instance, if, in a particular run of the model, the effective tax rate on an IRA is 25 percent, and the effective tax rate on a taxable savings account is 35 percent, then the effective tax increase on retirement savings is 40 percent ( = 10 percent / 25 percent). For an investor who begins an account at age 30 and contributes every year, the median effective tax increase in moving from a Roth IRA to a taxable account is 62.6 percent; the equivalent figure for a traditional IRA is 158.0 percent. Again, the tax increase

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imposed on a traditional IRA holder is larger because, in addition to the tax benefits of IRAs generally, the investor also loses the benefit of paying taxes at the lower rate applicable during retirement. The 5th-to-95th percentile of the tax rate increase is 52.6 percent to 72.0 percent for the Roth IRA, and 145.8 percent to 169.1 percent for the traditional IRA, indicating that in all or nearly all cases, the investor would be expected to suffer a substantial tax increase.

36.     Contributing only every other year has little effect on these effective tax increase estimates. The effective tax increases do depend to some degree on the age at which the investor begins the accounts, but the median tax increase is never less than 32.9 percent at any age, and even at the 5th percentile, the tax increases for investors of different ages are at or above 28 percent. Hence, investors of all types are very likely to experience a substantial tax increase if, as a consequence of the DOL's proposed amendments, they open taxable accounts instead of IRAs.

37.     One factor not incorporated into our model is the penalty for early withdrawal imposed on IRAs. Investors always face the temptation to raid retirement savings in response to financial shocks and other needs.[33] For IRAs, the law imposes a 10 percent additional tax on early distributions from both traditional and Roth IRAs in most cases.[34] No such additional tax applies to taxable accounts. This difference in incentives may make it more likely that investors maintain their savings in IRAs, relative to taxable accounts. If so, then the difference in account balances between IRAs and taxable accounts at the time of retirement will be even larger than we estimate in our model.

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33.     Gene Amromin and Paul Smith (2003) "What Explains Early Withdrawals from Retirement Accounts? Evidence from a Panel of Taxpayers," *National Tax Journal* 56(3):595-612.
34.     Internal Revenue Service, "Topic 557," http://www.irs.gov/taxtopics/tc557.html [accessed July 15, 2015].

38.     While, as noted above, the typical IRA investor has household income higher than the U.S. median, IRAs are nevertheless popular investments for households of all income levels. In order to better understand the effects of placing IRA investors into taxable savings accounts, we therefore also ran variants of the model, assuming different household income levels for the investor.  For illustrative purposes, we focused on the specification of the model in which the investor begins an account at age 30 and contributes every year.  As discussed above, we estimate the median household income of such an investor at age 30 as $72,729.  In Exhibit B, we also ran the model assuming the investor's household income at age 30 was either higher or lower than this value by 10 percent or 25 percent, producing a range between $54,547 and $90,911.  In 2011, this range of household incomes would encompass approximately the 54th percentile up to the 80th percentile of the distribution of the household incomes of 30-year-olds in the U.S.[35]

39.     As in Exhibit A, we report in Exhibit B the median, 5th, and 95th percentiles of account values, effective tax rates, lost retirement income, and effective tax increases when opening a taxable savings account instead of an IRA.  Exhibit B shows that higher income households have higher account values at retirement, since they are able to contribute more to their accounts each year.  Effective tax rates on all accounts also generally rise with income, consistent with the progressive tax structure.  Placing higher income IRA investors into taxable savings accounts sometimes involves larger tax increases and sometimes involves lower tax increases, relative to lower income investors, due to the different tax brackets during the working career and retirement for households of different incomes.  At all income levels considered, however, the median tax increase for an investor who would have opened a Roth IRA but instead

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35.     U.S. Census Bureau, 2011 Annual Social and Economic (ASEC) Supplement, HINC-02, Total All Races.

opens a taxable account is greater than 62 percent, and the median tax increase for an investor

who would have opened a traditional IRA but instead opens a taxable account is greater than 73

percent. Thus, investors with a wide range of incomes would experience substantial losses if the

DOL's proposed amendments reduced their access to IRAs.

### B. Implications for Retirement Security

40. The effective tax increases calculated above are clearly substantial, but in order to

make these results concrete, we examined the impact these tax increases would have on

investors' retirement security. To illustrate, we considered the effect for investors initiating

accounts at age 30, as described above, and contributing annually throughout the working life.

Immediately before retirement (*i.e.*, in 2049, at age 64), the investor's household income is

$250,141 (in nominal 2049 dollars, not current dollars). As noted above, the typical retirement

income replacement rate, relative to pre-retirement income, is about 60 percent, so suppose this

investor was able to maintain retirement income at about $150,085 (again, in nominal 2049

dollars).[36]

41. In Appendix C, we use the Social Security Administration's benefit formula to

project the annual Social Security payment this investor would receive at the time of retirement

in 2050 as $83,291. This means that the investor's savings must cover the remaining $66,794

each year.[37] In Exhibit A above, we estimated median account values at retirement for the

investor of $916,524 for a Roth IRA, $1,021,747 for a traditional IRA, and $736,068 for a

taxable savings account. Of course, investors may also have other assets that they can use to

fund their retirement, but these figures indicate that an investor can fund her retirement at the

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36. $150,085 = $250,141 x 60 percent.
37. $66,794 = $150,085 - $83,291.

desired level for approximately 13.7 years with a Roth IRA, 15.3 years with a traditional IRA, and 11.0 years with a taxable savings account.[38]

42.     This means that if, as a consequence of the DOL's proposed amendments, an investor opens a taxable savings account instead of an IRA, they would lose approximately 2.7 years of fully-funded retirement based on a Roth IRA, and approximately 4.3 years based on a traditional IRA.  For an investor who expects roughly 20 years of retirement, this reflects a 13.5 percent or 21.4 percent reduction in fully-funded retirement, respectively.

### C.  Aggregate Tax Increase Estimates

43.     Finally, we also estimated the potential overall dollar impact to U.S. investors from the effective tax increases calculated above.  Our calculation necessarily is a rough estimate, and relies on several assumptions for which there is some uncertainty.  The actual impact may be larger or smaller than we calculate here.  Nevertheless, this illustrates that the total impact may be very large if investors open taxable accounts instead of IRAs as a consequence of the proposed amendments.  It must therefore be seriously considered in any reasonable cost-benefit analysis of the proposed amendments.

44.     The DOL has indicated that in 2013, 34 million U.S. households had IRAs, and 41 percent of IRA-owning households reported holding IRAs at brokerages.[39]  This implies there are approximately 14.0 million U.S. households with brokerage IRAs.  As noted above, we understand that, as a consequence of the proposed amendments, many of the firms offering these

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38.     We ignore additional investment returns after retirement for these calculations.  This is appropriate if investors switch to less risky assets that provide expected returns that do not exceed inflation by much.  If investors are able to maintain returns above inflation during retirement, then these accounts can fund more years of retirement at the desired level, and the differences between the accounts in the number of years funded will be higher.  This is one reason why the results presented here may be conservative.

39.     Department of Labor (2015) "Fiduciary Investment Advice: Regulatory Impact Analysis," at 52 & 53.

accounts have indicated they will restrict the availability of new IRAs with balances less than

$25,000. Therefore, the proposed amendments have the potential to affect all households that

(absent the amendments) would have started brokerage IRAs either from a contribution or a

rollover of less than $25,000.

45.     The DOL has claimed that approximately half of all existing IRAs include no

rollover funds.[40] Moreover, many IRAs initiated with rollover funds were likely started with less

than $25,000. Indeed, the median traditional IRA rollover amount was only $22,840 in 2012.[41]

To be conservative, we assume that only half of the 14.0 million U.S. households with brokerage

IRAs started those accounts with a contribution or a rollover less than $25,000.

46.     Available data indicates that the average value (in 2013 dollars) of an IRA held by

a 65-year-old investor is $188,976.[42] This reflects all IRAs, not only brokerage IRAs, but we are

not aware of any available data providing information on average balances at age 65 among only

brokerage IRAs. If the average balance for the 7.0 million households calculated above was

$188,976 (in 2013 dollars) at the time these households retire, then these accounts would be

worth, in total, $1,323 billion upon retirement.

47.     We do not know whether the proposed amendments will affect these 7.0 million

households who hold existing IRAs, but even if their access to existing IRAs is not affected,

these households will, over time, be replaced with new households who may be affected if their

ability to start new IRAs is impaired. The median results of the model for all ages of investors

(as reported in Exhibit A) indicate that, at the time of retirement, taxable saving accounts have a

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40.     *Id.*, at 54.
41.     Investment Company Institute (2014) "The IRA Investor Profile: Traditional IRA Investors' Activity, 2007 - 2012," at 36.
42.     Craig Copeland (2014) "Individual Retirement Account Balances, Contributions, and Rollovers, 2013; With Longitudinal Results 2010-2013: The EBRI IRA Database," Employee Benefit Research Institute Issue Brief 414, at 9 (indicating average IRA balance of $165,139 for individuals 60-64 and $212,812 for individuals 65-70; the average of these two figures is $188,976).

value that is between 11.1 percent and 21.9 percent lower than Roth IRAs, and between 18.2 percent and 28.1 percent lower than traditional IRAs. This provides a range of the potential effect on savings at the time of retirement if investors forego IRAs for taxable accounts.

48.     Applying this range to the estimated $1,323 billion in IRA savings at the time of retirement for 7.0 million future households similar to those existing today, the potential investor losses due to a regulation that moves these households into taxable accounts would be between 147 billion and 372 billion.

49.     These losses would be spread out over many years, of course, as some of the 7.0 million households in question would likely not retire until well into the future. Moreover, it is possible some of these households could avoid or mitigate the impact of the effective tax increases we calculate by finding other ways to invest in IRAs, such as through non-commission-based accounts or by putting off starting an IRA until a later age when greater rollover assets may be available to them. (Of course, these alternative options may involve costs as well.) Nevertheless, these figures do illustrate that the potential total impact to U.S. savers of any regulation that restricts access to IRAs may be very large and must be at least considered in any reasonable cost-benefit analysis of such a regulation.

**Exhibit A**
**Summary of Model Estimates of Tax Impact of Placing IRA Investors Into Taxable Accounts**

| Age at Account Inception | Contribution Frequency | Account Value at Retirement (Nominal $ at Time of Retirement) | | | | Effective Tax Rate on Retirement Savings[2] | | | Lost Retirement Savings From Taxable Acct.[3] | | Effective Tax Increase From Taxable Acct.[4] | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Untaxed[1] | Traditional IRA | Roth IRA | Taxable Account | Traditional IRA | Roth IRA | Taxable Account | Relative to Traditional IRA | Relative to Roth IRA | Relative to Traditional IRA | Relative to Roth IRA |
| Median Values (50th Percentile) | | | | | | | | | | | | |
| 30 | Annual | $1,202,055 | $1,021,747 | $916,524 | $736,068 | 15.0% | 23.8% | 38.7% | $286,046 | $179,541 | 158.0% | 62.6% |
| 30 | Biennial | $623,203 | $529,723 | $475,040 | $380,843 | 15.0% | 23.8% | 38.8% | $149,021 | $93,930 | 158.9% | 63.0% |
| 35 | Annual | $816,199 | $612,149 | $612,149 | $480,709 | 25.0% | 25.0% | 41.0% | $131,057 | $131,057 | 64.0% | 64.0% |
| 35 | Biennial | $418,982 | $314,237 | $314,237 | $245,492 | 25.0% | 25.0% | 41.3% | $68,425 | $68,425 | 65.3% | 65.3% |
| 40 | Annual | $530,698 | $398,024 | $398,024 | $325,439 | 25.0% | 25.0% | 38.7% | $72,553 | $72,553 | 54.7% | 54.7% |
| 40 | Biennial | $277,475 | $208,106 | $208,106 | $169,772 | 25.0% | 25.0% | 38.8% | $38,339 | $38,339 | 55.1% | 55.1% |
| 45 | Annual | $306,697 | $260,693 | $230,023 | $204,503 | 15.0% | 25.0% | 33.2% | $55,907 | $25,202 | 121.5% | 32.9% |
| 45 | Biennial | $157,224 | $133,640 | $117,918 | $104,386 | 15.0% | 25.0% | 33.5% | $29,197 | $13,433 | 123.6% | 34.2% |
| 5th Percentile Values (95% of Outcomes Involve Larger Values) | | | | | | | | | | | | |
| 30 | Annual | $586,141 | $498,220 | $444,695 | $364,754 | 15.0% | 23.3% | 36.9% | $131,965 | $77,816 | 145.8% | 52.6% |
| 30 | Biennial | $302,958 | $257,514 | $229,727 | $188,380 | 15.0% | 23.3% | 37.0% | $68,584 | $40,494 | 146.3% | 52.9% |
| 35 | Annual | $418,407 | $313,805 | $313,805 | $265,144 | 25.0% | 25.0% | 36.6% | $48,499 | $48,499 | 46.5% | 46.5% |
| 35 | Biennial | $211,518 | $158,639 | $158,639 | $133,429 | 25.0% | 25.0% | 37.0% | $25,402 | $25,402 | 47.9% | 47.9% |
| 40 | Annual | $300,127 | $225,095 | $225,095 | $196,335 | 25.0% | 25.0% | 34.6% | $28,909 | $28,909 | 38.3% | 38.3% |
| 40 | Biennial | $156,689 | $117,517 | $117,517 | $102,111 | 25.0% | 25.0% | 34.6% | $15,158 | $15,158 | 38.6% | 38.6% |
| 45 | Annual | $185,452 | $157,635 | $139,089 | $124,898 | 15.0% | 25.0% | 32.0% | $32,883 | $14,066 | 113.5% | 28.1% |
| 45 | Biennial | $93,845 | $79,768 | $70,384 | $62,662 | 15.0% | 25.0% | 32.3% | $16,863 | $7,424 | 115.5% | 29.3% |
| 95th Percentile Values (95% of Outcomes Involve Smaller Values) | | | | | | | | | | | | |
| 30 | Annual | $2,473,732 | $2,102,672 | $1,891,507 | $1,495,796 | 15.0% | 24.3% | 40.4% | $606,129 | $398,323 | 169.1% | 72.0% |
| 30 | Biennial | $1,289,872 | $1,096,391 | $986,903 | $778,113 | 15.0% | 24.3% | 40.5% | $318,622 | $209,811 | 170.2% | 72.7% |
| 35 | Annual | $1,534,900 | $1,151,175 | $1,151,175 | $865,575 | 25.0% | 25.0% | 43.7% | $285,561 | $285,561 | 74.9% | 74.9% |
| 35 | Biennial | $796,981 | $597,736 | $597,736 | $447,234 | 25.0% | 25.0% | 44.0% | $150,603 | $150,603 | 76.1% | 76.1% |
| 40 | Annual | $927,703 | $695,777 | $695,777 | $546,565 | 25.0% | 25.0% | 41.3% | $151,255 | $151,255 | 65.3% | 65.3% |
| 40 | Biennial | $488,306 | $366,230 | $366,230 | $285,822 | 25.0% | 25.0% | 41.5% | $80,123 | $80,123 | 65.9% | 65.9% |
| 45 | Annual | $496,239 | $421,803 | $372,179 | $329,396 | 15.0% | 25.0% | 34.5% | $92,870 | $43,711 | 130.0% | 38.0% |
| 45 | Biennial | $258,089 | $219,375 | $193,566 | $170,684 | 15.0% | 25.0% | 34.8% | $48,972 | $23,497 | 132.1% | 39.3% |

Note: See text for assumptions regarding income at inception, income growth rate, inflation rate, investment returns, and other parameters.

1. Untaxed account value is reported in order to identify effective tax rates.

2. Effective tax rate is loss in specified account value, relative to untaxed account, at time of retirement. For instance, if an untaxed account would be worth $1,000,000, and an IRA or taxable account would be worth $800,000, then the effective tax rate is 20%.

3. Lost retirement savings is difference in dollar value between taxable account and specified IRA account at time of retirement.

4. Effective tax increase is percentage increase in effective tax rate between taxable account and specified IRA. For instance, if the effective tax rate on a taxable account is 35 percent and the effective tax rate on an IRA is 25 percent, then the effective tax increase is 40% ((35% - 25%) / 25%).

# Exhibit B
## Summary of Model Estimates of Tax Impact of Placing IRA Investors Into Taxable Accounts
## 30-Year-Old Account Holder Making Annual Contributions
## Various Initial Income Levels

| Household Income at Age 30 | Account Value at Retirement (Nominal $ at Time of Retirement) | | | | Effective Tax Rate on Retirement Savings[2] | | | Lost Retirement Savings From Taxable Acct.[3] | | Effective Tax Increase From Taxable Acct.[4] | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | Untaxed[1] | Traditional IRA | Roth IRA | Taxable Account | Traditional IRA | Roth IRA | Taxable Account | Relative to Traditional IRA | Relative to Roth IRA | Relative to Traditional IRA | Relative to Roth IRA |
| Median Values (50th Percentile) | | | | | | | | | | | |
| $54,547 | $901,545 | $766,314 | $748,296 | $631,862 | 15.0% | 17.1% | 30.0% | $135,149 | $116,292 | 99.8% | 75.3% |
| $65,456 | $1,081,848 | $919,571 | $861,046 | $698,208 | 15.0% | 20.5% | 35.5% | $222,911 | $162,351 | 136.6% | 72.9% |
| $72,729 | $1,202,055 | $1,021,747 | $916,524 | $736,068 | 15.0% | 23.8% | 38.7% | $286,046 | $179,541 | 158.0% | 62.6% |
| $80,002 | $1,322,262 | $991,697 | $991,697 | $748,521 | 25.0% | 25.0% | 43.4% | $243,303 | $243,303 | 73.4% | 73.4% |
| $90,911 | $1,495,024 | $1,121,268 | $1,126,455 | $847,465 | 25.0% | 24.6% | 43.3% | $273,541 | $279,053 | 73.1% | 75.7% |
| 5th Percentile Values (95% of Outcomes Involve Larger Values) | | | | | | | | | | | |
| $54,547 | $439,608 | $373,667 | $359,700 | $307,331 | 15.0% | 16.2% | 28.6% | $65,817 | $51,680 | 91.0% | 61.5% |
| $65,456 | $527,526 | $448,397 | $413,849 | $341,857 | 15.0% | 19.3% | 34.1% | $105,480 | $70,444 | 127.5% | 58.6% |
| $72,729 | $586,141 | $498,220 | $444,695 | $364,754 | 15.0% | 23.3% | 36.9% | $131,965 | $77,816 | 145.8% | 52.6% |
| $80,002 | $644,756 | $483,567 | $483,567 | $393,465 | 25.0% | 25.0% | 38.9% | $89,977 | $89,977 | 55.7% | 55.7% |
| $90,911 | $725,301 | $543,976 | $549,053 | $445,299 | 25.0% | 24.3% | 38.6% | $98,726 | $103,331 | 54.3% | 58.6% |
| 95th Percentile Values (95% of Outcomes Involve Smaller Values) | | | | | | | | | | | |
| $54,547 | $1,855,308 | $1,577,011 | $1,550,245 | $1,300,330 | 15.0% | 18.4% | 31.3% | $276,875 | $253,013 | 108.5% | 88.0% |
| $65,456 | $2,226,355 | $1,892,402 | $1,788,560 | $1,434,272 | 15.0% | 22.0% | 36.9% | $460,337 | $360,193 | 145.8% | 86.8% |
| $72,729 | $2,473,732 | $2,102,672 | $1,891,507 | $1,495,796 | 15.0% | 24.3% | 40.4% | $606,129 | $398,323 | 169.1% | 72.0% |
| $80,002 | $2,721,109 | $2,040,831 | $2,040,831 | $1,468,177 | 25.0% | 25.0% | 46.1% | $569,552 | $569,552 | 84.5% | 84.5% |
| $90,911 | $3,082,532 | $2,311,899 | $2,318,621 | $1,663,083 | 25.0% | 24.8% | 46.2% | $646,241 | $652,563 | 84.6% | 86.2% |

Note: See text for assumptions regarding income at inception, income growth rate, inflation rate, investment returns, and other parameters.

1. Untaxed account value is reported in order to identify effective tax rates.

2. Effective tax rate is loss in specified account value, relative to untaxed account, at time of retirement. For instance, if an untaxed account would be worth $1,000,000, and an IRA or taxable account would be worth $800,000, then the effective tax rate is 20%.

3. Lost retirement savings is difference in dollar value between taxable account and specified IRA account at time of retirement.

4. Effective tax increase is percentage increase in effective tax rate between taxable account and specified IRA. For instance, if the effective tax rate on a taxable account is 35 percent and the effective tax rate on an IRA is 25 percent, then the effective tax increase is 40% ((35% - 25%) / 25%).

**Appendix A: About Compass Lexecon**

Compass Lexecon is an economic consulting firm that specializes in the application of economics to a variety of legal and regulatory issues. Compass Lexecon has a professional staff of more than 325 individuals and fourteen offices throughout the United States, Europe and South America. Compass Lexecon also maintains affiliations with leading academics including several Nobel Prize winners in Economics.

Lexecon, Compass Lexecon's predecessor firm, was founded in 1977 by, among others, then Professor (now Judge) Richard A. Posner of the Seventh Circuit Court of Appeals. Compass Lexecon was formed in January 2008 through the combination of Lexecon with Competition Policy Associates, another premier economic consulting firm. Compass Lexecon is a wholly owned subsidiary of FTI Consulting, Inc., a global business advisory firm. Professor Daniel R. Fischel currently serves as Compass Lexecon's Chairman and President.

Compass Lexecon's practice areas include antitrust, securities and financial markets, intellectual property, accounting, valuation and financial analysis, pension economics and policy, corporate governance, bankruptcy and financial distress, derivatives and structured finance, class certifications and employment matters, damages calculations, business consulting, regulatory investigations and public policy.

Compass Lexecon's clients include the United States Department of Justice and other agencies of the federal government, state and local governments, regulatory bodies, major corporations, investor groups, and leading law firms across the globe.

For more information about Compass Lexecon, see its website at:
www.compasslexecon.com

**Appendix B: Materials Relied Upon**

**Public Documents**

80 FR 21927 (April 20, 2015)

Internal Revenue Service, Publication 590-A (2014)

Internal Revenue Service, Publication 17 (2014)

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http://www.ssa.gov/oact/cola/cbbdet.html [accessed July 17, 2015].

 http://www.ssa.gov/oact/TR/TRassum.html [accessed July 17, 2015].

 http://www.ssa.gov/oact/cola/piaformula.html

**Appendix C: Estimated Social Security Payments**

1.        We estimated the annual Social Security payout for a 30-year-old in 2015 who retires in 2050.  As noted above, we assumed household income at age 30 of \$72,729, and increased this income by approximately 4.5 percent per year until age 65.[1]  We indexed these earnings to the investor's age 60 year (*i.e.*, 2045, two years before retirement eligibility) according the Social Security Administration's most recent projections for the National Average Wage Index (NAWI).[2]  These are reported in the table below.  The Average Indexed Monthly Earnings (AIME) is the sum of these indexed earnings over the entire 35 year period, divided by 420 months during that period.[3]  This value is \$18,527.

2.        The Primary Insurance Amount (PIA) is calculated as a function of two "bend points" that serve to graduate Social Security benefits for high-income households.  These bend points can be calculated based on future values of NAWI, projected as described above, and are reported for each year in the table below.  The table indicates that, in the investor's age 62 year (the first year of retirement eligibility), the two bend points are projected to be $B_1 = \$2,876$ and $B_2 = \$17,334$.

3.        If $B_1$ and $B_2$ are the two bend points, then the PIA is equal to $0.9 \times B_1 + 0.32 \times (B_2 - B_1) + 0.15 \times (AIME - B_2)$.[4]  At age 62, the PIA for this investor is projected to be \$7,394.  This value is then increased between ages 62 and 65 at the projected future COLA of 2.7 percent.[5]  A 30-year-old investor today was born in 1985.  Therefore, under current regulations,

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1.        The assumed incomes are always below the Contribution and Benefit Base that constitutes the maximum annual earnings relevant for the calculation of Social Security benefits. http://www.ssa.gov/oact/cola/cbbdet.html [accessed July 17, 2015].

2.        http://www.ssa.gov/oact/TR/TRassum.html [accessed July 17, 2015].  Earnings after age 60 are not indexed.

3.        We assume all of the investor's highest 35 years of earnings take place after age 30.

4.        http://www.ssa.gov/oact/cola/piaformula.html [accessed July 17, 2015].

5.        *Id.*

if this investor retires at age 65, he receives a monthly Social Security benefit equal to 86.67

percent of the COLA-adjusted PIA, or $6,941.  On an annual basis, this is $83,291.[6]

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6.      $83,291 = $6,941 x 12.

# Indexed Earnings and Bend Points for Social Security Benefit Calculation

| Year | Age | Assumed Household Income[1] | Projected NAWI Growth Rate[2] | Projected NAWI[3] | Index Earnings to Age 60 Year[4] | Projected Bend Point 1[5] | Projected Bend Point 2[5] |
|------|-----|------|------|------|------|------|------|
| 2013 | 28 |  | 1.8% | $44,888 |  |  |  |
| 2014 | 29 |  | 3.7% | $46,549 |  |  |  |
| 2015 | 30 | $72,729 | 4.9% | $48,830 | $232,700 | $826 | $4,980 |
| 2016 | 31 | $75,420 | 5.0% | $51,271 | $229,818 | $857 | $5,164 |
| 2017 | 32 | $78,211 | 4.9% | $53,784 | $227,189 | $899 | $5,418 |
| 2018 | 33 | $81,104 | 4.7% | $56,312 | $225,020 | $944 | $5,688 |
| 2019 | 34 | $84,105 | 4.3% | $58,733 | $223,725 | $990 | $5,967 |
| 2020 | 35 | $87,217 | 4.1% | $61,141 | $222,865 | $1,036 | $6,248 |
| 2021 | 36 | $90,444 | 4.1% | $63,648 | $222,009 | $1,081 | $6,516 |
| 2022 | 37 | $93,791 | 4.0% | $66,194 | $221,369 | $1,125 | $6,783 |
| 2023 | 38 | $97,261 | 3.9% | $68,775 | $220,943 | $1,171 | $7,062 |
| 2024 | 39 | $100,859 | 3.8% | $71,389 | $220,730 | $1,218 | $7,344 |
| 2025 | 40 | $104,591 | 3.8% | $74,101 | $220,517 | $1,266 | $7,630 |
| 2026 | 41 | $108,461 | 3.8% | $76,917 | $220,305 | $1,314 | $7,920 |
| 2027 | 42 | $112,474 | 3.8% | $79,840 | $220,092 | $1,364 | $8,221 |
| 2028 | 43 | $116,636 | 3.8% | $82,874 | $219,880 | $1,416 | $8,534 |
| 2029 | 44 | $120,951 | 3.8% | $86,023 | $219,669 | $1,470 | $8,858 |
| 2030 | 45 | $125,426 | 3.8% | $89,292 | $219,457 | $1,525 | $9,195 |
| 2031 | 46 | $130,067 | 3.8% | $92,685 | $219,245 | $1,583 | $9,544 |
| 2032 | 47 | $134,880 | 3.8% | $96,207 | $219,034 | $1,644 | $9,907 |
| 2033 | 48 | $139,870 | 3.8% | $99,863 | $218,823 | $1,706 | $10,283 |
| 2034 | 49 | $145,045 | 3.8% | $103,658 | $218,612 | $1,771 | $10,674 |
| 2035 | 50 | $150,412 | 3.8% | $107,597 | $218,402 | $1,838 | $11,080 |
| 2036 | 51 | $155,977 | 3.8% | $111,686 | $218,191 | $1,908 | $11,501 |
| 2037 | 52 | $161,748 | 3.8% | $115,930 | $217,981 | $1,980 | $11,938 |
| 2038 | 53 | $167,733 | 3.8% | $120,335 | $217,771 | $2,056 | $12,391 |
| 2039 | 54 | $173,939 | 3.8% | $124,908 | $217,561 | $2,134 | $12,862 |
| 2040 | 55 | $180,375 | 3.8% | $129,654 | $217,352 | $2,215 | $13,351 |
| 2041 | 56 | $187,049 | 3.8% | $134,581 | $217,142 | $2,299 | $13,858 |
| 2042 | 57 | $193,970 | 3.8% | $139,695 | $216,933 | $2,386 | $14,385 |
| 2043 | 58 | $201,147 | 3.8% | $145,004 | $216,724 | $2,477 | $14,931 |
| 2044 | 59 | $208,589 | 3.8% | $150,514 | $216,515 | $2,571 | $15,499 |
| 2045 | 60 | $216,307 | 3.8% | $156,233 | $216,307 | $2,669 | $16,088 |
| 2046 | 61 | $224,310 | 3.8% | $162,170 | $224,310 | $2,770 | $16,699 |
| 2047 | 62 | $232,610 | 3.8% | $168,333 | $232,610 | $2,876 | $17,334 |
| 2048 | 63 | $241,216 | 3.8% | $174,729 | $241,216 | $2,985 | $17,992 |
| 2049 | 64 | $250,141 | 3.8% | $181,369 | $250,141 | $3,098 | $18,676 |

1. As described above, income is based on typical IRA investor income at age 30, and increased at approximately 4.5 percent per year.

2. Source: http://www.ssa.gov/oact/TR/TRassum.html.

3. Calculated as prior year NAWI, increased at projected growth rate.

4. Calculated as Household Income x (Specified Year NAWI / NAWI in 2045), and equal to Household Income after 2045.

5. Calculated as $180 x (NAWI from 2 years prior / $9,779.44). See http://www.ssa.gov/oact/cola/piaformula.html.

6. Calculated as $1,085 x (NAWI from 2 years prior / $9779.44). See http://www.ssa.gov/oact/cola/piaformula.html.