



# YOUR NEST EGG ON AUTO PILOT

## THE ADVANTAGES OF REAL SAVINGS + OVER THE R-BOND AS A DEFAULT INVESTMENT FOR THE AUTOMATIC IRA

The Obama administration has proposed bold new policies to expand retirement savings. Through a program of Automatic IRAs, the approximately 78 million American workers not currently covered by a plan at work would be able to save through workplace-based individual retirement accounts. The Administration also plans to simplify and expand the Saver's Credit to give eligible lower-income savers a 50 per cent "match" on contributions of up to \$1,000 to qualified retirement accounts. Together, these proposals promise to enhance the retirement security of millions of Americans, providing both the savings vehicle and the savings incentive to enable more low- and moderate-income households to begin saving for their retirement.

As important as money flowing into the Automatic IRA is, the central test of the Automatic IRA policy will be how much money will be available to flow out at retirement. How can the Automatic IRA insure that significant assets are built for retirement? To that end, the investment menu will be critical because it is the engine that grows contributions into retirement assets. The President's budget proposals anticipate that the Automatic IRA will include "a low-cost, standard type of default investment and a handful of standard, low-cost investment alternatives."<sup>1</sup> Experience from the 401(k) world indicates that default investments are attractive both to savers who do manage their portfolios and, especially, to those who do not. This suggests that many millions of savers in the Automatic IRA will choose the default option. This also means it will generate billions of dollars in investment assets under management. Ultimately, the selection of the default investment could determine the long-run success of the Automatic IRA policy.

The Initiative on Financial Security at the Aspen Institute has designed an investment vehicle suitable for use as the default investment for the Automatic IRA. Real Savings + (RS+) offers an automatic, inexpensive blend of TIPS and a market index to provide savers with a guaranteed return of their contributions along with the likelihood of upside potential through equity investing. RS+ thus protects the value of each dollar saved from the most likely risks to retirement income while offering the opportunity for significant growth as well.

As we will demonstrate in this brief, RS+ is highly likely to outperform the "R-Bond", another proposed default investment for the Automatic IRA, in building financial assets for retirement. At the same time we will show that RS+, like the R-bond, is able to guarantee the full return of a saver's contributions adjusted for inflation even under the worst imaginable economic circumstances. Finally, we will briefly describe other benefits of RS+ beyond investment performance, such as its low-cost structure, automatic asset allocation, and potentially wide availability throughout the financial services industry.

<sup>1</sup> United States Department of the Treasury. (2010, February). *General explanations of the administration's fiscal year 2011 revenue proposals*. (pp. 18). Washington, DC: Department of the Treasury. Retrieved from <http://www.treas.gov/offices/tax-policy/library/greenbk10.pdf>

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## THE CONTENDERS: REAL SAVING + AND THE R-BOND

There are no good precedents from the 401(k) world for building an investment menu for the Automatic IRA that can assure a worker's contributions both growth and safety at a low cost. Every market downturn prompts calls for workplace investment products that are less exposed to market risk. But when the market turns around, the urgency subsides, as investors become hungry for greater returns. 2010 promises to be no different. As policy makers set out to define an appropriate default investment for the Automatic IRA, memories of the shattered markets of 2008-2009 will require they walk a fine line between providing both safety and growth potential. This is particularly true, given that many, if not most, of Automatic IRA participants will be newcomers to retirement saving and investing.

One option that has been unofficially advanced as the default investment for the Automatic IRA is the so-called "R-Bond," which is a Treasury bond configured for use in a retirement program. The R-Bonds are likely to be based on inflation-adjusted Treasury bonds, such as TIPS. R-Bonds, if invested in inflation-adjusted Treasury bonds and held to maturity, would have stated returns, and would be free of default risk, market risk, and inflation risk.<sup>2</sup>

The Initiative on Financial Security at the Aspen Institute proposes an alternative to the R-Bond: Real Savings + (RS+). By design, RS+ fully protects every dollar saved against economic cycles, market declines and loss of purchasing power. RS+ is a combination of two investments: an automatic, inexpensive blend of TIPS and a broad-based equity market index. Like the R-Bond, RS+ protects the value of each dollar saved from inflation, default by the bond issuer, and falling stock prices. But it also offers the potential upside of equity market investing. To do so, RS+ invests a sufficient proportion of each retirement contribution in Treasury Inflation Protected Securities (TIPS) to guarantee each worker the return of his or her contributions, fully adjusted for inflation, when that worker retires. The difference between the entire retirement contribution and the amount invested in TIPS will be invested in a low-cost stock index, such as the S&P 500, to give savers some of the upside potential available through equity investing. The appendix provides an example of how RS+ would work in practice.<sup>3</sup>

## ARGUMENTS FOR R-BONDS AND RS+

### ARGUMENTS IN FAVOR OF THE R-BOND:

- Investment portfolios containing only Treasury bonds (R-Bonds) are safer than portfolios that incorporate the use of stocks since R-Bonds involve no market risk
- R-Bonds can be issued directly by the Treasury, simplifying the process and reducing costs
- R-Bonds would have greater appeal to lower-income workers, who are assumed to be very risk-averse and who may not be able to save for retirement on a long and regular basis

### ARGUMENTS IN FAVOR OF RS+:

- The inclusion of a controlled use of stocks will likely result in much higher retirement accumulations than a bonds-only approach since stocks have historically produced a higher average return than bonds
- RS+'s guaranteed return of principal, even under the worst possible market conditions, will protect the contributions of workers from default, market risk and inflation
- The probability that R-Bonds will outperform RS+ is extremely low

2 See Bruno, M. (2009, June). *Administration explores 'R bond' as option for retirement accounts*. New York: Investment News. Retrieved from <http://www.investmentnews.com/article/20090607/REG/90605995>

3 For a more complete explanation of the mechanics and design of RS+, See Mandell, L., Perun, P., Mensah, L. & O'Mara III, R. (December 12, 2009). *Real Savings Plus: An Automatic Investment Option for the Automatic IRA*. Policy Paper. The Initiative on Financial Security, The Aspen Institute. Available at [http://www.aspeninstitute.org/sites/default/files/content/docs/pubs/RealSavings%2B\\_Complete.pdf](http://www.aspeninstitute.org/sites/default/files/content/docs/pubs/RealSavings%2B_Complete.pdf)

## TESTING THE PERFORMANCE OF RS+ AND THE R-BOND OVER TIME TO DETERMINE THE SUPERIOR INVESTMENT VEHICLE

The potential performance of both RS+ and the R-Bond over time was tested through a statistical modeling technique known as a Monte Carlo simulation. Since it is impossible to accurately predict the future, the model tested retirement accumulations that could result from identical contributions to RS+ or the R-Bond over 10, 20, 30 and 40 year periods. Worker contributions in the model were set at \$1,000 per year, adjusted annually for inflation. Historical averages were used for the nominal return on the stock index (S&P 500), the real return on TIPS, and for inflation to predict nominal retirement accumulations. To help simplify the comparison, RS+ was compared to an inflation-adjusted R-Bond since this type of R-Bond is most likely to be advanced. Both RS+ and the R-Bond used the real return on 20-year TIPS in this example.

Clearly, RS+ would be expected to generate higher retirement accumulations than R-Bonds since the former allocates a portion of investment funds to stocks which have historically earned a higher average return than Treasury bonds. However, since the return on stocks has greater variability than the return on Treasury bonds, it is possible that a period of time that encompassed a significant stock market decline, such as the decade from 2000 to 2010, could result in better results for the R-Bonds. The risk aversion of investors varies considerably but, as a general rule, all investors are assumed to be at least somewhat risk averse.<sup>4</sup> For purposes of the Automatic IRA, risk aversion is a critical consideration because lower- and moderate-income workers may be more risk averse than other workers, given their limited retirement savings.<sup>5</sup> So, in evaluating R-Bonds versus RS+, it is important to estimate just how likely it would be that the safer R-Bonds would actually outperform RS+.

In our simple model, three important things are subject to unpredictable change: returns on the S&P 500, returns on TIPS and the rate of inflation. However, while these changes cannot be perfectly predicted, we can use their histories to predict the range in which they will change. This is done by calculating their historical standard deviations.

- The S&P 500 has a historical (nominal) mean return of 9.65 per cent and a standard deviation of 20.52 per cent.<sup>6</sup>
- TIPS have a historical (real) mean return of 2.207 per cent and a standard deviation of .25 per cent.<sup>7</sup>
- Inflation (increases in the US Consumer Price Index) has a historical mean of 3.02 per cent and a standard deviation of 3.11 per cent.<sup>8</sup>

In a Monte Carlo simulation, random numbers are generated for each of the variables, in this case S&P 500 returns, real TIPS returns and inflation, which have a mean and standard deviation identical to the historical mean and standard deviation for each variable. In the case of a 30 year simulation, for example, a random return is generated for the S&P 500 for each of the 30 years as is a random return for real TIPS and a random return for inflation. This is a total of 90 random numbers. These numbers are used to calculate retirement accumulation for both RS+ and R-Bonds. Then, the simulation is repeated for a total of 1,000 times, involving the total generation of 90,000 random numbers.

<sup>4</sup> Risk aversion is measured by  $A$  which is equal to excess return (the necessary return above the riskless rate) divided by the variance, or riskiness of the return. For meaningful sums of money (greater than those which give people happiness from gambling), investors must expect to receive a positive return which increases with the square of its standard deviation to compensate them for the risk they are taking on. As the riskiness of an investment increases, the expected return needed to get investors to take on that risk increases with the square of the risk.

<sup>5</sup> While every investor is said to be risk-averse, the degree of risk aversion differs by factors such as age, income, wealth and recent investment history. See Grable, J. E., & Lytton, R. H. (2001). Assessing the Concurrent Validity of the SCF Risk Tolerance Question. *Financial Counseling and Planning*, 12, 43–52, 2001. Grable & Lytton completed a review of seventeen studies that use the Survey of Consumer Finances risk tolerance measures and found that risk tolerance is positively related to wealth, among other variables. Grable & Lytton also found that respondents with higher risk tolerance are more likely to invest in stocks within a retirement plan. See also Yoo, R., Hanna, S., & Lindamood, S. (2004). Changes in Financial Risk Tolerance, 1983–2001. *Financial Services Review* 13, 249–266, 2004. Yoo, Hanna and Lindamood, using data from six Surveys of Consumer Finances that measured risk tolerance, found that income tends to have a significant positive relationship with risk. On page 249, Yoo, Hanna and Lindamood found that "...financial risk tolerance tends to increase when stock returns increase and decrease when stock returns decrease."

<sup>6</sup> These figures cover the 1926-2009 period and were calculated from annual returns on the S&P 500. Data source: ICMA-RC data base, available at: <http://www.icmarc.org/xp/rc/marketview/chart/supplemental/20100205sorted.html?audience=contentonly&showSidebar=no&v=byYear>

<sup>7</sup> See United States Treasury (2009, December). *Market yield on U.S. Treasury securities at 20-year constant maturity, quoted on investment basis, inflation-indexed*. These calculations used monthly data from July 2004, when 20 year TIPS were introduced, through December, 2009. Retrieved from: [http://www.federalreserve.gov/releases/h15/data/Monthly/H15\\_TCMII\\_Y20.txt](http://www.federalreserve.gov/releases/h15/data/Monthly/H15_TCMII_Y20.txt)

<sup>8</sup> These figures are from the 1926-2008 period. See Bodie, Z., Kane, A., & Marcus, A. (2010). *Essentials of Investments, 8th Edition*. New York: McGraw-Hill Irwin at pp. 130.

Table 1, below, gives the results of four separate Monte Carlo simulations, one for 10 years of accumulation, one for 20 years, one for 30 years and one for 40 years. In addition to producing the average accumulation for RS+ and R-Bonds for the 1,000 replications for each time period, the simulations also enable us to determine the number of times (out of the 1,000 replications) in which RS+ had a higher retirement accumulation than the R-Bond. This tells us the probability that RS+ will do better than the R-Bond.

Table 1: Expected Value of Retirement Savings for RS+ and Real R-Bonds and the Probability that RS+ Will Outperform the R-Bond for Various Savings Periods				
	10 Years	20 Years	30 Years	40 Years
<b>RS+ Retirement Accumulation</b>	\$14,212	\$49,458	\$158,905	\$523,405
<b>R-Bond Retirement Accumulation</b>	\$12,915	\$33,431	\$65,140	\$111,708
<b>Probability that RS+ will Exceed R-Bond</b>	90.1%	94.1%	97.5%	98.8%

The results tell us that RS+ is likely to result in higher retirement accumulations than the R-Bond in all four time periods. However, it is very clear that the longer the accumulation period, the greater the expected difference in accumulation and the greater the probability that RS+ will outperform the R-Bond. For example, in 40 years, savers using RS+ will expect to accumulate a nominal value of \$523,405, which is more than 4 times as much as they would accumulate using R-Bonds. In addition, there is a 98.8 per cent probability that they would do better using RS+ than R-Bonds, or just a 1.2 per cent chance that they would do better using R-Bonds.

In 30 years, savers using RS+ will expect to accumulate a nominal value of \$158,905, which is nearly 2½ times as much as they would accumulate using R-Bonds. In addition, there is a 97.5 per cent probability that they would do better using RS+ than R-Bonds, or a 2.5 per cent chance that they would do better using R-Bonds.

In much shorter periods of time, such as 10 years, the expected benefit of RS+ diminishes as does the probability that it will result in a higher accumulation than R-Bonds. RS+ would result in an expected accumulation of \$14,212 compared for \$12,915 for R-Bonds. This is not a large difference. In addition, the probability that RS+ will result in a higher retirement accumulation than R-Bonds falls to 90.1 per cent, meaning that there is a 9.9 per cent chance that savers would do better in R-Bonds.

## RESULTS OF THE ANALYSIS

As predicted, the inclusion of an index of common stocks in RS+ tends to make contributions grow more rapidly than they would if totally invested in inflation-protected government bonds such as R-Bonds. This difference becomes huge for accumulations over 30 or 40 years of work. Even workers who end up with only 10 or 20 years in the paid labor force are likely to do better with RS+, although the expected difference in retirement accumulation is lower.

It is important to stress again that the innovative design of RS+ guarantees savers the full return of their contributions, adjusted for inflation, even under the worst imaginable economic circumstances for equity investing. Through the “magic” of discounting, RS+ will automatically purchase TIPS in an amount that will grow to be equal to the inflation-adjusted value of the contribution at retirement, thus ensuring the safety of every dollar contributed to a saver’s nest egg. No default risk. No inflation risk. No market risk.

The analysis has thus demonstrated that RS+ is superior to R-Bonds for nearly all savers.<sup>9</sup> As we show, RS+ is highly likely to produce retirement savings that are a multiple of those produced by R-Bonds while guaranteeing the purchasing power of contributions even when market conditions are dire. In addition, the probability that retirement accumulations from R-Bonds will exceed those of RS+ is extremely low, generally less than a few percent.

## COST CONSIDERATIONS

In order to provide Automatic IRA savers the maximum potential for growth, the default investment should be low cost. R-Bonds, provided through the government, would certainly meet that criterion. Because of the simplicity of its design, RS+, provided through the private sector, is also a low-cost investment option. RS+ is composed of two products, TIPS and S&P500 index funds, which are already available, highly liquid and nearly costless. For example, the expense ratio for S&P500 exchange traded funds offered by i-Shares (symbol IVV) is just 9 basis points (nine one-hundredth of one per cent) and their TIPS ETF (symbol TIP) costs 20 basis points, for an average of about 14.5 basis points. It should be noted that TIPS can be bought at auction without a brokerage fee, potentially reducing the cost even further, although longer-term TIPS auctions are currently held just twice a year.

Therefore, although RS+ invests a portion of contributions in equities, unlike the R-Bond, it should not generate the high investment or administrative fees associated with traditional forms of equity investment options. Moreover, its automatic investment design limits consumer interaction, keeping operational expenses, such as staffing costly call-in lines, to a minimum. Ensuring that such costs are kept low is a critical issue for low- and moderate-income savers because fees and expenses can significantly reduce account growth.

## EASE OF USE

Both R-Bonds and RS+ take investment responsibility from the shoulders of savers. RS+ allocates contributions into TIPS and a stock index based upon the individual saver’s time to retirement and the current return on TIPS. RS+ automatically configures a unique contribution stream and precise retirement date for each saver. While this meets the unique needs of each saver, the allocation is determined by a simple computer program and is essentially cost-less. Moreover, savers obtain the potential benefits of equity investing without having to continually adjust their investments as market conditions change. There is no need to ever reallocate assets, thereby minimizing the transaction and administrative costs charged to accounts. Unlike the R-Bond, RS+ provides savers with an opportunity for some upside potential from equity investing at little to no cost. Like the R-Bond, RS+ does not require active investment management services or professional investment advice.

## CONCLUSION

The Automatic IRA program will fail if it merely creates millions of accounts too small to generate substantial retirement income. That puts the role of investments – critical to increasing account balances over time – front and center. Through the default investment, policy makers must insure savers an appropriate balance between safety and growth for their contributions to the Automatic IRA.

<sup>9</sup> Both investment alternatives – the “R-Bond” and the “RS+” – would necessitate similar enhancements to the Treasury’s TIPS program to facilitate the ongoing purchase of such bonds in amounts as low as a dollar and with maturities that match the worker’s intended retirement date.

From a growth perspective, RS+ is a better choice than R-Bonds as the default investment for the Automatic IRA. RS+ greatly outperforms the R-Bond over investment horizons that correspond to the number of years that workers are likely to be in the paid labor force. Not only are RS+ retirement nest eggs likely to be 2 ½ to 4 times those of R-Bonds, but the likelihood that R-Bond holders would do better is very small – in most cases, well under five per cent. Moreover, its guaranteed promise of purchasing power through TIPS and its blend of highly liquid investments come with at a very low cost. RS+ provides Automatic IRA savers, most of whom will be new to equity investing, with a product featuring automatic asset allocations with no need for expensive investment advice as well as a potentially wide availability throughout the financial services industry. From a safety perspective, RS+ fully insures the purchasing power of contributions at retirement. With RS+, there is no default risk, no inflation risk and no market risk to contributions.

For these reasons, given its superiority in providing both growth and safety, RS+ should be the default investment option for the Automatic IRA. Together with the Automatic IRA and the Saver's Credit, RS+ can significantly expand the retirement preparedness of millions of American workers, fulfilling the promise of President Obama to provide all hardworking Americans the opportunity to retire with dignity and security.

## APPENDIX

**A Detailed View of RS+ Accumulation Over 30 Years**  
**For a Worker Contributing an Inflation-Adjusted \$1,000 per Year**  
**if the Interest Rate on TIPS is 2%, the S&P Returns 9% and Inflation is 3%**

(a)	(b)	(c)	(d)	(e)	(f)	(g)	(h)
Year	Contribution	Cost of TIPS	Nominal Value of TIPS at Retirement	Real Value of TIPS at Retirement	Amount Invested in S&P500	Nominal Value of S&P500 at Retirement	Real Value of S&P500 at Retirement
1	1,000	552	2427	1000	448	5943	2448
2	1,030	580	2427	1030	450	5477	2324
3	1,061	609	2427	1061	452	5042	2204
4	1,093	640	2427	1093	453	4636	2087
5	1,126	673	2427	1126	453	4257	1974
6	1,159	707	2427	1159	453	3903	1864
7	1,194	742	2427	1194	452	3573	1758
8	1,230	780	2427	1230	450	3266	1655
9	1,267	819	2427	1267	447	2979	1555
10	1,305	861	2427	1305	444	2712	1458
11	1,344	904	2427	1344	439	2463	1364
12	1,384	950	2427	1384	434	2232	1273
13	1,426	998	2427	1426	428	2017	1185
14	1,469	1049	2427	1469	420	1817	1099
15	1,513	1102	2427	1513	411	1631	1016
16	1,558	1158	2427	1558	400	1458	936
17	1,605	1216	2427	1605	389	1298	858
18	1,653	1278	2427	1653	375	1150	783
19	1,702	1342	2427	1702	360	1013	710
20	1,754	1410	2427	1754	343	886	640
21	1,806	1482	2427	1806	324	768	572
22	1,860	1557	2427	1860	304	660	506
23	1,916	1635	2427	1916	281	559	442
24	1,974	1718	2427	1974	255	467	380
25	2,033	1805	2427	2033	228	382	320
26	2,094	1896	2427	2094	197	304	262
27	2,157	1992	2427	2157	164	232	206
28	2,221	2093	2427	2221	128	166	152
29	2,288	2199	2427	2288	89	106	99
30	2,357	2310	2427	2357	46	50	49
<b>Total</b>	<b>47,575</b>	<b>37,059</b>	<b>72,818</b>	<b>47,575</b>	<b>10,516</b>	<b>61,447</b>	<b>32,178</b>

## YEAR 1

The first year's contribution is \$1,000. Of that amount, \$552<sup>1</sup> is used to purchase 30 year TIPS [column (c)]. At 2 percent interest, \$552 will grow to be \$1,000 in 30 years [column (e)]. Since TIPS adjust their value by the rate of inflation, a three percent annual rate of inflation will cause the nominal (non-inflation-adjusted) value of the TIPS to be \$2,427 in 30 years [column (d)] or \$1,000 in "real," inflation-adjusted, or current year (all synonyms) dollars [column (e)].

The difference between the contribution of \$1,000 and the \$552 needed to buy TIPS is \$448 [column (f)] which is invested in the S&P500 stock index. At an assumed rate of return of 9 percent on stocks, this \$448 would be expected to grow to be \$5,943 [column (g)] in 30 years. In real or current year dollars, this would be equal to \$2,448 [column (h)].

## YEAR 2

The second year's contribution is \$1,030 [column (b)] since the original contribution of \$1,000 has grown with the 3 percent increase in salaries that corresponds, in this example, to the 3 percent rate of inflation. Of that amount, \$580 is used to purchase 29 year TIPS [column (c)]. At 2 percent interest, \$580 will grow to be \$1,000 in 29 years [column (e)]. Since TIPS adjust their value by the rate of inflation, a three percent annual rate of inflation will cause the nominal (non-inflation-adjusted) value of the TIPS to be \$2,427 in 29 years [column (d)] or \$1,030 in "real," inflation-adjusted, or current year<sup>2</sup> (all synonyms) dollars [column (e)].

The difference between the contribution of \$1,030 and the \$580 needed to buy TIPS, is \$450 [column (f)] which is invested in the S&P500 stock index. At an assumed rate of return of 9 percent on stocks, this \$450 would be expected to grow to be \$5,477 [column (g)] in 29 years. In real or current year (Year 2) dollars, this would be equal to \$2,324 [column (h)].

## YEAR 30

The last year's (Year 30) contribution will be \$2,357 [column (b)] which is equal to the original contribution of \$1,000 inflated by 3 percent each year for 30 years. Of that amount, nearly all of it (\$2,310) must be used to buy TIPS [column (c)] since they have only the final year to earn the 2 percent interest to grow to the real value of \$2,357 at retirement [column (e)]. Note that \$2,357 is merely the original contribution of \$1,000 adjusted for an annual inflation of 3 percent. The nominal value of \$2,310 used to purchase TIPS at the beginning of Year 30 is equal to \$2,427 at retirement (at the end of Year 30) since the value has grown by the real 2 percent return on TIPS as well as the 3 percent rate of inflation in that last year. The difference between the contribution of \$2,357 and the \$2,310 needed to buy TIPS is \$46 [column (f)] which is invested in the S&P500 stock index for one final year. At an assumed rate of return of 9 percent on stocks, this \$46 would be expected to grow to be \$50 at year end [column (g)]. In real or current year (Year 30) dollars, this would be equal to \$49 [column (h)].

## TOTAL ACCUMULATION

The worker has contributed a total of \$47,575 nominal dollars [column (b)] over his or her work life. At retirement, this will be worth (in Year 30 dollars) \$72,818 in TIPS [column (d)] plus \$61,447 in S&P500 stock [column (g)] for a total nominal value of \$134,265. It is interesting to note that if the entire contribution was placed in TIPS, instead of being divided between TIPS and S&P500 stocks, the nominal value at retirement would have been \$100,439.

<sup>1</sup> Pennies in this table have been truncated to keep the table easier to read.

<sup>2</sup> Year 2