



## Ruminations on Social Security

The Social Security program, a significant source of retirement income for most people, is complex. Furthermore, it is hard to discern through the political spin exactly what the future holds. I thought it might be helpful to briefly explain 1) how benefits are computed, 2) how the funding works, 3) possible solutions to the coming problems, and 4) what the rates of return are to participants. In the interest of keeping this at reasonable length, I will skip some details and nuances to make the “big picture” clear. All numbers are 2013 figures and, though many changes have occurred, I simplistically assume today’s rules have applied throughout the worker’s life.

**How are Social Security retirement benefits determined?** First, the PIA (Primary Insurance Amount) (which you can think of as the “normal” benefit) is computed using the following process:

- Adjust wages on which Social Security taxes were paid to today’s wage equivalent. Historically, wages have increased faster than prices leading to an even greater benefit than if it were “inflation” adjusted using the CPI (Consumer Price Index).
- Take the highest 35 years of the previously adjusted wages (averaging in zeros if there weren’t 35 years of wages) and divide by 12 to arrive at the AIME (Average Indexed Monthly Earnings). Think of this as the average earned each month in today’s wages.
- The PIA is then determined by taking 90% of the first \$791 of AIME plus 32% of the next \$3,977 plus 15% of the amount over that up to \$9,475. This means that, while Social Security taxes are paid on all income up to \$113,700 at the same fixed percentage, a lower paid worker gets a vastly better return. Annualized, the benefits are:
  - 90% of AIME from \$0 to \$9,492
  - 32% of AIME from \$9,492 to \$57,216
  - 15% of AIME from \$57,216 to \$113,700
- Thus, someone who makes \$9,492 per year (about 26 hours a week at the new federal minimum wage) would pay in about \$1,177 a year in taxes (both employer and employee contributions) and get a benefit of about \$8,543 per year – a benefit just over 7 times the contribution. Conversely, someone who made \$113,700 would pay in \$14,099 per year in taxes for a benefit of \$32,287 – just over 2 times the contribution.

This PIA is adjusted if benefits are taken at other than FRA (Full Retirement Age). The FRA is:

<b>Year of Birth</b>	<b>Full Retirement Age</b>
1937 or earlier	65
1938	65 and 2 months
1939	65 and 4 months
1940	65 and 6 months
1941	65 and 8 months
1942	65 and 10 months
1943-1954	66
1955	66 and 2 months
1956	66 and 4 months
1957	66 and 6 months
1958	66 and 8 months
1959	66 and 10 months
1960 and later	67

For each month (up to 36) prior to FRA that benefits are taken, benefits are permanently reduced by 5/9 of 1%. Prior to that, benefits are reduced by 5/12 of 1%. If benefits are taken after FRA, the increase is dependent on the year of birth as follows:

<u>Year of Birth</u>	<u>Credit Per Year</u>
1917-24	3.0%
1925-26	3.5%
1927-28	4.0%
1929-30	4.5%
1931-32	5.0%
1933-34	5.5%
1935-36	6.0%
1937-38	6.5%
1939-40	7.0%
1941-42	7.5%
1943 and later	8.0%

Thus, if someone born after 1960 retires at 62, he will receive 70% of his “normal” benefit; at 64 he would receive 80%; 100% at age 67; and 124% at age 70.

**How are the funds invested?** Contrary to the spin some politicians have used, there is no “lockbox.” Social Security taxes collected today are largely spent on today’s retirees. And, since a current Congress cannot legally bind a future Congress, there are no guarantees that any funds will be paid in the future. It is true that the current receipts from Social Security taxes exceed the current expenditures (for a few years until more baby boomers retire) and these funds are “invested” in government bonds. I put “invested” in quotes because an accurate analogy would be an individual “investing” by paying down their credit card balances with the money. When it comes time to tap the “investment,” the balances must be run back up to the previous level to get the cash needed.

**How can Social Security be fixed?** Social Security will probably never be permanently fixed because, whenever it is in good shape, Congress cannot resist the temptation to raise benefits thus making people happy today while causing problems for tomorrow. There is no serious doubt that the current system will be a train wreck in the future. The only question is how long we have until it happens. Here are the five main options to “fix” Social Security again (we have been here before):

1. Raise the age at which benefits can be taken (again). This is actually a very good idea from a financial planning perspective if it were taken to an extreme (which the politicians won’t do). One of the difficulties we have in helping people plan their retirement is spending down their assets so they never run out of funds, while living as well as they can. The main difficulty is we don’t know when they will, in the words of Hamlet, “shuffle off this mortal coil.” Dramatically increasing both the age at which Social Security benefits start and the benefit itself, would greatly simplify planning. For example, imagine there was no Social Security benefit until age 80, but then it was \$6,000 per month. That would probably lead to many people spending their savings more aggressively yet with increased peace of mind. In addition, this would encourage saving because folks would (should anyway) realize there is no money for them until much later so they should save for the early years. I have no doubt this won’t happen as Congress would take too much heat over it, and they haven’t shown a propensity toward doing something that is good over something that is popular. I expect they will tweak the ages by only a few years (again).

2. Lower the benefit amount. Generally the proposals are to means-test the benefit, thereby making it even more of a welfare-type system than it is already, or to change the inflation rate used to compute benefits. Changing the inflation computation has the advantage (from the politician's perspective) of being sufficiently complicated that people probably wouldn't notice what was done to their benefits. Means-testing the benefit sounds attractive at first, but would have pernicious effects. Imagine two families the same in every way except one family saved to the maximum in their 401(k) while the other saved nothing and took extravagant vacations each year. If Social Security were eliminated for the "rich," the first family might lose their benefit while the second received the full amount. This might lead many people to live for today rather than saving for the future. It also would lead to other strange (yet rational) behavior. Parents might aggressively gift their savings to their children to impoverish themselves and thus qualify for Social Security benefits.
3. Raise taxes. The main proposal is to have the taxes assessed on *all* wages instead of stopping at \$113,700. Because there are no benefits paid on wages over that level, this would remove much of the pretense of Social Security being a retirement system rather than a type of welfare.
4. Immigration. Because Social Security is a "pay as you go" (i.e. "Ponzi") system, the primary problem is that the ratio of workers to retirees has changed through the years so there are not enough people paying taxes to support those receiving benefits. It is unlikely that families will immediately start having significantly more children to help alleviate the problem, so immigration is one way to increase the number of workers paying taxes.
5. Shorten life expectancies. Rather than taxing cigarettes, they should be subsidized to help fix Social Security by shortening longevity. I am not serious, though it would work. Note that an inherent and unremarked conflict of interest exists when the government provides retirees both the bulk of health care funding and an income for life.

**What rate of return do Social Security participants earn?** As you might imagine, rate of return depends greatly on the level of covered earnings (see above) and how long the participant lives – everyone who dies before starting their benefits has a negative 100% rate of return. The longer you live, the better your rate of return. Since wealthier people live longer (on average of course) this is particularly harmful to the poor. On the other hand, lower wages have a much higher return given the same life expectancy. To analyze this, I made a few simplifying assumptions: I assumed benefits are begun at full retirement age of 67, that the current rules (2010 when this computed) are in existence throughout the worker's life, that wage inflation is equal to CPI inflation (a small tweak, but it lets us simplify everything to be in today's dollars throughout), and that the same real income is earned from either age 22 or 32 until age 67 when benefits commence. I also am ignoring the not insignificant non-retirement benefits such as disability. All of the rates of return and cash flows are "real" (net of inflation).

Because Social Security is designed by politicians rather than actuaries, there are some oddities. *When* contributions are made is not part of the formula. A worker must have "40 quarters" (10 years) of covered wages, but that could be achieved in the 10 years right before retirement. If a worker did that and earned it in the optimal amounts and years, the rates of return could reach 16%, and remember, that is *net* of inflation! With a non-working spouse (who would qualify for another half of the worker's benefit), the real rate of return could exceed 20%. On the following pages are the rates of return realized for a low income worker, a medium income worker, a high income worker, and an "optimized" situation both with and without a non-working spouse.

Low Wage (\$9,492/year or less)							
Age	Cash Flow	Real IRR from 22	Real IRR from 32	Age	Cash Flow	Real IRR from 22	Real IRR from 32
22	(\$1,177)	-100.0%		61	(\$1,177)	-100.0%	-100.0%
23	(\$1,177)	-100.0%		62	(\$1,177)	-100.0%	-100.0%
24	(\$1,177)	-100.0%		63	(\$1,177)	-100.0%	-100.0%
25	(\$1,177)	-100.0%		64	(\$1,177)	-100.0%	-100.0%
26	(\$1,177)	-100.0%		65	(\$1,177)	-100.0%	-100.0%
27	(\$1,177)	-100.0%		66	(\$1,177)	-100.0%	-100.0%
28	(\$1,177)	-100.0%		67	\$8,543	-12.1%	-12.0%
29	(\$1,177)	-100.0%		68	\$8,543	-5.9%	-5.4%
30	(\$1,177)	-100.0%		69	\$8,543	-3.4%	-2.7%
31	(\$1,177)	-100.0%		70	\$8,543	-1.9%	-1.0%
32	(\$1,177)	-100.0%	-100.0%	71	\$8,543	-0.9%	0.2%
33	(\$1,177)	-100.0%	-100.0%	72	\$8,543	-0.1%	1.0%
34	(\$1,177)	-100.0%	-100.0%	73	\$8,543	0.5%	1.7%
35	(\$1,177)	-100.0%	-100.0%	74	\$8,543	0.9%	2.3%
36	(\$1,177)	-100.0%	-100.0%	75	\$8,543	1.3%	2.7%
37	(\$1,177)	-100.0%	-100.0%	76	\$8,543	1.7%	3.1%
38	(\$1,177)	-100.0%	-100.0%	77	\$8,543	2.0%	3.4%
39	(\$1,177)	-100.0%	-100.0%	78	\$8,543	2.2%	3.7%
40	(\$1,177)	-100.0%	-100.0%	79	\$8,543	2.4%	3.9%
41	(\$1,177)	-100.0%	-100.0%	80	\$8,543	2.6%	4.2%
42	(\$1,177)	-100.0%	-100.0%	81	\$8,543	2.8%	4.3%
43	(\$1,177)	-100.0%	-100.0%	82	\$8,543	2.9%	4.5%
44	(\$1,177)	-100.0%	-100.0%	83	\$8,543	3.1%	4.6%
45	(\$1,177)	-100.0%	-100.0%	84	\$8,543	3.2%	4.8%
46	(\$1,177)	-100.0%	-100.0%	85	\$8,543	3.3%	4.9%
47	(\$1,177)	-100.0%	-100.0%	86	\$8,543	3.4%	5.0%
48	(\$1,177)	-100.0%	-100.0%	87	\$8,543	3.5%	5.1%
49	(\$1,177)	-100.0%	-100.0%	88	\$8,543	3.6%	5.2%
50	(\$1,177)	-100.0%	-100.0%	89	\$8,543	3.7%	5.3%
51	(\$1,177)	-100.0%	-100.0%	90	\$8,543	3.8%	5.3%
52	(\$1,177)	-100.0%	-100.0%	91	\$8,543	3.8%	5.4%
53	(\$1,177)	-100.0%	-100.0%	92	\$8,543	3.9%	5.5%
54	(\$1,177)	-100.0%	-100.0%	93	\$8,543	3.9%	5.5%
55	(\$1,177)	-100.0%	-100.0%	94	\$8,543	4.0%	5.6%
56	(\$1,177)	-100.0%	-100.0%	95	\$8,543	4.0%	5.6%
57	(\$1,177)	-100.0%	-100.0%	96	\$8,543	4.1%	5.7%
58	(\$1,177)	-100.0%	-100.0%	97	\$8,543	4.1%	5.7%
59	(\$1,177)	-100.0%	-100.0%	98	\$8,543	4.2%	5.7%
60	(\$1,177)	-100.0%	-100.0%	99	\$8,543	4.2%	5.8%

The real mortality-weighted overall IRR for a low-wage male who begins work at 22 is 2.18%. If he begins work at 32, it is 3.56%.

The real mortality-weighted overall IRR for a low-wage female who begins work at 22 is 2.77%. If she begins work at 32, it is 4.21%.

Medium Wage (\$57,216/year)							
Age	Cash Flow	Real IRR from 22	Real IRR from 32	Age	Cash Flow	Real IRR from 22	Real IRR from 32
22	(\$7,095)	-100.0%		61	(\$7,095)	-100.0%	-100.0%
23	(\$7,095)	-100.0%		62	(\$7,095)	-100.0%	-100.0%
24	(\$7,095)	-100.0%		63	(\$7,095)	-100.0%	-100.0%
25	(\$7,095)	-100.0%		64	(\$7,095)	-100.0%	-100.0%
26	(\$7,095)	-100.0%		65	(\$7,095)	-100.0%	-100.0%
27	(\$7,095)	-100.0%		66	(\$7,095)	-100.0%	-100.0%
28	(\$7,095)	-100.0%		67	\$23,814	-23.0%	-23.0%
29	(\$7,095)	-100.0%		68	\$23,814	-12.2%	-12.1%
30	(\$7,095)	-100.0%		69	\$23,814	-8.2%	-7.9%
31	(\$7,095)	-100.0%		70	\$23,814	-6.0%	-5.6%
32	(\$7,095)	-100.0%	-100.0%	71	\$23,814	-4.5%	-4.0%
33	(\$7,095)	-100.0%	-100.0%	72	\$23,814	-3.5%	-2.9%
34	(\$7,095)	-100.0%	-100.0%	73	\$23,814	-2.7%	-2.0%
35	(\$7,095)	-100.0%	-100.0%	74	\$23,814	-2.1%	-1.3%
36	(\$7,095)	-100.0%	-100.0%	75	\$23,814	-1.5%	-0.7%
37	(\$7,095)	-100.0%	-100.0%	76	\$23,814	-1.1%	-0.2%
38	(\$7,095)	-100.0%	-100.0%	77	\$23,814	-0.7%	0.2%
39	(\$7,095)	-100.0%	-100.0%	78	\$23,814	-0.4%	0.6%
40	(\$7,095)	-100.0%	-100.0%	79	\$23,814	-0.1%	0.9%
41	(\$7,095)	-100.0%	-100.0%	80	\$23,814	0.1%	1.2%
42	(\$7,095)	-100.0%	-100.0%	81	\$23,814	0.4%	1.4%
43	(\$7,095)	-100.0%	-100.0%	82	\$23,814	0.6%	1.7%
44	(\$7,095)	-100.0%	-100.0%	83	\$23,814	0.8%	1.8%
45	(\$7,095)	-100.0%	-100.0%	84	\$23,814	0.9%	2.0%
46	(\$7,095)	-100.0%	-100.0%	85	\$23,814	1.1%	2.2%
47	(\$7,095)	-100.0%	-100.0%	86	\$23,814	1.2%	2.3%
48	(\$7,095)	-100.0%	-100.0%	87	\$23,814	1.3%	2.5%
49	(\$7,095)	-100.0%	-100.0%	88	\$23,814	1.4%	2.6%
50	(\$7,095)	-100.0%	-100.0%	89	\$23,814	1.6%	2.7%
51	(\$7,095)	-100.0%	-100.0%	90	\$23,814	1.7%	2.8%
52	(\$7,095)	-100.0%	-100.0%	91	\$23,814	1.7%	2.9%
53	(\$7,095)	-100.0%	-100.0%	92	\$23,814	1.8%	3.0%
54	(\$7,095)	-100.0%	-100.0%	93	\$23,814	1.9%	3.1%
55	(\$7,095)	-100.0%	-100.0%	94	\$23,814	2.0%	3.1%
56	(\$7,095)	-100.0%	-100.0%	95	\$23,814	2.1%	3.2%
57	(\$7,095)	-100.0%	-100.0%	96	\$23,814	2.1%	3.3%
58	(\$7,095)	-100.0%	-100.0%	97	\$23,814	2.2%	3.3%
59	(\$7,095)	-100.0%	-100.0%	98	\$23,814	2.2%	3.4%
60	(\$7,095)	-100.0%	-100.0%	99	\$23,814	2.3%	3.4%

The real mortality-weighted overall IRR for a medium-wage male who begins work at 22 is -0.09%. If he begins work at 32, it is 0.85%.

The real mortality-weighted overall IRR for a medium-wage female who begins work at 22 is 0.58%. If she begins work at 32, it is 1.58%.

High Wage (\$113,700/year or more)							
Age	Cash Flow	Real IRR from 22	Real IRR from 32	Age	Cash Flow	Real IRR from 22	Real IRR from 32
22	(\$14,099)	-100.0%		61	(\$14,099)	-100.0%	-100.0%
23	(\$14,099)	-100.0%		62	(\$14,099)	-100.0%	-100.0%
24	(\$14,099)	-100.0%		63	(\$14,099)	-100.0%	-100.0%
25	(\$14,099)	-100.0%		64	(\$14,099)	-100.0%	-100.0%
26	(\$14,099)	-100.0%		65	(\$14,099)	-100.0%	-100.0%
27	(\$14,099)	-100.0%		66	(\$14,099)	-100.0%	-100.0%
28	(\$14,099)	-100.0%		67	\$32,287	-30.4%	-30.4%
29	(\$14,099)	-100.0%		68	\$32,287	-16.6%	-16.5%
30	(\$14,099)	-100.0%		69	\$32,287	-11.3%	-11.2%
31	(\$14,099)	-100.0%		70	\$32,287	-8.5%	-8.3%
32	(\$14,099)	-100.0%	-100.0%	71	\$32,287	-6.7%	-6.4%
33	(\$14,099)	-100.0%	-100.0%	72	\$32,287	-5.5%	-5.1%
34	(\$14,099)	-100.0%	-100.0%	73	\$32,287	-4.5%	-4.0%
35	(\$14,099)	-100.0%	-100.0%	74	\$32,287	-3.8%	-3.2%
36	(\$14,099)	-100.0%	-100.0%	75	\$32,287	-3.1%	-2.5%
37	(\$14,099)	-100.0%	-100.0%	76	\$32,287	-2.6%	-1.9%
38	(\$14,099)	-100.0%	-100.0%	77	\$32,287	-2.2%	-1.5%
39	(\$14,099)	-100.0%	-100.0%	78	\$32,287	-1.8%	-1.0%
40	(\$14,099)	-100.0%	-100.0%	79	\$32,287	-1.5%	-0.7%
41	(\$14,099)	-100.0%	-100.0%	80	\$32,287	-1.2%	-0.4%
42	(\$14,099)	-100.0%	-100.0%	81	\$32,287	-0.9%	-0.1%
43	(\$14,099)	-100.0%	-100.0%	82	\$32,287	-0.7%	0.2%
44	(\$14,099)	-100.0%	-100.0%	83	\$32,287	-0.5%	0.4%
45	(\$14,099)	-100.0%	-100.0%	84	\$32,287	-0.3%	0.6%
46	(\$14,099)	-100.0%	-100.0%	85	\$32,287	-0.1%	0.8%
47	(\$14,099)	-100.0%	-100.0%	86	\$32,287	0.1%	1.0%
48	(\$14,099)	-100.0%	-100.0%	87	\$32,287	0.2%	1.1%
49	(\$14,099)	-100.0%	-100.0%	88	\$32,287	0.3%	1.3%
50	(\$14,099)	-100.0%	-100.0%	89	\$32,287	0.5%	1.4%
51	(\$14,099)	-100.0%	-100.0%	90	\$32,287	0.6%	1.5%
52	(\$14,099)	-100.0%	-100.0%	91	\$32,287	0.7%	1.6%
53	(\$14,099)	-100.0%	-100.0%	92	\$32,287	0.8%	1.7%
54	(\$14,099)	-100.0%	-100.0%	93	\$32,287	0.9%	1.8%
55	(\$14,099)	-100.0%	-100.0%	94	\$32,287	1.0%	1.9%
56	(\$14,099)	-100.0%	-100.0%	95	\$32,287	1.0%	2.0%
57	(\$14,099)	-100.0%	-100.0%	96	\$32,287	1.1%	2.1%
58	(\$14,099)	-100.0%	-100.0%	97	\$32,287	1.2%	2.2%
59	(\$14,099)	-100.0%	-100.0%	98	\$32,287	1.3%	2.2%
60	(\$14,099)	-100.0%	-100.0%	99	\$32,287	1.3%	2.3%

The real mortality-weighted overall IRR for a high-wage male who begins work at 22 is -1.27%. If he begins work at 32, it is -0.52%.

The real mortality-weighted overall IRR for a high-wage female who begins work at 22 is -0.54%. If she begins work at 32, it is 0.27%.

Age	Optimized		w/ Non-Working Spouse	
	Cash Flow	Real IRR	Cash Flow	Real IRR
57	(\$575)	-100.0%	(\$575)	-100.0%
58	(\$575)	-100.0%	(\$575)	-100.0%
59	(\$575)	-100.0%	(\$575)	-100.0%
60	(\$575)	-100.0%	(\$575)	-100.0%
61	(\$575)	-100.0%	(\$575)	-100.0%
62	(\$575)	-100.0%	(\$575)	-100.0%
63	(\$575)	-100.0%	(\$575)	-100.0%
64	(\$6,550)	-100.0%	(\$6,550)	-100.0%
65	(\$14,099)	-100.0%	(\$14,099)	-100.0%
66	(\$14,099)	-100.0%	(\$14,099)	-100.0%
67	\$8,543	-59.3%	\$12,814	-46.1%
68	\$8,543	-28.0%	\$12,814	-14.6%
69	\$8,543	-12.2%	\$12,814	-0.3%
70	\$8,543	-3.3%	\$12,814	7.4%
71	\$8,543	2.3%	\$12,814	12.0%
72	\$8,543	5.9%	\$12,814	14.9%
73	\$8,543	8.5%	\$12,814	16.9%
74	\$8,543	10.3%	\$12,814	18.4%
75	\$8,543	11.7%	\$12,814	19.4%
76	\$8,543	12.7%	\$12,814	20.2%
77	\$8,543	13.5%	\$12,814	20.7%
78	\$8,543	14.2%	\$12,814	21.2%
79	\$8,543	14.7%	\$12,814	21.5%
80	\$8,543	15.1%	\$12,814	21.8%
81	\$8,543	15.4%	\$12,814	22.0%
82	\$8,543	15.7%	\$12,814	22.1%
83	\$8,543	15.9%	\$12,814	22.3%
84	\$8,543	16.1%	\$12,814	22.4%
85	\$8,543	16.2%	\$12,814	22.4%
86	\$8,543	16.3%	\$12,814	22.5%
87	\$8,543	16.4%	\$12,814	22.6%
88	\$8,543	16.5%	\$12,814	22.6%
89	\$8,543	16.6%	\$12,814	22.6%
90	\$8,543	16.6%	\$12,814	22.7%
91	\$8,543	16.7%	\$12,814	22.7%
92	\$8,543	16.7%	\$12,814	22.7%
93	\$8,543	16.8%	\$12,814	22.7%
94	\$8,543	16.8%	\$12,814	22.7%
95	\$8,543	16.8%	\$12,814	22.7%
96	\$8,543	16.8%	\$12,814	22.7%
97	\$8,543	16.9%	\$12,814	22.7%
98	\$8,543	16.9%	\$12,814	22.8%
99	\$8,543	16.9%	\$12,814	22.8%

The real mortality-weighted overall IRR for this optimized situation is 13.41% for men, 14.51% for women, and 20.14% for married with a non-working spouse.

**Notes:**

*The analysis in this report has been prepared by David E. Hultstrom, MBA, CFP<sup>®</sup>, CFA<sup>®</sup>.*

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