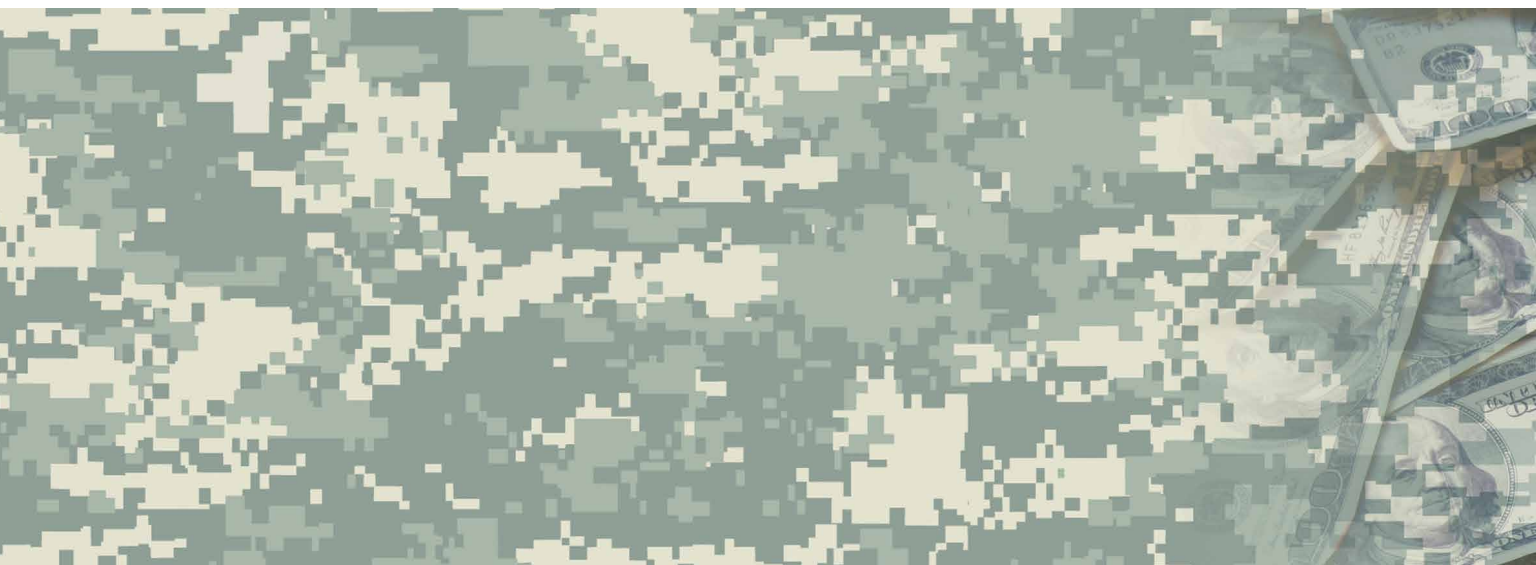


A Financial Comparison of the Blended (New) Retirement System and the Current (Soon to Be Old) Defined Benefit System

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The 2016 National Defense Authorization Act (NDAA) included a number of provisions, but none is more far-reaching or fraught with as much confusion as the new military retirement system. Prior to the 2016 NDAA, military retirement was not vested until the twenty-year mark. Once earned, annual military retirement was computed using the simple formula *2.5 percent x number of years of service x annual base pay*. This produced a pension equal to 50 percent of the retiree's preretirement base pay at twenty years. The annual salary used in the formula was the average of the

retiree's highest thirty-six-month period of service, which was usually the final three years of service.¹

The 2016 NDAA reduced the retirement formula from 2.5 percent per year of service to 2 percent per year, which lowers the defined benefit from 50 percent of the retiree's preretirement income to 40 percent at the twenty-year mark. However, servicemembers can supplement their pensions by contributing to the Thrift Savings Plan (TSP). While it was always possible to save money on the side for retirement, the new system provides a matching feature. After two years of service, the

government matches the servicemember's contribution of up to 5 percent of their salary, making the servicemember's 5 percent contribution a 10 percent deposit in his or her retirement account.²

Analysis

To evaluate these two retirement systems, it is first necessary to determine the income stream (or cash flows) each would produce. For officers to retire with twenty years of service, they must at a minimum attain the grade of O-4 (the rank of major in the Army, Air Force, and Marine Corps, or a lieutenant commander in the Navy or Coast Guard), unless they had prior enlisted service. They become eligible for promotion to O-5 (a lieutenant colonel in the Army, Air Force, and Marines, or a commander in the Navy or Coast Guard) at year sixteen, so they may retire at twenty years as an O-5.

This analysis can also be applied to enlisted servicemembers, as they face the same retirement

be eligible for an immediate annuity of 50 percent of this salary, or \$45,005 and \$49,873, respectively.

So, once a servicemember has completed twenty years of service and has vested the retirement benefits, what is the present value of this series of pension payments? In other words, what dollar amount would be required in a retirement fund at year twenty to pay out an equivalent series of payments? In order to determine the value of these pension payments (that are often called annuities in finance), two variables must be determined. First, how many payments will be made? Since this is a lifetime pension, answering the question requires an estimate of mortality. Government estimates of life expectancy currently average 79.26 years, with female life expectancy exceeding that of males by four years (eighty-two years vs. seventy-eight years).⁵ Using the average is acceptable for Social Security and Medicare projections, since they are dealing with a large population pool. However, an individual's life expectancy may be above average, which



(Graphic by Arin Burgess, *Military Review*)

decision as their officer counterparts. However, their promotions are much less regular, making it more difficult to predict base pay at various years of service. For instance, a Navy petty officer can retire with twenty years of service at a rank anywhere from E-6 to E-9.³ Because of this high degree in enlisted rank variability eligible for a twenty-year retirement, this study focuses only on officers.

The 2016 military pay chart shows an annual salary for an O-4 over twenty years \$90,320.40, and \$100,660.80 for an O-5.⁴ Under the old system, these officers would

would mean exhausting his or her retirement fund if the payout were based on the average life span. To ensure that this analysis does not underestimate life expectancy, a life expectancy of ninety-seven years will be used. This implies that if an officer were commissioned at age twenty-two, he or she would have twenty years of service at age forty-two, and then would receive the retirement payment for the next fifty-five years.

The second variable that needs to be assumed in the value calculation is a discount rate, or rate of return, that is associated with the cash flows. The rate of return varies

Table 1. New System Maximum at O-4

Year	Monthly salary	Annual salary	5% retirement contribution with match	I = 6% retirement balance	I = 7.5% retirement balance	I = 9% retirement balance
1	\$ 2,972	\$ 35,669	\$ 2,081	\$ 2,081	\$ 2,081	\$ 2,081
2	\$ 2,972	\$ 35,669	\$ 2,140	\$ 4,346	\$ 4,377	\$ 4,408
3	\$ 3,900	\$ 46,804	\$ 4,680	\$ 9,287	\$ 9,385	\$ 9,485
4	\$ 4,492	\$ 53,903	\$ 5,390	\$ 15,234	\$ 15,480	\$ 15,729
5	\$ 5,287	\$ 63,446	\$ 6,345	\$ 22,493	\$ 22,985	\$ 23,489
6	\$ 5,287	\$ 63,446	\$ 6,345	\$ 30,187	\$ 31,054	\$ 31,948
7	\$ 5,541	\$ 66,488	\$ 6,649	\$ 38,647	\$ 40,032	\$ 41,472
8	\$ 5,541	\$ 66,488	\$ 6,649	\$ 47,615	\$ 49,683	\$ 51,854
9	\$ 5,819	\$ 69,826	\$ 6,983	\$ 57,454	\$ 60,392	\$ 63,503
10	\$ 5,819	\$ 69,826	\$ 6,983	\$ 67,884	\$ 71,904	\$ 76,201
11	\$ 6,746	\$ 80,950	\$ 8,095	\$ 80,052	\$ 85,391	\$ 91,154
12	\$ 6,746	\$ 80,950	\$ 8,095	\$ 92,950	\$ 99,891	\$ 107,453
13	\$ 7,082	\$ 84,978	\$ 8,498	\$ 107,025	\$ 115,880	\$ 125,621
14	\$ 7,082	\$ 84,978	\$ 8,498	\$ 121,944	\$ 133,069	\$ 145,425
15	\$ 7,315	\$ 87,779	\$ 8,778	\$ 138,039	\$ 151,827	\$ 167,291
16	\$ 7,315	\$ 87,779	\$ 8,778	\$ 155,099	\$ 171,992	\$ 191,125
17	\$ 7,449	\$ 89,392	\$ 8,939	\$ 173,344	\$ 193,831	\$ 217,265
18	\$ 7,449	\$ 89,392	\$ 8,939	\$ 192,684	\$ 217,307	\$ 245,758
19	\$ 7,527	\$ 90,320	\$ 9,032	\$ 213,277	\$ 242,637	\$ 276,909
20	\$ 7,527	\$ 90,320	\$ 9,032	\$ 235,106	\$ 269,867	\$ 310,862
Average top three years \$ 90,011			Σ = \$140,927			
x 40%			Present value of			
\$36, 004.32			40% payment =	\$ 670,885	\$ 670,885	\$ 670,885
			Total value =	\$ 905,991	\$ 940,752	\$ 981,748

(Graphic by John B. White)

inversely with risk. Since the pension payments are obligations of the federal government, and are essentially free of default risk, it is reasonable to use the market's risk-free rate of interest, the government's rate on Treasury bills (T-bills) as the appropriate discount rate. The government's T-bill rate has averaged approximately 5 percent since 1928.⁶ Using a 5 percent discount rate, it would take a fund of \$838,607 to fund fifty-five annual payments of \$45,005 (O-4) and \$937,886 to fund fifty-five annual payments of \$49,873 (O-5). Under the new system, the 40 percent payments after twenty years of service are \$36,004 (O-4) and \$39,898 (O-5). At 5 percent, the fund necessary to make these payments for fifty-five years would be \$670,885 and \$743,440, respectively. In both cases, the value of the defined benefit portion of the new system is only 80 percent of the defined benefit portion of the old system. This is a reflection of the new system's payment of 40 percent of the base pay, while the old system pays 50 percent of the

base. These differences represent a significant amount of money in retirement.

However, the new system also comes with a defined contribution feature wherein the government matches a servicemember's savings of up to 5 percent of his or her salary. This matching feature does not begin until after two years of service. (After sixty days of service, under the new plan, the government will contribute 1 percent of a servicemember's salary.⁷) How much would a servicemember accumulate if he or she opted for the new plan and took maximum advantage of government matching over a twenty-year career? The answer depends on the rate of return earned on savings. The TSP has several funds that are options for retirement savings. These funds reflect government bonds (G fund), a fixed-return fund (F fund), large-firm stocks (C fund), smaller-firm stocks (S fund), and international stocks (I fund). The G, F, and C funds have been in existence for nearly thirty years, while the S and I funds

Table 2. New System Maximum at O-5

Year	Monthly salary	Annual salary	5% retirement contribution with match	I = 6% retirement balance	I = 7.5% retirement balance	I = 9% retirement balance
1	\$ 2,972	\$ 35,669	\$ 2,081	\$ 2,081	\$ 2,081	\$ 2,081
2	\$ 2,972	\$ 35,669	\$ 2,140	\$ 4,346	\$ 4,377	\$ 4,408
3	\$ 3,900	\$ 46,804	\$ 4,680	\$ 9,287	\$ 9,385	\$ 9,485
4	\$ 4,492	\$ 53,903	\$ 5,390	\$ 15,234	\$ 15,480	\$ 15,729
5	\$ 5,287	\$ 63,446	\$ 6,345	\$ 22,493	\$ 22,985	\$ 23,489
6	\$ 5,287	\$ 63,446	\$ 6,345	\$ 30,187	\$ 31,054	\$ 31,948
7	\$ 5,541	\$ 66,488	\$ 6,649	\$ 38,647	\$ 40,032	\$ 41,472
8	\$ 5,541	\$ 66,488	\$ 6,649	\$ 47,615	\$ 49,683	\$ 51,854
9	\$ 5,819	\$ 69,826	\$ 6,983	\$ 57,454	\$ 60,392	\$ 63,503
10	\$ 5,819	\$ 69,826	\$ 6,983	\$ 67,884	\$ 71,904	\$ 76,201
11	\$ 6,746	\$ 80,950	\$ 8,095	\$ 80,052	\$ 85,391	\$ 91,154
12	\$ 6,746	\$ 80,950	\$ 8,095	\$ 92,950	\$ 99,891	\$ 107,453
13	\$ 7,082	\$ 84,978	\$ 8,498	\$ 107,025	\$ 115,880	\$ 125,621
14	\$ 7,082	\$ 84,978	\$ 8,498	\$ 121,944	\$ 133,069	\$ 145,425
15	\$ 7,315	\$ 87,779	\$ 8,778	\$ 138,039	\$ 151,827	\$ 167,291
16	\$ 7,315	\$ 87,779	\$ 8,778	\$ 155,099	\$ 171,992	\$ 191,125
17	\$ 8,159	\$ 97,902	\$ 9,790	\$174,195	\$ 194,682	\$ 218,116
18	\$ 8,159	\$ 97,902	\$ 9,790	\$194,437	\$ 219,073	\$ 247,537
19	\$ 8,389	\$ 100,667	\$ 10,067	\$216,170	\$ 245,570	\$ 279,882
20	\$ 8,389	\$ 100,667	\$ 10,067	\$239,207	\$ 274,055	\$ 315,138
Average top three years \$ 99,745			Σ = \$144,699			
	x 40%	\$39,898	Present value of 40% payment =	\$ 743,440	\$ 743,440	\$ 743,440
			Total value =	\$ 982,647	\$ 1,017,494	\$ 1,058,578

(Graphic by John B. White)

only date from 2001. Since most retirement funds are a combination of stocks and bonds, this study looks at returns from the G and C funds. Since inception, these funds have earned an average annual return of 5.43 percent and 10.43 percent, respectively.⁸

This study examines three investment scenarios: one with moderate risk, one with lower risk, and one with higher risk. The annual return assumed in the moderate strategy is 7.5 percent. This would imply a mix of 58.6 percent stocks (C fund) and 41.4 percent bonds (G fund). The low-risk return is assumed to be 6 percent, which corresponds to 88.6 percent bonds and 11.4 percent stocks. Finally, the more aggressive strategy assumes an annual return of 9 percent, which implies 28.6 percent in bonds and 71.4 percent in stocks. A common rule of thumb for determining the appropriate mix of stocks and bonds in a retirement portfolio is to set the percentage of stocks equal to 110 minus the investor's age.⁹ Thus, a twenty-year old would have 90 percent stock and 10

percent bonds, a thirty-year old would have 80 percent stocks and 20 percent bonds, etc. Using this rule as a guide makes a portfolio higher risk when a servicemember is young, but decreases the risk exposure as he or she ages, which is exactly how most financial advisors guide their clients. Using this rule, a young officer would have a portfolio with 88 percent stock at age twenty-two (the assumed age at commissioning), and it would decline to 68 percent stock at age forty-two, when he or she becomes eligible for the twenty-year retirement pension payments. Over that twenty-year period, the officer's portfolio would average 78 percent stock and 22 percent bonds. Thus, the general rule of thumb for the mix of stocks and bonds is more aggressive than our aggressive strategy that produces a 9 percent return. If there is a bias in the numerical analysis of this study, it is that the assumptions on the portfolio's rate of return are too low.

For an officer who retired as an O-4 and opted for the new retirement system, used the maximum matching

Table 3. Old System Maximum at O-4

Year	Monthly salary	Annual salary	5% retirement contribution no match	I = 6% retirement balance	I = 7.5% retirement balance	I = 9% retirement balance
1	\$ 2,972	\$ 35,669	\$ 1,783	\$ 1,783	\$ 1,783	\$ 1,783
2	\$ 2,972	\$ 35,669	\$ 1,783	\$ 3,674	\$ 3,701	\$ 3,727
3	\$ 3,900	\$ 46,804	\$ 2,340	\$ 6,263	\$ 6,318	\$ 6,374
4	\$ 4,492	\$ 53,903	\$ 2,695	\$ 9,393	\$ 9,487	\$ 9,582
5	\$ 5,287	\$ 63,446	\$ 3,172	\$ 13,229	\$ 13,371	\$ 13,514
6	\$ 5,287	\$ 63,446	\$ 3,172	\$ 17,346	\$ 17,546	\$ 17,747
7	\$ 5,541	\$ 66,488	\$ 3,324	\$ 21,924	\$ 22,187	\$ 22,450
8	\$ 5,541	\$ 66,488	\$ 3,324	\$ 26,842	\$ 27,175	\$ 27,508
9	\$ 5,819	\$ 69,826	\$ 3,491	\$ 32,297	\$ 32,705	\$ 33,112
10	\$ 5,819	\$ 69,826	\$ 3,491	\$ 38,158	\$ 38,649	\$ 39,139
11	\$ 6,746	\$ 80,950	\$ 4,047	\$ 45,015	\$ 45,595	\$ 46,175
12	\$ 6,746	\$ 80,950	\$ 4,047	\$ 52,378	\$ 53,062	\$ 53,746
13	\$ 7,082	\$ 84,978	\$ 4,249	\$ 60,495	\$ 61,291	\$ 62,087
14	\$ 7,082	\$ 84,978	\$ 4,249	\$ 69,217	\$ 70,136	\$ 71,056
15	\$ 7,315	\$ 87,779	\$ 4,389	\$ 78,733	\$ 79,785	\$ 80,838
16	\$ 7,315	\$ 87,779	\$ 4,389	\$ 88,962	\$ 90,158	\$ 91,355
17	\$ 7,449	\$ 89,392	\$ 4,470	\$ 100,037	\$ 101,390	\$ 102,742
18	\$ 7,449	\$ 89,392	\$ 4,470	\$ 111,943	\$ 113,464	\$ 114,984
19	\$ 7,527	\$ 90,320	\$ 4,516	\$ 124,787	\$ 126,489	\$ 128,191
20	\$ 7,527	\$ 90,320	\$ 4,516	\$ 138,595	\$ 140,492	\$ 142,389
Average top three years \$ 90,011			Σ = \$71,920			
x 50%			Present value of			
\$45,005			50% payment =			
				\$ 838,607	\$ 838,607	\$ 838,607
				\$ 977,202	\$ 979,099	\$ 980,996
				\$ 71,210	\$ 38,346	(752)
				(old-new)		

(Graphic by John B. White)

possible, and earned 7.5 percent over a twenty-year career; he or she would accumulate a retirement fund of \$269,867. (This analysis assumes the individual is promoted at his or her first opportunity through O-4. These promotions occur in years two, four, and ten. Retiring as an O-4 assumes the individual was unsuccessful in his or her promotion to O-5 in year sixteen.) A 6 percent return over the same period would have produced \$235,106, while a 9 percent return would yield \$310,862 (see table 1 on page 112). Even the lowest return produces a retirement fund that exceeds the difference between the values of the 50 percent pension and the 40 percent pension with the match. Thus, the new pension utilizing the government-matching fund would produce a higher retirement benefit than the old 50 percent pension.

Likewise, an officer that retired under the new system as an O-5 (promoted in years two, four, ten, and sixteen),

used the maximum matching possible, and earned 7.5 percent over a twenty-year career, would accumulate a retirement fund of \$274,055. A 6 percent return on the officer's TSP investments would yield \$239,207, while a 9 percent return would amass \$315,138 over the twenty-year career (see table 2 on page 113).

Under the new pension, pre-tax salary is reduced by one's contribution to his or her TSP. It was always possible to contribute to the TSP under the old system, but the contribution was not matched. To make the "old versus new" comparison most accurate, it is necessary to calculate what a 5 percent unmatched TSP contribution would generate for someone under the old system. Assuming a return of 7.5 percent, an O-4 would accumulate \$140,492; at a 6 percent return, that amount would decline to \$138,595, while a 9 percent return would yield \$142,389 (see table 3). Similarly, an

Table 4. Old System Maximum at O-5

Year	Monthly salary	Annual salary	5% retirement contribution no match	I = 6% retirement balance	I = 7.5% retirement balance	I = 9% retirement balance
1	\$ 2,972	\$ 35,669	\$ 1,783	\$ 1,783	\$ 1,783	\$ 1,783
2	\$ 2,972	\$ 35,669	\$ 1,783	\$ 3,674	\$ 3,701	\$ 3,727
3	\$ 3,900	\$ 46,804	\$ 2,340	\$ 6,263	\$ 6,318	\$ 6,374
4	\$ 4,492	\$ 53,903	\$ 2,695	\$ 9,393	\$ 9,487	\$ 9,582
5	\$ 5,287	\$ 63,446	\$ 3,172	\$ 13,229	\$ 13,371	\$ 13,514
6	\$ 5,287	\$ 63,446	\$ 3,172	\$ 17,346	\$ 17,546	\$ 17,747
7	\$ 5,541	\$ 66,488	\$ 3,324	\$ 21,924	\$ 22,187	\$ 22,450
8	\$ 5,541	\$ 66,488	\$ 3,324	\$ 26,842	\$ 27,175	\$ 27,508
9	\$ 5,819	\$ 69,826	\$ 3,491	\$ 32,297	\$ 32,705	\$ 33,112
10	\$ 5,819	\$ 69,826	\$ 3,491	\$ 38,158	\$ 38,649	\$ 39,139
11	\$ 6,746	\$ 80,950	\$ 4,047	\$ 45,015	\$ 45,595	\$ 46,175
12	\$ 6,746	\$ 80,950	\$ 4,047	\$ 52,378	\$ 53,062	\$ 53,746
13	\$ 7,082	\$ 84,978	\$ 4,249	\$ 60,495	\$ 61,291	\$ 62,087
14	\$ 7,082	\$ 84,978	\$ 4,249	\$ 69,217	\$ 70,136	\$ 71,056
15	\$ 7,315	\$ 87,779	\$ 4,389	\$ 78,733	\$ 79,785	\$ 80,838
16	\$ 7,315	\$ 87,779	\$ 4,389	\$ 88,962	\$ 90,158	\$ 91,355
17	\$ 8,159	\$ 97,902	\$ 4,895	\$ 100,463	\$ 101,815	\$ 103,168
18	\$ 8,159	\$ 97,902	\$ 4,895	\$ 112,819	\$ 114,347	\$ 115,874
19	\$ 8,389	\$ 100,667	\$ 5,033	\$ 126,241	\$ 127,956	\$ 129,671
20	\$ 8,389	\$ 100,667	\$ 5,033	\$ 140,667	\$ 142,586	\$ 144,505
Average top three years \$ 99,745			Σ = \$73,806			
	x 50%	Present value of				
	\$49,873	50% payment =		\$ 937,886	\$ 937,886	\$ 937,886
		Total value =		\$ 1,078,553	\$ 1,080,472	\$ 1,082,391
		Difference =		\$ 95,906	\$ 62,978	\$ 23,813
		(old-new)				

(Graphic by John B. White)

O-5 would accumulate \$144,505 at 7.5 percent, and \$142,586 and \$140,667, respectively, at 6 percent and 9 percent (see table 4).

For someone who retired under the new system as an O-4, the present value of his or her pension payments at retirement (40 percent of base pay) is \$670,885, to which he or she could add from \$235,106 (6 percent return) up to \$310,862 (9 percent return), giving him or her a retirement valued from \$905,991 up to \$981,748 (see table 1 on page 112). The old system (50 percent of base pay) yields a pension retirement valued at \$838,607, plus an additional \$138,595 (at 6 percent) up to \$162,389 (at 9 percent). This yields a total retirement value range of \$977,202 to \$980,996 (table 3). While the old system produces a higher total value at retirement for the low and moderate risk investor, the new system provides a higher valued retirement portfolio at the 9 percent return.

For O-5 retirees, the present value of their 40 percent pension is \$743,440, which can be augmented by their TSP account. This account would range from \$239,207 at a 6 percent return to \$315,138 at 9 percent. This yields a total value after a twenty-year career of \$982,647 up to \$1,058,578 (see table 2 on page 113). The old system (50 percent of base pay) is valued at \$937,886. Assuming someone under the old system deposited 5 percent of his or her base pay into the TSP, he or she would have an additional \$140,667 (at 6 percent) up to an additional \$144,505 (at a 9 percent return). That produces a total value under the old system ranging from \$1,078,552 to \$1,082,391 for an O-5 retiree (table 4). The old system values exceed those of the new system in each case. However, the difference of \$95,906 at a 6 percent annual return rate decreases to \$23,813 as the annual return rate rises to 9 percent.

Table 5. Retirement O-4

Commission year	Years to retire	New system			Old system		
		6%	7.5%	9%	6%	7.5%	9%
2016	20	\$ 235,106	\$ 269,867	\$ 210,862	\$ 138,595	\$ 140,492	\$ 142,389
2015	19	\$ 228,811	\$ 261,645	\$ 300,164	\$ 131,646	\$ 133,445	\$ 135,244
2014	18	\$ 222,702	\$ 253,779	\$ 290,069	\$ 125,182	\$ 126,889	\$ 128,597
2013	17	\$ 210,099	\$ 237,775	\$ 269,814	\$ 117,291	\$ 118,887	\$ 120,483
2012	16	\$ 196,405	\$ 220,629	\$ 248,413	\$ 108,838	\$ 110,315	\$ 111,791
2011	15	\$ 181,200	\$ 201,856	\$ 225,303	\$ 99,583	\$ 100,928	\$ 102,273
2010	14	\$ 166,856	\$ 184,393	\$ 204,101	\$ 90,973	\$ 92,197	\$ 93,420
2009	13	\$ 156,674	\$ 167,369	\$ 183,717	\$ 82,580	\$ 83,685	\$ 84,789
2008	12	\$ 139,295	\$ 151,533	\$ 165,016	\$ 74,772	\$ 75,767	\$ 76,761
2007	11	\$ 126,040	\$ 136,063	\$ 146,998	\$ 67,145	\$ 68,031	\$ 68,918
2006	10	\$ 113,536	\$ 121,671	\$ 130,468	\$ 60,050	\$ 60,836	\$ 61,622

(Graphic by John B. White)

Table 6. Retirement O-5

Commission year	Years to retire	New system			Old system		
		6%	7.5%	9%	6%	7.5%	9%
2016	20	\$ 239,207	\$274,055	\$315,138	\$140,667	\$142,586	\$144,505
2015	19	\$ 232,912	\$265,833	\$304,440	\$133,718	\$135,539	\$137,360
2014	18	\$ 226,803	\$257,966	\$294,345	\$127,254	\$128,983	\$130,713
2013	17	\$ 214,200	\$241,962	\$274,090	\$119,363	\$120,891	\$122,599
2012	16	\$ 200,507	\$224,817	\$252,689	\$110,910	\$112,408	\$113,907
2011	15	\$ 185,301	\$206,044	\$229,579	\$101,655	\$103,022	\$104,389
2010	14	\$ 170,957	\$188,581	\$208,377	\$ 93,045	\$ 94,290	\$ 95,536
2009	13	\$ 156,775	\$171,557	\$187,993	\$ 84,652	\$ 88,778	\$ 86,905
2008	12	\$ 143,396	\$155,721	\$169,292	\$ 76,844	\$ 77,860	\$ 78,877
2007	11	\$ 130,142	\$140,250	\$151,274	\$ 69,217	\$ 70,125	\$ 71,033
2006	10	\$ 117,637	\$125,859	\$134,743	\$ 62,122	\$ 62,929	\$ 63,737

(Graphic by John B. White)

Implications

The preceding analysis was done from the perspective of having successfully completed a twenty-year career. However, completion of twenty years in the service is not guaranteed. Under the current system, less than 20 percent of all servicemembers leave the service with retirement benefits. That number is considerably higher for officers. While it varies by branch of service, between 30 percent and 40 percent of the officer corps earn retirement benefits. What is surprising is the number who pass the ten-year point (when they become eligible to remain for twenty years) and leave *before* they reach twenty years of service. Roughly one in five who complete ten years of service do not make it to twenty years.¹⁰ While the service can force an officer out prior to promotion to O-4, one is left to assume that those who leave beyond the ten-year point do so on their own. And, in doing so, they abandon an incredibly valuable retirement that they are halfway or more to earning.

Therefore, before one can fully endorse one plan over the other, there is one final value of the new system that needs to be considered—the portability of the TSP portion of the retirement. The portability feature is most valuable to those who do not complete twenty years and vest the defined benefit portion of the retirement. The portability value is the difference between the amount in a TSP under the new system and the value of the TSP under the old system. For example, at the five-year mark and with a 7.5 percent return, the new system 10 percent TSP account exceeds the old 5 percent TSP account by \$9,614 (\$22,985–\$13,371). A 6 percent return yields a difference of \$9,264, while a 9 percent return generates a difference of \$9,975 for the same five-year period. This difference increases with service time. At ten years, the difference ranges from \$29,726 (6 percent return) to \$37,062 (9 percent return). At fifteen years, these differences range from \$59,306

to \$86,453, depending on a 6 percent or 9 percent annual return.

The old system total values at twenty years exceeded those of the new system from \$752 to \$95,906, depending on rank and rates of return, which yields an average difference of \$48,749. Knowing that the old system would exceed the value of the new system in twenty years by an average of \$48,749, what is the value of that difference today when a servicemember must decide *today* whether to opt into the new or remain in the old system? What is the present value today of \$48,749 twenty years from now?

Again, it depends on the discount rate, which reflects the risk of not being able to serve twenty years. While approximately 35 percent of commissioned officers complete twenty years of service, it is not accurate to say they have a one-in-three chance of earning retirement. Many officers leave the service after repaying their initial obligation. It is perhaps more accurate to look at the attrition between the ten-year mark and the twenty-year mark, since these presumably reflect officer exits at their own request. The odds of successfully completing twenty years increase dramatically at the ten-year mark. As previously stated, roughly four out of five officers who hit ten years make twenty years and vest.

If the odds of making twenty years once a servicemember has passed the ten-year mark are only 80 percent, then an appropriate discount rate incorporating that level of risk should be in excess of 24 percent. For simplicity, assume the rate is 25 percent. This implies that the present value of \$48,749 in twenty years is only \$562.

Another way to interpret this \$562 value is to look at it as an insurance premium. For \$562, paid when an officer is commissioned, he or she has insured against the average difference in the value of the new system versus the old system. If an officer was to make the \$562 payment out of each paycheck (240 paychecks over twenty years), the amount deducted from each pay period for his or her "retirement system average difference insurance" is only \$6.39. This \$6.39 payment must be weighed against the excess value of the officer's TSP should he or she leave the service before twenty years.

Decision Facing Current Officers

Current officers who received their commission after 1 January 2006 must also decide which retirement system

to select. For those who are not considering a twenty-year career, the choice is obvious. Select the new system and leave the service with a retirement that is more than double what is contributed, thanks to the government match and the interest earned.

For those with several years of service who would plan to stay for twenty years, the choice is not so simple. Tables 5 and 6 show what they may accumulate in a TSP account under the new system and the old system, retiring as either an O-4 or an O-5. Each of the projections shows that the estimated amount saved is less than for a new officer, because the individual is saving for less than twenty years. However, as previously stated, the difference is the insurance premium against the chance that he or she does not successfully complete a twenty-year career.

Conclusions

The NDAA of 2016 presents the officer corps with a significant decision to be made regarding retirement. Both systems have advantages and disadvantages. Individuals will analyze the exact same information and reach exactly opposite decisions. In the end, it will depend on one's attitude towards risk. Risk tolerance will influence the rate of return a servicemember is attempting to achieve with his or her retirement investment portfolio.

Some may contend that the new system shifts the risk, fairly or unfairly, to the servicemembers, as a sizeable portion of their retirement is in their TSP account. Servicemembers must now contend with the variability of market returns and its impact on their retirement, something their predecessors did not have to face.

However, all servicemembers, whether under the current or new system, face the significant retirement risk that they will not successfully complete the required twenty years to earn their retirement. Under the current system, retirement is an all-or-nothing proposition. Serve less than twenty years, and one leaves with nothing. The risk of not completing twenty years still exists under the new system. However, under the new system, one does not leave empty-handed if he or she fails to reach twenty years of service.

Consider a worst-case scenario: tragic life events force an officer to leave the service after nineteen years at age forty-one. Under the old system, that officer leaves with everyone's sympathy, but no pension. If the officer had fully participated under the new system, he or she would have accumulated \$242,637 (as an O-4)

and \$245,570 (as an O-5) at 7.5 percent. If the officer placed that money in an account earning only 6 percent and left it there without making any additional deposits until age sixty (age fifty-nine and one-half is the first opportunity to withdraw from a retirement plan without incurring the 10 percent tax penalty), the retirement account would grow to \$734,122.

This would be enough to pay out \$49,816 until age ninety-seven (our earlier estimated mortality). This payment from the TSP-funded account exceeds the \$45,006 retirement pay an O-4 retiree would receive under the old system. If the officer left the money in until age sixty-seven (the current full retirement age for those born after 1960), the account would grow

to \$1,103,849. At 6 percent, this account could pay out \$80,193 per year for the next thirty years. These payouts are slightly higher if the officer resigns at year nineteen as an O-5. And, all of this future retirement income requires no additional deposits after he or she leaves the service.

As stated before, one's attitude toward risk will play a significant role in deciding which retirement option to select. Rational people will examine exactly the same data and reach exactly opposite decisions. Predicting future events is tricky business. The best one can hope for is that after a thorough examination of available information, a servicemember can live with the decision he or she makes with minimal regret. ■

Biography

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Notes

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