

## Appendix A

### Assumptions Underlying Comparisons of TSP, Roth, and Taxable Investment Accounts

#### I. Assumptions used in Calculations

##### A. *Pay and Contributions*

In order to compare a TSP account, a Roth IRA, and a taxable investment account an advisor needs to understand the assumptions underlying the data presented in Table 1 of Appendix F. One series of assumptions concerns the contributions. Service members can contribute up to five percent of their earnings to a TSP account. Unfortunately, many members will not be able to contribute that much money. As such, Table 1 presents figures for members contributing five percent, as well as three percent, of their salaries. Presumably, members will make monthly contributions throughout their years of service.<sup>1</sup>

Service members will receive a pay raise in July of 2000 and that pay scale formed the basis for all calculations. Naturally, the pay scale will change, but for purposes of this paper, the author kept the scale constant.<sup>2</sup> To use the scale typical service members'

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<sup>1</sup> Mr. Max Beilke, stated the average ages of retirement for enlisted and officers were 42 and 44 years old respectively. Telephone Interview with Max Beilke, Department of Defense, Deputy Chief of Staff Personnel, (Jan. 24, 2000). His statement however, does not agree with the average ages obtained by analyzing the data for fiscal year 1998. The average age and length of service for non-disability retirements for enlisted and officers was 41.1 and 46.4 years respectively. The average length of service for non-disability retirements for enlisted and officers was 21.7 and 24.2 years respectively. Data transmitted electronically by Mike A. Dove of the Defense Management Data Center, West on Mar. 27, 2000. The author based calculations in this paper on Mr. Beilke's earlier statements. This difference will affect Table 3 in Appendix F (High-Three versus REDUX). The effect on the values for enlisted members is minimal. There is no effect on the basic conclusions for officers however; the statements regarding specific ages are less valid. Regarding rank, the author "rounded up" the ranks to E7 and O5 for calculations regarding pay.

<sup>2</sup> Note the absence of a pay raise factor in the calculations offsets the absence of an inflation factor.

promotion patterns had to be determined because the Federal Government bases pay upon rank and years of service. The author derived the promotion patterns for an enlisted person and an officer promotion from data provided by the Defense Management Data Center (DMDC).<sup>3</sup>

*B. Rates of Return on Investments*

Another series of assumptions underlie the investment accounts. The returns for ten-year periods for the G, F, and C funds were 7.3, 9.0, 19.1, percent respectively.<sup>4</sup> Because these funds are essentially index funds, they represent the industry as a whole.<sup>5</sup> As such, investments in a broadly diversified stock portfolio should have yielded similar returns. Granted, a young investor could boost his overall rate of return by investing more heavily in the C fund. As that investor approached retirement however, advisors would recommend a more conservative portfolio necessitating the use of G and F type funds or comparable instruments with accompanying lower yields. To capture the historic performance of the market and the impact of diversification, the hypothetical portfolios presumably returned ten percent a year.<sup>6</sup>

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<sup>3</sup> Colonel Jeffery J. Perry, Under Secretary of Defense (Personnel & Readiness) transmitted the data to the author electronically in January of 2000. The data originally came from the Defense Management Data Center. Colonel Perry believes fiscal year 1998 (as of September 30, 1998) most accurately reflects the current force. The career progressions for fiscal year 1998 form the basis for figures presented in Table 1 of Appendix F.

<sup>4</sup> TSP AT A GLANCE 7 (Fed. Retirement Thrift Inv. Bd., Wash. D.C., Feb. 1, 1999), *available at* <http://www.tsp.gov>. Note administrators calculated the rates of return after removing fund administrative expenses, management fees, and trading costs from the calculations. *Id.*

<sup>5</sup> *See supra* Appendix D.

<sup>6</sup> The rate is also representative of a portfolio heavily invested in stocks. The rate of return for various instruments from 1925-1997 is as follows: cash/money market instruments - 3.8%, bonds (long term)/fixed

C. Tax Rates

Presumably, investors were subject to a sixteen-percent Federal tax rate and no state income tax.<sup>7</sup> The IRS does not impose any tax liability on contributions and earnings in a TSP account until participants take withdrawals or distributions.<sup>8</sup> In contrast, the IRS imposes tax liability on contributions to a Roth IRA.<sup>9</sup> For the purpose of comparison, the investor presumably paid the tax from monies other than those available for investing in a Roth IRA. The IRS never imposes tax liability on the earnings of a Roth IRA.<sup>10</sup> With the taxable investment account, the investor pays tax on the contributions and the earnings with monies available for investment. In other words, the investor pays the taxes with funds he could have invested.

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income (20 year government bonds) - 5.2%, large stocks (S& P 500 Index) - 11.0%, medium stocks - 11.7%, and small capital stocks (index) - 12.7%. IBBOTSON ASSOC., STOCKS, BONDS, BILLS AND INFLATION 1998 YEARBOOK (annual updates done by Robert G. Ibbotson and Rex A. Sinquefield).

<sup>7</sup> Mr. Saul Pleeter, an economist, indicated he used a tax rate of 16% in his calculations regarding the military and the TSP. He based the 16% on a study done on marginal tax rates in the military. Researchers completed the study as part of the Seventh Quadrennial Review of Military Compensation. Telephone Interview with Saul Pleeter, Assistant Director of Compensation, Office of the Assistant Secretary of Defense Force Management, Office of the Assistant Secretary of Defense Force Management Policy, (Military Personnel Policy) (Jan. 24, 2000). The 16% figure is in keeping with a report done by the Congressional Research Service. Authors of that report reviewed data on individual federal income tax returns for 1995, 1996, and 1997. The average tax rate expressed as a percentage of adjusted gross income was 14.7%, 15.2%, and 15.4% for the three years respectively. Tax Notes Today, #22 2000 TNT 18-22 CRS Report on Individual Tax Returns for 1995-1997, TAX ANALYSTS, Jan. 27, 2000, available in LEXIS, All Sources Library, Tax Analysts Tax Notes Today File.

<sup>8</sup> I.R.C. § 401(k) (Research Inst. of Am. 1999).

<sup>9</sup> I.R.C. § 408A(c)(1).

<sup>10</sup> I.R.C. § 408A(d).

#### *D. Inflation Rate*

A comparison of TSP, Roth, and taxable investment accounts does not require consideration of inflation.<sup>11</sup> In order to discuss the full impact of taxes however, one must consider inflation. The author presumed an inflation rate of 3% in calculating the data found in Table 2 of Appendix F.<sup>12</sup>

#### *E. End Point Comparisons*

Service members will not be able to contribute to their TSP accounts when they leave Federal service. In making comparisons of TSP, Roth, and taxable investment accounts (Table 1), service members presumably left service after either 20 or 30 years. For comparison, investors in the Roth or taxable investment accounts presumably stopped contributing funds at the same points.

## II. “Calculators” used in Data Computation

The author used the online services of FinanCenter, Tucson, Arizona in various calculations.<sup>13</sup> Reporters for Money magazine recommended FinanCenter’s calculators.<sup>14</sup>

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<sup>11</sup> Note the absence of an inflation factor in Table 1 offsets the lack of a pay raise factor.

<sup>12</sup> The inflation rate averaged 3.1% from 1925-1997. IBBOTSON ASSOC., *supra* note 6. The calculator presented on [financenter.com](http://financenter.com) rounds numbers to whole integers. See *infra* Part II. As such, an inflation rate of 3% underlies the calculations.

<sup>13</sup> Readers can obtain more information about the history; mission and philosophy; and products of the company at [http://www.financenter.com/aboutfc/aboutfc\\_page.html](http://www.financenter.com/aboutfc/aboutfc_page.html).

Specifically, the calculators for retirement and savings were used to compute the figures found in Tables 1 and 2 of Appendix F, respectively. The author makes no claims as to the accuracy or proper applicability of these calculators to any particular set of circumstances. Basic calculations underlying the data were made using Microsoft Excel.

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<sup>14</sup> Sarah Rose, *Best of the Web: The Top 50 Financial Websites*, MONEY, Dec. 1999.