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MBA PROFESSIONAL REPORT

A Financial Analysis of Retirement Plan Investment Options for Military Personnel

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June 2004

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A FINANCIAL ANALYSIS OF RETIREMENT PLAN INVESTMENT OPTIONS FOR MILITARY PERSONNEL

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requirements for the degree of

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ABSTRACT

This project analyzes retirement investment options currently available to all US service members. Specifically, it reviews eligibility requirements to participate in several investment vehicles, including military pensions, the Uniformed Services Thrift Savings Plan (TSP), traditional and Roth IRA's, annuities and Certificates of Deposit (CD's). Analysis of three notional service member profiles reveals the projected returns with retirement investment options. The information in this report is intended for discussion and initial planning purposes only. It is designed to help service members understand a general course of action that can help meet retirement objectives.

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TABLE OF CONTENTS

LIST OF FIGURES

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LIST OF TABLES

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ACKNOWLEDGMENTS

To my wife Aldrith, whose love and support sustains me. To my Mother and Father for teaching me that persistence is the key to success.

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EXECUTIVE SUMMARY

Retirement planning should be addressed by all military personnel. It is never too late or too early to begin saving for retirement. The earlier one begins saving the better one's chances of earning more for their future, but the reality is that most service members do not get an early start. Many do not save enough because they don't set specific goals. The purpose of this study is twofold. First, is to inform service members about the importance of retirement planning. The ability to set goals, chart a path to those goals, and begin working towards them is vital to retirement planning. Second, a financial analysis of three service member profiles illustrates how one can set a goal and achieve it with proper planning. Successful retirement planning depends on creating a strategy that works for the service member and their particular situation. Setting retirement goals, maximizing workplace savings, establishing Roth IRA's for both spouses if married, and periodically reviewing asset allocation can put service members on the right path.

The first observation from this study is the importance of retirement planning. It is best to start today on what will arguably be the most important financial decision in one's career. Next, service members should not place too much reliance on Social Security benefits. At present the maximum a person can receive in benefits is approximately $1,800 per month as an individual, or $3,482 for a couple if both are eligible for the maximum benefit. The conditions for receiving the maximum include being a worker who had been earning more than $5,000 per month prior to retirement. So, based on the Social Security Administration's own information, the most it will replace is about one third of pre-retirement income. Third, growth-oriented investments should be the first step in any retirement planning. Finally, service members should take full advantage of the tax-deductible dollars and tax-deferred growth offered by programs such as IRA's and TSP.

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I. INTRODUCTION

A. PURPOSE

This project analyzes possible retirement investment options currently available to all US service members. Specifically, it reviews the eligibility requirements necessary to participate in several investment vehicles, including military pensions, the Uniformed Services Thrift Savings Plan (TSP), traditional and Roth IRA's, annuities and Certificates of Deposit (CD's). Performing financial analysis of three service member profiles, the results reveal the projected returns with the retirement investment product options that could maximize savings. The information in this project is intended for discussion and initial planning purposes only. It is designed to help service members understand a general course of action that can help meet retirement objectives.

B. BACKGROUND

Military retirement pay is a valuable asset because it is essentially a defined benefit plan (DB) that pays a monthly contribution to service members between 40-75 percent of their active duty base pay for the rest of their lives. This amount is adjusted annually for inflation. If a service member chooses to participate in the Survivor Benefit Plan, a portion of his retired pay will be paid to beneficiaries after death.

On October 30, 2000, the Floyd D. Spence National Defense Authorization Act for Fiscal Year (FY) 2001 was signed into law by President Clinton. The significance of this act was that one of the provisions of the law extended participation in the Thrift Savings Plan (TSP) to all uniformed service members, active duty and Ready Reserve.[1] In January 2002, every US service member had an opportunity to participate in the federal TSP. Prior to this, the only members that were allowed to participate in this plan were federal and postal employees, which included members of Congress and the House of Representatives. Military participation in the TSP was enacted in part as an incentive to improve recruitment and retention in the armed forces in a competitive job market.

[1] Moran, Pamela-Jeanne, "Uniformed Services Participation in the Thrift Savings Plan", Memo dated 30 Nov 01, Deputy Director, Office of External Affairs, Federal Retirement Thrift Investment Board.

After efforts covering several years of negotiating by the military services, a plan was devised to allow active duty personnel into the program.[2]

Many workers believe that employers who provide lucrative benefits to their employees usually retain them. Until the TSP opened its program to uniformed service members, the armed services was the largest workforce in the US not covered by an employer-sponsored, tax-advantaged payroll savings plan.[3] Unless US service members had Individual Retirement Accounts (IRAs) or other personal savings, they were only covered by Social Security benefits.

The TSP is a defined contribution (DC) plan that will allow members to currently save five to nine percent of their base pay. The TSP offers the same type of savings and tax benefits that many civilian companies and corporations offer their employees under the "401(k)" plans.

C. RESEARCH QUESTIONS

1. Primary Research Questions:

1. Why is retirement planning important for service members?
2. How do service members find out whether they can afford to retire?
3. What are the possible resources service members have to plan for their retirement?
4. How much income will a service member need during retirement?
5. How can a service member calculate his retirement needs?

D. SCENARIO BUILDING

Due to the complexity and variability of retirement planning methods, making choices among programs can be challenging. As a primary reference for analyzing retirement planning options, the textbook *Financial Management Theory and Practice*, 10th Ed, by Eugene F. Brigham and Michael C. Ehrhardt will be used. Specific emphasis is placed on the chapter dealing with the Time Value of Money.

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[2]Armed Forces News, "Introducing the Thrift Savings Plan"www.armedforecesnews.com/index5.html, February 2004.

[3] Shafer, Vivian C. MAJ, "The New Military Thrift Savings Plan: Worth Consideration", September 2000, 2.

Three profiles are created to demonstrate retirement savings programs: 1) a service member just starting her career, 2) a service member who is already saving for retirement, and 3) a service member who is approaching retirement age. Spreadsheet models using the Microsoft Excel program and online retirement calculators are created and then analyzed to compare their investment options. A financial analysis is conducted with various options and cost counts to reveal the impact of each of the options and the net present value (NPV) of each alternative.

E. ORGANIZATION OF PROJECT

Chapter I - Introduction identifies the purpose of the research and provides an overall background of the project and the primary research questions.

Chapter II - Retirement Planning includes why retirement planning is important and explanations of various retirement planning vehicles.

Chapter III - Military Retirement Scenarios Analysis examines three service member profiles and their retirement plans to assess their investment choices.

Chapter IV - Risk Assessment/Sensitivity Analysis measures the impact on outcomes of changing one or more key input values about which there is uncertainty.

Chapter V - Conclusions and Recommendations analyzes the findings from the financial analysis, answers the primary research questions, and provides conclusions and recommendations for service members when planning for retirement investments.

F. BENEFITS OF STUDY

This project resulted in several noteworthy conclusions concerning the benefits of utilizing various investment techniques when planning for retirement years. However, this project is not an endorsement for participation in any specific type of investment or an investment company; it is for informational purposes only. The overall benefit will be to assist service members in their efforts to plan for a successful retirement. Any service member considering participation in any type of retirement investments should consult a professional financial planner or consultant for assistance.

G. SCOPE AND LIMITATIONS

This project specifically analyzes US military service members' retirement options with respect to supplementing military retired pay benefits. First, this project takes a look at why retirement planning is important for military service members. Second, an analysis of three profiles demonstrates the variability of retirement savings plans.

Due to the complexity of the many options available to calculate various retirement investment options, not all possible scenarios can be explored in this project. This project sought to analyze three of the most likely scenarios that would be both practical and affordable to typical service members. In addition, this project excludes all state income tax requirements on all contribution plans and focuses only on federal income tax requirements. When analyzing retirement options, the use of spreadsheets or retirement calculators is necessary in order to try and predict the future. These calculators try to predict the future by taking a group of assumptions, including inflation rate, real rate of return on investments, life span, retirement ages, and income requirement upon retirement. Although no one can predict the future, the use of these retirement calculators enables one to make some general assumptions about retirement planning. The first is the need to determine the amount of money required to support retirement living, the second is the amount of money needed each year to reach one's retirement goal. The approach in answering these questions varies, but ultimately they provide the framework to set individual goals.

II. RETIREMENT PLANNING

A. INTRODUCTION: WHY PLANNING IS IMPORTANT

In today's world, arguably the primary concern of every working person is the ability to adequately provide for his family. Ensuring current and future financial security can prove to be a difficult task. Unknown to most, the financial decisions made during one's working years affect retirement income received many years in the future. For service members, making the right decision is difficult. In the past, there were no pension plans, no social security benefits, and the average life expectancy was approximately 48 years. With more than one million people retiring each year at the age of 62, the need to have income to maintain current living conditions has risen dramatically.[4] Many financial planning firms tell most of their clients that a conservative age to plan your retirement investments for is a life expectancy of 85 years. A sound investment decision made early in a service member's career could improve the quality of life for his family during its retirement years.

The House Education and the Workforce Committee recently listened to the first round of testimony from the National Retirement Planning Coalition, several financial services firms, and a representative from MetLife Insurance Company. During these hearings, the importance of retirement planning was heavily emphasized. Recently completed studies revealed that tens of millions of Americans are not prepared to meet their financial needs in retirement. The amount that the ordinary American has saved for retirement is less than $50,000, and almost 40 percent of those working have almost no retirement savings at all.[5] These hearings were the first in a series of hearings set for 2004 on defined benefit pension reform. The committee wants to present a comprehensive legislative package that addresses pension issues in order to avoid a new group of retirees living in poverty and helping solve the problem of retirees outliving their assets.[6]

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[4] US Census Bureau facts and figures as of December 11, 2003.

[5] Testimony to the House Education and Workforce Committee, April 5, 2004. Washington, DC.

[6] Testimony from the House Education and Workforce Committee, April 4, 2004, Washington, DC.

B. OBJECTIVES FOR RETIREMENT PLANNING

Building on these recommendations, this project provides valuable insight to service members with regards to which method or combination of methods are best suited to address their retirement investment needs. At present, options for service members include (1) investing in TSP for Uniformed Service Members, (2) investing in a combination of IRAs, and (3) investing in CD's or annuities. Analysis of these alternatives will highlight the financial consequences for uniformed service members and possibly assist them in making crucial planning decisions for their retirement.

Peter Lynch, Vice Chairman of Fidelity Management and Research Company is a recognized expert in the field of investing. Fidelity Investments is the largest mutual fund company in the US with more than $880 billion under management. Mr. Lynch was the portfolio manager of Fidelity's Magellan Fund, which was the best performing mutual fund in the world from 1977 to 1990. He took the fund from $20 million in assets to $14 billion during his tenure. Mr. Lynch has listed a few things that every service member should consider for retirement. They include maximizing tax-advantaged opportunities with employee- sponsored plans such as TSP, contributing to traditional and Roth IRAs, and variable annuities.[7] Mr. Lynch's overarching theme is that finding the right mix of assets that have a chance to outpace inflation, grow enough to exceed spending and provide income along the way is even more challenging after one retires. In addition, retirement planning must be done early in life to ensure that one attains the lifestyle he or she desires in retirement.

C. RETIREMENT PLANNING BASICS

1. Pensions

The US government introduced pension plans in the 1920's to help support retiring civilian workers. US military pensions can be traced back to the American Revolution and the Civil War.[8] These early pensions for both volunteers and military members were a result of disabilities caused during warfare. Both disabled and widowed families were entitled to compensation if proof of marriage to the service member could

[7] www.personal.fidelity.com/planning/investment, March 2004.

[8] www.archives.gov, January, 2004.

be provided. The pension plans were created as a result of employers believing that they had an obligation to provide for retired workers who spent a lifetime contributing to the growth and profits of a company. Any business could set up a pension plan. To date, practically all government organizations provide pension plans for their employees. However, part-time employees are rarely covered by pension plans, in addition to seasonal workers and most employees with small salaried service and retail jobs.

There are two primary types of pension plans available to most American workers, defined benefit and defined contribution. US service members receive a defined benefit (DB) plan. The military retired pay is a (DB) plan that guarantees a yearly pension equal to approximately 50 percent of base pay, vested after 20 years. The federal government historically invests money in a pension fund in order to pay monthly retirement pensions. Most current US service members participate in the CSB/Redux Option for retirement plans. CSB is Career Status Bonus, which is the option for a (1) time payment of $30,000 at the 15th year of active duty, or (2) taking the pre-1986 High-3 Retirement system. The High-3 Retirement system multiplies the years of service by 2.5 percent, which equals 50 percent at 20 years and 75 percent at 30 years. The Career Status Bonus was designed to encourage service members to remain on active duty past 20 years of service.[9] This system results in a reduced amount of retirement pay but it pays a $30,000 bonus at the completion of the member's fifteenth year of active duty service. The member receives 2 percent per year of base pay for the first twenty years, and receives 3.5 percent per year for every year served from the 20th year until the 30th year.

The decision of which plan to choose should be based on each individual service member's current and future financial needs. Table 1 shows a comparison of the percentage of base pay a service member would receive under each of the plans.

[9] USAA Educational Foundation, "Retirement from the Military", September, 2003.

Years of Service	20	22	24	26	28	30
CSB/REDUX Option	40%	47%	54%	61%	68%	75%
High-3 Option	50%	55%	60%	65%	70%	75%

Table 1. Percentages of Military Retirement Pay of CSB/REDUX vs. High 3

From: USAA Educational Foundation

2. Defined Benefit Plans

Traditional pension plans, called defined benefit (DB) plans, are set up in a manner where employers put money into funds that pay retired workers, and their survivors if available, a regular percentage of their monthly income upon the untimely death of the employee for the remainder of the beneficiary's life. The amount received for US service members is based on the rank attained and the number of years served in the highest rank. With the options available to today's service member, the amount received from their pension can vary from a small monthly check to a generous percentage of their final salary. With DB plans, service members cannot choose how the retired pay money is invested. The guarantee of a percentage of your salary is one of the trade-offs for the benefit of the military pension.

The calculation of the amount of the pension is based on Table 1 above. However, it is important that all members understand this plan due to the variations with each individual case. Two people who retire at the same rank may have different pensions based on several factors that may be unique to each service member. In general, the longer a service member serves the higher the amount of the military pension. But, there are time in pay grade limitations that may affect some service members, so if the promotion milestones are not reached by these prescribed timelines then the service member will be obligated to retire at that time.

Under current laws, the government does not require companies to provide pension plans, but the incentive to those that do is reduced corporate taxes. These plans

are closely monitored and regulated by the government to ensure that employees actually receive their money.

3. Defined Contribution Plans

In today's business world, the likelihood of companies offering full pensions is not very good. The fact remains that Social Security is meeting less than 40 percent of most Americans post-retirement needs, and 401 (k) plans are becoming a more important source of income.[10] The amount of retirement income received is a result of the actual contributions made to one's account during one's working years. Until 2002, the US military did not have a retirement plan option for those members who decided to leave the military. The Uniformed Services Thrift Savings Plan (TSP) serves as a supplement to the military retirement program by providing service members the same type of savings and tax benefits enjoyed by corporate employees with 401 (k) plans.[11] In addition, according to the rules of the TSP if the service member decides not to make the military a career, he or she can take his or her contributions to any employee sponsored 401 (k) plan. This is partly done because with a defined contribution (DC) plan the employers are not responsible for guaranteeing a fixed amount of income, but rather the performance of the markets determine the value of the retirement portfolio.

With the DC plan, the employees assume the risk of their investments, while the employer assumes the risk with the DB plan. The military is unique in that it offers both plans to service members, thus allowing them to maximize retirement savings with TSP participation. The DC plan is basically a 401(k) account that the company agrees to invest typically 2 to 10 percent of one's salary in a retirement plan each year, while offering the employee several investment options and sometimes matching funds. The government limits the size of the amount of annual contributions an employer can contribute to a DC plan.[12] With a DB plan there are no contribution limits, however the cap on how much an employee can receive is 100 percent of the average salary or an amount that increases with inflation in $1,000 increments.

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[10] Hoffman, Ellen, "The 401(k)'s Twin Villains", *BusinessWeek*, 16 February 2004, 1.

[11] Shafer, Vivian, MAJ, "The New Military TSP: Worth Consideration, 4.

[12] Morris, Kenneth M. and Virginia B, "The Wall Street Journal Guide to Planning Your Financial Future", 3rd ed., New York, 2002.

One of the major problems with plans such as TSP and 401 (k) plans is that there are far too many workers, including US service members not contributing to these plans.[13] Most US service members know that the military retired pay alone is insufficient to support a family, which is at minimum half of current take home pay. According to the Census Bureau in 2002, 43% of full-time workers aged 21 to 64 were not participating in any type of employer sponsored retirement plans.[14] One of the major advantages of the DC plan is that employees have more control over where their money is invested and the ability to transfer their earnings to another employer if a better career opportunity becomes available. Table 2 lists three major types of defined contribution plans.

Type	Funding	Contribution	Eligibility	Loan Privileges
TSP	Employer/Employee	Employer may match funds employee defers	Federal employees	Yes
401 (k)	Employer/Employee	Employee contributes pretax salary	Employees of firms that sponsor plans	Yes
403 (b)	Employer/Employee	Employee contributes pretax salary	Employees of non-profit firms	Yes

Table 2. Types of Defined Contribution Plans

From: Merrill Lynch Retirement Planning

The bottom line with DC plans is that service members have a choice of whether or not to participate, and if so how much to invest.

4. Diversification

The last and probably the most important topic of discussion in this section is diversification. It is important to make sure that investments have the best chance to meet expectation, and the best way to do this is through diversification. Diversification is

[13] Francis, David R., "Don't Walk Away From a 401 (k)", *Christian Science Monitor*, February 2004.

[14] Hoffman, Ellen, "The 401(k)'s Twin Villains. *BusinessWeek Online*, February 16, 2004.

the process of spreading money through several different types of investment vehicles in order to prevent the sort of catastrophic losses that occurred with the Enron Corporation bankruptcy.[15]

Diversification sounds simple but may not be easy for a young service member. In addition to having the disposable income available, one must determine how to allocate money to maximize, or make more money than one loses to inflation and market losses with one's investment. Every investment carries risk and no stock is immune to losing value. It is possible for a stock to fall dramatically and not ever return to original purchase price. In addition, emergencies may arise that force the sale of investments. Not only must a strategic plan must be made, it also must be executed and monitored to weather any sudden bad turns in the stock markets. Service members must ask themselves these five questions; with whom will I invest my funds? Where will I invest them? What am I buying next? When do I make my investments? How are my investments doing? Each individual service member must determine the answers to these questions and then consult a financial planner or advisor for assistance with their savings plan.

D. RETIREMENT PLANNING MEANS

1. Social Security

Approximately 96% of US workers are covered by Social Security.[16] The average retired worker gets approximately $900.00 per month and a spouse half of that. President Roosevelt introduced the Social Security Act in 1935 as part of a plan to help revive an economy in a slump since the stock market crash in 1929. Today, social security outlays comprise the largest portion of mandatory spending of the federal budget. The FY 2004 federal budget of $2.2 trillion contained outlays of more than $535 billion for social security and Medicare spending in the form of monthly payments to more than 50 million beneficiaries.[17]

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[15] Tanner, Robert, "Public Retirement Funds Lose $1 Billion in Enron Collapse", Associated Press, January 2002.

[16] www.ssa.gov, March, 2004.

[17] Summary of the Federal Budget, Congressional Budget Office (CBO), January 2004.

Social security was created as a safety net that would provide income for retired and disabled workers and their families. Other countries attempted to start similar programs, with voluntary participation. However, they experienced very little success. Therefore, Congress decided that everyone eligible to receive benefits had to participate. The Federal Insurance Contribution Act (FICA) was passed to authorize employers to deduct employee contributions automatically from salaries and forward this money to the Internal Revenue Service (IRS). Currently, social security provides benefits to 90% of American households that have someone over the age of 65, thus achieving its primary goal of reducing the poverty rates of elderly households.[18]

2. Military Retirement

Military retirement is essentially reduced compensation for timed served in the armed forces. Retired pay ranges from 40 percent to 75 percent of basic pay.[19] When determining a military member's retired pay, factors such as pay grade at retirement, qualifying years of service, date of initial entry into military service (DIEMS), and total creditable points for retired pay are used for the computation of monthly benefits. There are three types of active duty military retirement options in effect today. If a service member entered the military before 8 September 1980 then they are eligible for the final pay plan. If entry occurred between 8 September 1980 and 31 July 1986 then the benefits come under the high-three plan. All service members entering active duty after 31 July 1986 have a choice of the high-three or the career status bonus/redux plan. The chart in Table 3 lists a detailed description of each of the three types of plans. With the assumptions made in this project, most US service members serving on active duty today fall under the latter plan.

[18] Social Security Administration summary of statistics from March 2004.

[19] www.military.com, February 2004.

	Final Pay Plan	High Three Plan	CSB/Redux Plan
Basic retirement pay at 20 years	50% of final pay	50% of High-Three basic pay	40% of High-Three basic pay
Additional retirement for each year after 20	2.5% (maximum 75%)	2.5% (maximum 75%)	3.5% (maximum 75%)
Bonus on fifteenth year	None	None	$30,000
Cost of living allowance	Equal to the increase in the Consumer Price Index	Equal to the increase in the Consumer Price Index	1% less than the increase in the Consumer Price Index
Date entered active duty	Before 8 Sep 1980	After 7 Sep 1980	After 31 July 1986

Table 3. Military Retirement Pay Choices

From: USAA Educational Foundation

3. Traditional Individual Retirement Accounts (IRAs)

A traditional IRA is a tax-deferred account designed specifically for retirement savings. Anyone under the age of 70 ½ who has earned income may establish and contribute up to $3,000 ($3,500 if aged 50 or older) annually.[20] Basically, the objective of the account is to provide the investor with a tax shelter for contributions until the funds are received for use. Contributions to IRAs can be invested in the employee or service member's choice of stocks, bonds, certificates of deposit (CDs), or mutual funds. This flexibility is one of the selling points financial planners use when recommending retirement investment vehicles to current or potential clients. Any money received from the traditional IRA prior to age 59 ½ will incur a 10 percent penalty for early withdrawal.

[20] Edward Jones Retirement Plans, www.edwardjones.com, February 2004.

At the age of 70 ½ the funds in the account must be withdrawn. To be eligible to make a traditional IRA contribution, you must not be part of a 401 (k), TSP, or other qualified retirement plan at work, or not have an adjusted gross income (AGI) of more than $55,000 for singles or $75,000 for married couples in 2004.

4. Roth Individual Retirement Accounts (IRAs)

The Roth IRA is an Individual Retirement Account that was created by the Taxpayer Relief Act of 1997 in order to provide another option for traditional non-deductible IRAs.[21] The late Senator William V. Roth, Jr. was the driving force behind initiating tax and savings reforms, thus the reason for his name being linked to the account. The Roth IRA allows after tax contributions and the opportunity to receive tax-free income during retirement years. At present, the maximum contribution to the Roth IRA is $3,000 ($3,500 if aged 50 or older) each year or 100% of earned income, whichever is less. A service member may contribute to a Roth IRA, deductible IRA, and a non-deductible IRA provided the total for all three accounts does not exceed the maximums mentioned previously. The contributions for Roth IRAs are not deductible, however, the earnings grow tax deferred and could be potentially tax-free. Distributions from the Roth IRA can be received penalty free and tax-free if the account is held for at least five years and you are at least 59 1/2 years old when you begin making withdrawals.

Not everyone may qualify for participation in the Roth IRA. A majority of US service members qualify because of the amount of income received as base pay. Single service members qualify if adjusted gross income (AGI) is less than $95,000. The range of $95,001 to $110,000 qualifies for a partial Roth and an AGI of $110,001 or higher may not contribute to the Roth IRA. For married service members, if the amount of the AGI is less than $150,000 they qualify for a Roth. The range of $150,001 to $160,000 qualifies for a partial Roth, and an AGI of $160,001 and higher may not contribute to the Roth.

There are several rules and guidelines that must be followed when opening an IRA. However, it is relatively easy to open an IRA account. It is up to each individual service member to decide which is right for them (See Table 4). The money invested in

[21] Bernstein, Adam, "Sen. William Roth Dies; Force Behind IRAs", *Washington Post*, 15 December 2003.

IRA's can be done in various types of accounts, including a basic savings account to more risky options and futures accounts. There are restrictions for IRA investments in assets such as art, foreign coins or gemstones. Contributions to IRA accounts can be made anytime until April 15th to receive credit for the previous tax year.

	Roth IRA	**Traditional IRA** Nondeductible	 Deductible
Pros	-Tax free income -No required withdrawals	-Tax deferred earnings	-Immediate tax savings -Tax-deferred earnings
Cons	-Not deductible -5 yrs to qualify for tax-free	-Not-deductible -Taxes due at withdrawal -Required withdrawal at 70 1/2	-Taxes due at withdrawal -Required withdrawal at 70 1/2

Table 4. IRA Investment Options

5. Uniformed Services Thrift Savings Plan (TSP)

The Uniformed Services TSP is a defined contribution plan that provides retirement income from individual accounts. The amount of income received is directly related to how much money is invested and the earnings received.[22] Currently, TSP conducts two "open seasons" each year to allow service members the opportunity to register. April 15 through June 30 and October 15 through December 31. TSP was originally established for federal civilian employees, but was only open to military personnel beginning in January 2002. Although military personnel do not have matching contributions, the ability to lower taxable income by as much as 9 percent of basic pay is a great advantage.

[22] Summary of the Uniformed Services Thrift Savings Plan. This document gives a detailed summary of all of the existing funds that service members can choose to invest their earnings.

Of the 1.4 million members on active duty and the reserves, there were 408,250 military personnel participating in TSP as of February 2004.[23] The participation rate of service members in TSP is at 29.1 percent.[24] This is a low number considering TSP has been available for more than two years. It appears that many service members are either unaware, indifferent, or cannot afford to contribute. In the Defense Department, the Navy leads with a participation rate of 38.5 percent.[25]

E. CRITICAL CONSIDERATIONS FOR RETIREMENT PLANNING

1. Ways to Allocate Assets

Asset allocation is a process of determining the best way of distributing investments in order to fit time horizon and risk tolerance. This may sound complicated but the easiest way to approach this is to figure out how much risk a service member can assume, considering time left until retirement. There is no "right" response to this question because risk tolerance varies with individuals. The standard advice offered by the financial services industry is that the younger you are the more risk you should be willing to take.[26] This is reasonable because if there is a sudden decline in the stock markets there is ample time for equity investments to recover. Economic theory does not provide a natural connection between a person's time horizon and their risk tolerance. So, one service member may have a time horizon of 25 years and consider himself or herself very risk averse, while another thinks the exact opposite is true- having a short time horizon but are quite willing to assume risk.

Almost all investments fall into three categories: stocks, bonds, and cash. There are various types of investments that let individuals determine how and what type of stocks and bonds they buy, but all pension plans, 401 (k)'s and any type of retirement plan invests in some form of stocks and bonds. Depending upon the risk tolerance of the service member and the time horizon left before reaching retirement age, the type and amount that is invested into the retirement savings plan will vary with each individual

[23] Barr, Stephen, "Open Season for Thrift Plan Could Soon be Closed", *The Kansas City Star*, 20 Apr 04.

[24] Ibid, 2.

[25] Ibid, 2.

[26] http://university.smartmoney.com, March, 2004.

fund manager. Therefore, service members should seek a professional financial consultant or advisor before investing any money.

a. Stocks

A stock is a share of ownership in a business.[27] Every service member that completes the requirements for receiving retired pay owns some type of stock. Under the DB plan the federal government does the "investing" and the service member does not have to worry about tracking their funds. However, with TSP or any other type of DC plan such as a 401 (k) account, changing and tracking stock position is possible. When it comes to investing in stocks for retirement, every service member must know that there are no "free lunches" in America. In other words, if an investment sounds too good to be true, then it probably is.

b. Bonds

A bond can be defined quite simply as a loan.[28] Unlike stocks, bonds promise a specific return on investment over a specified period of time. This is most attractive to investors who want to assume less risk of losing money on their original investment. This type of investment can guarantee income through their retirement years. Bonds are not risk free. If the company goes bankrupt, one could lose part, or all of the original investment. The most important thing to remember about bonds is when interest rates fall, bond prices go up and when interest rates go up, bond prices fall. Trying to predict an interest rate is a very difficult thing to do, so service members should seek financial counseling before investing their hard-earned wages.

c. Cash

Certificates of Deposit or CD's are special types of cash deposit accounts with banks or credit unions that normally offer a higher interest rate return than a regular savings account.[29] Unlike most investment vehicles, CD's are insured with the Federal Deposit Insurance Corporation (FDIC) up to $100,000. In other words, if the bank or credit union files for bankruptcy, money will be repaid up to a maximum of $100,000.

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[27] Ibid.

[28] http://university.smartmoney.com, March, 2004.

[29] http://www.sec.gov/investor/pubs/certific.htm, February, 2004.

d. Annuities

Annuities are contracts that are designed to be a source of retirement income.[30] They are sold by brokerage firms, banks, and insurance agents, and issued by an insurance company. The funds in an annuity are not protected by government deposit insurance; service members must therefore insure that the sponsoring insurance company is both stable and strong. Insurance company ratings are readily available on the Internet through several different sources. There are several different types of annuities, including immediate, fixed, deferred, and variable deferred. Each service member should determine what type of annuity would be appropriate for his or her situation.

e. Inflation

Inflation is the most important factor to consider when determining where to put retirement investments. Inflation is the erosion of overall buying power, and every service member is familiar with inflation whether he or she knows it or not. In order to combat the negative effects of inflation service members will have to achieve a higher rate of return on the combined investments. Inflation can cause serious problems for those living on fixed incomes. Unless a cost of living allowance (COLA) increase accompanies the pension, a retiree may find himself or herself unable to live comfortably on a fixed income in periods of rising inflation. Table 5 shows a history of inflation in America since 1994.

Some of the early signs of inflation include rising consumer prices when the economy begins to heat up. One measure of price level, the Consumer Price Index (CPI), produces monthly data on the prices paid by consumers for a representative basket of good and services.[31] The CPI can be used as an indicator of the effectiveness of government policy. In addition, business executives, labor leaders and other private citizens use the index as a guide in making economic decisions. The index affects the income of almost 80 million people as a result of statutory action: 47.8 million Social Security beneficiaries, about 4.1 million military and Federal Civil Service retirees and

[30] http://university.smartmoney.com, April, 2004.

[31] United States Department of Labor.

survivors, and about 22.4 million food stamp recipients.[32] Since 1985, the CPI has been used to adjust the Federal income tax structure to prevent inflation-induced increases in taxes.

Year	Inflation Rate
2003	2.27%
2002	1.59%
1993	2.96%
1992	3.03%
1983	3.22%
1982	6.16%
1974	11.03%
1973	6.16%
1963	1.24%
1962	1.20%

Table 5. Inflation Rates from 1962 – 2003
From: United States Department of Labor

F. INVESTMENT RETURN EXPECTATIONS

1. Determining Risk Tolerance

Before any service member decides to put money into retirement savings they must determine how comfortable they are with risk. Basically, how much risk is acceptable in order to receive more at a later date? If the stock market experienced a sudden decline, would you sell everything or move your money to a money market or savings account? Would you be afraid to invest again? Or, would you use the market decline as an opportunity to invest more with the lower prices? Understanding risk

[32] Ibid.

tolerance will lay the foundation for every service member's retirement portfolio. Once this is understood, portfolio allocation will be easier to determine.

2. Historical Performance

Once the service member has determined risk tolerance, a retirement portfolio can be created with a combination of stocks, bonds, annuities, etc. The idea is to select investments that will react differently to market conditions so that a loss in one can be offset by a gain in another. This will minimize overall retirement portfolio risk.

It is a good idea for service members to look at the historical returns in each investment they have selected, even though past performance does not guarantee future results. The historical average for stocks is 10.3%, 5.5% for bonds and 3.8% for money market accounts from December 31, 1925 to June 30, 2003.[33] Variability of return represents the variability of stock price changes during a specific period of time.

Investors, analysts, financial consultants and regulators are all concerned with stock return variability because a stock price can experience fluctuations in price when it is not a result of news from a specific firm, industry or the market in general. The existence of this type of "excessive" volatility or "noise" undermines the usefulness of stock prices as a "signal" about the true intrinsic value of a firm, a concept that is important for the informational efficiency of the markets.[34] The need to access money and retirement objectives will drive the choices made for each individual portfolio. Financial analysts share a common understanding about how to measure stock return volatility. They agree that it varies over time, but that it is not increasing in recent years, as many market participants have perceived. Stock return volatility is predictable in its response to past negative price shocks compared to past positive price shocks, but what causes these shocks and even how many fundamental factors drive volatility over time is not clear to many analysts.[35] Although service members cannot lower market risk, they can take an active role in limiting its adverse consequences by diversifying and increasing their knowledge about their investments.

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[33] http://www.ibbotson.com, March 2004.

[34] Karolyi, G. Andrew, "Why Stock Return Volatility Really Matters", *Strategic Investor Relations*, Spring 2001.

[35] Ibid, 14.

III. MILITARY RETIREMENT SCENARIO ANALYSIS

A. INTRODUCTION

The purpose of this chapter is to develop three service member profiles in terms of their retirement planning programs. These examples serve as a guide for readers to illustrate what is required for a typical retirement plan. As the scenarios show, there is no easy road to retirement. It takes a lot of hard work and discipline to carry out one's plans. Retirement is not what is used to be. Although there are numerous periodicals, websites, family and friends to use a resource for retirement planning, service members should seriously consider utilizing their command financial specialist, Certified Financial Planners, and Stockbrokers before committing any money for investments.

The retirees of today and tomorrow are not likely to live their golden years relaxing in a rocking chair. In today's world, retirement is defined more in what one is going to do next, as opposed to what one is going to stop doing, although we all look forward to the day that we can get off the "working train". The question is: Will you be able to retire when you reach your retirement age? This is one of the most important questions that need to be answered by every service member. A recent *Fortune* magazine article stated that the US savings rate is the lowest of any industrialized nation, and the ratio of US workers to retirees had fallen from 17 to 1 in 1950 to currently 3.2 to 1.[36] Having enough money to live after one retires is the largest hurdle that service members must clear as they approach their retirement years. The general rule that financial planners use when advising their clients is that one typically needs between 75 and 80 percent of pre-retirement income in order to maintain one's current standard of living.

1. The Basics for Planning: Calculating Future Value and Present Value

The value of a dollar today is worth more than a dollar received in the future because if one had it now it could be invested, earn interest, and probably end up with a higher value in the future.[37] Compounding is defined as the process of going from

[36] Brigham, Eugene F., Ehrhardt and Michael C., *Financial Management Theory and Practice, 10th ed.*, p 285.

[37] Ibid, 287.

present values (PVs) to future values (FVs).[38] It is believed that Albert Einstein once declared that the greatest mathematical discovery of all time was compounded interest. He is credited with discovering the Rule of 72. The Rule of 72 is a simple way to determine how long it would take to double money in a savings account. For example, if one had $1000 in an investment account and it is earning 4 percent interest, 72 divided by 4 is 18. Thus, it would take 18 years for the money to double without any additional deposits. Discounting can be defined as finding present values, and basically is the opposite of compounding. [39]

2. Terminology and Formulas

In order to understand the terminology used when discussing future and present value, a brief descriptions is listed as follows: PV = the present value, or the beginning amount in your account; i = the interest rate the bank pays on the account; INT = dollars of interest you earn during the year; FVn = future value, or ending amount of your account and the end of n years into the future, once interest is earned; n = number of periods involved in the analysis.[40] One can see that both compounding and discounting are interrelated. $FV_n = PV\ (1+i)^n$ and $PV = \underline{FV_n\ /\ (1+i)^n} = FV_n(1/1+i)^n$. These formulas are the basis of all of the calculations for the scenarios analyzed in this chapter. The following tables are the present and future values of lump sums for determining how long it would take one's money to grow. The first column in the tables is the period of time needed for one dollar to grow to the amount shown in each corresponding column. For example, in ten years one dollar invested that receives an interest rate of nine percent would have a future value of $2.367.

[38] Ibid, 287

[39] Ibid, 295.

[40] Ibid, 297.

Future Value Interest Factor of $1 per period at i% for n periods

Period	1%	2%	3%	4%	5%	6%	7%	8%	9%	10%
1	1.010	1.020	1.030	1.040	1.050	1.060	1.070	1.080	1.090	1.100
2	1.020	1.040	1.061	1.082	1.103	1.124	1.145	1.166	1.188	1.210
3	1.030	1.061	1.093	1.125	1.158	1.191	1.225	1.260	1.295	1.331
4	1.041	1.082	1.126	1.170	1.216	1.262	1.311	1.360	1.412	1.464
5	1.051	1.104	1.159	1.217	1.276	1.338	1.403	1.469	1.539	1.611
6	1.062	1.126	1.194	1.265	1.340	1.419	1.501	1.587	1.677	1.772
7	1.072	1.149	1.230	1.316	1.407	1.504	1.606	1.714	1.828	1.949
8	1.083	1.172	1.267	1.369	1.477	1.594	1.718	1.851	1.993	2.144
9	1.094	1.195	1.305	1.423	1.551	1.689	1.838	1.999	2.172	2.358
10	1.105	1.219	1.344	1.480	1.629	1.791	1.967	2.159	2.367	2.594
11	1.116	1.243	1.384	1.539	1.710	1.898	2.105	2.332	2.580	2.853
12	1.127	1.268	1.426	1.601	1.796	2.012	2.252	2.518	2.813	3.138
13	1.138	1.294	1.469	1.665	1.886	2.133	2.410	2.720	3.066	3.452
14	1.149	1.319	1.513	1.732	1.980	2.261	2.579	2.937	3.342	3.797
15	1.161	1.346	1.558	1.801	2.079	2.397	2.759	3.172	3.642	4.177
16	1.173	1.373	1.605	1.873	2.183	2.540	2.952	3.426	3.970	4.595
17	1.184	1.400	1.653	1.948	2.292	2.693	3.159	3.700	4.328	5.054
18	1.196	1.428	1.702	2.026	2.407	2.854	3.380	3.996	4.717	5.560
19	1.208	1.457	1.754	2.107	2.527	3.026	3.617	4.316	5.142	6.116
20	1.220	1.486	1.806	2.191	2.653	3.207	3.870	4.661	5.604	6.727
25	1.282	1.641	2.094	2.666	3.386	4.292	5.427	6.848	8.623	10.835
30	1.348	1.811	2.427	3.243	4.322	5.743	7.612	10.063	13.268	17.449
35	1.417	2.000	2.814	3.946	5.516	7.686	10.677	14.785	20.414	28.102
40	1.489	2.208	3.262	4.801	7.040	10.286	14.974	21.725	31.409	45.259
50	1.645	2.692	4.384	7.107	11.467	18.420	29.457	46.902	74.358	117.391

Table 6. Future Value of a Lump Sum
From: Financial Management Theory and Practice

Present value interest factor of $1 per period at i% for n periods

Period	1%	2%	3%	4%	5%	6%	7%	8%	9%	10%
1	0.990	0.980	0.971	0.962	0.952	0.943	0.935	0.926	0.917	0.909
2	0.980	0.961	0.943	0.925	0.907	0.890	0.873	0.857	0.842	0.826
3	0.971	0.942	0.915	0.889	0.864	0.840	0.816	0.794	0.772	0.751
4	0.961	0.924	0.888	0.855	0.823	0.792	0.763	0.735	0.708	0.683
5	0.951	0.906	0.863	0.822	0.784	0.747	0.713	0.681	0.650	0.621
6	0.942	0.888	0.837	0.790	0.746	0.705	0.666	0.630	0.596	0.564
7	0.933	0.871	0.813	0.760	0.711	0.665	0.623	0.583	0.547	0.513
8	0.923	0.853	0.789	0.731	0.677	0.627	0.582	0.540	0.502	0.467
9	0.914	0.837	0.766	0.703	0.645	0.592	0.544	0.500	0.460	0.424
10	0.905	0.820	0.744	0.676	0.614	0.558	0.508	0.463	0.422	0.386
11	0.896	0.804	0.722	0.650	0.585	0.527	0.475	0.429	0.388	0.350
12	0.887	0.788	0.701	0.625	0.557	0.497	0.444	0.397	0.356	0.319
13	0.879	0.773	0.681	0.601	0.530	0.469	0.415	0.368	0.326	0.290
14	0.870	0.758	0.661	0.577	0.505	0.442	0.388	0.340	0.299	0.263
15	0.861	0.743	0.642	0.555	0.481	0.417	0.362	0.315	0.275	0.239
16	0.853	0.728	0.623	0.534	0.458	0.394	0.339	0.292	0.252	0.218
17	0.844	0.714	0.605	0.513	0.436	0.371	0.317	0.270	0.231	0.198
18	0.836	0.700	0.587	0.494	0.416	0.350	0.296	0.250	0.212	0.180
19	0.828	0.686	0.570	0.475	0.396	0.331	0.277	0.232	0.194	0.164
20	0.820	0.673	0.554	0.456	0.377	0.312	0.258	0.215	0.178	0.149
25	0.780	0.610	0.478	0.375	0.295	0.233	0.184	0.146	0.116	0.092
30	0.742	0.552	0.412	0.308	0.231	0.174	0.131	0.099	0.075	0.057
35	0.706	0.500	0.355	0.253	0.181	0.130	0.094	0.068	0.049	0.036
40	0.672	0.453	0.307	0.208	0.142	0.097	0.067	0.046	0.032	0.022
50	0.608	0.372	0.228	0.141	0.087	0.054	0.034	0.021	0.013	0.009

Table 7. Present Value of a Lump Sum
From: Financial Management Theory and Practice

B. PLANNING BASED ON STAGES IN THE MILITARY CAREER

One of the best decisions US service members can make is to begin preparing for retirement as soon as possible. The Retirement Confidence Survey just recently released its results, 63 percent of 25 to 34 year olds say they are saving for retirement, up from 50 percent of the same age group just 10 years ago. Young US service members should know that they are not the only entry level American workers that feel that their salaries are too limited to begin saving for what seems like a long way into the future. There are many difficult choices that must be made regarding housing, daily living expenses, automobiles and possible credit card or student loan debt. Thus, service members should create a simple checklist similar to the one below that will help them determine what is the right amount to save for retirement. At a minimum, one must answer the following questions:

- ***What income is needed for a comfortable retirement?***
- ***What assets are now available for retirement?***
- ***What pensions and annuities can be expected upon retirement?***
- ***What is the expected real rate of return during working and retirement years?***
- ***How many years to retirement? How many years in retirement?***

Each of these checklist questions are addressed in each scenario. The first scenario that will be analyzed will involve a young US service member just starting her career in the US Navy.

1. Scenario Number One

A Navy E-5 named Tonya, who is an Information Systems Technician, has decided that at the age of 25, she should start looking into some type of simple retirement investment. She recently signed up for the TSP and chose to contribute 8 percent of her $1991.10 base monthly salary, totaling $159.28. She would also like to invest in an IRA because she has been doing research and thinks that a Roth IRA would be a great addition to her TSP account. Unfortunately, she thinks that she cannot afford both. At present, Tonya is not sure about the amount of income she will need for a comfortable retirement. She is currently single but she believes that she will probably be married and have

children by the time she reaches retirement age. She knows what assets she has available now so that is what she will have to use to run the model. She is expecting her military pension upon retirement, and she thinks that a second career will provide some type of income when that is complete. She is not optimistic about social security so she will not add that to her calculations.

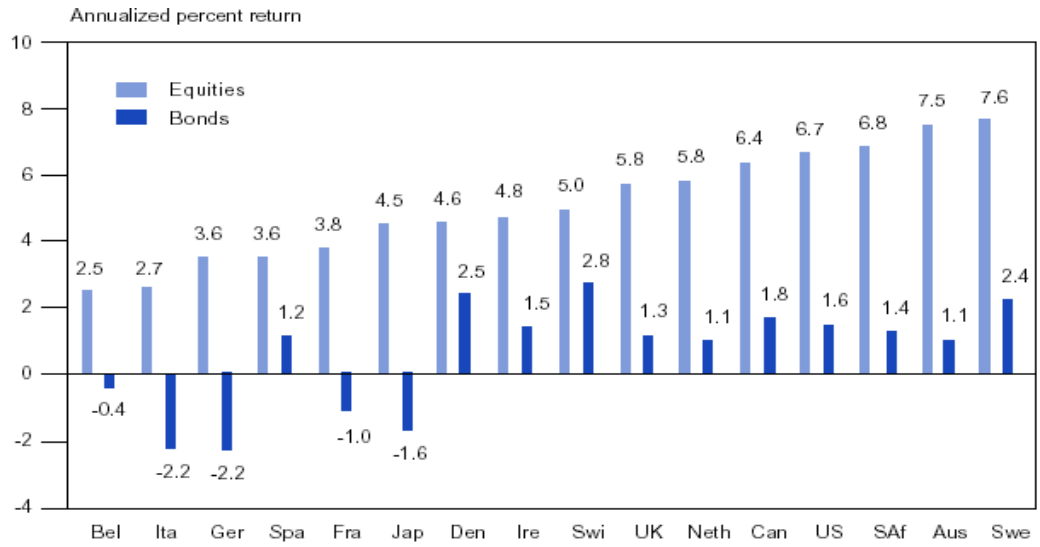

Figure 1. Real Return on Equities Versus Bonds Internationally, 1900 – 2000

From: PIMCO Investment Outlook

Figure 1 is a historic look at the real return on equities and bonds, both domestically and internationally. This average of annualized percent return covers a period of one hundred years. Sweden has the largest real rate of return with an average of 7.6 percent, while the United States is fourth with 6.7 percent. Belgium has the lowest with an average rate of 2.5%. Therefore, 6.7 percent will be utilized in the following three scenarios based on this information.

RETIREMENT ASSUMPTIONS	
Monthly contribution amount	$159.28
Age when contributions start	25
Age when contributions stop	40
Age when withdrawals begin	60
Assumed yearly return after inflation	6.70%
Annual Withdrawal amount at retirement	$21,000.00
Tax rate (before retirement)	15%
Tax rate (after retirement)	15%
AUTOMATIC ENTRY COMPUTATION AREA (no entries allowed)	
Monthly contribuation amount	$ (159.28)
Monthly rate	0.56%
IRA monthly rate (after tax)	$ (135.39)
Number of months growth	240
Number of years of growth	20
Withdrawal needed if pretax	$ 24,705.88

Value Criteria	Value of TSP (Pretax)	Value of Roth IRA (after tax $)
Value after contribution period	$80,015.71	$68,013.35
Value after growth period	$292,727.58	$248,818.44

WITHDRAWAL PERIOD ($21,000/YEAR)			
Age	**Growth Years**	**Value of TSP (after taxed withdrawal)**	**Roth IRA Value (No tax)**
60	36	$285,979.15	$243,082.28
61	37	$278,778.57	$236,961.79
62	38	$271,095.56	$230,431.23
63	39	$262,897.79	$223,463.12
64	40	$254,150.76	$216,028.15
65	41	$244,817.69	$208,095.03
66	42	$234,859.30	$199,630.40
67	43	$224,233.69	$190,598.64
68	44	$212,896.17	$180,961.75
69	45	$200,799.04	$170,679.18
70	46	$187,891.40	$159,707.69
71	47	$174,118.95	$148,001.11
72	48	$159,423.74	$135,510.18
73	49	$143,743.95	$122,182.36
74	50	$127,013.62	$107,961.58
75	51	$109,162.36	$92,788.01
76	52	$90,115.06	$76,597.80
77	53	$69,791.59	$59,322.85
78	54	$48,106.45	$40,890.49
79	55	$24,968.41	$21,223.15
80	56	$280.12	$238.10

Figure 2. Scenario Number One Analysis

Using the real rate of return average from Figure 1, Figure 2 reveals that Tonya can allow her account to grow under the assumed average rate of return until age 60 when she will begin systematic withdrawals. Another assumption for this scenario is that Tonya will remain in the 15 percent federal income tax bracket. Her retirement plans call for her to withdraw an after tax amount that will net her $21,000 annually of supplemental income. In this scenario, Tonya's decision to invest in either a Roth IRA or the TSP is a great idea. ***In order to receive the tax benefits now, she should continue investing in the TSP***. If her budget allows at a later date, the Roth IRA would be a great addition to her portfolio. The key to Tonya's ability to achieve her retirement goals is starting early with her investment planning. Time is one of the greatest assets she has in her portfolio.

2. Scenario Number Two

The second scenario involves an Air Force O-3 named Terry who is married and has been in the Air Force for 9 years. Both Terry and his wife work; Terry is 35 and his wife Tina is 30 years old. They both desire to retire at the age of 60. Terry's current income is $60,000 annually and his wife's is $40,000. Both Terry and his wife have received a typical annual real pay raise of 3 percent. Terry and his wife expect to receive post –retirement income from social security, pensions, and employer sponsored savings plans. The estimate of their expected annual social security benefits is $13,500 for Terry and $10,300 for Tina.[41] These payments are expected to begin at age 62. If Terry retires from the military after 20 years of service he will receive approximately $33,000 in annual payments in today's dollars. His wife has no pension plan but she has a 401 (k) plan with a current balance of $7,000 and Terry has $10,000 in the TSP. Both contribute 9 percent of their annual pay to their retirement savings plan. In addition, they both contribute $3,000 annually to a Roth IRA. The investment portfolio for this family includes an aggressive mix of stocks and bonds. Their federal tax rate is 28 percent. Are Tina and Terry following an investment plan that will help them reach their retirement goal of 75 to 80 percent of their pre-retirement income that financial planners suggest?

[41] Projected estimated benefits from the Social Security Administration based upon current salary and years of contributions to FICA.

Required Income (Current Dollars)	**$ 15000**
Required Income (Future Dollars)	**$ 31406.67**
Number of Years Until Retiring	**25**
Number of Years After Retiring	**25**
Annual Inflation (on Required Income)	**3.0 %**
Annual Real Yield on Balance	**6.7 %**

Need $ 530896.02 ($ 214062.49 invested today)

Year	Beg Bal	Withdraw	Interest	End Bal
1	530896.02	31406.67	33465.79	532955.14
2	532955.14	32348.87	33540.62	534146.89
3	534146.89	33319.34	33555.45	534383.00
4	534383.00	34318.92	33504.29	533568.38
5	533568.38	35348.48	33380.73	531600.63
6	531600.63	36408.94	33177.84	528369.53
7	528369.53	37501.21	32888.18	523756.50
8	523756.50	38626.24	32503.73	517633.99
9	517633.99	39785.03	32015.88	509864.84
10	509864.84	40978.58	31415.38	500301.64
11	500301.64	42207.94	30692.28	488785.98
12	488785.98	43474.18	29835.89	475147.69
13	475147.69	44778.40	28834.74	459204.03
14	459204.03	46121.75	27676.51	440758.79
15	440758.79	47505.41	26347.98	419601.36
16	419601.36	48930.57	24834.94	395505.73
17	395505.73	50398.49	23122.19	368229.43
18	368229.43	51910.44	21193.37	337512.37
19	337512.37	53467.75	19030.99	303075.60
20	303075.60	55071.79	16616.26	264620.07
21	264620.07	56723.94	13929.04	221825.17
22	221825.17	58425.66	10947.77	174347.28
23	174347.28	60178.43	7649.31	121818.17
24	121818.17	61983.78	4008.90	63843.29
25	63843.29	63843.29	0.00	0.00

Figure 3. Tina's Required Investment

From: Bankrate.com

Required Income (Current Dollars)	**$ 12000**
Required Income (Future Dollars)	**$ 25125.34**
Number of Years Until Retiring	**25**
Number of Years After Retiring	**25**
Annual Inflation (on Required Income)	**3.0 %**
Annual Real Yield on Balance	**6.7 %**

Need $ 424716.89 ($ 171250.02 invested today)

Year	Beg Bal	Withdraw	Interest	End Bal
1	424716.89	25125.34	26772.63	426364.18
2	426364.18	25879.10	26832.50	427317.58
3	427317.58	26655.47	26844.36	427506.47
4	427506.47	27455.14	26803.44	426854.77
5	426854.77	28278.79	26704.59	425280.57
6	425280.57	29127.16	26542.28	422695.69
7	422695.69	30000.97	26310.55	419005.27
8	419005.27	30901.00	26002.99	414107.26
9	414107.26	31828.03	25612.71	407891.94
10	407891.94	32782.87	25132.31	400241.37
11	400241.37	33766.36	24553.83	391028.84
12	391028.84	34779.35	23868.72	380118.21
13	380118.21	35822.73	23067.80	367363.28
14	367363.28	36897.41	22141.21	352607.09
15	352607.09	38004.33	21078.38	335681.14
16	335681.14	39144.46	19867.96	316404.64
17	316404.64	40318.79	18497.75	294583.59
18	294583.59	41528.36	16954.70	270009.94
19	270009.94	42774.21	15224.79	242460.52
20	242460.52	44057.44	13293.01	211696.09
21	211696.09	45379.16	11143.23	177460.17
22	177460.17	46740.53	8758.22	139477.85
23	139477.85	48142.75	6119.45	97454.55
24	97454.55	49587.03	3207.12	51074.64
25	51074.64	51074.64	0.00	0.00

Figure 4. Terry's Required Investment

From: Bankrate.com

Terry and Tina's required income from investments is determined by estimating their desired retirement income minus pensions received. Terry and Tina's calculations in Figures 3 and 4 shows that their investments are not sound enough in helping them achieve their goal of 75 percent of their pre retirement income. With Social Security, Terry's pension and both of their investments, they should have approximately $75,000 of annual retirement income in future dollars.

Tina and Terry need to remember that their plan needs to be flexible. Economic conditions change from year to year so their plan may need modification periodically. At times, their plan will come up short if they keep a lot of money in CD's and the interest rate received is not keeping pace with other investment accounts. A one time smart investment does not mean that it will be the best investment all the time. When one is investing for retirement it usually makes sense to change your strategy as one gets closer to actually leaving the workforce.[42] Tina and Terry should perhaps be more risk averse with their investments at the end of their careers.

3. Scenario Number Three

The final scenario involves Jim, an O-6 in the Navy, who has 10 years remaining until he retires from the military. Jim is married with two kids and he has served in the Navy for 22 years. Jim initially enlisted in the Navy and later was commissioned after receiving an appointment to the Naval Academy. Jim is 46 years old and he has decided with the investments he made, he will not need to work upon retirement. His wife Jane does not work so there will be no other retirement income other than his. Jim received an MBA from Harvard Business School early in his career so he feels he has the knowledge to invest wisely and feels comfortable with his decisions. Jim's savings and investments have made him $400,000 over his career. He invested his flight bonuses into his retirement plan and he feels it is time to reap the benefits. He currently invests $1000 monthly and he plans to continue this until he retires. He has calculated he will have $1 million dollars upon retirement and feels that this will be sufficient along with his military pension. Is a million dollars enough to retire on for Jim and his family?

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[42] www.online.wsj.com, April 2004.

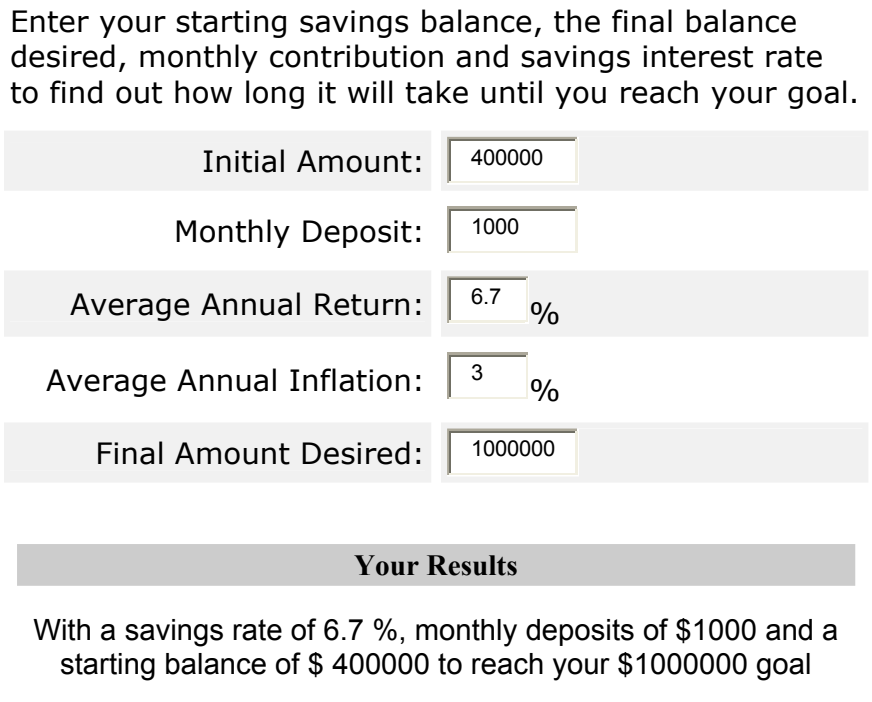

Figure 5. Jim's Retirement Investments

From: Bankrate.com

From the calculations it appears Jim will not reach his goal of $1 million in 10 years. In addition, due to inflation, if he had reached his goal his investment would only be worth $722,421.28. Investment experts state that $1 million dollars is enough to live on if:

1. You are willing to manage a diversified portfolio that includes stocks throughout your retirement.
2. You are willing to use all of the assets to live on.
3. You believe that Social Security benefits will continue for you, as currently structured, including inflation adjustments.

4. You have separately provided protection against catastrophic events, particularly health care, through insurance or other means.[43]

Therefore, will Jim be able to retire in 10 years? ***Yes, but he will be short of his goal of $1 million.*** He and his family will need to determine if they will be able to maintain the type of lifestyle they desire with the amount of income he will have available. Also, he will have approximately $700,000 in today's dollars, his monthly pension will be $6,000 before taxes, and his Social Security benefits approximately $1500 each month.

In today's environment, service members must realize that at the age when most retire from the military they will live longer and be more active in retirement than their parents. Doing things right will take more than just financial planning. Jim may realize after a few months into his retirement years that working again is a financial necessity. Depending upon the return on his investments during retirement, Jim could be part of the record number of 21 million Americans age 55 or older that are in the workforce.

C. SUMMARY

This purpose of this chapter was to provide a look at service members in different stages of their careers and to show how to assess their retirement plans. What the reader needs to take away from this chapter is that there are various ways available to reach one's retirement goals. This chapter has identified only three profiles for purposes of illustration. Many others are possible. Each service member can assess his or her own plans using this method.

[43] Woodruff, Tom, "Is $1 Million Enough to Retire On?" *MSN Money*, April 2004.

IV. RISK ASSESMENT/SENSITIVITY ANALYSIS

A. INVESTMENT RISK

Investment risk is always present. Service members should be aware of these risks before starting their program. As stated earlier, there is no such thing as a totally safe investment, but one can determine how much risk one is comfortable with. Other than investment risk, there are other risks that cannot be predicted or controlled. They are market risk, currency fluctuations, inflation risk, and political turmoil.[44]

Market risk depends on the state of the economy in general. When markets in general fall, individual investments usually fall with it. Currency fluctuations will affect international investments. When the dollar's value rises, the dollar value of international investments fall. Inflation affects fixed rate investments such as bonds and CD's. Relative to other currencies, Political turmoil affects investments that are dependent upon those nations' economies. Oil and gas price volatility are the most recent examples of how this affects the US economy.

B. SENSITIVITY ANALYSIS

Sensitivity analysis measures the impact on investment outcomes of changing one or more key input values about which there is uncertainty.[45] Varying the amount of inflation and the amount of realized return on investments provides many combinations of possible outcomes. There is a substantial difference in the amount an investment returns to the service member based on these two variables alone. In addition varying investment inputs also significantly affect the outcomes of the retirement calculators.

1. Advantages

The first advantage of using sensitivity analysis is it shows the how significant any given input variable is when determining the benefit of an investment's worth. Displaying a range of input values does this and the service members can see the possible range of outcomes. Sensitivity analysis also helps identify where to spend

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[44] www.online.wsj.com, April 2004.

[45] Marshall, Harold E., *Technology Management Handbook* (Boca Raton: CRC Press, 1999, 59.

additional available income in order to improve investment chances. It can also be used when there is little information and time for more sophisticated techniques.

2. Disadvantages

The major disadvantage of sensitivity analysis is that there is no explicit measure of risk exposure.[46] Although one may be aware of the possible outcomes, the analysis contains no explicit measure of the likelihood. Other disadvantages associated with sensitivity analysis include not being able to reflect the effects of diversification. Diversification is essential to every retirement planning portfolio. Therefore, the inputs that change as a result of diversification cannot be properly evaluated. Finally, sensitivity analysis does not incorporate any information about the possible magnitudes of the forecast errors. Any errors as a result of calculated assumptions are not incorporated in the results of the scenarios completed.

3. Illustration of Sensitivity Analysis

In order to illustrate how sensitivity analysis can affect retirement investment, an example is listed in Table 8 with the following assumptions: $10,000 per year is the required income needed. Additional assumptions for this illustration include beginning retirement savings is zero, the service member is 25 years old, and there is forty years until retirement. The sensitivity analysis is useful for individual retirement planning because without knowing how much to save, one may be on the extreme ends of saving too much or not saving enough. The sensitivity analysis will help one determine a proper balance with regards to being able to enjoy life in addition to preparing for the type of lifestyle desired in retirement. Some service members are saving too much each month for their retirement while others are not saving enough. If one has no idea where they are in the matrix then the possibilities of reaching one's goal may not be possible.

[46] Marshall, Harold E., *Technology Management Handbook* (Boca Raton: CRC Press, 1999), 62.

Pre-Retirement Portfolio Returns	Post-Retirement Portfolio Returns: Low 2%	Base 4%	High 6%
High 8%	$770	$600	$490
Base 6%	$1300	$1050	$825
Low 4%	$2200	$1700	$1400

Table 8. Required Yearly Investments

Table 8 shows how much one needs to invest in when assuming a base of 6 percent real return on pre-retirement investments and 4 percent real return on post-retirement investments. The table assumes the service member is aged 25 with 40 years left to retirement, retiring at the age of 65. The post-retirement return assumes 30 years in retirement until age of 95. This sensitivity analysis shows that real rate of return can have a significant impact on how much money one needs to invest in order to receive $10,000 real per year in retirement income. The amount one invests based on real return can vary from $490 to $2200 per this table. This table indicates degree of risk associated with one's contributions to retirement. In this case, $1050 per year is sufficient for the base case. If contributions are less than $500 per year, there is a high risk of not achieving one's goal. Someone saving more than $2200 per year is something of a miser.

Real ret of return for post-retirement portfolio will likely be higher. The post-retirement must generate an annual income; this construct can be expected to reduce rate of return.

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V. CONCLUSIONS AND RECOMMENDATIONS

A. SUMMARY

Retirement planning should be addressed by all military personnel. It is never too late nor too early to begin saving for retirement. The earlier savings begin, the better one's chances of earning more for their future; but the reality is that most service members do not get an early start. For service members that do get an early start, many do not save enough because they don't set specific goals. The purpose of this study was twofold. First, to inform service members about the importance of retirement planning. The ability to set goals, chart a path to those goals, and begin working towards them is vital to retirement planning. Second, a financial analysis of three service member profiles was completed to illustrate how one can actually achieve goals with proper planning. Successful retirement planning depends on creating a strategy that works for the service member and their particular situation. Establishing an emergency fund, setting retirement goals, maximize workplace savings, establishing Roth IRA's for both spouses if married, and periodically reviewing asset allocation will put service members on the right path.

B. CONCLUSIONS

This study produced five overall primary conclusions:

1. Primary Conclusions:

- ***Retirement planning is important for service members because many workers are not prepared to meet their financial needs in retirement. The ability to set aside smaller amounts of money in the present is much easier to accomplish than trying to save massive amounts when one is late into a working career.***

- ***An analysis using spreadsheets similar to the scenarios built for this project will help service members determine if and when they can afford to retire. While many service members may say they want to retire and live carefree by the age of 50 that is just not possible for most.***

- ***Some of the possible resources available to service members include their command financial specialist, Certified Financial Planners, and Stockbrokers. Although most service members may not have worked with a financial professional, they are a resource that can act as a coach to keep one motivated and encouraged when things don't always go as planned.***

- ***The amount of income a service member needs during retirement will be determined from inputting the retirement assumptions in a retirement calculator or spreadsheet. Several factors, which will be determined by each service member can significantly impact the amount of money needed. Retirement lifestyle is the key factor in determining the amount of income needed.***

- ***In order for one to calculate retirement needs, a rough estimate can be made using retirement calculator software that is accessible via the Internet. The rough figures produced from the inputs will serve as a guide for planning. A financial professional can run a more detailed analysis using Monte Carlo simulation analysis to provide a more realistic picture.***

C. RECOMMENDATIONS

The predominant conclusion from the results of this study is the ***definite need for all service members to begin a retirement savings plan immediately.*** Putting off until tomorrow what should have been done yesterday can have grave consequences for retirement planning. It is important to start today on what will arguably be the most important financial decision in one's career.

Service members should avoid underestimating the amount needed for retirement living. Many service members plan their retirement on 100% of what they make today to ensure they won't have to reduce their standard of living. This is generally not possible unless the service member has decided to work a second career that will support this planning.

Next, service members should not place too much reliance on Social Security benefits. At present the maximum a person can receive in benefits is approximately $1,800 as an individual, or $3,482 for a couple if both are eligible for the maximum benefit. The conditions for receiving the maximum include being a worker who had been earning more than $5,000 per month prior to retirement. So, based on the Social Security Administration's own information, the most it will replace is about one third of pre-retirement income.

Last, utilizing equity investments should be the first step in any retirement planning. Also, service members should take full advantage of the tax-deductible dollars and tax-deferred growth offered by programs such as IRA's and TSP.

D. SUGGESTED AREAS FOR FUTURE RESEARCH

There is currently no formal retirement planning training for service members to attend as part of their introduction to serving in the armed forces. Can the military implement a formal training course to address the importance of retirement planning to all service members? With the defined benefit pension plans becoming a thing of the past in the corporate world, what are the implications of a shift to the defined contribution plan in which the service member will decide whether or not to participate? With the House Education & the Workforce Committee currently investigating how seriously under-prepared tens of millions of Americans are to meet their financial retirement needs, there is a potential for the military to lead the way by providing members with the knowledge they need to be successful in this area. We constantly train to fight, so in order to keep our service members focused on the task at hand, we can help them by providing the comfort of knowing that their retirement planning needs are fulfilled.

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