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THE PROS AND CONS OF PRIVATIZING SOCIAL SECURITY

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ABSTRACT

Social Security is the largest social insurance program in the United States. Each year actuaries and the Social Security Administration evaluate the financial status of the program. In 2015, a review of Social Security showed that Social Security's finances would not be able to support all of their promised benefits by 2034. Changes must be made to the current program to ensure benefit payments in the future.

This paper considers various Social Security reform options policymakers could implement in order to create financial stability within the program. After discussing how the current program works, with an emphasis on the calculation of Social Security retirement benefits, reform options were analyzed. Traditional reform options, including increasing taxes and decreasing benefits, were discussed. Then reform plans involving privatization, or the movement of a portion of Social Security from the public sector to the private sector, were examined. Such reform options include investing Social Security assets in the securities market and incorporating a program of individual retirement accounts. The impact on Social Security's finances, the likelihood of implementation, and the impact on national savings were considered for each reform option. After considering the different reform options, a plan to reform Social Security through a tax increase while investing in the securities market is proposed.

TABLE OF CONTENTS

LIST OF FIGURES	iii
LIST OF TABLES	iv
ACKNOWLEDGEMENTS	v
Chapter 1 Introduction	1
Chapter 2 An Overview of Social Security.....	2
History and Framework.....	2
2015 Social Security Specifics.....	7
Chapter 3 The Challenges Facing Social Security.....	15
Chapter 4 Traditional Options for Reform.....	19
Increasing Taxes	19
Decreasing Benefits	21
Other Options for Change	23
Reform Through Privatization	25
Chapter 5 Investing Social Security Trust Fund Assets in the Securities Market	26
Analysis.....	26
Capital Gains Tax.....	32
Chapter 6 Defined Contribution Plans	35
Design Questions	37
Individual Accounts Only	38
Add-On Approach.....	39
Carve-Out Approach	39
Individual Account Plan.....	43
Chapter 7 Conclusion.....	46
Appendix A Retirement Benefit Tables.....	49
BIBLIOGRAPHY.....	53

LIST OF FIGURES

Figure 1 Social Security & The Federal Government.....6

Figure 2 The United States Government.....7

Figure 3 PIA vs AIME Graph.....10

Figure 4 Historical Life Expectancy17

Figure 5 Ratio of Workers to Beneficiaries18

LIST OF TABLES

Table 1 Full Retirement Ages	8
Table 2 AIME Calculation.....	9
Table 3 PIA Example Calculation	9
Table 4 Low Income Worker PIA Calculation	11
Table 5 Replacement Ratio Comparison	11
Table 6 Early Retirement Benefits.....	12
Table 7 Delayed Retirement Benefits	13
Table 8 Example of Cost of Living Adjustments	14
Table 9 Taxation of Social Security Benefits	21
Table 10 Replacement Ratio Comparison	35

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Chapter 1

Introduction

Social Security is the largest social insurance program in the United States. It includes old-age, survivor, and disability insurance against loss of income due to each scenario. While the system has not fundamentally changed since its inception in 1935, the United States' Social Security system is expected to experience financial challenges in the upcoming years. While Social Security could continue to operate under the current system, the sooner changes are made on the path to sustainable solvency, the less drastic and immediate their implementation need be. As the United States' population experiences an increasing life expectancy and as the baby boomers enter retirement, the program will not be able to provide the same benefits to future retirees as it does today. That is, the same benefits will not be available to the retired population if the money paid into the program does not increase. A variety of proposals have been suggested to correct the shortfalls in the current system, including increasing payroll taxes and decreasing benefits.

A third potential solution is to restructure aspects of Social Security in attempts to increase returns on assets. One way of doing so is to privatize Social Security by incorporating a system of individual accounts. Another way would be to invest Social Security assets in a diversified portfolio including stocks. To determine whether the United States should privatize Social Security retirement benefits, it is important to first understand the current system. A solution cannot be proposed without first understanding what current retirees and current working Americans expect from Social Security. Then a plan to privatize must be analyzed, considering its feasibility, impact on current retirees, future retirees and future workers, as well as its likelihood of being passed into law. Only then can the pros and cons of privatizing Social Security be understood.

Chapter 2

An Overview of Social Security

History and Framework

In the United States today, a system is in place that provides monetary benefits to those citizens that have worked and contributed money to the system throughout their life. While retirement may seem like a well deserved break from many years of hard work, it also comes with a great deal of uncertainty – the uncertainty that comes whenever one is unemployed and missing their expected paycheck. The United States implemented a system to help support those Americans that have contributed Social Security taxes throughout their working career; it comes in the form of Social Security Old Age Retirement Benefits. The need to assist the elderly population after their working years are over is one that has been present throughout history. In some cultures, individuals saved valuable goods throughout their lives in preparation for the time they would stop working in their old age. Other cultures saw dependency on younger family members as a way to support the elderly. The Middle Ages saw the development of formal organizations or societies made up of similar workers. These societies provided benefits to their members, especially in times of financial hardship, such as those often experienced in old age. In the 1930's when many in the United States called for an economic security program, more than a dozen other countries around the world were already implementing such programs (“Historical Background And Development of Social Security”).

During the Great Depression, the United States' government created the Social Security program as a means to provide economic security to the retired population. From its inception, Social Security was designed as a contributory defined benefit system, paying out benefits after a worker had paid taxes into the system for a length of time. Since the United States adopted Social Security in 1935, the program has undergone many changes. These included such changes as alterations to the percentage of wages taxed, how much each retiree receives as a benefit, which workers must participate, as well as adjustments for

changes in the cost of living and the addition of disability and survivor benefits. However, Social Security remains today, as it did in 1935, a contributory defined benefit program. Social Security is contributory because one becomes eligible to receive benefits only after paying taxes, therefore contributing to the program. Social Security is also a defined benefit program, which means that upon retirement, one receives a predetermined benefit. Globally, Social Security programs may take on a variety of forms, but in the United States, Social Security has always been a contributory defined benefit program. Each working American contributes a percentage of their paycheck towards paying the Social Security benefits of current and future retirees. In return, when contributors retire, they will receive Social Security benefits funded by past and current workforce's Social Security Taxes (“Historical Background and Development of Social Security”).

Since its inception, Social Security in the United States has embodied a few underlying principles. Social Security is an earned right, meaning that United States citizens have the right to Social Security benefits, but only if they have contributed to the system through taxes. Additionally, Social Security in the United States is almost universal. While some state and local government workers are exempt from participation, in general, most working Americans participate in the system. Support for the program comes from this idea of universality. Because it is something almost everyone participates in, almost everyone has a vested interest in its future and continued operation. Furthermore, Social Security balances individual equity and social adequacy. The Social Security Administration calculates one's retirement benefits based on how much a retiree earned during their career, and therefore contributed to the system. Hence, after investing more into the program one receives more from it. However, Social Security replaces a greater portion of the income of those who earned less during their career, incorporating the principle of social adequacy. The calculation of Social Security benefits shows the balance between individual equity and social adequacy (“Reform Options” 2007 4).

Many regard Social Security as a pay as you go system, as the money paid into the system from taxes goes directly to paying out the benefits. In reality, the system is more complex than that. It is true

that the money collected from Social Security taxes, Federal Insurance Contribution Act (FICA) and Self Employed Contribution Act Taxes (SECA), pays current retirees' benefits. However, the number of workers today is greater than the number of retirees receiving benefits. When more money is paid in than needs to be paid out in benefits, the Social Security Administration puts the excess into the Social Security trust fund. The excess does not merely sit in this account, but is invested in United States Treasury bonds. In issuing Treasury bonds, the government is able to use the money brought in by Social Security taxes to help decrease its debt and fund other programs and spending. However, this does not actually decrease the national debt, as the money eventually needs to be repaid. The Social Security trust fund, therefore, comes from tax revenues and interest earned on the Treasury bonds held in the trust fund ("Social Security Reform: Trust Fund Investments" 1).

Before exploring the financial challenges predicted to burden Social Security in the upcoming years, as well as the solutions proposed, it is imperative to understand how the current system works and operates. While the Social Security Administration operates as an independent agency of the federal government, the two do interact. When analyzing the United States' Social Security System, one can consider the Social Security Administration and federal government separately, or one can look at the entire United States Government as a whole.

The Social Security Administration and federal government, when viewed as separate entities, maintain a lender-borrower relationship in times of surplus. Historically, there have been more workers contributing taxes to Social Security than retirees receiving benefits. Often during these times, Social Security collected more money than was needed to pay the benefits immediately owed. Excess money collected is placed in the Social Security trust fund. However, the money does not merely sit in an account waiting to be withdrawn to pay benefits. Instead, the excess money, or trust fund assets, are invested in special issue Treasury bonds. Essentially, the Social Security Administration loaned the federal government money in the form of the bonds they purchased. A Treasury bond is merely a promise from the Department of the Treasury to pay back the money loaned with interest. Upon receiving these

loans and issuing promises to repay, the federal government was able to use the money from Social Security for government spending as they saw fit. Just like any other pension plan, the Social Security trust fund is holding the Treasury bonds until they need the money to pay benefits in the future while earning interest on the investment.

The ratio of a), workers contributing to Social Security to b), retirees, has been decreasing, and already Social Security has needed to exchange Treasury bonds for money in order to pay benefits owed, a trend that will only continue in upcoming years. By asking the Department of the Treasury to repay their loans, the Social Security Administration is causing problems for the Treasury. The money loaned was already spent to fund other government programs and spending, and the Treasury does not have the money to pay back the loans they have promised (“Social Security Individual Accounts: Design Questions” 1). In general, the Department of the Treasury has three options to repay loans they owe when they do not hold the money to do so. The first option is to increase federal taxes, therefore bringing in more money and using the money to repay the loans. The second option is to decrease government spending. If spending is cut from other programs and initiatives, it can be used to repay the money loaned. The final option is for the Treasury to issue more money, essentially borrowing more and increasing the national debt. As the ratio of workers to retirees decreases, benefit payments will be funded in larger part by money being repaid by the Treasury. Figure 1 summarizes how the Social Security Administration and the federal government function in relation to one another.

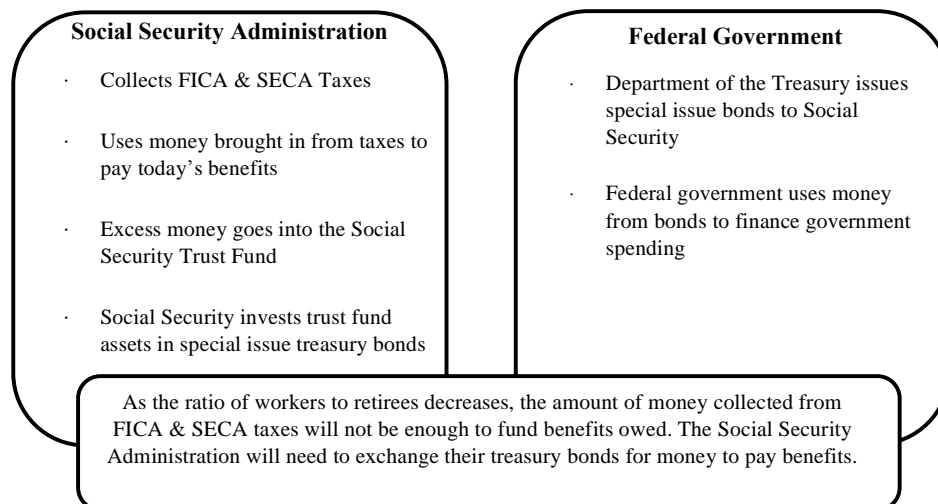


Figure 1 Social Security & The Federal Government

When looking at the United States Government as a whole, Social Security can be seen as a pay as you go system that faces future financial challenges. From this simpler perspective, the money collected by the government from FICA and SECA taxes is used in two ways. First, the money is used to pay the current benefits owed. Once those benefits are paid, the Department of the Treasury uses any excess money in a way similar to how they use the money brought in by federal taxes. The money may be used for a variety of different government programs and spending. As the ratio of Social Security contributing workers to retirees decreases, the money brought in from FICA and SECA taxes will not be enough to pay out current benefits. At this time, the U.S. government, specifically the Department of the Treasury, will need to fund the benefits owed (“Social Security Reform: Trust Fund Investments” 1). However, the Treasury will not have the money to do so. They will have three options to fund the benefits owed. They can increase taxes, decrease spending, or borrow more money. Figure 2 summarizes how Social Security may be viewed as a component of the United States Government.

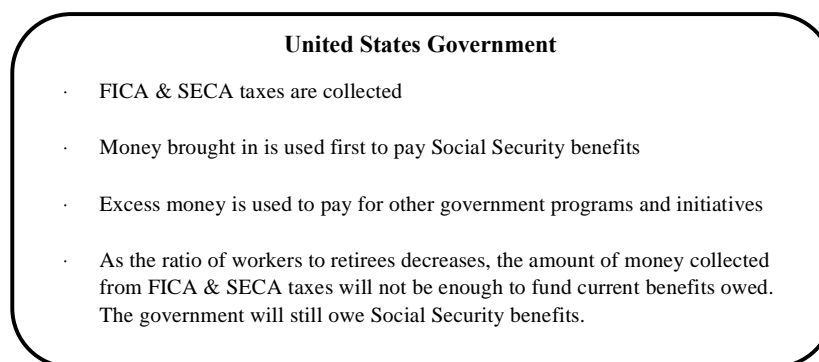


Figure 2 The United States Government

While the two perspectives differ in specifics, considering Social Security a little differently, they show the same process. More importantly, they both illustrate the underlying challenge facing the future of Social Security. Unless the Social Security Administration is able to increase revenue or the return on the assets they hold, the Treasury will owe Social Security funds to pay beneficiaries benefits that they do not have the money to pay.

2015 Social Security Specifics

Since 1935, the specifics of Social Security, dollar amounts and percentages, have changed and been updated many times. In 2015, each American worker paid 6.2% of their wages up to the taxable wage base towards Social Security taxes. A worker only has to pay Social Security taxes on their earnings up to the taxable wage base, \$118,500 in 2015. Once one has exceeded that in a given year, they are not taxed for Social Security until the following year. Each year the Social Security Administration increases the taxable wage base by the average increase in national wages. In addition to individual contributions, one's employer matches that 6.2%, meaning that 12.4% of all wages up to the taxable wage base are contributed to Social Security. In addition to the 6.2% Social Security tax, employees pay a 1.45% Medicare tax on all of their earnings. Like the Social Security tax, one's employer matches this amount,

but unlike Social Security taxes, Medicare taxes apply to all earnings, with no annual cap. By working and contributing money to Social Security through taxes, one earns credits. For each \$1,220 one earns, one receives one-quarter year of credit. Each year one may only earn a maximum of four credits, and before becoming eligible for Social Security retirement benefits, one must earn 40 credits. Essentially, the program is designed so that someone has to contribute to Social Security for about ten years before they are able to benefit from the system (“Understanding the Benefits”).

Social Security calculates a retiree’s benefit using a multi-step formula. To begin, a worker’s Primary Insurance Amount (PIA) is determined. A PIA is the benefit amount a retiree is to receive if they retire at their full retirement age. The Social Security Administration designates full retirement ages for workers depending on their year of birth as seen in Table 1 (“Understanding the Benefits”).

Table 1 Full Retirement Ages

Year of Birth	Full Retirement Age
1943-1954	66
1955	66 and 2 Months
1956	66 and 4 Months
1957	66 and 6 Months
1958	66 and 8 Months
1959	66 and 10 Months
1960 or Later	67

Upon retirement, the Social Security Administration indexes a worker’s actual earnings each year to account for increases in average wages since that year due to wage inflation. Indexing earnings each year allows the Social Security Administration to compare a worker’s earnings in relative dollars.

Retirees are eligible to receive benefits on the 35 years in which they earned the most money during their career, based on their indexed annual earnings. One’s greatest 35 indexed earnings are then divided by 420 (35 years in months), resulting in the retiree’s Average Indexed Monthly Earning (AIME).

Essentially, a retiree’s AIME is their average monthly earnings during the 35 years in which they made the most money, in today’s dollars (“Your Retirement Benefit: How It’s Figured”). An example AIME

calculation is shown in Table 2. Example Benefit calculations are based on an example retiree whose annual earnings are shown and indexed in Appendix A.

Table 2 AIME Calculation

Average Indexed Monthly Earning Calculation		
Sum of Largest 35 Indexed Annual Earnings	Months	AIME
\$2,848,035.00	420	\$6,781.04
AIME Formula = Sum of Largest 35 Annual Earnings ÷ 420		

The next step in calculating one's Social Security retirement benefit is to calculate a retiree's PIA from their AIME. The formula used to do so consists of splitting an individual's AIME into three parts, calculating a percentage of each, and taking their sum. The first part of the formula calculates 90% of the first \$856 of one's AIME. The second part calculates 32% of the AIME in excess of \$856, but less than \$5157. The final part calculates 15% of the AIME greater than \$5,157. All three parts are added together and rounded down to the dollar, resulting in a retiree's PIA ("Primary Insurance Amount"). Table 3 shows the PIA calculation for the example retiree whose annual earnings are shown and indexed in Appendix A.

Table 3 PIA Example Calculation

Primary Insurance Amount Calculation			
AIME	Part 1	Part 2	Part 3
\$6,781.04	$0.9 * (\$856) = \770.40	$0.32 * (\$5,157 - \$856) = \$1376.32$	$0.15 * (\$6,781.04 - \$5157) = \$243.61$
	PIA	Rounded PIA	Replacement Ratio
	$\$770.40 + \$1376.32 + \$243.61 = \2390.33	\$2,390	$35\% = \$2,390 / \$6,781.04$

The bend points, or specific dollar amounts, used in this formula are for Social Security benefit calculations in 2015. The Social Security Administration adjusts these bend points from time to time to account for changes in national average wages.

Chart 1: PRIMARY INSURANCE AMOUNT FORMULA FOR PERSONS TURNING AGE 62 IN 2007

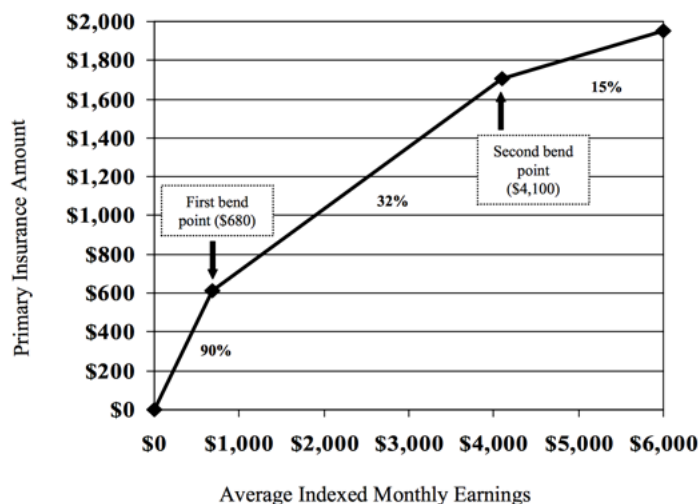


Figure 3 PIA vs AIME Graph

As discussed earlier, Social Security contains the underlying principle of social adequacy, meaning that those who earn less receive relatively more from the program. As can be seen in Figure 3. An analysis of the benefit formula and a closer examination of replacement ratio shows this. The replacement ratio is the percent of a worker's AIME that they will receive from their retirement benefit. For example, if a worker's AIME is just above the first bend point, they will receive 90% of most of their earnings, resulting in them receiving a retirement benefit that replaces a larger portion of their annual earnings than a worker that earned over the taxable wage base each year. While the PIA of a low-income worker will be less than the PIA of a high-income worker, the percent of their AIME they receive as a retirement benefit will be larger ("Reform Options" 2007 6). Table 4 shows an example PIA calculation for a relatively low-income worker. Table 5 compares the AIME, PIA, and replacement ratio for workers of varying levels of income, again showing that those with lower AIMEs and PIAs have greater replacement ratios. It is important to remember that Social Security benefits were not designed to replace one's entire income. The calculations for Table 5 can be found in Appendix A.

Table 4 Low Income Worker PIA Calculation

Primary Insurance Amount Calculation			
AIME	Part 1	Part 2	Part 3
\$1,000	$0.9 * (\$856) = \770.40	$0.32 * (\$1,000 - \$856) = \$46.08$	$0.15 * (\$0) = \0
PIA		Rounded PIA	Replacement Ratio
$\$770.40 + \$46.08 + \$0 = \816.48		\$816	82%

Table 5 Replacement Ratio Comparison

Replacement Ratio Comparison		
AIME	PIA	Replacement Ratio
\$1,000	\$816.48	82%
\$2,000	\$1,136.48	57%
\$3,000	\$1,456.48	49%
\$4,000	\$1,776.48	44%
\$5,000	\$2,096.48	42%
\$6,000	\$2,273.17	38%

A retiree's PIA is the retirement benefit they will receive if they retire at their full retirement age. However, a worker may choose to retire before their full retirement age or continue working past that age. In doing so, their retirement benefit will be impacted. In 2016, a worker can choose to retire as early as age 62. If they do, they will receive reduced retirement benefits. As can be seen in calculations in Table 6, for each month a worker retires early, meaning before their full retirement age, their benefit will be reduced by 5/9% for the first 36 months and one half of one percent for each additional month early. The earlier one decides to retire, the larger the reduction in their retirement benefit ("Understanding the Benefits").

Table 6 Early Retirement Benefits

Early Retirement Benefit					
Early Retirement Age	Full Retirement Age	PIA	Number of Months Early	Reduction	Early Retirement Benefit
62	66	\$2,390	48	$2390 * (20\% + .005 * (48-36)) =$ \$637.33	\$1,753
63	66	\$2,390	36	$2390 * 5/9\% * 36 =$ \$478.00	\$1,912
64	66	\$2,390	24	$2390 * 5/9\% * 24 =$ \$318.67	\$2,071
65	66	\$2,390	12	$2390 * 5/9\% * 12 =$ \$159.33	\$2,231
<p>Reduction Formula = $PIA \times (5/9\% \times (\text{Months Before Full Retirement Age up to 36}) + .005(\text{Additional Months Before Full Retirement Age}))$</p> <p>Early Retirement Benefit = PIA - Reduction</p>					

Additionally, a worker can choose to retire after their full retirement age. In doing so, one increases one's retirement benefit. The percentage at which their benefit will increase depends on the year in which they were born; the full table of benefit increases is listed in Appendix A. For workers retiring now it is an 8% increase for each year worked after the full retirement age. Furthermore, a worker can only increase their benefit by delaying retirement up until age 70, after which one will have maxed out their benefit increase. At that point, they will have maximized their retirement benefit available from Social Security ("Understanding the Benefits"). The delayed retirement benefit at various ages for the continued example for a worker whose annual earnings is indexed in Appendix A and was born in 1950 is shown in Table 7.

Table 7 Delayed Retirement Benefits

Delayed Retirement Benefit					
Delayed Retirement Age	Full Retirement Age	PIA	Number of Years Delayed	Increase	Delayed Retirement Benefit
66 + 1 month	66	\$2,390	1/12	$2390 * 8\% * 1/12 =$ \$15.93	\$2,405
66 + 2 months	66	\$2,390	2/12	$2390 * 8\% * 2/12 =$ \$31.87	\$2,422
66 + 3 months	66	\$2,390	3/12	$2390 * 8\% * 3/12 =$ \$47.80	\$2,438
66 + 4 months	66	\$2,390	4/12	$2390 * 8\% * 4/12 =$ \$63.73	\$2,454
67	66	\$2,390	1	$2390 * 8\% * 1 =$ \$191.20	\$2,581
68	66	\$2,390	2	$2390 * 8\% * 2 =$ \$382.40	\$2,772
69	66	\$2,390	3	$2390 * 8\% * 3 =$ \$573.60	\$2,964
70	66	\$2,390	4	$2390 * 8\% * 4 =$ \$764.80	\$3,155

The Social Security Administration makes one final adjustment to a retiree's benefit. A worker could retire at age 65 and live another 15 years before passing away at age 80. Rather than receiving the same benefit for those 15 years, Social Security adjusts one's benefit to account for increases in cost of living. Each year the Social Security Administration considers changes to the Consumer Price Index and announces a Cost of Living Adjustment (COLA) to apply to retiree's benefits, a change made to Social Security in 1975. COLAs ensure a retiree's benefit will allow a retiree to purchase roughly the same amount of goods year after year. If Social Security did not apply COLAs, a retirement benefit calculated in 2000 would be able to purchase considerably less than the same amount of goods in 2015.

The Social Security Administration applies COLAs annually from the time a worker turns 62 until they no longer receive benefits. Since the earliest a worker can retire is age 62, one's retirement benefit is adjusted for COLAs annually from age 62 on, even if they do not actually retire for years to come. Those workers who choose to retire at their full retirement age, or who choose to delay retirement receive the same COLAs as those who choose to retire early ("How Your Retirement Benefit is Figured"). If the Consumer Price Index does not increase year to year, the Social Security Administration does not increase benefits, such as was the case in 2016. An example of how COLAs effect a retiree's benefit is shown in Table 8. The complete list of COLA adjustments can be found in Appendix A.

Table 8 Example of Cost of Living Adjustments

Example of Cost of Living Adjustments					
	Retirement Age	Year of Retirement	Retirement Benefit	COLA's Since Age 62	2016 Retirement Benefit
Early Retirement	64	2011	\$2,103	1.15	\$2,410.07
Full Retirement	66	2013	\$2,390	1.15	\$2,738.71
Delayed Retirement	68	2015	\$2,771	1.15	\$3,175.30
COLA Formula = (1.036)(1.017)(1.00)(1.00)(1.036)(1.017)(1.015)(1.017)(1.00)				=	1.15
Retirement Benefit with COLA = Retirement Benefit × (1+COLA ₂₀₁₂) × (1+COLA ₂₀₁₃) × (1+COLA ₂₀₁₄) × (1+COLA ₂₀₁₅) × (1+COLA ₂₀₁₆)					

The money collected by the Social Security Administration from FICA and SECA taxes funds more than just retirement benefits. If someone cannot work due to a physical or mental condition that is expected to last at least one year or result in death, they may be eligible to receive Social Security disability benefits. Additionally, family members of those receiving Social Security benefits, either retirement or disability, may be eligible to receive benefits as well. While family members may be eligible for up to half of one's Social Security benefit, there is a cap to the total amount of money a family can receive from Social Security annually. This cap is about 150% – 180% of an individual's benefit. Social Security taxes also go towards paying survivor benefits. Survivor benefits are benefits paid to family members of those who have passed away after contributing Social Security taxes, given they fit a certain criteria. While retirement benefits are often the focus of Social Security conversations and debates, these additional disability and survivor benefits must be kept in mind. While this process appears quite complex, the Social Security Administration is very efficient in their work. Less than 1% of the money collected by Social Security taxes is used to fund the administration and management of Social Security (“Understanding the Benefits”).

Chapter 3

The Challenges Facing Social Security

Each year the Board of Trustees of the Social Security trust funds reports on the financial conditions of Social Security. This report analyzes the immediate and future outlook of the program. The 2015 annual report explains the challenges facing Social Security in the future, giving explanations and projections of future financial stability. Currently, the Social Security trust fund contributes funds to help pay Social Security retirement benefits, meaning that the amount of money brought into the system through taxes is not enough to cover benefits owed. The Social Security trust fund has accumulated funds from payroll taxes, interest on Treasury bonds, and taxes on Social Security benefits. In the past, when the cost of Social Security benefits has been less than the income brought in by payroll taxes, the Social Security Administration deposited the excess in the trust fund. In upcoming years, the costs are expected to continue to be greater than the income brought in. Benefit payments will continue to draw from the trust fund, eventually depleting its reserves, and resulting in a more purely pay as you go system. Once benefit payments deplete the trust fund, the money collected from payroll taxes will have to go to immediately paying benefits (“An Actuarial Perspective on the 2015 Social Security Trustees Report”).

The 2015 Trustees Report projects that Social Security benefit payments will deplete the trust fund by 2034, after which payroll taxes will only be able to support about 75% of the scheduled benefits owed. The United States Government must make changes to ensure that future retirees will receive their Social Security benefits. When analyzing the future financial conditions of Social Security, actuaries consider the actuarial balance of the system. The actuarial balance evaluates the long-range solvency of the system. More specifically, the formula used to find the actuarial balance calculates the difference in the present value of future income and future costs and divides that number by the present value of taxable payroll over the next 75 years. A positive number shows the system in actuarial balance, meaning

that its finances are sufficient to cover its costs in the next 75 years. The 2015 Trustees report shows the formula resulting in a -2.68, showing the financial problems the program faces. To make the program actuarially balanced in 2015, payroll taxes would have to increase by 2.62% or benefits need to be decreased 16.4%. The discrepancy between the -2.68 formula result and the 2.62% necessary increase comes from a difference in calculation formulas. The actuarial balance calculation includes a trust fund reserve equal to one year's costs. The necessary tax increase calculation does not account for a trust fund reserve, therefore requiring less of an increase than the actuarial balance formula would suggest. The current funds and future tax income will not be sufficient to provide all retirement benefits in the future ("An Actuarial Perspective on the 2015 Social Security Trustees Report").

The driving force behind the financial challenges facing Social Security is the aging of the United States population. After World War II the country experienced an increased birth rate, resulting in the baby boomer generation. The baby boomers make up such a large portion of the U.S. population that as they age, the average age of the population increases as well. As the baby boomers continue to retire, the costs facing Social Security, scheduled retirement benefits, will increase as well. Moreover, on a more personal scale, the average individual in the United States is living longer ("An Actuarial Perspective on the 2015 Social Security Trustees Report"). Males born in 2014 are expected to live until age 76.8, 15.4 more years than those males born in 1940. Females born in 2014 are expected to live until age 81.4, 15.7 more years than those females born in 1940. Figure 4 shows these numbers as well as the life expectancies for those born each year in between. Additionally, Figure 4, the Historical Life Expectancy Table, includes the expected years until death for those at age 65 in each given year ("The 2015 Annual Report..." 95).

Calendar year	Historical data			
	At birth		At age 65	
	Male	Female	Male	Female
1940	61.4	65.7	11.9	13.4
1945	62.9	68.4	12.6	14.4
1950	65.6	71.1	12.8	15.1
1955	66.7	72.8	13.1	15.6
1960	66.7	73.2	12.9	15.9
1965	66.8	73.8	12.9	16.3
1970	67.2	74.9	13.1	17.1
1975	68.7	76.6	13.7	18.0
1980	69.9	77.5	14.0	18.4
1985	71.1	78.2	14.4	18.6
1990	71.8	78.9	15.1	19.1
1995	72.5	79.1	15.4	19.1
2000	74.0	79.4	15.9	19.0
2001	74.1	79.5	16.1	19.1
2002	74.2	79.5	16.2	19.1
2003	74.4	79.6	16.3	19.2
2004	74.8	80.0	16.7	19.5
2005	74.8	80.0	16.7	19.5
2006	75.1	80.2	17.0	19.7
2007	75.4	80.5	17.2	19.9
2008	75.5	80.5	17.2	19.9
2009	75.9	80.8	17.5	20.2
2010	76.1	80.9	17.6	20.2
2011	76.2	81.0	17.7	20.2
2012 ^b . . .	76.3	81.1	17.8	20.3
2013 ^b . . .	76.6	81.3	18.0	20.5
2014 ^b . . .	76.8	81.4	18.1	20.6

Figure 4 Historical Life Expectancy

If retirees outlive the projected life expectancies used when the Social Security Administration developed the benefit formula and tax amounts, then more benefits will be scheduled to be paid out than the system can support. Simply put, the longer retirees live, the more Social Security benefit payments they expect to receive. While immigration does bring an influx of young, working people into the United States, causing an increase in payroll tax revenue, the impact will not be great enough to offset the effects of the aging U.S. population. In 2013 there were 2.8 workers for every retiree in the United States. By 2090, that ratio is projected to drop to 2.0. Changes must be made to the current system to insure that future retirees will receive Social Security benefits (“An Actuarial Perspective on the 2015 Social Security Trustees Report”). Figure 5 shows how the number of workers per beneficiary (including old age, survivor, and disability beneficiaries) has decreased over time and is estimated to continue decreasing in the future (“The 2015 Annual Report...” 15).

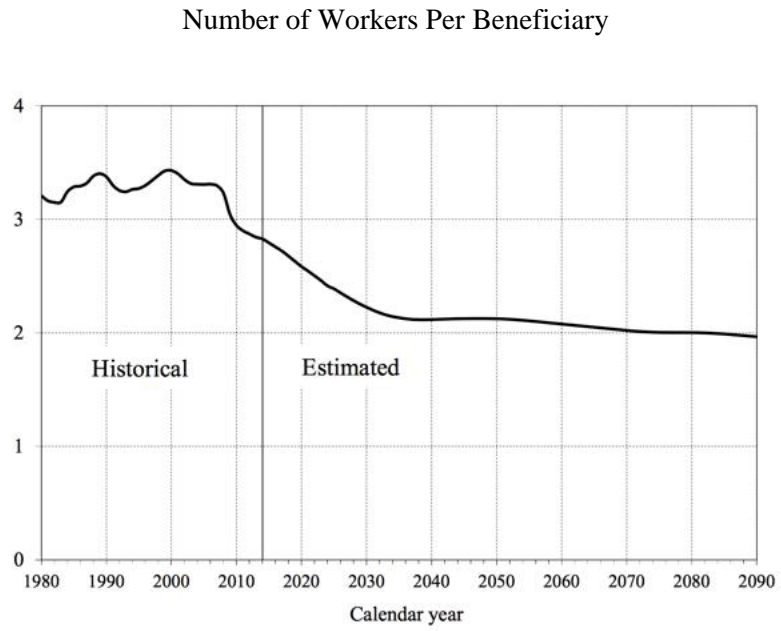


Figure 5 Ratio of Workers to Beneficiaries

Chapter 4

Traditional Options for Reform

Social Security's inability to pay scheduled retirement benefits as the number of retirement benefits increase and the relative size of the workforce decreases, summarizes the overarching problem facing the future of Social Security. Trust fund assets will be needed in order to pay scheduled Social Security benefits. Not only will this lead to a depletion of the trust fund, but it also will cause problems for the Department of the Treasury. The Treasury does not currently have the funds to repay the bonds the Social Security trust fund holds. In order to repay the bonds, or loans, the United States Government will need to increase taxes, decrease benefits, or borrow more. After the trust fund runs out, the money brought in from payroll taxes will not be sufficient to cover all of the scheduled payments ("An Actuarial Perspective on the 2015 Social Security Trustees Report"). There are a few options policymakers could enact to alter the system, making Social Security more financially sustainable in the upcoming years. When making changes to Social Security, policymakers can either modify the current system or structurally change how the program currently works. In modifying the current system, Congress can either increase taxes or decrease benefits. Either option, or a combination of the two options, could potentially solve the long-term problem Social Security faces ("Reform Options" 2007 9).

Increasing Taxes

In regards to changing taxation policy, a few specific options are available. To begin, payroll taxes could be increased across the board. In 2015, the payroll tax rate was 12.4%, with the employee and employer each contributing 6.2% of taxable wages to Social Security. Policymakers could increase the tax rate as high as they see fit, theoretically bringing in enough funds to cover future Social Security benefits. The 2015 Social Security Board of Trustees reported that payroll taxes need to increase 2.62% to bring in enough money to cover benefits owed ("An Actuarial Perspective on the 2015 Social Security Trustees

Report” 1). In the past when faced with similar financing problems, the government has increased payroll tax rates as a solution; however, this solution proved unsustainable. In order to create a sustainable system, the tax rate would have to be reevaluated and adjusted periodically. A one-time increase cannot guarantee future solvency (“Reform Options” 2007 9).

Moreover, Congress could increase the taxable wage base. A worker pays taxes on wages only up to a set threshold, or limit on taxable earnings. In 2007 the limit was \$97,500, meaning that only about 85% of the earnings in the United States were taxable. Each year the taxable wage base is adjusted in order to keep up with inflation. In 2015, the limit on taxable earnings was \$118,500. By increasing this limit further, or even eliminating the limit all together, Social Security could bring in additional revenue. The Social Security Administration could invest the additional funds, increasing the money available in the Social Security trust fund. As the ratio of workers to retiree shifts, the additional funds could directly pay Social Security benefits (“Reform Options” 2007 9).

Increasing program participation could also increase the money brought in by payroll taxes, a method used the past. When Social Security was first established, not all fields of work were required to participate. The 1983 amendments to Social Security required most federal employees to contribute and participate in Social Security for the first time (“Historical Background and Development of Social Security”). Today a relatively small portion of America’s workforce does not participate in Social Security. This group mainly consists of those who work for religious organizations in addition to some state and local government workers. While requiring their participation would bring more money into the system, the effect would not be significant, making additional action necessary (“Reform Options” 2007 10).

Finally, the taxation of Social Security benefits could be adjusted as an additional means of contributing to the program (“Reform Options” 2007 10). Social Security benefits may be taxed as part of an individual’s income tax if together Social Security benefits and other sources of income are above certain thresholds. Income tax is based on one’s combined income, or gross income plus one-half of one’s

Social Security benefits. The percent of one’s Social Security benefit may be taxed according to the following chart (“Benefits Planner: Income Taxes And Your Social Security Benefits”).

Table 9 Taxation of Social Security Benefits

Taxation of Social Security Benefits			
File an Individual Return		File a Joint Return with Spouse	
Combined Income	Percent of Benefits Taxed	Combined Income	Percent of Benefits Taxed
\$25,000 - \$34,000	Up to 50%	\$32,000 - \$44,000	Up to 50%
More Than \$34,000	Up to 85%	More Than \$44,000	Up to 85%

Most individuals receiving a Social Security benefit are taxed on up to 85% of their benefit. While increasing revenues brought into the program through modifying tax policy may temporarily fix Social Security’s pressing issues, if policymakers choose to increase the taxation of Social Security benefits, the problem will again need to be addressed and the program adjusted in the future (“Reform Options” 2007 10) .

Decreasing Benefits

If policymakers want to solve the financial challenges facing Social Security through modifications to the current system, they may decrease Social Security benefits. The simplest solution would be to cut all Social Security retirement benefits for current and future retirees. Increasing the normal retirement age, or age at which a retiree is eligible to receive their full PIA, would also decrease scheduled Social Security retirement benefits. Congress addressed increasing the normal retirement age in 1983 in response to the increased life expectancy of the United States population. The normal retirement age increases by two months depending on year of birth until those born after 1960 who will reach full retirement age at 67. A further increase in the normal retirement age could help to solve the financial challenges Social Security faces. Conversely, not all careers are equal. It may be unsafe or unrealistic for workers in particular careers to continue to work past a certain age, such as those working as airline

pilots. It is not considered age discrimination for airlines to make pilots retire once they reach a certain age, as it has been deemed unsafe for older workers continue flying planes. These workers could retire early, as is the norm in their field of work, but in doing so would forgo a portion of their benefit. These workers would not be able to collect their full PIA upon retirement (“Reform Options” 2007 11).

Another option is to modify the formula used to calculate a retiree’s Primary Insurance Amount, or PIA. For instance, policymakers could reduce the three bend points used in the PIA formula (currently 90 percent, 32 percent, and 15 percent). If each of the bend points were decreased by the same amount, the formula would continue to be progressive in nature. However, workers would see a decrease in the percent of their income replaced by Social Security benefits when compared to today’s beneficiaries, which would be particularly problematic for low income workers (“Reform Options” 2007 11). Conversely, policymakers could change only the upper bend points in the PIA formula. In doing so, the social adequacy aspect of the formula would remain intact (“Reform Options” 2007 12).

Likewise, the formula used to calculate a retiree’s AIME could be modified. Currently, the Social Security Administration calculates one’s AIME using the average of the wages they earned in their 35 highest earning years. If instead, one’s AMIE was calculated using an average of one’s highest 40 earning years, benefits would be reduced. In addition to mathematically reducing benefits, increasing the number of years one’s retirement benefits are based on would incentivize workers to have longer careers. On the other hand, those who cease working for periods of time, namely women, would be at a disadvantage if a change such as this was implemented (“Reform Options” 2007 14).

Each year, cost of living adjustments are made to retiree’s Social Security benefits. However, some feel that those adjustments are too generous and should be smaller. Decreasing or minimizing the cost of living adjustments could decrease the amount owed by Social Security. Altering the cost of living adjustments could be immediately implemented to those already receiving Social Security benefits, and does not call for a restructuring of the program or the formulas utilized. However, a decrease in benefits would logically cause pushback and discontent from participants (“Reform Options” 2007 15).

While cutting benefits may appear to be a reasonable solution to the financial challenges Social Security faces, lawmakers would be unwilling to agree to take such action, especially as a cut in benefits will not be favorable to their constituents. Additionally, reducing benefits may not be a permanent solution (“Reform Options” 2007 11). Historically, Congress has changed the benefit formulas, retirement ages, and cost of living adjustments. The fact that Social Security faces future financial shortfalls proves that these solutions are temporary fixes that will need to be addressed again in the future.

Other Options for Change

While traditional solutions suggested to fix Social Security include increasing taxes, decreasing benefits, or implementing a combination of the two, these are not the only options. One less traditional solution would be to require one to pass a means test before the Social Security Administration deems a retiree eligible for benefits. The Social Security Administration would examine all retired workers, their dependents, and beneficiaries in order to determine their need and eligibility for benefits. A means test would be a measuring tool for the Social Security Administration to use in order to determine whether a retiree is in financial need of retirement benefits, or if they are financially secure enough to support themselves through retirement.

In deciding what factor best indicates a retiree’s financial need, the Social Security Administration can choose from different forms of means tests. An income means test would determine a retiree’s need for benefits based on their income. While in theory, basing a retirement benefit on how much income one received through their career or in recent years may seem straightforward and logical, the idea becomes much more complex in practice. It is important to understand who decides on the implementation of changes to Social Security, including the potential incorporation of a means base test. Congress is responsible for passing or approving changes made to Social Security in the United States, which makes passing certain changes more difficult. A few questions regarding the design of a means test

must be considered, the first being whether the test should be an all or nothing indicator, or if the benefits should be paid out on a scalar system. Adopting a means test that determines, yes or no, a retiree's eligibility for retirement benefits is unlikely to pass into law. Those deciding on the test may be on the higher end of the income spectrum and would unlikely vote for a law taking away their own retirement benefit. The more reasonable approach would be to create a means based test that would determine how large of a retirement benefit one is eligible for based on their current financial status.

The next step in designing a means test is deciding what means the Social Security Administration should measure. An income-based means test is one option. Some may advocate for setting the minimum income to lose eligibility for Social Security retirement benefits on the lower side, perhaps at \$75,000. (An income about equivalent to the average family income in the United States) By no longer providing benefits to those making more than this threshold, Social Security would theoretically save on benefit payments. Not only would the number of benefit payments decrease, but those with higher incomes receive larger Social Security retirement benefits, meaning that implementing a low threshold income means test would remove the most expensive benefit payments the Social Security Administration owes. However, those voting on such a test, members of Congress, are likely to have an income above the threshold. It is unlikely that they would pass a law essentially foregoing their benefit. On the other hand, implementing a means test based on an income level that is too high, perhaps \$125,000, would do little to fix the financial challenges facing Social Security. Another option for a means test is one based on assets rather than income. The Social Security Administration could evaluate a potential beneficiary's assets including investments and real estate. When considering whether an asset-based means test would be passed into law brings up similar issues to those surrounding passing an income-based means test.

A few other factors must be considered that would further complicate the creation of a means test. Firstly, would such a test be a one-time test or would the Social Security Administration periodically re-examine the financial status of America's retirees? While a one-time test clearly stands out as the simpler, more efficient option, if one retires 20 years before they pass away, there is the chance that their

financial status changes. A periodic means test would add complexity to the currently efficient Social Security Administration. Additionally, the unintended impact of a means test must be considered. Those workers that have contributed to Social Security and are preparing to retire would know that if their income or assets test greater than a given threshold, they could lose their retirement benefits. An incentive to consume more and save less could surface. If a worker appeared to have the means to live comfortably without Social Security benefits, they may lose their benefit, so workers may strive to appear to have less when tested, in order to remain eligible for benefits. Means testing to decrease Social Security benefit payments would also impact the public's support for the program. Currently, because most working Americans contribute and benefit from the system, Social Security has experienced large public support. However, if workers are expected to contribute to the system without guaranteed benefit, their support may diminish. While a means test has the potential to help solve the problems Social Security is predicted to face in the future, it seems unlikely that Congress would adopt such a provision ("Reform Options" 2007 19).

Reform Through Privatization

While some support fixing Social Security by making relatively small changes to the current system and structure, others support a restructuring of Social Security's current framework. Such fundamental changes include incorporating an aspect of privatization to the United States' Social Security System. Privatization means removing the process from the public sector, in this case the federal government. Aspects of privatization could be incorporated by investing trust fund assets in the securities market or implementing individual accounts. Regardless of which course of action policymakers take, the sooner changes are made, the less drastic they need be. The sooner the government acts, the more gradual changes and reform's implementation can be.

Chapter 5

Investing Social Security Trust Fund Assets in the Securities Market

As the United States' Social Security program operates today, the money brought into the system from payroll taxes goes towards paying the benefits for today's retirees. However, when there are more workers than retirees, as has historically been the case, the Social Security Administration deposits any money collected in excess of benefits due into the Social Security trust fund. Rather than merely sitting in the trust fund, the Social Security Administration invests these assets in low risk, special issue U.S. government securities in the form of U.S. Treasury bonds ("Reform Options" 2007 19). These bonds are unique and operate under slightly different rules than U.S. Treasury bonds open to the public for investment. The U.S. Treasury bonds that the Social Security Administration has invested Social Security trust fund assets in are redeemable at par at any time. Additionally, they cannot be traded in the financial markets ("Significance of the Social Security Trust Funds" 3). Social Security earns market rates of interest on these bonds ("Reform Options" 2007 19). In the face of the financial challenges facing Social Security as soon as in 2034, some suggest investing Social Security's trust fund assets in the securities market rather than in U.S. Treasury bonds. Investing a portion of Social Security's trust fund assets in equities could increase the expected long-term earnings of the trust fund ("Investing Social Security Assets in the Securities Market" 1).

Analysis

A well-known and accepted finance principle of investing states that low risk securities have smaller potential earnings than riskier, more volatile investments. When one invests in volatile securities, one is uncertain about the security's future value. The value of the security has the potential to increase drastically, but also has the potential to decrease greatly. People are generally risk averse, and more comfortable investing in securities in which the earnings are more certain. In order to attract investors to

invest in riskier, more volatile securities, these investments must pay a higher average return than lower risk securities. The investment awards the investor with this increased compensation for bearing the risk that the security may decrease in value. While investors may be hesitant to invest in riskier securities, these investments also give investors the possibility of high potential earnings, possibly making the risk worthwhile (“Investing Social Security Assets in the Securities Market” 3).

Currently, Social Security invests its trust fund assets in low risk Treasury bonds. While these bonds contain some risk, namely inflation and interest rate risk, they are much less volatile than most securities. Since Treasury bonds are low risk, they also provide a relatively low rate of return. While some feel more comfortable investing workers’ Social Security contributions in low risk securities with certain returns, others recommend investing in more volatile corporate bonds and equities because of their higher yields. Investing the same amount of money in more volatile securities could result in greater returns for Social Security. This means that the program would have more money in the trust fund to pay out future benefits without increasing taxes or decreasing benefits. While uncertainty exists in investing in the securities market rather than government bonds, the risk may be worth the potential yields (“Investing Social Security Assets in the Securities Market” 3).

Proposals to invest Social Security assets in securities do not advocate investing the entirety of the trust fund in the securities market. Instead, they suggest Social Security’s assets be invested in a diverse portfolio of investments. By investing in a combination of more volatile securities and less risky government bonds, the returns seen by the trust fund are expected to be greater than has been traditionally seen from a portfolio of purely government bonds. However, the risk associated with investing is difficult to evaluate. Stock market risk proves much more difficult to analyze than risk such as mortality risk generally associated with pension plans (“Investing Social Security Assets in the Securities Market” 4).

Social Security is the United States’ largest social insurance program. Opponents of investing Social Security trust fund assets in the securities market express their concerns regarding the unintended effect that investing such a large amount could have on the securities market (“Reform Options” 2007

18). Investing Social Security's assets can only be done when there are assets to invest. Current trust fund assets could be invested if Social Security sells the bonds they currently hold. Any payroll taxes collected in excess of the necessary benefit payments could also be invested; however, as the ratio of workers to retirees decreases, there will be less money brought in and sitting in the trust fund. Instead, tax contributions will need to be used to pay Social Security benefits. The ability to invest these excess funds may be a disappearing phenomenon ("Investing Social Security Assets in the Securities Market" 2). Depending on the transition period, Social Security could quickly become a large buyer of securities, before later becoming a large seller. The exact effect this would have on the price of securities and the securities market is unknown, but speculated upon ("Reform Options" 2007 18). Social Security's holdings could dominate the securities market. Prices of securities could lose meaning, no longer reflecting the performance of a company and the state of the economy. This effect could go as far as creating an environment where management loses incentives to act in the interest of shareholders of a given company ("Investing Social Security Assets in the Securities Market" 6).

This influx of investment from the federal government could lead to changes in supply and demand within the securities market. In order to invest trust fund assets in other investments, the Social Security Administration would have to sell a portion of the U.S. Treasury bonds they currently hold. Doing so will increase the supply of government bonds in the market. The increase in supply will in turn lead to a decrease in the price of these bonds, therefore, increasing their interest rates. As the Social Security Administration looks to buy a large number of private securities, the demand will increase. As a result, the price of private securities will increase, reducing their expected future returns. After the market adjusts for these changes, private securities are expected to be more expensive than government bonds. While the previous scenario follows basic economic principles, the securities market may not behave exactly so in reality. As the demand for private securities increases, companies may choose to issue more equities, increasing their supply. The exact ramifications the securities market will experience cannot be predicted with absolute certainty ("Investing Social Security Assets in the Securities Market" 6).

Additionally, there are concerns about political interference in the private sector of the economy if Social Security were to become the owner of a large investment portfolio of publicly traded securities. By buying large amounts of stock of one company versus another, the federal government could be seen as playing favorites for political gain. Furthermore, in theory, the government could even take advantage of ownership rights that come with owning stock in a company, and go as far as voting on management and operational issues. This would greatly increase the government's role in the private sector of the economy. When deciding whether to invest in a company, political considerations may be taken into consideration, especially if a company utilizes controversial practices or has a controversial product ("Investing Social Security Assets in the Securities Market" 5). For example, the government may favor companies that employ more Americans versus a company that is sending jobs and employment opportunities to other countries.

While concerns regarding government interference in the private sector of the economy are valid concerns, these are avoidable. For example, in 2000 the Canada's Social Security equivalent, the Canada Pension Plan (CPP), began investing a portion of its assets in the securities market. The Canadian system has a reserve similar to the American Social Security Trust Fund. In the late 1990's actuaries projected that their reserves would be depleted by 2015, a result of the decreasing ratio of workers to retirees. The Canadian government reformed the system in response. Canada's reform included increasing taxes, decreasing benefits, and investing some assets in equities. The CPP Investment Board, an investment board independent of the government, was created to manage the investment of CPP assets in equities. The CPP Investment Board is a separate entity from the agency that distributes and manages the CPP. The board consists of 12 directors who manage a senior management team. The management team consists of finance and investments experts that were hired from the private sector. It is the responsibility of the management team to recommend strategy and make decisions regarding investments.

When creating the CPP Investment Board, the Canadian government instructed the board to act in the best interest of those workers that had contributed to the system, meaning that the board must try to

maximize returns without investing too riskily. While legislation did not restrict investments or impose many limitations on the board's investment strategy, it has strived to invest in a diverse portfolio including both domestic and foreign securities. However, the government did impose a limit on how much (30% of the investment portfolio) the CPP Investment Board can invest in foreign securities. With the goal of maximizing returns, the board of directors has turned in large part to the private sector, rather than government workers, to find talent to manage the CPP investments. In fact, legislation does not allow government officials to sit on the CPP Investment Board. Additionally, if the government wants to make changes to the program or select new members of the committee that nominates the board of directors of the CPP Investment Board, the changes must be approved by a variety of different bodies. The Canadian Federal government in addition to 2/3 of the ten provincial governments must approve the changes. There are also systems in place to ensure the CPP Investment Board continues to work in the best interest of the workers that have contributed taxes to the system. The CPP Investment Board must provide quarterly financial statements on their performance, are examined at a minimum every six years, and hold public meetings to talk about their performance at least every two years. These precautions were all implemented to safeguard against government interference in the securities market (Sarney and Preneta).

Proponents of investing Social Security assets in the securities market have called attention to the Federal Employees' Thrift Savings Plan (TSP) as a model to follow, especially in regards to how to avoid political concerns when investing. This program has used index funds to invest in the securities market since its creation in 1987. Rather than involving personal decision in the investment process, the TSP automatically invests in a range of securities, creating a diverse portfolio without demonstrating favorites or allowing for the influence of political agendas. The TSP has experienced good returns on their investments following this strategy. Conversely, TSP is significantly smaller than Social Security ("Investing Social Security Assets in the Securities Market" 5). At the end of 2014, the TSP had \$70.7 billion in assets ("Fund Information" 1). At the end of 2014, the Social Security trust fund had \$2.8

trillion in assets (“Trust Fund Data” 1). The effect of investing such large amounts in a similar manner using index funds remains unknown. Additionally, it would be possible in the future for policymakers to change how assets are invested, meaning that there would be potential for political interference in the future (“Investing Social Security Assets in the Securities Market” 5).

When analyzing any plan for reform, the impact of proposed changes on national savings must be considered. Under the current Social Security program, the United States Department of the Treasury borrows money brought in from payroll taxes and issues U.S. Treasury bonds to the Social Security trust fund. The funds from the issued bonds contribute to the overall operating budget of the United States government. If a portion of the money historically borrowed by the Treasury is instead invested in the securities market, national savings and the U.S. Treasury bond market could be effected. However, economists who have studied proposals to invest trust fund assets in the securities market generally feel that national savings will not be impacted by a shift in investments alone. Some expect the public to change their individual investment strategies upon learning that their Social Security contributions are being invested in more volatile securities than Treasury bonds. Rather than investing personal savings in volatile securities, individuals may be more inclined to invest in seemingly safer, more certain, low risk, government issued bonds. If this theory comes to fruition, national savings will not be affected as much. The United States Department of the Treasury will merely be borrowing from a different source. Conversely, if the public does not react in such a way, the United States Department of the Treasury will need to either issue new money, find new sources to borrow from, or cut spending (“Investing Social Security Assets in the Securities Market” 4).

Investing the Social Security trust fund assets in the securities market rather than in low risk, government issued Treasury bonds creates the potential for a larger return on investments than Social Security’s current investment portfolio experiences. While the potential for larger returns exists, it comes with the uncertainty of investing in the stock market. Social Security would not be able to guarantee the future balance of the trust fund and the amount that will be available to pay future benefits. Furthermore,

the effect of changing the investment strategy of Social Security will have on the securities market cannot be known for certain. While economists have studied the possible effects, the exact outcome remains highly speculative.

Capital Gains Tax

While investing Social Security trust fund assets in the securities market has the potential to provide returns on trust fund assets larger than historically experienced from investing in Treasury bonds, the increased risk and uncertainty may make this reform option unappealing to some. When investing in the stock market, there is always the possibility that one can lose rather than gain money, a risk that policymakers may not want to take with the earnings of their constituents. There are ways to replicate the effect of investing trust fund assets in the stock market, without actually doing so. Currently, the federal government taxes one's capital gains, or the income one receives each year from investments. By dedicating a portion of the federal Capital Gains tax to the Social Security trust fund, the Social Security Administration can replicate the effect of investing trust fund assets in the stock market. For example, a 3 percent tax on capital gains and income from dividends would have a similar result as the Social Security trust fund investing assets in the stock market to the extent of holding 3 percent of the stock market. While using a portion of the Capital Gains tax to increase the assets held by Social Security, this idea also poses design questions and concerns.

The first design question policymakers must consider when evaluating the pros and cons of taxing capital gains for Social Security use is how to tax capital gains. The federal government currently taxes capital gains up to 15%. If Congress were to redirect a portion of the already taxed capital gains, perhaps 3%, they would have to make up for that loss. Capital gains taxes are already being put to use by the federal government, if Social Security were to use some of the money brought in by this tax, the federal government would have to figure out how to fund the spending the money was previously used for. The

only options being to increase taxes, decrease spending, or borrow more money to cover the missing revenue source. While this seems like an undesirable effect of redirecting capital gains taxes, it is important to remember, that under the current system, the United States Government is going to have to repay the money loaned to Social Security through Treasury bonds anyway, leading to a need to increase taxes, decrease spending, or borrow more money. The other option is to increase capital gains taxes right away and direct the increase in taxation to Social Security. Opponents of the idea do not favor such a tax increase.

Another design question that must be considered is whether capital gains taxes should be treated similarly to payroll taxes. The Social Security Administration tracks how much money a worker contributes to Social Security throughout their career and uses this information to calculate one's retirement benefit. If capital gains taxes were treated the same way, essentially considered as additional worker contributions to the system, it would be logical for retirement benefits to increase accordingly. While this is an increase in taxes and money brought into Social Security, the increase in benefits would offset the effect, leaving Social Security in the same position it currently stands in. The other option is to look at money coming from capital gains taxes as money brought into Social Security from the federal government, not individuals. This would mean an increase in money brought into the system without an equivalent increase in benefit payments. Adopting this thinking and execution would help the financial status of Social Security.

Opponents of using capital gains taxes for Social Security purposes call attention to the fact that this idea strays from the traditional form of Social Security. Social Security is thought to be financed from payroll taxes alone, and using capital gains taxes strays from this idea. However, this is not actually the case. While it is true that most of the money contributed to Social Security comes from payroll taxes, one must also remember that Social Security benefits are subject to federal income taxation. The proceeds of those income taxes go to Social Security. Additionally, the Treasury bonds bought with Social Security

trust fund assets earn interest from the federal government, an additional form of income. Using money from means other than payroll taxes is not unprecedented.

Those advocating for the use of capital gains taxes to increase Social Security's trust fund recognize the advantages of this idea compared to investing assets directly in the securities market. Using the money brought in from capital gains taxes would reflect the high earning potential of investing in the securities market without Social Security taking on more risk. Losses experienced by individuals are capped at \$3,000, meaning that Social Security may receive less funds from these taxes during years of poor stock market performance, but not losses. If one experiences a loss from their investments, they are able to reduce their net income by \$3,000 for the given year. If their loss exceeds \$3,000, the credit of the loss carries on to the next year, meaning they can reduce their net income by \$3,000 each year until all of their losses are accounted for. This is a positive for Social Security because while some years they may receive less from capital gains taxes, they will not be losing large amounts of money, which is a real possibility if trust fund assets were invested directly in the stock market.

Additionally, directing a portion of capital gains taxes to Social Security rather than investing trust fund assets directly in the stock market removes a great deal of the uncertainty previously discussed. Investing a large amount of money in the securities market would have an uncertain effect on the supply and demand of securities. The impact on national savings can be predicted, but unknown for certain. The potential for political interference would always be present. Taxing the gains from others' experiences in the stock market would remove these uncertainties and potential problems. Rather than entering the securities market and potentially disrupting the system, Social Security would instead be benefiting from good performance in the securities market at a much lower risk ("Investing Social Security Assets in the Securities Market" 6). Another similar idea would be to require the Treasury to pay a higher interest rate on Treasury bonds that Social Security holds. This alternative is simpler and would avoid some of the concerns surrounding Social Security's use of capital gains tax income.

Chapter 6

Defined Contribution Plans

Social Security today exists as a defined benefit program. One becomes eligible for Social Security retirement benefits after contributing payroll taxes to Social Security and earning 40 credits throughout their career. The Social Security Administration pools the money brought in from payroll taxes in the Social Security trust fund before using the funds to pay out benefits. After contributing payroll taxes throughout their career, once a worker reaches retirement age, the Social Security Administration calculates their benefit based on their average indexed wages. While benefits may change due to changes in legislation and policies, for the most part, upon retirement, an individual knows how much to expect from Social Security benefits. As previously discussed, the percentage of wages replaced by one's Social Security retirement benefit depends on whether one was a low, medium, or higher earner throughout their career. The lowest earners receive a defined benefit that replaces most of their working income. A medium earner will receive a defined benefit replacing less of their income. A high earner will receive a defined benefit replacing the smallest percentage of their working income, as can be seen in Table 10. A defined benefit system allows for the sharing of risk, one of the main reasons why many favor the current Social Security framework. Poor returns on investments, early death, disability, and the probability of outliving one's savings are all risks shared by the pool of people contributing to and receiving Social Security ("Investing Social Security Assets in the Securities Market" 3).

Table 10 Replacement Ratio Comparison

Replacement Ratio Comparison		
AIME	PIA	Replacement Ratio
\$1,000	\$816.48	82%
\$2,000	\$1,136.48	57%
\$3,000	\$1,456.48	49%
\$4,000	\$1,776.48	44%
\$5,000	\$2,096.48	42%
\$6,000	\$2,273.17	38%

When looking for ways to fix Social Security given its looming financial challenges, some advocate a shift towards a defined contribution system, as opposed to the current defined benefit system. A defined contribution system is one in which a worker periodically contributes a fixed amount throughout their working career without a guarantee of how much they will receive upon retirement. If a change incorporating defined contributions were adopted, retirees would no longer receive a benefit calculated from their wage history. Instead, as a worker progressed through their career, they would accumulate their contributions in an individual account, rather than contributing to the Social Security system as a whole (“Investing Social Security Assets in the Securities Market” 3). This money would be invested differently than the Social Security trust fund assets are today. Instead, these contributions would be invested in the securities market, making this proposal a form of privatization. Privatization meaning that Social Security, at least in part is transferred from the public to private sector. This would create the potential for individual accounts to earn higher returns than the Social Security trust fund experiences. However, individual accounts would also be subject to stock market crashes that could occur right before retirement or after retirement when going back to work is not an option.

Upon retirement, an individual would have access to these funds, rather than a defined benefit from the government. The amount an individual has access to during retirement would depend on how their individual account was invested throughout their working years and the returns they experienced (“Reform Options” 2007 20). Generally, those in favor of implementing a system utilizing individual accounts believe that each individual should be responsible for facing and dealing with risk presented through their life (“Investing Social Security Assets in the Securities Market” 3). The exact payments one can expect to receive upon retirement are not known and can change even throughout retirement because there is the chance that one’s investments will increase or decrease depending on the behavior of the stock market at the time. Instead of a guaranteed benefit, workers would get whatever their investments could provide at retirement (“Social Security Reform Options” 2014 23).

Design Questions

Conceptually, the idea of incorporating aspects of a defined contribution plan into Social Security encompasses many potential proposals. While the basic notion proves easy to grasp, a proposal in favor of implementing individual accounts could take a variety of different forms. Before analyzing a specific plan including individual accounts and the principle of defined contributions, one should consider the different design questions policymakers face (“Social Security Individual Accounts: Design Questions” 1).

Policymakers must first decide whether a defined contribution plan will be voluntary or mandatory. While a voluntary plan providing workers with the choice of participating or abstaining may seem more appealing than mandatory regulations, the creation of a voluntary plan would lead to additional design questions for policymakers to answer. When would workers need to decide whether to participate or stay with the traditional Social Security program? Administratively, it would be easiest to set a specific one-time window for workers to make that decision. In proposals advocating for a one-time decision, the choice stands irrevocably and workers may not change their minds at a later time. However, workers may claim that they are more knowledgeable about their options or that their personal situations have changed later down the road, making them want to change their decision. Other proposals have suggested various times in which workers can decide or change their decisions. These open seasons would provide opportunities for workers to reevaluate their circumstances and decisions (“Social Security Individual Accounts: Design Questions” 5).

Voluntary participation would also mean additional administrative work for the Social Security Administration. The administration, which today operates as one of the most efficient government entities, would need to track which workers chose to participate in the defined contribution system and which stayed with traditional Social Security. Furthermore, they would have to perform all administrative duties for each program. A voluntary plan would also call for an increase in communication between the Social Security Administration and each worker. Workers would need to be educated about their options, especially through the transition period and before the implementation of this new idea. While it may

seem logical to delegate the job of educating workers about their options to individual employers, there are doubts about their ability to educate America's workforce adequately. Instead, the government would need to spend time and resources educating the public. Finally, because a defined contribution plan is new and different from the program that workers are familiar with, they may be hesitant to enroll. Another question that would arise from choosing a voluntary program is whether the government could or should guarantee the greatest benefits to retirees. Some proposals have suggested that the government pay out the greatest benefit, either that available from traditional Social Security or through individual accounts. Doing so would not only increase administrative and benefit expenses for the Social Security Administration, but it may also encourage workers to invest overly aggressively as they have a safety net if their investments fail to produce high returns. These are all factors that must be considered when deciding whether to suggest a voluntary or mandatory program change ("Social Security Individual Accounts: Design Questions" 5).

Individual Accounts Only

Policymakers must consider how defined contributions will coincide with the traditional Social Security system. One possibility would be for workers to contribute their taxable wage base taxes entirely to their individual accounts. In theory, implementing a system such as this would create an environment in which a deficit would be impossible. The amount that a retiree received during retirement would consist entirely of the money they had contributed to their individual account throughout their career. While this may seem like a plan with entirely positive outcomes, there have not been any proposals to switch to an entirely defined contribution system. The main reason being that Social Security has been operating as a defined benefit system for over 75 years and a sudden switch would most likely not be well received by voters ("Reform Options" 2007 20).

Add-On Approach

Other alternatives including additional contribution or carve out contribution plans, have been more thoroughly developed and explored. Several plans suggest workers contribute funds in addition to the 6.2% of their taxable wages to individual retirement accounts. Add-on proposals would expand rather than alter the current system. Mandating additional contributions to individual accounts would essentially be equivalent to increasing the payroll tax rate, and diverting some of the funds to an individual account. Voluntary additional accounts have also been suggested, many of which coincide with employee or government matching to the contributions designated for individual accounts. Proposals that incorporate government matching generally include a cap for that match. Essentially incentivizing low-income workers to participate. Calling for the government to match a portion of defined contributions would create more expenses for Social Security, and implementing a system of add on contributions would do nothing to fix the financial challenges the program will face in the upcoming years (“Reform Options” 2007 20).

Carve-Out Approach

Most proposals to incorporate defined contributions in the Social Security system advocate for carved out contributions. Instead of directing all Social Security contributions to individual accounts or requiring workers to contribute more to the system, a carve out approach would divert a percentage of current Social Security contributions away from the trust fund into individual accounts. The diverted contribution would consist of typically 2% from a worker’s paycheck as well as 2% of the employer’s contribution on the worker’s behalf. If contributing money to an individual account rather than traditional Social Security, a worker would forfeit some of their traditional Social Security benefit, which would continue to be calculated based on the amount a worker contributes to traditional Social Security.

Investing one's individual account in higher returning securities is expected to make up for the decrease in the defined retirement benefit one would receive. However, this is dependent on the performance of the stock market ("Reform Options" 2007 21). If one wants to retire in a recession year, their investments may have lost money, and one may have to postpone retirement until one has accumulated a larger amount in their account. Low wage earners will be taking on the most risk. Under the current system, low wage earners' benefits are subsidized. While high earners receive a relatively low replacement ratio in their retirement benefits, the lowest earners' retirement benefits replace about 90% of their earnings. Individual accounts remove that subsidization. Low wage earners are no longer guaranteed that 90% replacement ratio. Incorporating a means test or guaranteeing traditional Social Security benefits if individual investments do not perform as well as expected would insure against this loss. However, these insurances could cost Social Security a lot, doing nothing to help its financial status. Similar to add on benefits, a carve out approach alone would do nothing to solve the financial problems Social Security faces. Proposals promoting carve out or add on contributions must include whether the program will continue this way, or will eventually transition to a purely defined contribution system ("Reform Options" 2007 21).

Once policymakers decide how to dictate a worker's contribution, they must outline how the funds in individual accounts will be invested and managed. Ideally, the Social Security Administration would help workers choose between attractive investment options in an effective and efficient manner. The administration and management of individual accounts should strive to look out for the best interest of only the participants, keeping political agendas out of investment decisions. Investments could be managed centrally by a government entity, or in a more decentralized manner by the private sector. Individual accounts managed by a government entity would provide workers with more limited investment options, yet would create a relatively simple and low cost program. Individual accounts managed by the private sector would be more expensive. Policymakers and the Social Security

Administration would need to continuously work to ensure that political agendas are kept out of centrally managed investments (“Social Security Individual Accounts: Design Questions” 7).

How and when individual accounts should be paid to retirees remains the final design factor that policymakers must consider when outlining a defined contribution proposal. Most individual account proposals limit the withdrawal of funds to a worker’s retirement, meaning that a worker cannot take money out of their retirement account before retirement. Social Security was created as a way to ensure the retired population was financially secure; therefore, implementing a retirement only withdrawal stipulation remains on par with basic Social Security principles. Those designing defined contribution proposals must decide how a retiree will receive their benefits. The existing options of which are a lump sum payment or annuity payments. Most proponents of defined contribution plans advise only allowing lump sum payments if a worker passes away before retirement. If so, the deceased’s family should be entitled to the accumulated value of their individual account (“Social Security Individual Accounts: Design Questions” 8).

When a worker reaches retirement, they could receive payments in the form of a lump sum, elect for voluntary annuity payments, or mandatory annuity payments. Most proposals encourage a mandatory annuity program. An annuity is a financial instrument that pays out a stream of payments to an individual for an extended period of time, in the case of retirees, the remainder of one’s life. While a mandatory annuity may limit the choices retirees have in regards to how they spend their money, most believe the positives outweigh the negatives. Those most likely to disagree with mandatory annuity payments include those with large individual accounts, those who have invested other finances in retirement savings, those who believe they are better able to invest their money than the Social Security Administration, and those who are in poor health and do not expect to live very long. On the other hand, mandatory annuities would ensure that a retiree does not outlive their savings. Those who would benefit most from mandatory annuities include those in good health, women, high earners, and those with long life expectancies. Upon retirement, one does not know exactly how many years their retirement savings must last and, an annuity

ensures that an individual will not run out of money. Annuities also remove the possibility of spending one's money too quickly, as they will only receive a particular payment each period ("Social Security Individual Accounts: Design Questions" 8).

Mandating annuities would influence the annuity market. Currently, buying annuities proves advantageous for those who expect to live a long time, as they are rather expensive products. This means that those selling annuities expect to pay annuitants for an extended period of time, further driving up the cost. By mandating the purchase of annuities, their market price could decrease. From the point of view of those selling annuities, if a mix of those living both long and short lives makeup their customer base, they can afford to sell annuities for less. The decrease in price comes from the fact that those who pass away earlier will not be alive to collect their payments in the future, and that unpaid money can be used to pay the annuities of those who live an extended period of time ("Social Security Individual Accounts: Design Questions" 9). Annuities can take a variety of forms. Annuities can make payments for a set number of years, or for the remainder of one's life. Annuities can pay a set payment each period, or can be variable, in which payments can fluctuate in relation to the investments they are tied to. Proponents of utilizing annuities under a defined contribution plan often strive to set a standard annuity. One potential form for a standard annuity could be a fixed payment that may only be adjusted annually to keep up with changes in cost of living ("Social Security Individual Accounts: Design Questions" 9).

In addition, policymakers must decide who should provide annuities. The potential suppliers include the private annuity market, the federal government through the Social Security Administration or a similar agency, or the federal government through private firms. Most who have studied individual accounts believe the best option is to create a centralized annuity program operated by the federal government. Because a centralized program would supply annuities for a large, diverse population of retirees, cross subsidizing one another and driving the price down. If the sale of annuities was outsourced to the private annuity market, there is the possibility that an insurer will become insolvent and be unable to make promised payments. This risk would be unacceptable in the Social Security sphere as

approximately 49 million people receive Social Security retirement payments, a number that will increase in upcoming years. Furthermore, if a defined contribution element were incorporated into Social Security, it would be most efficient to combine the traditional and annuity payments under one administration (“Social Security Individual Accounts: Design Questions” 9). While the idea of implementing a defined contribution component to Social Security appears relatively straightforward. The parameters of a given proposal must be defined before the true advantages and disadvantages may be completely analyzed.

Individual Account Plan

In 2001, President George W. Bush put together a commission dedicated to the reform of Social Security. After considering various plans of action, a final report was published in December outlining three different models for reform. The first model for reform is analyzed as an example of an option for change utilizing defined contributions. Establishing voluntary personal accounts is the defining component of this reform model. Under this plan, workers would be able to redirect a portion of their payroll taxes away from the traditional Social Security System and into a personal account. The plan suggests a carve out approach, where 2% of an employee’s total 6.2% contribution be reassigned to a personal account. Participating workers’ traditional Social Security benefits would decrease, due to their smaller contributions to the traditional program. Plan designers believe that participating workers would more than make up for the lost benefits in earnings from their personal account. However, the earning one receives depends on the stock market, which has the potential to perform well or crash (Moynihan 109).

One advantage to implementing a rather straightforward defined contribution plan is the future potential it holds. While this plan calls for a 2% carve out, if adopted, it could set the stage for future legislation regarding individual accounts. Over time, Congress could pass laws allowing a larger portion of one’s contributions to be redirected to personal accounts. Congress could even mandate that a certain proportion of each individual account be invested in government bonds. The potential for future

legislation is limitless, yet first implementing a seemingly simple plan of individual accounts could be a true stepping stone to more radical change. When developed in 2001, the commission considered the projected increase in benefits a worker could potentially experience if they chose to participate in the program. A medium earner that volunteered to participate in an individual account was expected to receive benefits approximately 12% greater than the benefits they would receive under the traditional Social Security program (Moynihan 110). However, it is important to remember that investing in the stock market always comes with the possibility of losing money, depending on the market's performance.

The fiscal challenges facing Social Security in future years would not be solved by adopting this reform plan. Social Security retirement benefits are calculated based on the amount one contributes to traditional Social Security over the course of their career. Therefore, as workers opted to participate in individual accounts, they would make smaller contributions to the traditional system, while also requiring the system to pay less out to them during their retirement years. The other reform options explored earlier would also need to be considered and potentially adopted alongside this voluntary individual account plan. One aspect of Social Security's financial challenges that implementing this reform plan would impact is the cash flow shortfalls Social Security is expected to experience. This reform model is expected to decrease that cash flow shortfall by 1.5% as current retiree's benefits still need to be paid from a decrease in funds coming into the system through payroll taxes. The transition cost of implementing a shift to defined contribution suggested by this plan shows an advantage this plan has in comparison to other defined contribution plans, mostly because of its simplicity. The more complex the plan the higher administrative costs may rise. Other plans also suggest the government guarantee benefits to retirees, which could cost the administration money. Under this plan, the financial burdens of transitioning would be shared over multiple generations, not just one. Each year Social Security releases a report about their financial status. Included in the report is the 75-year actuarial balance. Implementing this plan would actually lead to a worse actuarial balance in the 75-year projection, but a more favorable actuarial balance beyond the projection period due to the transition costs.

From the perspective of individual workers, a reform plan implementing a program of individual personal accounts looks extremely appealing. This program presents the opportunity to pass down accumulated funds from one's personal account to their family if they pass away unexpectedly. Additionally, individual accounts provide workers with a greater sense of ownership over their retirement savings. The major downside to this particular defined contribution proposal remains that it does not provide a solution to the financial problems Social Security faces (Moynihan 111).

Chapter 7

Conclusion

The United States' current Social Security system is facing financial challenges as soon as 2034. The sooner Congress implements changes to overcome these challenges, the less severe they need be. After analyzing the traditional options for reform including increasing taxes, decreasing benefits, and privatization options, including investing in the securities market and incorporating a system of individual accounts, the best option for reform is not clear. Increasing taxes or decreasing benefits is unfavorable for the workers contributing to Social Security as it requires giving up more of their wages and receiving less or the same amount in return. The most logical and realistic Social Security reform is one incorporating three different options, increasing taxes, decreasing benefits, and investing in the securities market.

While the idea of incorporating individual accounts was discussed, the implementation of voluntary individual accounts created by carving out a portion of a given worker's Social Security contributions will do nothing to help the financial status of Social Security. Individual retirement accounts have many advantages for individual workers and their dependents. Individual accounts could theoretically be accessed if needed before retirement. If a retiree was experiencing hard financial times, the funds could be used before they were scheduled to be paid out. Upon death, a retiree could leave the remainder of their individual account to their spouse or dependents. As previously discussed, individually invested accounts have great earning potential. However, if these accounts are funded by carving out a percentage of one's payroll taxes, Social Security would receive less contributions to be pooled and used to pay other benefits.

For Social Security to collect the same amount in contributions, workers would have to contribute a larger percentage of their taxable wages. If individuals have the option of contributing more wages than the current payroll tax to a personal retirement account, they should do so privately, leaving the Social Security Administration out of the process. If individuals choose to contribute more to Social Security in the form of an individual account, in order for legislation to pass, they would most likely want

a guarantee return on their investment, which, depending on the behavior of the stock market, could cost Social Security money. Instead, individuals that have the means to contribute additional funds to a personal retirement account should do so separately from the federal government. After all, Social Security was never meant to replace all of an individual's income. Social Security benefits were not designed to be large enough for a retiree to live off without supplemental savings.

Policymakers should implement changes to the current Social Security system that incorporate increased taxes, decreased benefits, and investing in the securities market. While increasing taxes and decreasing benefits will be unfavorable to voters, if these are done while simultaneously investing some assets in the securities market, the magnitude of the increase in taxes or decrease in benefits can be smaller than if done alone.

To begin, the Social Security Administration needs to increase the money brought into the system. As the 2015 Trustee report noted, in order to cover all owed benefits, payroll taxes would need to increase by 2.62%. However, this may not be necessary. Policymakers could combine an increase in payroll tax with an increase in taxable wage base to bring in more money to the system. Additionally, Congress should carve out a percentage of the money brought in from capital gains taxes to be used for Social Security. Investing payroll contributions in the securities market is risky, with the actual returns unknown. However, using capital gains tax money for Social Security purposes is equivalent to the Social Security Administration holding a percentage of the securities market. Collecting capital gains taxes instead of investing assets themselves eliminates the possibility of government interference in the stock market. In theory, after collecting more payroll taxes in addition to using money from capital gains taxes, Social Security would have enough funds to pay current benefits owed. However, because workers are contributing more to the system without receiving an increased benefit, this proposal appears to decrease benefits. It is important to realize that this is not a permanent solution. Social Security is an ever changing program. As the economic, financial, and demographic climate of the United States changes, the program specifics will need to be addressed and updated. Furthermore, the longer Congress waits to address the

problems Social Security is predicted to face, the less options and freedom they will have to make changes.

Appendix A

Retirement Benefit Tables

Profile of Example Retiree
Born in 1947
Began working in 1967
Reached full retirement age in 2013 at age 66
AIME = \$6781.04
PIA = \$2390
For COLA Adjustment
Retired early at age 64 in 2011
Delayed retirement until age 68 in 2015

Annual Indexed Earnings For Example Retiree					
Year	Max Earning	Actual Earning	Min(C&D)	Index Factor	Indexed Earning
1955	\$4,200.00	\$0.00	\$0.00	14.08	\$0.00
1956	\$4,200.00	\$0.00	\$0.00	13.16	\$0.00
1957	\$4,200.00	\$0.00	\$0.00	12.76	\$0.00
1958	\$4,200.00	\$0.00	\$0.00	12.65	\$0.00
1959	\$4,800.00	\$0.00	\$0.00	12.05	\$0.00
1960	\$4,800.00	\$0.00	\$0.00	11.60	\$0.00
1961	\$4,800.00	\$0.00	\$0.00	11.37	\$0.00
1962	\$4,800.00	\$0.00	\$0.00	10.38	\$0.00
1963	\$4,800.00	\$0.00	\$0.00	10.57	\$0.00
1964	\$4,800.00	\$0.00	\$0.00	10.16	\$0.00
1965	\$4,800.00	\$0.00	\$0.00	9.98	\$0.00
1966	\$6,600.00	\$0.00	\$0.00	9.41	\$0.00
1967	\$6,600.00	\$30,000.00	\$6,600.00	8.92	\$58,872.00
1968	\$7,800.00	\$30,000.00	\$7,800.00	8.34	\$65,052.00
1969	\$7,800.00	\$30,000.00	\$7,800.00	7.89	\$61,542.00
1970	\$7,800.00	\$30,000.00	\$7,800.00	7.51	\$58,578.00
1971	\$7,800.00	\$30,000.00	\$7,800.00	7.15	\$55,770.00
1972	\$9,000.00	\$30,000.00	\$9,000.00	6.52	\$58,680.00
1973	\$10,800.00	\$30,000.00	\$10,800.00	6.13	\$66,204.00
1974	\$13,200.00	\$30,000.00	\$13,200.00	5.79	\$76,428.00
1975	\$14,100.00	\$35,000.00	\$14,100.00	5.39	\$75,999.00
1976	\$15,300.00	\$35,000.00	\$15,300.00	5.04	\$77,112.00
1977	\$16,500.00	\$35,000.00	\$16,500.00	4.75	\$78,375.00
1978	\$17,700.00	\$35,000.00	\$17,700.00	4.4	\$77,880.00
1979	\$22,900.00	\$35,000.00	\$22,900.00	4.05	\$92,745.00
1980	\$25,900.00	\$35,000.00	\$25,900.00	3.71	\$96,089.00
1981	\$29,700.00	\$35,000.00	\$29,700.00	3.37	\$100,089.00
1982	\$32,400.00	\$35,000.00	\$32,400.00	3.20	\$103,680.00

Year	Max Earning	Actual Earning	Min(C&D)	Index Factor	Indexed Earning
1983	\$35,700.00	\$35,000.00	\$35,000.00	3.05	\$106,750.00
1984	\$37,800.00	\$35,000.00	\$35,000.00	2.88	\$100,800.00
1985	\$39,600.00	\$40,000.00	\$39,600.00	2.76	\$109,296.00
1986	\$42,000.00	\$40,000.00	\$40,000.00	2.68	\$107,200.00
1987	\$43,800.00	\$40,000.00	\$40,000.00	2.52	\$100,800.00
1988	\$45,000.00	\$40,000.00	\$40,000.00	2.40	\$96,000.00
1989	\$48,000.00	\$40,000.00	\$40,000.00	2.31	\$92,400.00
1990	\$51,300.00	\$40,000.00	\$40,000.00	2.21	\$88,400.00
1991	\$53,400.00	\$40,000.00	\$40,000.00	2.13	\$85,200.00
1992	\$55,500.00	\$40,000.00	\$40,000.00	2.03	\$81,200.00
1993	\$57,600.00	\$40,000.00	\$40,000.00	2.01	\$80,400.00
1994	\$61,085.00	\$41,750.00	\$41,750.00	1.60	\$66,789.56
1995	\$63,578.09	\$42,213.24	\$42,213.24	1.45	\$61,287.41
1996	\$66,071.18	\$42,676.47	\$42,676.47	1.30	\$55,648.23
1997	\$65,400.00	\$45,000.00	\$45,000.00	1.69	\$76,050.00
1998	\$68,400.00	\$45,000.00	\$45,000.00	1.61	\$72,450.00
1999	\$72,600.00	\$45,000.00	\$45,000.00	1.53	\$68,850.00
2000	\$76,200.00	\$45,000.00	\$45,000.00	1.45	\$65,250.00
2001	\$80,400.00	\$45,000.00	\$45,000.00	1.41	\$63,450.00
2002	\$84,900.00	\$45,000.00	\$45,000.00	1.40	\$63,000.00
2003	\$87,000.00	\$45,000.00	\$45,000.00	1.36	\$61,200.00
2004	\$87,900.00	\$45,000.00	\$45,000.00	1.30	\$58,500.00
2005	\$90,000.00	\$50,000.00	\$50,000.00	1.26	\$63,000.00
2006	\$94,200.00	\$50,000.00	\$50,000.00	1.20	\$60,000.00
2007	\$97,500.00	\$50,000.00	\$50,000.00	1.15	\$57,500.00
2008	\$102,000.00	\$50,000.00	\$50,000.00	1.12	\$56,000.00
2009	\$106,800.00	\$50,000.00	\$50,000.00	1.14	\$57,000.00
2010	\$106,800.00	\$50,000.00	\$50,000.00	1.12	\$56,000.00
2011	\$106,800.00	\$50,000.00	\$50,000.00	1.08	\$54,000.00
2012	\$110,100.00	\$50,000.00	\$50,000.00	1.05	\$52,500.00
2013	\$113,700.00	\$50,000.00	\$50,000.00	1.04	\$52,000.00
2014	\$117,000.00	\$55,000.00	\$55,000.00	1.00	\$55,000.00
2015	\$118,500.00	\$55,000.00	\$55,000.00	1.00	\$55,000.00

PIA and Replacement Ratio Calculation			
AIME	\$1,000	\$2,000	\$3,000
Part 1	$0.9 * (\$856) = \770.40	$0.9 * (\$856) = \770.40	$0.9 * (\$856) = \770.40
Part 2	$0.32 * (\$1,000 - \$856) = \$46.08$	$0.32 * (\$2,000 - \$856) = \$366.08$	$0.32 * (\$3,000 - \$856) = \$686.08$
Part 3	$0.15 * (\$0) = \0	$0.15 * (\$0) = \0	$0.15 * (\$0) = \0
	$\$770.40 + \$46.08 + \$0 =$	$\$770.40 + \$366.08 + \$0 =$	$\$770.40 + \$686.08 + \$0 =$
PIA	\$816.48	\$1,136.48	\$1,456.48
Rounded PIA	\$816	\$1,136	\$1,456
Replacement Ratio	82%	57%	49%
AIME	\$4,000	\$5,000	\$6,000
Part 1	$0.9 * (\$856) = \770.40	$0.9 * (\$856) = \770.40	$0.9 * (\$856) = \770.40
Part 2	$0.32 * (\$4,000 - \$856) = \$1006.08$	$0.32 * (\$5,000 - \$856) = \$1326.08$	$0.32 * (\$5,157 - \$856) = \$1376.32$
Part 3	$0.15 * (\$0) = \0	$0.15 * (\$0) = \0	$0.15 * (\$6,000 - \$5157) = \$126.45$
	$\$770.40 + \$1,006.08 + \$0 =$	$\$770.40 + \$1326.08 + \$0 =$	$\$770.40 + \$1376.32 + \$0 =$
PIA	\$1,776.48	\$2,096.48	\$2,273.17
Rounded PIA	\$1,776	\$2,096	\$2,273
Replacement Ratio	44%	42%	38%

Increase for Delayed Retirement		
Year of Birth	Yearly Rate of Increase	Monthly Rate of Increase
1933-1934	5.0%	11/24 of 1%
1935-1936	6.0%	1/2 of 1%
1937-1938	6.5%	13/24 of 1%
1939-1940	7.0%	7/12 of 1%
1941-1942	7.5%	5/8 of 1%
1943 or Later	8.0%	2/3 of 1%

Cost of Living Adjustments			
July 1975	8.0%	January 1997	2.9%
July 1976	6.4%	January 1998	2.1%
July 1977	5.9%	January 1999	1.3%
July 1978	6.5%	January 2000	2.5%
July 1979	9.9%	January 2001	3.5%
July 1980	14.3%	January 2002	2.6%
July 1981	11.2%	January 2003	1.4%
July 1982	7.4%	January 2004	2.1%
January 1984	3.5%	January 2005	2.7%
January 1985	3.5%	January 2006	4.1%
January 1986	3.1%	January 2007	3.3%
January 1987	1.3%	January 2008	2.3%
January 1988	4.2%	January 2009	5.8%
January 1989	4.0%	January 2010	0.0%
January 1990	4.7%	January 2011	0.0%
January 1991	5.4%	January 2012	3.6%
January 1992	3.7%	January 2013	1.7%
January 1993	3.0%	January 2014	1.5%
January 1994	2.6%	January 2015	1.7%
January 1995	2.8%	January 2016	0.0%
January 1996	2.6%		

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ACADEMIC VITA

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EDUCATION

The Pennsylvania State University (University Park, PA)
Schreyer Honors College

Class of May 2016
Smeal College of Business

Bachelor of Science: *Risk Management, Actuarial Science Option*
Statistics Minor

ACTUARIAL EXAMS

Exam P/Probability Theory
Passed July 2014
Exam F/M Financial Math
Passed June 2015

WORK EXPERIENCE

Cigna

Summer 2015

Actuarial Intern within Cigna Global Health Benefits

- Performed an actual to expected claims study for global dental pricing
- Worked with actuarial interns on case studies and presentations
- Gained an understanding of the actuarial career path

Advanced Electrical Services Group, Inc.

Summer 2013, 2014

- Calculated payroll for 25 employees bi-weekly
- Processed accounts payable and accounts receivable
- Oriented new staff to process payroll

Salon Moxi

2010 – Present

Receptionist/Client Coordinator

- Interacted with clients over the phone and in the salon, answering questions, discussing issues, and promoting services
 - Facilitated communication to 1,200 clients through mailings and phone calls during times of significant change and development
-

LEADERSHIP/ACTIVITIES

Tapestry Dance Company (University Park, PA)

September 2013 – May 2016

Vice President 2015

Secretary 2014