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Social Security Retirement Benefits Timing: A Model for Working Families

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**Social Security Retirement Benefits:
A Timing Model for Working Families**

By Francine J. Lipman and James E. Williamson

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I. Introduction

With more than 61 million individuals receiving Social Security benefits, one out of every four American families receives monthly cash payments from the Social Security Administration (SSA).¹ These monthly payments directly benefit 48.5 million retired workers, their current and former spouses, 10 million disabled adults, and more than 3 million children.² Several million more children and adults in the increasing number of multigenerational households in the United States benefit indirectly from Social Security retirement payments.³

In addition to their broad reach, monthly Social Security retirement benefits have ensured the financial well-being of millions of American families for more than 80 years.⁴ Eight-four percent of Americans 65 and older receive these benefits, with more than 60 percent of beneficiaries receiving one-half or more of their income from SSA.⁵ Notably, 33 percent of beneficiaries receive at least 90 percent of their income from SSA.⁶

The percentages of people of color who rely on Social Security income are even more significant. Hispanic, Black,

and Asian seniors rely on Social Security benefits for one-half or more of their income, at rates of 73, 69, and 62 percent, respectively. Similarly, Hispanic, Black, and Asian seniors rely on Social Security benefits for 90 percent or more of their income, at rates of 52, 45, and 41 percent, respectively.⁷ Additionally, about 48 percent of married couples and 71 percent of unmarried individuals receive one-half or more of their income from SSA.⁸ After decades of decreases in defined benefit plans and interest rates, along with escalating health care costs and life spans, these high rates of reliance on Social Security benefits are not surprising.

Given the depth and breadth of reliance on Social Security benefits, it is critical for households to understand and plan for decreasing average retirement benefit amounts. Many seniors rely on Social Security retirement benefits because they have few or no other resources. According to the U.S. Government Accountability Office, 41 percent of households age 55 and older, 52 percent of households age 65 through 74, and 71 percent of households age 75 and older have no retirement savings.⁹ Therefore, maximizing Social Security retirement benefits is critical for seniors' and their families' health, safety, and welfare.

As of June 2017, retired workers received average annual benefits of \$16,428, while surviving spouses age 60 and older only received \$15,684 in average annual benefits.¹⁰ Retired workers and their spouses received average annual aggregate benefits of \$27,336, and a widowed senior with two dependent children received av-

1 Natl. Acad. of Soc. Ins., *Social Security Benefits, Finances, and Policy Options: A Primer* (Nov. 2017) (setting forth detailed data on Social Security retirement and disability income).

2 *Id.*

3 Francine J. Lipman, *(Anti)Poverty Measures Exposed*, 21 Fla. Tax Rev. 389, 415 (2017) (describing the broad and deep direct and indirect antipoverty benefits of Social Security retirement payments).

4 Doug Walker, *Social Security Is Turning 80 and Has Never Been Stronger*, Soc. Sec. Administration, <https://blog.ssa.gov/social-security-is-turning-80-and-has-never-been-better> (June 29, 2015).

5 Natl. Acad. of Soc. Ins., *supra* n. 1.

6 *Id.*

7 *Id.*

8 *Id.*

9 *Id.*

10 *Id.*

erage annual benefits of \$31,968 for the household.¹¹ These amounts represent current average earnings replacement rates of only 52, 38, 32, and 25 percent of low (\$22,215), medium (\$49,366), high (\$78,985), and maximum (\$120,418) earnings amounts, respectively, for a retired worker at age 65 in 2017. Over time, these replacement rates are scheduled to decrease as full retirement age (FRA) increases. Medium earners' replacement rates at age 65 will decrease from 38 to 34 percent in 2020 and to 31 percent in 2030.

Because Social Security benefits are such an important component of household income for families, it is not surprising that in 2016 Social Security benefits lifted more than 26 million people out of poverty, including 1.5 million children, 7.5 million adults, and more than 17 million seniors.¹² Moreover, Social Security benefits decreased the depth of and proximity to poverty for millions more seniors, children, and their families.

The amount of monthly Social Security retirement benefits a senior and his or her family receives is directly related to when these benefits are claimed. Accordingly, the timing of claiming Social Security retirement benefits is a vital decision for individuals who will rely on these benefits to support their households after they retire. Many models and measures individuals use to make these timing decisions, among other financial decisions, are the same as those developed to guide large

business organizations. However, because of the differences in wealth, capacity, life cycle, mission, and goals between individuals and large business organizations, not to mention the impact of unique human attributes, these models and measures do not fit the needs of individuals, particularly those in lower- and middle-income households.

Nevertheless, the increasingly vulnerable individuals in these households do need strategic measures and models to guide them when making financial decisions. Strategic measures and models designed to meet their unique needs are valuable to these individuals, their families, and the economy as a whole because benefits are decreasing over time. One such strategic measure is the quality value of marginal Social Security benefits to a household. This article presents a few examples of quality-value dollar models using strategic measures, which better expose the financial advantages seniors gain by delaying receipt of their Social Security retirement benefits.

As members of Congress struggle to resolve the long-term financial viability of Social Security and Medicare, given an aging and longer living U.S. population, it is possible that increasing FRA beyond age 67 may be part of any Social Security reform package. A quality-value dollar model would be helpful in senior outreach, education, and engagement regarding the decision about Social Security retirement benefits timing and any changes to the existing Social Security retirement system.

II. Methodology and Analysis

The methodology used for the analysis presented in this article is normative, limiting conclusions to descriptions of the effects of the different measurement

11 *Id.*

12 Liana Fox, *The Supplemental Poverty Measure: 2016* 2 & fig. 8, U.S. Census Bureau Current Population Reports, <https://www.census.gov/content/dam/Census/library/publications/2017/demo/p60-261.pdf> (rev. Sept. 2017) (describing Social Security benefits as the most significant antipoverty program).

models on an individual's decision about Social Security retirement benefits timing, given the constraints imposed. Therefore, the analysis represents a theoretical exploration. Further empirical and applied behavioral research is necessary to arrive at a more practical application.

To establish a background for the analysis, we present in Section III two traditional accounting models that are regularly applied to financial decision-making. We include examples that demonstrate the serious financial consequences that can occur when traditional accounting models, using nominal dollars only, are used to make a decision about Social Security retirement benefits timing. In the situations presented, the resulting consequences adversely affected the individuals and their households.

In Section IV, we propose that the quality values of certain incremental dollars might differ from the quality values of other dollars. The subsequent discussion considers whether measuring and using the different quality values of incremental dollars might lead to better financial decisions than simply using nominal dollars. Section V presents an analysis of the factors involved in the Social Security retirement benefits timing decision. This is followed by the presentation in Section VI of two real-world examples demonstrating the consequences of using traditional accounting models, using nominal dollars without any adjustments, to make decisions about Social Security retirement benefits timing. In these two examples, the first involving an employee and the second involving an individual who owns a small business, we demonstrate the significant impact on lifestyle that adverse timing decisions can have for lower- and middle-income individuals and their families.

In Section VII, we develop a model that supports the use of quality dollars instead of nominal dollars, and Section VIII illustrates how quality dollars might be calculated. Finally, Section IX illustrates how quality dollars might be used in conjunction with traditional accounting models — the financial accounting and managerial accounting models — to decide when to begin receiving Social Security retirement benefits.

III. Traditional Accounting Models

To illustrate how traditional accounting models are applied to analyze a financial decision, consider the case of John Jones, who bought a \$1 lottery ticket every Wednesday and Saturday for 20 years. Over the 20-year period, John spent a total of \$2,080 ($\$2 \times 52 \text{ weeks} \times 20 \text{ years}$) on lottery tickets. He only won once. His winning ticket paid \$1,985 in a lump sum cash award.

A traditional analysis of whether this was a successful financial strategy typically would be done in one of two ways. Some analysts would compute the \$95 loss in nominal dollars (\$1,985 in winnings – \$2,080 in expenditures) and conclude that John should not have gambled. A more sophisticated analysis would consider whether the \$1,985 payoff was received early or late in the 20-year period. The net present value (NPV) of the discounted cash flow could then be calculated to determine whether the venture was successful. For example, if the first lottery ticket purchased paid the \$1,985 award, and assuming an annual discounted rate of return of 10.4 percent,¹³ the NPV would

13 For purposes of this analysis, we use the approximate long-term yield rate on equities held for investment; 10.4 percent is specifically used so that dividing by 52 semiweekly lottery purchases resulted in 0.1 percent per

be positive, \$1,110.¹⁴ This indicates that the venture was profitable. If, on the other hand, the last ticket purchased resulted in the \$1,985 payout, the NPV would be negative, \$627,¹⁵ indicating that the venture was unprofitable. If the 820th lottery ticket was the winner, the NPV would be zero,¹⁶ indicating the point of indifference.

These two approaches, using nominal dollars (unadjusted for value other than time of payout in the NPV example) — traditionally called the financial accounting model and the managerial accounting model — are commonly used when analyzing financial decisions. The main goal of this article is to explore whether decisions about Social Security retirement benefits timing might be made more effectively by developing and using a measure of quality dollars designed to meet the unique needs of lower- and middle-income individuals — instead of by using nominal dollars. A secondary goal is to illustrate how measures of quality dollars work within the traditional structures of the commonly used financial accounting and managerial accounting models. Before we address these goals, we must first describe the concept of quality-valued dollars.

IV. Quality-Valued Dollars

Assigning a quality value to dollars is an idea that has been raised in financial analysis for decades.¹⁷ Unfortunately, the

concept has faced challenges in both implementation and acceptance. These challenges have arisen predominately because it has been difficult to determine what values to assign to which nominal dollars. Notably, according to Richard Petty, although the word “quality” often means different things to different people, everyone agrees that quality is a good thing.¹⁸ In most cases, quality is an attribute, or something a product or service has or does not have. Petty also describes quality as the absence of defects.¹⁹ Joseph Juran, one of the first scholars who recognized a human dimension to quality,²⁰ described quality as fitness for purpose or use.²¹ Quality has also been expressed as value exchanged for currency. Even though the characteristic of quality is usually associated with a product or service, it can also apply to other things, such as life, time, and reputation. If something has a feature that can benefit a user or enhance his or her experience compared with its alternative, that feature is considered a quality.

In this article, we propose that certain incremental dollars may have an inherent attribute or quality that other dollars, although similar in nominal amount, do not likewise possess. For example, assume

half-week period, simplifying the explanatory calculations of the present values.

14 $NPV = \$1,985 - (\$1/1.001 + \$1/1.001^2 + \dots + \$1/1.001^{2080}) = \$1,110$

15 $NPV = \$1,985/1.001^{2080} - (\$1/1.001 + \$1/1.001^2 + \dots + \$1/1.001^{2080}) = (\$627)$

16 $NPV = \$1,985/1.001^{820} - (\$1/1.001 + \$1/1.001^2 + \dots + \$1/1.001^{2080}) = \$0$

17 See generally Williams Edward Deming, *Out of*

the Crisis: Quality, Productivity, and Competitive Position (Mass. Inst. of Tech. 1986) (finding that when organizations focus on quality rather than costs, quality improves and costs decrease); Michael Perigord, *Achieving Total Quality Management* (Productivity Press 1990); Roy Fox, *Making Quality Happen: Six Steps to Total Quality Management* (McGraw-Hill 1991).

18 Richard Petty, *Managing and Accounting for Quality*, Management Accounting Issues Report (Australian Soc. of CPAs 1997).

19 *Id.*

20 Joseph M. Juran, *Juran on Planning for Quality* (Free Press 1988).

21 *Id.*

that the basic needs of food and shelter consume an elderly person's entire monthly pension of \$1,000, leaving no money for health care. An increase of \$250 per month, or enough to pay for health coverage, could bring an increase in quality of life greater than the \$250 or a 25 percent increase in nominal dollars. If we could establish that adding health coverage would double the individual's quality of life, we might argue that the marginal dollars should be included at a quality value of \$1,000 in an adjusted model for making the decision about when he or she should begin receiving Social Security retirement benefits.

Appropriate measures are critical because imposing inappropriate measures could lead an individual to make adverse financial decisions. Inappropriate measures can be especially harmful to lower- and middle-income seniors because of their limited assets and limited amount of time left in the workforce. Such financial constraints, along with the fact that these individuals are more likely to be less financially sophisticated and more readily influenced to make harmful financial decisions, make them especially vulnerable to the effects of adverse financial decisions.

In support of this proposition, economist Milton Friedman believed that employers should not provide health insurance coverage for employees because providing this tax-preferred employee fringe benefit contributes to disproportionately escalating medical costs.²² He

laid some blame on members of Congress who passed tax laws that allow employers, when computing their taxable income, to deduct the health insurance premiums they paid even though employees do not have to include this compensation (an excluded fringe benefit) in their taxable income.²³ Friedman believed this creates inefficiency because employees do not perceive themselves as being affected by their medical costs; therefore, they tend to overuse health care services. Friedman believed that individuals make better health care decisions when they incur some costs as well as benefits.

The proposition that measurement concepts can affect strategic decisions is not a new idea.²⁴ Robin Cooper demonstrated that outdated cost accounting systems contributed to poor manufacturing decisions.²⁵ Professors Robert Kaplan and David Norton developed the balanced scorecard to redirect management's focus from concentrating too heavily on short-term financial measures of performance.²⁶ Chee Chow and others revealed

No. 108-173, 117 Stat. 2066) was signed into law by President George W. Bush on December 8, 2003. Among many other new requirements, the act requires that individuals make a copayment for their health insurance and prohibits individuals from purchasing a supplemental insurance plan that would cover the copayment. As a result, an individual's decision to purchase prescription drugs under the government program requires him or her to incur some cost.

22 Milton Friedman, *How to Cure Health Care*, 3 HOOVER DIGEST (July 30, 2001) <https://www.hoover.org/research/how-cure-health-care-0>. Friedman's concerns evidently had some influence because Congress passed the most comprehensive overhaul of Medicare in 2003. The Medicare Prescription Drug, Improvement, and Modernization Act (Pub. L.

23 26 U.S.C. § 106(a) (2018) (setting forth the exclusion of employer-provided health coverage from gross income).

24 James E. Williamson, *The Effects of Measurement Concepts on the Investment Decisions of Trustees*, 46 Acctg. Rev. 139 (1971).

25 Robin Cooper, *Does Your Company Need a New Cost System?* 1 J. Cost Mgt. 45 (Spring 1987).

26 Robert Kaplan & David Norton, *Translating*

how small businesses might make better strategic decisions with the balanced scorecard approach.²⁷ More recently, the mitigating effects of information on performance were examined by scholars including Joseph Fisher, Laureen Maines, Sean Pepper, and Geoffrey Sprinkle.²⁸

Even though the effects of measurement concepts on decisions have been explored in depth by scholars,²⁹ this article presents the topic in a different context by focusing on decision-making by lower- and middle-income individuals rather than by large business organizations. This framework is novel and adds to the literature on the effects of measurement concepts on financial decisions.

V. Factors Involved in Social Security Retirement Benefits Timing Decisions

Not only is the decision about when to start receiving Social Security retire-

ment benefits unique to each individual, it also involves an increasing number of individuals. During the 20th century, the number of individuals age 65 and older increased 11 times compared with only 3 times for those under age 65.³⁰ Declining fertility and mortality rates have led to a sharp rise in the median age from 20 years in 1860 to 34 in 1994 and 38 in 2017.³¹ According to Census Bureau projections, the senior population will more than double between now and 2050, to 80 million or 20 percent of the U.S. population.³² Most of this growth is projected to occur from 2010 to 2030, when the baby boomer generation qualifies for Social Security retirement benefits. Because of the number of individuals affected, the decision about when to start receiving Social Security retirement benefits has attracted the attention of many financial professionals who provide a variety of advisory products and services.

A qualifying individual has to make his or her first decision about the timing of Social Security retirement benefits at age 62. FRA for those born after 1959 is age 67; however, these individuals may elect to receive Social Security retirement benefits, discounted by 30 percent, starting as early as age 62.³³ For example, if an individual

Strategy Into Action: The Balanced Scorecard (Harvard Bus. Sch. Press 1996); Robert Kaplan & David Norton, *The Balanced Scorecard — Measures That Drive Performance*, 70 Harvard Bus. Rev. 71 (1992); see also Robert Kaplan, *Devising a Balanced Scorecard Matched to Business Strategy*, 22 Plan. Rev. 15 (1994).

- 27 Chee Chow et al., *Applying the Balanced Scorecard to Small Companies*, 79 Mgt. Acctg. 21 (1997); Robert Capettini et al., *Instructional Cases: The Proper Use of Feedback Information*, 7 Issues in Acctg. Educ. 37 (1997).
- 28 Joseph G. Fisher et al., *Using Budgets for Performance Evaluation: Effects of Resource Allocation and Horizontal Information Asymmetry on Budget Proposals, Budget Slack, and Performance*, 77 Acctg. Rev. 847 (2002).
- 29 John Lingle & William Schiemann, *From Balanced Scorecard to Strategic Gauges: Is Measurement Worth It?* 85 Mgt. Rev. 56 (1996); Lawrence S. Maisel, *Performance Measurement: The Balanced Scorecard Approach*, 6 J. Cost Mgt. 47 (1992); Rod Newing, *Wake Up to the Balanced Scorecard!*, 73 Mgt. Acctg. 22 (1995); Rob Newing, *Benefits of a Balanced Scorecard*, 114 Accountancy 52 (1994).

30 Jennifer M. Ortman et al., *An Aging Nation: The Older Population in the United States*, U.S. Census Bureau, <https://www.census.gov/prod/2014pubs/p25-1140.pdf> (May 2014).

31 U.S. Census Bureau, *The Nation's Median Age Continues to Rise*, <https://www.census.gov/library/visualizations/2017/comm/median-age.html> (June 22, 2017).

32 Ortman et al., *supra* n. 30.

33 The Social Security Administration is instituting changes enacted by Congress and signed into law by President Reagan in 1983 that, among other things, increased the age people must reach to receive full retirement benefits from age 65 to age 67; correspondingly the

qualifies for a retirement benefit amount of \$1,429 per month starting at age 67, he or she could elect to take a reduced benefit amount of \$1,000 per month starting at age 62. This, of course, would come at the cost of giving up the additional \$429 per month until death. Notably, a May 2017 study of 2016 household well-being by the Board of Governors of the Federal Reserve System found that the most common age to retire is age 62.³⁴ Alternatively,

percentage of full benefits paid to people retiring at the earliest possible age of 62 is gradually being lowered from 80 to 70 percent. Geoffrey Kollmann, *Social Security: Summary of Major Changes in the Cash Benefits Program*, Soc. Sec. Administration, <https://www.ssa.gov/history/reports/crsleghist2.html> (May 18, 2018). The phase-in depends on the year an individual was born and can be determined from online resources available on the Social Security website at Soc. Sec. Administration, Benefits Planner: Retirement, Full Retirement Age, <https://www.ssa.gov/planners/retire/retirechart.html> (July 14, 2018)

Year of Birth	Full Retirement Age (FRA) to Receive Full Benefits	Age 62 Benefits as Percentage of FRA Benefits
1937 or earlier	65	80
1938	65 and 2 months	79 ¹ / ₆
1939	65 and 4 months	78 ¹ / ₃
1940	65 and 6 months	77 ¹ / ₂
1941	65 and 8 months	76 ² / ₃
1942	65 and 10 months	75 ⁵ / ₆
1943–1954	66	75
1955	66 and 2 months	74 ¹ / ₆
1956	66 and 4 months	73 ¹ / ₃
1957	66 and 6 months	72 ¹ / ₂
1958	66 and 8 months	71 ² / ₃
1959	66 and 10 months	70 ⁵ / ₆
	67	70

34 Bd. of Govs. of Fed. Reserve Sys., *Report on the Economic Well-Being of U.S. Households in*

a qualifying individual can delay receipt of Social Security retirement benefits until age 70 and receive annual delayed retirement credits of 8 percent per year. Thus, this qualifying individual could elect to receive \$1,772 in monthly Social Security retirement benefits starting at age 70.

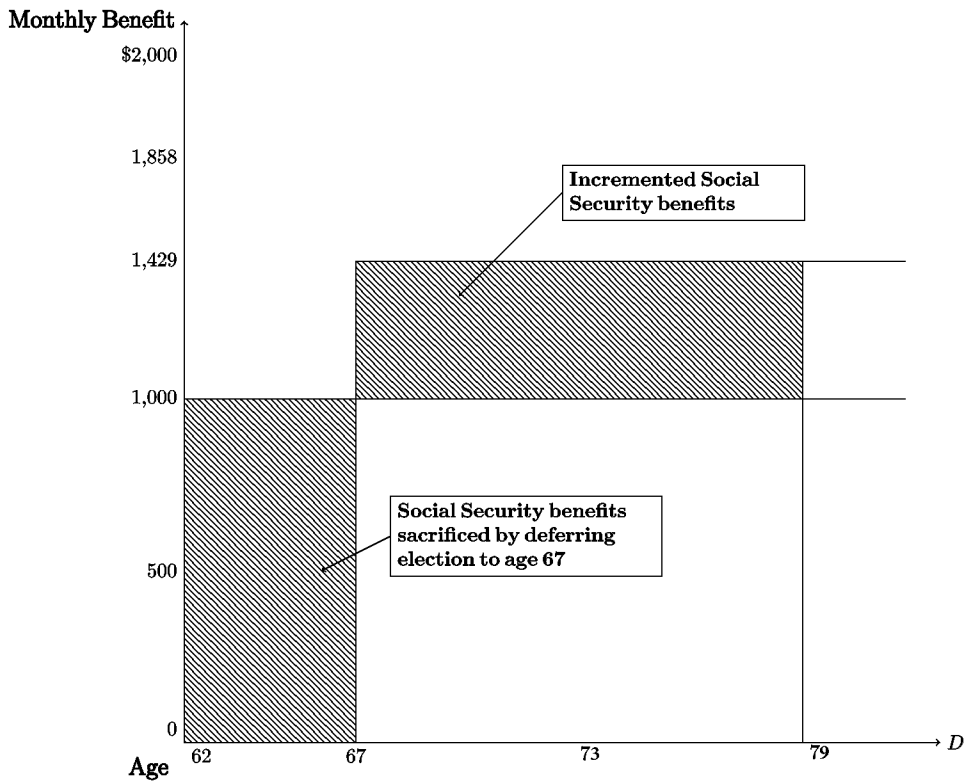
The popular financial adviser, Suze Orman, has used simple payback calculations to advise her television viewers regarding when they should start receiving their Social Security retirement benefits.³⁵ Orman broadly advised all individuals to take their retirement benefits at age 62 because, she explained, If you wait until age 65 [which was FRA at that time] to get the additional amount, you will lose three years of benefits and it will take 11 years at the higher benefit amount to recover the difference.³⁶ Thus, you would have to live past age 76 to receive more dollars than the early retirement payments you relinquished. FRA for seniors reaching 62 in 2018 is 66 years and 4 months and is scheduled to increase to age 67 for seniors reaching 62 in 2022 (or individuals born in 1960 or later). If we update Orman’s payback analysis to statutory FRA for 2022 and after, retirement payments are foregone from the earliest retirement age (62) to FRA, which will be age 67 (5 years (i.e., 60 months)). Using 60 foregone retirement benefit payments and an increased discount for early retirement benefit payments of 30 percent (compared with 20 percent), the payback period is only slightly longer (11.65 years):

2016 (May 2017).

35 Suze Orman, *Commentary: When to Start Social Security Retirement Benefits*, Squawk Box (CNBC Sept. 4, 2003).

36 *Id.*

Figure 1. Social Security Retirement Benefits Timing Decision Based on Simple Payback Analysis



- (1) $[60 \times \$1,000 / \$429 \text{ additional payment amount received for waiting to FRA}] / 12 \text{ months a year} = 11.65$ years of the higher benefit needed to recoup the lost 60 months of benefits or a life expectancy of age 67 + 11.65 years = age 78 years and 8 months. Using the current SSA life expectancy tables, an average woman turning age 62 in 2018 should live until age 86.4 (19.4 years beyond FRA) and an average man should live until age 83.7 (16.7 years beyond FRA).

While not explicitly stating how she arrived at this age for claiming Social Security retirement benefits, Orman, nevertheless, insisted that individuals should start taking their benefits at age 62. Because she did not

adjust her numbers for risk or the time value of money, Orman must have used some form of the financial accounting model in conjunction with information on average life expectancies. A depiction of what we assume to be her simple payback analysis is illustrated in Figure 1, adjusted to account for the fully phased-in FRA of 67. Figure 1 demonstrates that if an individual elects to claim Social Security retirement benefits at FRA (here, age 67), the individual's foregone aggregate benefits from age 62 to age 67 will equal his or her aggregate incremental Social Security retirement benefits at age 78 and 8 months. If the individual lives beyond this age, he or she will enjoy incremental benefits greater than the foregone benefits; if the individual does not survive to this age, he or she will suffer a deficit

(i.e., the foregone benefits will exceed his or her incremental benefits received).

Orman did not consider risk in her analysis, but when we analyze future financial issues, such as sources of income and return on investment, outcomes become less certain. However, because Social Security retirement benefits are guaranteed payments from the U.S. government, the risk-free value of the additional Social Security retirement benefits at FRA is a critical omission in Orman's analysis.

Traditionally, when adjusting different sources of income for risk, guaranteed payments from the U.S. government have been used as the risk-free standard for comparison with other sources of potential income. For example, a 6 percent yield on U.S. Treasury bonds might have the same risk-adjusted value as an 8 percent yield on corporate bonds.³⁷ Therefore, because the additional nominal dollars from Social Security retirement benefits to be received in the future are certain, they should have a higher risk-adjusted value than the same amount of less certain nominal dollars from other sources.

The time value of money and risk differences are only two of the relevant factors Orman omitted in her analysis. She also did not mention the potential tax costs (or benefits) of Social Security retirement benefits or the opportunity cost of lost earnings from age 62 to FRA. We discuss these issues in the next section, where we examine two cases regarding Social Security retirement benefits timing.

VI. Analysis of Two Cases

A. An Employed Individual

Jonathan worked at the same factory for 35 years. Although he enjoyed his job

and the camaraderie of fellow workers (especially at the pub they often stopped at after work to share stories and a couple of beers), he decided he would retire at age 62. When cautioned that he would sacrifice considerable potential marginal dollars by starting to receive his Social Security retirement benefits before FRA, he replied, "Everyone says retiring at 62 is the correct thing to do. If I don't do it now, I'll never live long enough to make up my lost Social Security retirement benefits."

Six years later, Jonathan is mowing grass at the local golf course for \$9 per hour; he made \$25 per hour at the factory. He works because he needs the extra money. Moreover, he loves stopping at the local pub after work to meet with the guys. Unfortunately, he only gets to work at the golf course during the 5 months of the season. During the long winter, he waits for summer to get those valuable extra dollars and the companionship of the other workers.

This real-life situation highlights critical external factors that Orman and other professionals who use simple payback analysis do not consider. These other factors impact the quality of life and well-being of individuals, especially those in lower- and middle-income households.

B. An Individual Who Owns a Small Business

Because many traditional accounting models emphasize the effects of taxes on individuals and their small businesses, we present this case. Here, professionals advised the individual about the timing of his Social Security retirement benefits and related tax strategies. Unfortunately, while considering these important factors, the professional advisers did not consider the macro effects of the decision on the individual's personal and business goals, thus

37 Lawrence J. Gitman et al., *Corporate Finance* (South-Western 2004).

inadvertently altering them. The consequences were significant and far-reaching for the individual and his family.

Steve and Anne own and operate a family farm in Iowa. At age 62, Steve visited the local SSA office for assistance with his decision about when to begin receiving his Social Security retirement benefits. He was given the information presented in Table 1 regarding the amount he would receive based on the age at which his benefits start.

Table 1. Monthly Social Security Retirement Benefits Based on Age When Benefits Start

Age	Monthly Benefit (\$)
62	1,050
67	1,500
70	1,860

Based on this information, SSA and Steve’s tax preparer and financial planner advised him to start receiving his benefits at age 62 because this most likely would give him a larger total lifetime benefit, unless he lived well beyond normal expectations. SSA used nominal dollars for the payback calculations, whereas the financial planner prepared an analysis based on the present value of future benefits. The expected future cash flows were calculated using data from actuarial tables of life expectancy for a 62-year-old man.

Steve and Anne were very pleased at the prospect of having the additional income at this time, even though it would only be \$1,050 a month as opposed to the \$1,500 or \$1,860 they would receive monthly by delaying the start date. Steve, however, was not ready to quit farming at age 62 and asked whether this would affect his benefits. He was told that if his net earned income from farming is greater than a certain amount (\$17,040 in 2018,

indexed annually for inflation) in any given year, he will have to pay back some of his Social Security retirement benefits.³⁸ Steve also understood that if he reached FRA, the SSA would increase his benefits permanently for any amounts that were withheld due to net earnings in excess of the applicable threshold.³⁹ Because farming had not been very profitable in recent years, mainly due to adverse weather and low prices for corn, alfalfa, and soybeans, none of the parties who helped Steve make his timing decision focused on this issue.

The following year one of Steve’s neighbors approached him with a proposed joint venture to rent some neighboring fields that were not being farmed because the owner had recently died. Because of their proximity to the available acreage and the fact that they had all of the necessary equipment, with little effort, Steve and his neighbor could make significant additional net income to divide between

38 If an individual receives Social Security retirement benefits before FRA, he or she must pay back \$1 for each \$2 above the earned income threshold that is annually indexed for inflation. In the year such an individual reaches FRA, SSA deducts \$1 in benefits for every \$3 earned above a higher earned income threshold dollar amount. In 2018, the earned income threshold is \$45,360, only counting earnings before the month the individual reaches FRA. In the year the individual first begins to receive Social Security retirement benefits, SSA ignores earnings the individual made before the month he or she began receiving benefits and treats the individual as retired in any month he or she earned \$1,420 or less. Soc. Sec. Administration, *Benefits Planner: Retirement, Getting Payments While Working*, <https://www.ssa.gov/planners/retire/whileworking.html> (accessed June 18, 2018).

39 Soc. Sec. Administration, *Exempt Amounts Under the Earnings Test*, <https://www.ssa.gov/OACT/COLA/rtea.html> (accessed July 18, 2018).

them. Steve said that he would really like to join in the venture but would be unable to do so because, if it became successful, he would have to pay back some of his Social Security retirement benefits. Even though Steve avoided this lucrative joint venture, he still had an unexpectedly high net income at the end of the year. Because the weather and market prices improved, Steve accumulated an estimated \$30,000 net profit for the year. His tax preparer and financial planner, however, came up with a solution; Steve could buy a new piece of equipment for \$20,000, which he could immediately expense for federal income tax purposes, thus reducing his net profit and taxable income. This strategy would also achieve the goal of avoiding any repayment of Social Security retirement benefits.

A week after Steve invested in yet another John Deere, one of his neighbors stopped by to admire the new piece of equipment. The equipment was parked in the front yard because Steve had no room left in his sheds. "What are you going to do with that?" the neighbor asked. "I really don't know," Steve responded. "I had to buy it for tax purposes. And now I have to find the time, energy, and money to build another shed to house it. Maybe my son David will help me when he finishes all of his work. Never any rest or relief for farmers or their families."

By claiming his Social Security retirement benefits early, Steve altered his personal and business goals, thus changing his overall financial strategy from maximizing crop output, minimizing costs, and maximizing profitability to avoiding net earnings so that he would not have to pay back his Social Security retirement benefits. Thus, Steve's focus was distracted from his long-standing goals, which were developed over time to maximize his qual-

ity of life and his family's well-being. This example is presented to show that using inappropriate measures to make financial decisions distorts the way individuals view their personal and business goals. These distortions have potentially devastating consequences for lower- and middle-income individuals, who are especially vulnerable to financial volatility and challenges.

VII. New Financial Decision-Making Measures for Lower- and Middle-Income Individuals

Assuming that measures for making financial decisions differ between individuals and large business organizations, we may gain a better understanding of these differences by looking at the factors involved in the decision to purchase insurance. In general, the amount of risk an individual or large business organization is willing to accept depends to some extent on the individual's or business entity's net assets or worth. For example, many large business organizations self-insure (use their own money rather than insurance) to pay for possible losses from fire, storm, earthquake, and even liability from tort actions. Individuals seldom self-insure unless forced to do so for economic reasons. Most of them pay insurance premiums to protect themselves from financially catastrophic events.

Insurance companies bear — in addition to the cost of insurance benefit payouts — operating costs and the responsibility for shareholder profits. Thus, insurance premiums charged to individuals and businesses in the aggregate are greater than the direct benefits they receive in reimbursements for insured losses. Individuals understand that insurance is an additional cost but voluntarily incur it to insure themselves against potentially

large expenses from losses. Paying this additional cost is only rational if individuals place different values on the nominal dollars of premium payments and the nominal dollars of potential catastrophic losses.

This concept leads to the idea that individuals believe that the value of a sum of dollars that must be paid in large amounts (i.e., expenses from a loss) is greater than the value of the same sum of dollars paid in small amounts over multiple periods (i.e., insurance premiums). This concept may provide an important first step when trying to develop new measures to enhance financial decision-making for individuals, particularly lower- and middle-income individuals. In this article, when certain dollars appear to have a value greater than their nominal value, they are described as quality-adjusted dollars.

A. Quality-Adjusted Dollars and Willingness to Pay

With this background, we can better answer the question about whether John Jones' lottery experience was a successful part of his overall financial strategy. If, instead of buying lottery tickets, John had paid insurance premiums of \$2 per week for 20 years and then an employee got injured on the job, resulting in a \$1,985 insurance claim, we would say that John made a sound business decision in paying the insurance premiums. Therefore, while acknowledging that the lottery is a wind-fall profit instead of a reimbursement for loss, the two situations are basically the same. Because this article is developing a theory, we do not conclusively deduce that John's lottery investment was successful. However, behavior such as John's is rational and consistent and should be considered when developing new measures lower- and middle-income individuals can use when making financial decisions.

B. Quality-Adjusted Dollars and Ability to Earn

If we accept the concept that the quality value of nominal dollars in small amounts differs from the quality value of nominal dollars in large amounts, we can theorize that the quality value of nominal dollars may differ at different times in an individual's life. Similarly, differences in the quality value of nominal dollars can be related to the individual's ability to earn marginal dollars at different times in his or her life. If so, it follows that:

1. When ability to earn marginal dollars decreases, the quality value of marginal dollars increases.
2. Because the ability to earn marginal dollars decreases as individuals age, the quality value of marginal dollars increases as they age.⁴⁰

According to these propositions, estimating the quality value of marginal dollars may help individuals make better decisions concerning the timing of their Social Security retirement benefits. Additionally, it would be helpful if the estimated value of those quality dollars could be used in the financial accounting model or managerial accounting model.

Although quality dollars might provide useful information, they tend to be difficult to derive and quantify. In the literature, the difficulties associated with calculating quality dollars has undermined widespread adoption of quality dollars as

⁴⁰ In addition to aging, periods of low earning ability could have many causes, such as recession, political disruption, or a disaster such as a fire, flood, hurricane, or tornado. Govt. Accountability Off., *Retirement Security: Most Households Approaching Retirement Have Low Savings* (GAO-15-419), Rpt. to Ranking Member, Subcomm. on Primary Health & Ret. Sec., Comm. on Health, Educ., Lab. & Pens., U.S. Sen. (May 2015).

a broad-based effective measure for making financial decisions. In the following section, we explore estimating the value of quality dollars.

VIII. Quality Dollars: A Better Measure for Financial Decision-Making by Individuals

The search for a simple measure of quality dollars has encountered many challenges because, among other issues, many dimensions impact value differently for a variety of individuals. In this article, we present two dimensions of quality dollars. The first dimension presumes that nominal dollars in large payment amounts have a greater quality value than nominal dollars in small payment amounts. The second dimension presumes that the quality value of marginal dollars increases as the ability of the individual to earn marginal dollars decreases.

Resolving the measurement issues related to quality dollars in terms of the first dimension is beyond the scope of this article. Experiments with individual participants would be necessary to try to extract, develop, and quantify values. While there is considerable ongoing experimental research in managerial accounting,⁴¹ the obstacles to deriving broadly acceptable and quantifiable measures are significant.

The measurement issues associated with quality dollars in terms of the second dimension may not be as difficult to resolve. We attempt a simple hypothetical mea-

surement for the case in which the value of marginal dollars increases as the ability of the individual to earn decreases. This measurement is structured around the individual's decision regarding when to start receiving Social Security retirement benefits. If we can measure the increase in the value of dollars as the individual's ability to earn decreases, this would be very useful to the millions of individuals who are faced with deciding when to begin receiving Social Security retirement benefits.

If individuals had usable measures of the quality value of the marginal dollars they would gain by waiting to receive their Social Security retirement benefits, they could make better decisions concerning when to start receiving benefits. Because an individual's ability to earn marginal dollars decreases as the individual ages, it is logical to assume that the value of guaranteed risk-free marginal dollars increases as the individual ages. If we can construct a model to measure the decline in the ability to earn, we can use that model to estimate the increasing value of risk-free marginal dollars.⁴² The proposed calculations use the nominal dollars from the example illustrated in Figure 1 and described in equation (1). The increasing quality value of risk-free marginal dollars is illustrated in Figure 2.

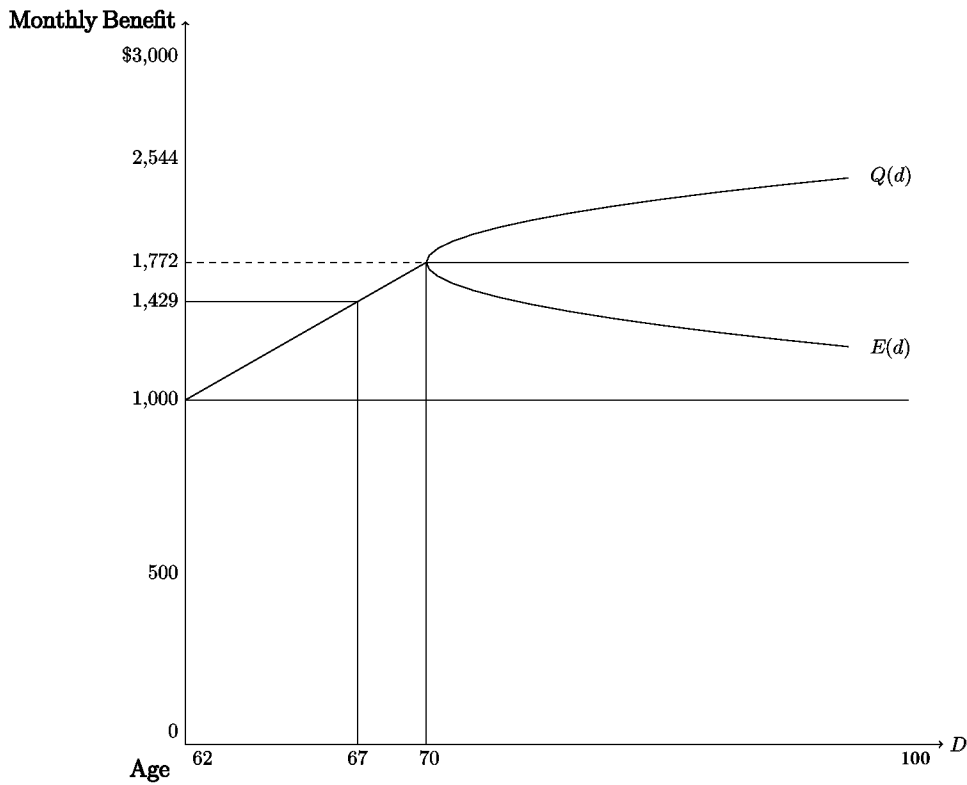
In this model, it is assumed that as an individual's earning power decreases, the quality value of certain risk-free marginal dollars increases at the same rate. These values are illustrated in Figure 2 by $E(d)$ and $Q(d)$. At age 70, before earning power begins to diminish,⁴³ both values are equal

41 Geoffrey B. Sprinkle, *Perspectives on Experimental Research in Managerial Accounting*, 28 *Acctg., Orgs. & Soc'y* 287 (2003); Mark L. Frigo, *What's Missing in Our Strategic Plans?* 84 *Strategic Fin.* 12 (2003); Mark L. Frigo, *Performance Measures That Drive the Goal Tenets of Strategy*, 85 *Strategic Fin.* 8 (2003); Paul A. Sharman, *The Case for Management Accounting*, 85 *Strategic Fin.* 42 (2003).

42 See generally James B. Ramsey, *The Elements of Statistics: With Applications to Economics and the Social Sciences* (Duxbury 2002); Jan Gullberg, *Mathematics From the Birth of Numbers* (W.W. Norton & Co. 1997).

43 We use age 70 as the last year in which earn-

Figure 2. Social Security Retirement Benefits:
Increasing Quality Value of Risk-Free Marginal Dollars



to \$772. At age 100, when earning power approaches zero, $Q(d)$ approaches $\$772 + \$772 = \$1,544$. Therefore, at all times t , the quality value of the marginal dollars is as follows:

- (2) $Q(d)_t = 772 + [772 - E(d)_t]$, where
- (3) $E(d)_t = 772 \times (\text{ratio of diminished earning power at time } t)$

Although we can intuitively measure the value of $Q(d)$, at ages 70 and 100, the values in between are not intuitive.⁴⁴ There-

ing power is 100 percent because it is consistent with the age at which Social Security retirement benefits are at their peak and with increasingly longer lives and healthier demographics in the senior population so that arguably it is FRA. Moreover, retirement scholars have noted that the revised structure of Social Security retirement benefit payments translates into an affirmative statement that age 70 is effectively FRA. Some have even suggested that the government should better communicate this position in its outreach and education. Alicia Munnell, *Social Security Real Retirement Age is 70*, Ctr. for Ret. Research at Boston College (Oct. 2013).

44 This is the same problem that confronted Arthur B. Laffer when trying to construct his curve. Austan Goolsbee, *Evidence on the High-Income Laffer Curve From Six Decades of Tax Reform*, Brookings Panel on Econ. Activity (Sept. 1999); see also Arthur B. Laffer, *Supply Side Economics*, 37 *Fin. Analysts J.* 29 (1981). While Laffer intuitively knew that a zero percent tax rate would provide zero tax dollars of revenue and that a 100 percent tax rate would also, by undermining incentives, provide zero tax dollars of revenue, he could not definitively

fore, we need to find some substitute measure that can be relied on to provide a reasonable estimate of the real values.

Assuming the existence of an observable regularity in the rate of decline of an individual's earning power after age 70, according to equation (2), an observable regularity in the rate of increase of the quality-adjusted value of marginal Social Security retirement benefit dollars results. The increasing value of marginal dollars can be described using either the increased cumulative average value or the increased incremental value of marginal dollars.⁴⁵ Because the cumulative average value is easier to work with, we will use it to demonstrate the measurement of quality dollars in the subsequent examples. Therefore, the cumulative quality value of marginal Social Security retirement benefit dollars from age 70 to age t is measured as follows:

$$(4) \Sigma Q(d)_{70-t} = 12(t - 69)[772 + [(772) - (772 (Y_{70-t}))]], \text{ where}$$

$$(5) Y_{70-t} = \text{ratio of the cumulative average diminished earning power from age 70 to age } t, \text{ where}$$

$$(6) Y_{70-t} = pX^q, \text{ where}$$

$$X = t - 69$$

p = earning power at age 70 = 1.000 (i.e., 100%, no diminishment)
 q = the index of decreasing earning power

The value of q is calculated as follows:

$$(7) q = \frac{\ln (\% \text{ decreased earning power})}{\ln 2}$$

Assuming that an individual's average earning power beyond age 70 decreases at a 30 percent rate each time the cumulative age doubles (assuming age 70 = 1 and therefore age 71 = 2 or the first doubling), we get the following result:

$$(8) q = \frac{\ln (0.70)}{\ln 2} = \frac{-0.35667}{0.6931} = -0.5146$$

The diminishing average earning power from age 70 to 85 and, finally, at age 100 is illustrated in Table 2.

Using Table 2 and equation (4), we get the estimated cumulative quality-adjusted value of incremental Social Security retirement benefit dollars at various ages (see Table 3). These amounts represent the cumulative additional value of delaying the receipt of Social Security retirement benefits until age 70 at each age presented in the table. If the quality-adjusted values of the incremental dollars presented in Table 3 are reasonable estimates of their real value to the individual, these values will better inform an individual concerning his or her decision regarding the age at which to start receiving Social Security retirement benefits. Quality-adjusted values should provide more relevant information that can be used in either the financial accounting model or managerial accounting model.

IX. Application of Models Unique to Financial Decision-Making by Individuals

Even though we present several disparities in the application of traditional accounting models to help individuals decide when to begin receiving Social

measure the effect on tax revenues of any rate in between.

45 Joyce T. Chen & Rene P. Manes, *Distinguishing the Two Forms of the Constant Percentage Learning Curve Model*, 1 Contemporary Acctg. Research 242 (Spring 1985).

Table 2. Diminishing Average Earning Power From Age 70 to 85 and at Age 100

Cumulative Age	Average Earning Power (%)
70	100
71	70
72	56.8
73	49
74	43.68
76	36.738
77	34.3
78	32.28
79	30.58
80	29.11
81	27.839
82	26.7156
83	25.716
100	17.082

Security retirement benefits, there is no reason to completely discard these models when designed specifically for individuals. Because the financial accounting and managerial accounting models have a long history of being broadly and successfully used by large business organizations to make financial decisions, we should capitalize on that advantage to enhance the financial decision-making process for individuals. These two models have evolved naturally over time, gaining flexibility and allowing easy adaptation to individuals.

A. *Quality Dollars and the Financial Accounting Model*

The financial accounting model is most familiar to the general population and

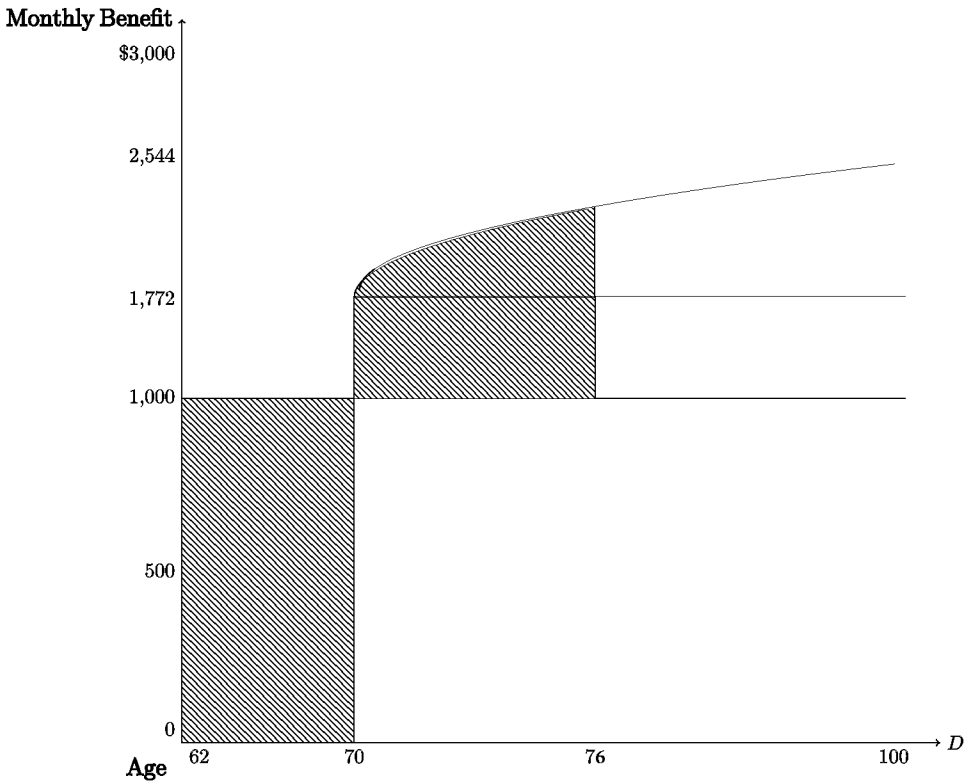
Table 3. Cumulative Quality-Adjusted Value of Incremental Social Security Retirement Benefit Dollars

Age	Value
70	9,264
71	24,086
72	39,798
73	55,956
74	72,409
75	89,061
76	105,872
77	122,805
78	139,837
79	156,952
80	174,143
81	191,388
82	208,690
83	226,040
84	248,885
85	260,859
100	525,264

the business world. In most applications of this model, nominal dollars are used and few adjustments are made for value concepts such as the timing of cash flows, nature of the income source, inherent risk, tax benefits and burdens, and transaction or other entity costs. However, quality-adjusted dollars could work well in the financial accounting model.

If Orman had used our quality-adjusted marginal Social Security retirement benefit dollars in her analysis, she would have derived a payback period of just over

**Figure 3. Social Security Retirement Benefits Adjusted for Quality Dollars:
The Financial Accounting Model**



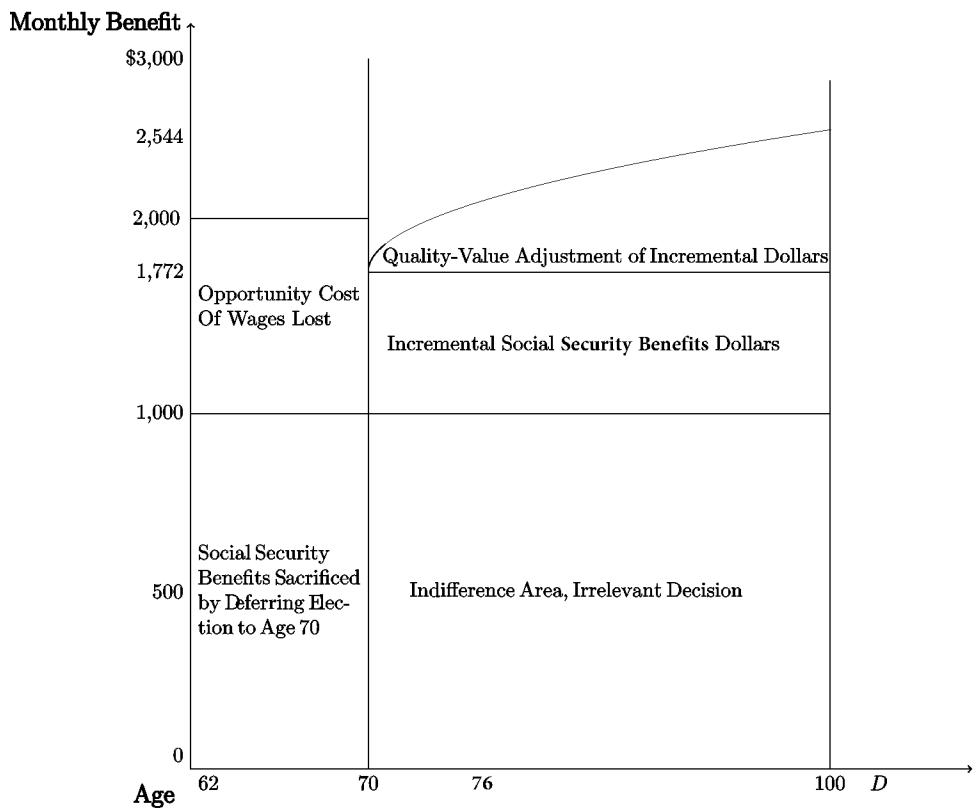
6 years. This payback period, illustrated in Figure 3 (96 months of foregone Social Security retirement benefit payments from age 62 through age 70 of \$1,000 = \$96,000 paid back in just over 6 years when the beneficiary is age 76), is almost 50 percent less than the 11-year period Orman calculated using nominal dollars. Therefore, if seniors who decided, based on Orman's advice, to begin receiving Social Security retirement benefits at age 62 had been shown this quality-adjusted information, they may have made a different timing decision. Furthermore, if these seniors had been shown this information, coupled with an analysis of the opportunity costs of not pursuing earned income, potential tax costs, and the social welfare benefits and burdens of employment, un-

doubtedly many would have made a different timing decision.

B. Quality Dollars and the Managerial Accounting Model

Although not as familiar as the financial accounting model, the managerial accounting model may be more useful to lower- and middle-income individuals when making the decision about when to begin receiving Social Security retirement benefits. This model is less constrained by the traditional concepts of net income, gains, and losses that need to be used when dealing with third parties and government entities such as tax authorities. Perhaps most beneficial is the fact that the managerial accounting model is perfectly adapted to measurements such as oppor-

Figure 4. Social Security Retirement Benefits Adjusted for Quality Dollars:
The Managerial Accounting Model



tunity costs and the time value of money.⁴⁶ There are at least two ways to use the quality values of incremental Social Security retirement benefit dollars, as illustrated in Figure 4. One way is to compare the discounted present value of the incremental quality-adjusted Social Security retirement benefit dollars to be gained with the discounted present value of the Social Security retirement benefit dollars

that will be sacrificed by delaying the receipt of Social Security retirement benefits until age 70. The second method considers not only incremental quality-adjusted Social Security retirement benefit dollars but also the opportunity cost of the years of wages lost because of the decision to receive retirement benefits early.

C. The Discounted Present Value Model

The discounted present value model is similar to the financial accounting model, except that the relevant numbers are reduced to their discounted present values at age 62. Because of this adjustment, the payback period is more than the approximately 6 years calculated using the financial accounting model. The actual pay-

46 For an overview of the subject, see Don R. Hansen et al., *Cost Management: Accounting and Control* (6th ed., South-Western Publishing Co. 2009); Ronald Hilton et al., *Cost Management: Strategies for Business Decisions* (4th ed., McGraw-Hill/Irwin 2008); Charles T. Horngren et al., *Cost Accounting: A Managerial Emphasis* (15th ed., Pearson 2015).

back period depends on the discount rate used, which is based on the relevant facts and circumstances of each case. A payback analysis, using a 2 percent discount rate and the quality-adjusted values from Table 3, is illustrated in Table 4. Under this analysis, by age 77 the retiree would be in a positive NPV based on value-adjusted dollars.

D. An Opportunity Cost Analysis

Although the discounted present value model provides an interesting contrast to the financial accounting model, neither model considers the opportunity cost of foregone wages if an individual elects to receive Social Security retirement benefits before FRA. In this case, looking at Figure 4, the question is: What aggregate value will the individual gain from continuing to work? The first \$1,000 per month is irrelevant because the individual will get that amount regardless of his or her decision, either in the form of wages or Social Security retirement benefits. The relevant opportunity income includes not only the quality-adjusted value of the incremental Social Security retirement benefit dollars but also the additional wages of \$1,000 per month before FRA. In this case, there is no comparison of dollars gained and dollars lost. There is only one relevant question: Is the total value of the opportunity income worth continuing to work? The answer to this question is subjective; each individual must come up with an answer based on his or her own measures. However, the opportunity value that could be gained by continuing to work and delaying the receipt of Social Security retirement benefits until FRA or even until age 70 with 8 percent annual delayed retirement credits is important information for any individual answering this question.

Table 4. Payback Period Using Discounted Present Value Model

Age	Cash Flow (\$)	Cumulative Present Value (\$) ¹
62	(12,000)	(12,000)
63	(12,000)	(23,764)
64	(12,000)	(35,298)
65	(12,000)	(46,606)
66	(12,000)	(57,692)
67	(12,000)	(68,561)
68	(12,000)	(79,217)
69	(12,000)	(89,664)
70	9,264	(81,757)
71	14,822	(69,332)
72	15,685	(56,465)
73	16,158	(43,470)
74	15,453	(31,285)
75	16,652	(18,412)
76	16,811	(5,671)
77	16,933	6,910
78	17,032	19,317
79	17,115	31,590
80	17,191	43,567

1 For simplicity of analysis, Social Security retirement benefits or wages are assumed to be received at the beginning of the year rather than over a 12-month period.

X. Summary

Individuals need key strategic measures when making financial decisions, including the decision about when to begin receiving Social Security retirement benefits. Using inappropriate measures can and does lead to detrimental and even devastating financial decisions. These decisions can be especially harmful to lower- and middle-income individuals because their limited assets make them more vulnerable to the consequences of each failed decision. In addition, these individuals may be less financially sophisticated and more easily influenced to make imprudent decisions.

Performance measures and models that are used to guide large business organizations are, to a great extent, the same as those used by individuals to make their financial decisions. However, because individuals and large business organizations differ considerably in wealth, capacity, life cycle, mission, and goals — and because individuals are human — problems can result when individuals, particularly lower- and middle-income individuals, use these tools to make financial decisions. Individuals who use inappropriate measures may steer themselves in the wrong direction. We can all recount stories, similar to those described herein, in which a vulnerable but well-meaning senior drove his or her family over a financial cliff into the abyss of poverty by doing this.

Strong evidence, although mostly anecdotal, indicates that individuals, particularly lower- and middle-income individuals, need unique tools for making financial decisions. The Ford Motor Company's

goal of being number one in the truck market, for example, does not correspond to the personal and business goals of individuals and their small businesses. Individuals likely need strategic measures that focus on quality of life, not on consumer ranking, market share, or size.

Despite research limitations noted herein, adjusting nominal dollars for risk and other unique differences might be helpful in improving the way individuals, particularly lower- and middle-income individuals, decide when they should start receiving Social Security retirement benefits. For this reason, we developed a procedure to estimate the quality value of marginal dollars.

We then used quality dollars in both the financial accounting and managerial accounting models. Although quality dollars worked well in both of these traditional accounting models, they worked better with the managerial accounting model. This was mostly due to the managerial accounting model being more proficient with measures of opportunity costs and the time value of money.

The Census Bureau projects that the population of individuals age 65 and older will increase more than 50 percent from 2015 through 2030.⁴⁷ Professionals working with this tsunami of seniors facing the decision about when to begin receiving Social Security retirement benefits can find some solace in the discovery that traditional accounting models could be value adjusted for these increasingly challenging times.

47 Ortman et al., *supra* n. 30.

