

CONNECTICUT LAW REVIEW

VOLUME 47

JULY 2015

NUMBER 5

Article

A Behavioral Contract Theory Perspective on Retirement Savings

RYAN BUBB, PATRICK CORRIGAN & PATRICK L. WARREN

The primary motivation for retirement savings policy is the view that many of us, if left to our own devices, will not save enough for retirement. Special tax subsidies for employer-sponsored retirement plans—a principal component of the federal policy scheme—have made such plans the predominant vehicle for private savings for retirement. A growing body of evidence shows that the details of plan design can have large effects on savings outcomes. The design of the “choice architecture” of these plans, however, is delegated to employers. We analyze the incentives for employer plan design produced by the labor market. Employers offer retirement plans to attract workers. If those workers make systematic mistakes in their retirement savings decisions, then the labor market will produce incentives for plan designs that generally fail to effectively address the problems. Indeed, the presence of workers who undersave due to myopia results in equilibrium employer plan designs that exploit the myopic by lowering their total compensation. Our analytic framework provides novel explanations for a range of features of plan design, including the high prevalence of matching contributions, the use of low default contribution rates in automatic enrollment plans, the shift away from annuities toward lump sum distributions, and the offering of investment options with excessive fees. The regulation of these plans should be reformed to address the problems with employer incentives that we identify. More fundamentally, our analysis calls for a rethinking of the current scheme’s special subsidies for employer-sponsored plans.

ARTICLE CONTENTS

I. INTRODUCTION	1319
II. EMPLOYERS AS CHOICE ARCHITECTS FOR RETIREMENT SAVINGS	1324
III. THE FEDERAL POLICY FRAMEWORK	1328
A. SUBSIDIZING EMPLOYER PLANS: INCOME TAX TREATMENT OF EMPLOYER-SPONSORED RETIREMENT SAVINGS PLANS.	1329
B. TAXING CHOICE: PAYROLL TAX TREATMENT OF EMPLOYER-SPONSORED RETIREMENT SAVINGS PLANS.....	1331
C. REGULATING PLAN DESIGN: THE NONDISCRIMINATION RULES.	1335
IV. EQUILIBRIUM RETIREMENT SAVINGS CHOICE ARCHITECTURES	1337
A. EQUILIBRIUM PLAN DESIGN WITH NO TAX ON CHOICE.....	1339
B. EQUILIBRIUM PLAN DESIGN WITH A TAX ON CHOICE.....	1349
C. LABOR MARKET INCENTIVES FOR OTHER ASPECTS OF PLAN DESIGN.	1350
V. IMPLICATIONS FOR RETIREMENT SAVINGS POLICY	1359
A. REFORMING THE REGULATION OF EMPLOYER PLANS.	1359
B. ENDING DELEGATION OF CHOICE ARCHITECTURE TO EMPLOYERS. ..	1363
VI. CONCLUSION	1365



A Behavioral Contract Theory Perspective on Retirement Savings

RYAN BUBB,* PATRICK CORRIGAN** & PATRICK L. WARREN***

I. INTRODUCTION

Retirement savings policies affect the labor market in different ways, depending on the underlying behavioral bias that is producing the undersaving problem that the policies are intended to address.¹ For example, mandatory savings rules like Social Security might distort labor supply downward by preventing individuals from consuming the fruits of their labor as early as they would like.²

In this Article we explore another aspect of the interaction between the labor market and retirement savings “policies,” focusing on the opposite direction of causality. The operation of the labor market has a powerful effect on employer-sponsored retirement plan design and therefore on retirement savings behavior. A full understanding of the implications of behavioral biases for retirement savings, and for optimal policy, requires an understanding of the equilibrium set of retirement plan designs that emerge when (potentially) biased workers meet profit-maximizing firms in the labor market.

A substantial fraction of private savings for retirement occurs through employer-sponsored retirement plans, in large part due to their favorable tax treatment. By one recent accounting, almost forty percent of all assets

* Professor of Law, New York University School of Law. Email: ryan.bubb@nyu.edu.

** New York University School of Law, J.D. Class of 2015; Harvard Kennedy School of Government, M.P.P. 2011.

*** Associate Professor of Economics, Clemson University, John E. Walker Department of Economics. Email: patrick.lee.warren@gmail.com. For helpful comments and discussions, we are grateful to Oren Bar-Gill, Brookes Billman, Josh Blank, Jacob Goldin, Daniel Halperin, David Kamin, Louis Kaplow, and workshop participants at Columbia Law School, Duke Law School, Harvard Law School, NYU School of Law, Stanford Law School, and Yale Law School.

¹ See Daniel Shaviro, *Multiple Myopias, Multiple Selves, and the Under-Saving Problem*, 47 CONN. L. REV. 1215, 1267 (2015) (discussing the effect of taxing the return to saving on labor supply); Louis Kaplow, *Myopia and the Effects of Social Security and Capital Taxation on Labor Supply* 1, 5–7, 14, 16, 20 (Nat’l Bureau of Econ. Research, Working Paper No. 12452, 2006) (examining the effect of social security and capital taxation on labor supply by myopic workers); Louis Kaplow, *Government Policy and Labor Supply with Myopic or Targeted Savings Decisions*, in 29 TAX POL’Y & THE ECON. (Jeffrey R. Brown ed., forthcoming 2015) (“[L]abor supply considerations could be substantial in designing an optimal program.”).

² Shaviro, *supra* note 1, at 1234 (arguing that Social Security might benefit from a design change because, as is, it leads to “unnecessarily large labor supply distortions”).

from private savings at retirement, and almost sixty-six percent excluding home equity, stem from employer plans.³ In the aggregate, total assets saved through employer-sponsored retirement plans rival the capitalized value of Social Security benefits.⁴

These employer-provided plans can—and often do—include a mix of mandatory savings features, scope for voluntary employee contributions to the plan, and savings incentives through employer matching contributions.⁵ Some establish a defined benefit for retired workers, typically in the form of a life annuity, while others commit the employer to providing only some set of contributions to each worker's retirement account.⁶ The particular combination of these features chosen by an employer creates a “choice architecture” for employees' retirement savings decisions, and a growing literature in behavioral economics documents that these plan design choices can have large effects on savings behavior.⁷

So it is not just the government that creates the rules that shape retirement savings. *Employers* also design a set of rules that play a similar role and at a similar scale. Indeed, each employer is in essence a microcosm of the larger federal policy scheme. The cluster of savings mandates, incentives, and other rules chosen by each employer parallels the rules and incentives for retirement savings provided by federal law through the Social Security program and the tax code.

The devolution to employers of what is effectively policy-making authority in this area raises a first-order question: How do employers design their retirement plans? What incentives do they face in choosing, for example, whether to offer non-elective employer contributions or

³ James Poterba et al., *The Composition and Drawdown of Wealth in Retirement?*, J. ECON. PERSP., Fall 2011, at 95, 97. These figures are calculated by counting savings in Individual Retirement Arrangements (IRAs) among the assets funded by employer-sponsored plans, since the vast majority of the flow of funds into IRAs stem from rollovers of employer-sponsored plans like 401(k)s. Craig Copeland, *Individual Retirement Account Balances, Contributions, and Rollovers, 2012; With Longitudinal Results 2010–2012: The EBRI IRA Database*, EBRI ISSUE BRIEF, May 2014, at 1, 4. A recent report from the Employee Benefit Research Institute using a database with 25.3 million IRAs owned by 19.9 million unique individuals indicated that nearly ninety-one percent of funds flowing into IRAs in 2012 resulted from rollovers, while about nine percent came from new contributions. *Id.* at 4, 17.

⁴ For a cohort of retirement-age workers in 2008, the former totaled \$261 billion while the latter totaled \$393 billion. Poterba et al., *supra* note 3, at 97.

⁵ See generally *How America Saves 2014: A Report on Vanguard 2013 Defined Contribution Plan Data*, VANGUARD (2014), available at https://pressroom.vanguard.com/content/nonindexed/How_America_Saves_2014.pdf (describing variations in employer-sponsored retirement plan design).

⁶ *Employer-Sponsored Pensions: A Primer*, URB. INST (2008), available at <http://www.urban.org/research/publication/employer-sponsored-pensions-primer> (comparing defined benefit, defined contribution, and hybrid plans).

⁷ See *infra* note 8; see also Jeffrey R. Brown et al., *Individual Account Investment Options and Portfolio Choice: Behavioral Lessons from 401(K) Plans* 7 (Nat'l Bureau of Econ. Research, Working Paper No. 13169, 2007) (discussing the amount of choice various plans provide).

instead to offer only employer matching contributions or no employer contributions whatsoever? There has been little work on these questions in the behavioral literature on retirement savings. The field has focused instead on estimating the effects of alternative plan designs on worker savings behavior and (relatedly) on documenting ways that individuals fail to optimize their retirement savings.⁸ The descriptive findings of these papers have formed the basis for prescriptive claims about how employers *should* design their retirement savings plans.⁹ For example, after reviewing the behavioral literature on retirement savings in a recent survey article, Professors Benartzi and Thaler ask:

What can employers do so that more plan participants enroll in retirement plans, contribute an amount that will build a reasonable retirement nest-egg, and allocate the funds among assets in an appropriately diversified way?¹⁰

They proceed to suggest to employers a range of plan design options to improve their workers' retirement savings outcomes. One might call this a "public finance" approach to employer retirement plan design. The employer is cast in the role of social planner, optimizing plan design to maximize worker welfare.

This normative approach to analyzing employer plan-design decisions contrasts sharply with the positive approach to analyzing contract design in the behavioral literature on product markets. The standard approach in "behavioral contract theory" begins by positing some structure to behavioral biases on the consumer side of the market.¹¹ The analysis

⁸ See Raj Chetty et al., *Active vs. Passive Decisions and Crowd-Out in Retirement Savings Accounts: Evidence from Denmark*, 129 Q.J. ECON. 1141, 1141 (2014) ("[T]he effects of retirement savings policies on wealth accumulation depend on whether they change savings rates by active or passive choice."); James J. Choi et al., *Defined Contribution Pensions: Plan Rules, Participant Choices, and the Path of Least Resistance*, in 16 TAX POL'Y & THE ECON. 67, 70 (James M. Poterba ed., 2002) (arguing that employers have much influence over employees' retirement accounts because employees "[a]lmost always" behave passively); Brigitte C. Madrian & Dennis F. Shea, *The Power of Suggestion: Inertia in 401(k) Participation and Savings Behavior*, 116 Q.J. ECON. 1149, 1177 (2001) (discussing the effects of the default rule governing participation in the plan on employees' initial participation); Richard H. Thaler & Shlomo Benartzi, *Save More Tomorrow™: Using Behavioral Economics to Increase Employee Saving*, 112 J. POL. ECON. S164, S164–S167 (2004) (discussing the effects of a default rule increasing worker contributions over time on savings).

⁹ See, e.g., Gabriel D. Carroll et al., *Optimal Defaults and Active Decisions*, 124 Q.J. ECON. 1639, 1642, 1671 (2009) (modeling employers as social planners that design retirement plans to maximize worker welfare); Choi et al., *Defined Contribution Pensions*, *supra* note 8, at 104 (suggesting that employers and policymakers should consider plan defaults carefully because employees will likely fall back on the default options); Thaler & Benartzi, *supra* note 8, at S164 (arguing that employers should automatically escalate employees' retirement savings contributions to increase savings).

¹⁰ Shlomo Benartzi & Richard Thaler, *Heuristics and Biases in Retirement Savings Behavior*, 21 J. ECON. PERSP. 81, 99 (2007).

¹¹ For a recent literature review, see generally Botond Köszegi, *Behavioral Contract Theory*, 52 J. ECON. LITERATURE 1075, 1075, 1113 (2014) ("summariz[ing] and organiz[ing] . . . the rapidly growing

proceeds by positing some structure to the contracting environment and working out theoretically the set of equilibrium contracts that emerge when profit-maximizing firms contract with biased consumers.¹² A general theme in this literature is that the equilibrium contracts can be “exploitative” in the sense that a central consideration driving their design is an attempt by firms to profit from consumers’ mistakes.¹³

One potential justification for *not* taking a similar approach to understanding employer-provided retirement plans is the view that markets do not provide important incentives for employers with respect to retirement plan design. For example, Professors Barr, Mullainathan, and Shafir argue that attempts to boost participation in retirement plans face “at worst indifferent and at best positively inclined employers and financial firms.”¹⁴ They contrast this with other markets, like consumer credit, in which firms have strong incentives to exploit consumer mistakes.¹⁵ This perspective might explain the tendency of economists and legal scholars to adopt a prescriptive stance toward employers’ retirement plan designs, while at the same time taking a more descriptive, equilibrium approach to contract design in other markets.

However, the same firms that are analyzed in the behavioral contract theory literature as profit-maximizers in their product markets also contract with workers in the labor market. Retirement plans are an important feature of those labor market contracts. Moreover, the rich literature on worker savings behavior documents a set of behavioral biases that affect not only workers’ savings choices but also their preferences across alternative retirement plan designs. The operation of the labor market therefore creates an important set of incentives for firms in

literature on behavioral contract theory.”). Influential examples of this literature include Stefano DellaVigna & Ulrike Malmendier, *Contract Design and Self-Control: Theory and Evidence*, 119 Q.J. ECON. 353, 353 (2004) (analyzing the profit-maximizing contract design if consumers have time-inconsistent preferences and are partially naïve about it); Xavier Gabaix & David Laibson, *Shrouded Attributes, Consumer Myopia, and Information Suppression in Competitive Markets*, 121 Q.J. ECON. 505, 506–507 (2006) (analyzing how profit-maximizing firms will structure contracts to shroud attributes when contracting with naïve myopic consumers). The main expositor of this approach in legal academia is Oren Bar-Gill. See generally OREN BAR-GILL, *SEDUCTION BY CONTRACT: LAW, ECONOMICS, AND PSYCHOLOGY IN CONSUMER MARKETS* (2012) (discussing the implications of behavioral biases for consumer contracts).

¹² This basic approach has also been extended to modeling nonprofit and mutually-owned firms, which are under lower-powered incentives to exploit consumer mistakes. See Ryan Bubb & Alex Kaufman, *Consumer Biases and Mutual Ownership*, 105 J. PUB. ECON. 39, 39–40 (2013) (showing that nonprofits and mutuals offer contracts that exploit consumer mistakes to a lesser degree than investor-owned firms).

¹³ See, e.g., Köszegi, *supra* note 11, at 1104 (“[A] contract is exploitative if the economically central considerations driving it derive from trying to profit from the agent’s mistake . . .”).

¹⁴ Michael S. Barr et al., *Behaviorally Informed Regulation*, in *THE BEHAVIORAL FOUNDATIONS OF PUBLIC POLICY* 440, 444 (Eldar Shafir ed., 2013).

¹⁵ *Id.*

designing these plans.

One view is that the labor market aligns employers' interests with those of their workers with respect to retirement plan design, at least to some extent. For example, Professor Zvi Bodie argues that "[e]mployers who acquire a reputation for taking care of the retirement needs of their employees may find it easier to recruit and retain higher-quality employees. . . . Employers therefore have some economic incentive to act in the best interests of their employees."¹⁶

But the behavioral contract theory approach we take in this Article suggests a very different dynamic: competition for workers in the labor market leads employers to offer retirement savings plans that exploit workers' behavioral biases. Our goal in this Article is to outline this general analytical approach and use it to generate insights about employer-provided pension plan design and retirement savings policy.

In Part II we begin by describing how employers' retirement plan designs create a "choice architecture" for their workers' retirement savings decisions. In Part III we discuss the basic tax and regulatory policies that affect incentives for particular types of retirement plan designs and for savings. One contribution of this Part is to point out an important way in which current policy *taxes choice*, an observation that to our knowledge has heretofore been overlooked in the behavioral literature on retirement savings.

Part IV is the analytic heart of this Article. In it we consider how, within the framework of these tax and regulatory policies, the operation of the labor market shapes retirement plan design. Our analysis draws in part on a formal model that two of us are currently developing in a companion paper.¹⁷ We focus on the structure of employer contributions to the plan. We show that the presence of workers who undersave due to myopia—the very type of workers whom the federal retirement savings policy scheme is intended to help—results in employer plan designs that exploit the myopic. Employer plans do so by offering matching contributions, which naïve myopic workers overvalue. Matching results in cross-subsidization of rational workers, which lowers myopic workers' total compensation. Matching also crowds out the superior—and non-redistributive—commitment device of non-elective contributions.

Our specific analysis of the structure of employer contributions illustrates a far more general conceptual point: if workers undersave (or make other retirement savings mistakes) due to behavioral biases, then the labor market will quite generally give employers incentives to design plans to cater to and exploit, rather than resolve, those behavioral biases and that

¹⁶ Zvi Bodie, *Pensions as Retirement Income Insurance*, 28 J. ECON. LITERATURE 28, 37 (1990).

¹⁷ See Ryan Bubb & Patrick Warren, *A Positive Theory of Retirement Plan Design* (2015) (unpublished manuscript) (on file with authors).

can even harm the undersavers whom federal retirement savings policy is intended to help.

To further illustrate the point, we also consider employer incentives in choosing the default rule governing participation in the plan, whether to offer a traditional defined benefit pension, and the plan's menu of investment options. Our analysis provides novel explanations for the use of low default contribution rates in automatic enrollment plans, the shift away from defined benefit annuities toward lump sum distributions in defined contribution plans, and the offering of investment options with excessive fees.

In Part V we conclude by briefly considering the implications of our analysis for retirement savings policy. We suggest reforms to nondiscrimination and tax rules for employer-provided plans that could improve outcomes for workers prone to undersaving. Our analysis also calls for a fundamental rethinking of the current scheme's special subsidies for employer-provided plans. Delegating choice architecture to employers results in bad choice architecture, given employers' incentives. Our current regime might be improved by supplanting employer-based retirement plans with a federally-sponsored defined contribution retirement savings vehicle, designed by a federal agency charged with helping workers save for retirement, that is available to all workers independent of their employer.

II. EMPLOYERS AS CHOICE ARCHITECTS FOR RETIREMENT SAVINGS

An important general insight from behavioral economics, with fundamental implications for law, is that the way a choice is structured and framed can have large impacts on the decisions individuals ultimately make.¹⁸ The institutions that structure individuals' choices can be usefully thought of as creating a "choice architecture" that shapes decision-making.¹⁹ Key elements of choice architecture include the range of choice allowed, the language used to frame decisions, the default that prevails in the absence of an affirmative choice, and any incentives or "prices" attached to each option.²⁰

Some of the foundational work in behavioral economics that led to this perspective involved the choices of workers in the context of employer-sponsored retirement savings plans, like 401(k) plans.²¹ Consider a newly-hired employee on the first day of her job. New employee orientation

¹⁸ See RICHARD H. THALER & CASS R. SUNSTEIN, *NUDGE: IMPROVING DECISIONS ABOUT HEALTH, WEALTH, AND HAPPINESS* 3 (2008) (describing how seemingly insignificant details about how choices are structured can have large effects on behavior).

¹⁹ *Id.*

²⁰ *Id.*

²¹ See, e.g., Madrian & Shea, *supra* note 8, at 1150 (documenting the effects of the default rule governing 401(k) plan participation on worker savings behavior).

inevitably entails some paperwork (too much!). Included in the stack of forms is one to sign up for her employer's retirement savings plan and to elect how much to contribute from each paycheck to the plan. One of the most celebrated findings from the behavioral literature is that employees' initial participation decisions in these plans are very sensitive to the default rule governing participation in the plan.²² If new hires have to submit the form to opt *out* of participation, rather than to opt in, initial participation skyrockets.²³ The use of an opt-out design—referred to as “automatic enrollment”—can result in at least some retirement savings by employees who would otherwise have initially contributed nothing to the plan.²⁴ On the other hand, these defaults are also sticky in the opposite direction. Evidence shows that many workers who, under a traditional opt-in plan, would have enrolled at *higher* savings rates, will instead stick with a lower default savings rate in an opt-out design.²⁵

The default rule that governs participation in such employer plans is thus an important aspect of the choice architecture for employees' retirement savings. And crucially, it is the employer that designs this aspect of the choice architecture.

In addition to defaults, employers' plan designs can also include mandatory savings rules.²⁶ Defined benefit plans, for example, mimic the structure of Social Security by essentially mandating retirement savings by workers. When an employer includes a defined benefit pension as part of the overall compensation and benefit package provided to its employees, it is providing a form of compensation that must be taken in the form of a life annuity at retirement. For workers who have difficulty disciplining themselves to save as much as they would like, such defined benefit pensions can result in much greater retirement savings. Indeed, data show that households with defined benefit pensions end up with considerably higher wealth at retirement on average than households without such pensions.²⁷

Defined contribution plans can also include mandatory features. For example, employers can provide non-elective contributions to the retirement plan—that is, employer contributions that are not contingent on

²² *Id.*

²³ *Id.* at 1149–50.

²⁴ *Id.* at 1150.

²⁵ See Ryan Bubb & Richard H. Pildes, *How Behavioral Economics Trims Its Sails and Why*, 127 HARV. L. REV. 1593, 1609 (2014) (discussing evidence that automatic enrollment reduces the savings of many workers).

²⁶ *Id.*

²⁷ Alan L. Gustman & Thomas L. Steinmeier, *Effects of Pensions on Savings: Analysis with Data from the Health and Retirement Study*, 50 CARNEGIE-ROCHESTER CONF. SERIES ON PUB. POL'Y 271, 316–17 (1999).

any choice by the worker.²⁸ Non-elective employer contributions function as minimum savings mandates for employees. Employer contributions are most certainly part of the worker's compensation, yet the worker cannot elect to receive the money as disposable income outside of the retirement plan instead.

Defined benefit pensions and employer contributions can also function in another way: if workers fail to take them into account when choosing how much to save on their own, through the plan or otherwise, then these plan features serve to increase workers' savings, even for those for whom they are not binding as mandatory minimums. And there is solid evidence that, for most workers, non-elective contributions function in exactly this way.²⁹

Employers also choose whether to allow workers the option of making their own contributions to the retirement plan at all. For plans that do allow employee contributions, employers can choose to provide incentives for their workers to save for retirement in the form of employer matching contributions. Employers have flexibility in setting matching rates. For example, an employer may match employees' contributions to the plan dollar-for-dollar up to one percent of their salary, and then match employees' contributions from one to six percent of their salary at only fifty cents on the dollar. These types of contingent employer contributions create powerful incentives for employees to save more. With a dollar-for-dollar match, for example, every dollar that the employee foregoes in pre-income-tax pay yields two dollars added to her retirement account. A common piece of retirement savings advice is to make sure you are contributing enough to receive your employer's maximum match: "Don't lose out on free money!"³⁰

Employer plan design also creates a choice architecture for employees' investment choices. Employers typically present participants with a menu of funds in which to invest, each of which has a certain degree of risk and expected return. The precise menu offered and the way in which the choices are framed can have significant effects on participants' portfolio

²⁸ Bubb & Pildes, *supra* note 25, at 1609.

²⁹ Chetty et al., *supra* note 8, at 1215 ("[A]pproximately 85% of individuals are passive individuals who save more when induced to do so by an automatic contribution . . .").

³⁰ See, e.g., *Employer-Sponsored Retirement Accounts*, SCHWAB MONEYWISE, http://www.schwabmoneywise.com/public/moneywise/money_basics/account_types/employer_sponsored_retirement_accounts (last visited Mar. 6, 2015) ("When you think about it, that match is virtually 'free' money. You should always contribute enough to your 401(k) to capture the match."); Ray Martin, *401(k) Savings Advice for Gen-Xers*, CBS MONEY WATCH (June 19, 2012, 7:00 AM), <http://www.cbsnews.com/news/401k-savings-advice-for-gen-xers/> ("If you absolutely cannot afford to save 10 percent of your pay right now, then begin with at least the minimum required to receive the maximum employer matching contributions . . .").

choices.³¹

Finally, employers also structure their employees' choices in withdrawing funds from their plan. Employers may—but are not required to—allow early withdrawals prior to age fifty-nine and a half, subject to a ten percent income tax penalty, if the employee faces financial hardship.³² Employers may also allow employees to take loans from their retirement accounts.³³ Being able to take loans from the plan or early withdrawals in the event of a hardship can benefit workers who are hit with the unexpected. On the other hand, an important function of these accounts is to provide workers with a commitment device that helps them build savings when they might otherwise be tempted to burn through them. The flexibility afforded by allowing early withdrawals from the plan undermines this commitment function. Another key element of plan design is whether the funds are made available to retirees as a lump sum or if instead there is at least an option to annuitize the funds within the plan.

Employer-designed retirement plans establish a choice architecture for retirement savings for most U.S. workers. Approximately sixty-five percent of private sector workers in recent years had access to a retirement plan through their employer.³⁴ Nineteen percent of private sector workers had access to a defined benefit plan, and sixty percent had access to a defined contribution plan.³⁵ Table 1 below provides summary statistics on the design of employer-sponsored defined contribution plans. The vast majority of defined contribution plans allow for employees to make elective contributions to the plan and most also offer matching

³¹ See Quinn Curtis & Ian Ayres, *Measuring Fiduciary and Investor Losses in 401(k) Plans 2*, (July 15, 2012) (unpublished manuscript), available at http://papers.ssrn.com/sol3/papers.cfm?abstract_id=2107796 (estimating significant losses to 401(k) participants due to poor menu construction by plan fiduciaries).

³² Generally, qualified plans must prohibit distributions except on account of death, disability or severance from employment, hardship, the attainment of age fifty-nine and a half, or termination of the plan. I.R.C. § 401(k)(2)(B) (2006); Treas. Reg. § 1.401(k)-1(d) (2009). Hardship must involve a showing of an "immediate and heavy financial need." Treas. Reg. § 1.401(k)-1(d). Plans are not required to allow for hardship withdrawals, but employers may elect to provide employees with this option. If they do so, they must specify objective criteria with which to determine whether a hardship has occurred. A ten percent penalty tax is imposed on all distributions made before the employee turns fifty-nine and a half unless certain exceptions apply. I.R.C. §§ 72(t)(1), 72(t)(2)(A)(i) (2006).

³³ Loans from qualified plans are permitted as an exception to general anti-alienation rules of qualified plans. I.R.C. § 401(a)(13)(A) (2006). To mitigate the loss of retirement savings through loans that are never paid back, plan loans are only available under certain circumstances and subject to restrictions. See I.R.C. § 72(p) (2006) (listing the restrictions that apply to a loan's payee with multiple loans).

³⁴ Alicia H. Munnell & Dina Bleckman, *Is Pension Coverage a Problem in the Private Sector?*, CENTER FOR RETIREMENT RES. B.C. 1 (Apr. 2014), http://crr.bc.edu/wp-content/uploads/2014/04/IB_14-7-508.pdf.

³⁵ U.S. DEP'T OF LABOR & U.S. BUREAU OF LABOR STATISTICS, NATIONAL COMPENSATION SURVEY: EMPLOYEE BENEFITS IN THE UNITED STATES, MARCH 2014 tbl. 2 (Sept. 2014), available at <http://www.bls.gov/ncs/ebs/benefits/2014/ebbl0055.pdf>.

contributions. About half of plans provide some form of non-elective employer contribution. The vast majority of plans allow employees to take loans from the plan and to make hardship withdrawals.

Table 1. Employer-sponsored defined contribution plan design.

Allows employee contributions.	97.3%
Percentage of eligible employees who made a contribution to plan in 2010.	76.9%
Average percentage of salary contributed for all active participants.	8.0%
Provides non-elective employer contributions.	53.5%
Provides matching contributions.	80.2%
Average maximum percentage of pay matched.	5.1%
Total employer contributions as percentage of eligible participants' total annual payroll.	3.7%
Automatically enrolls new employees.	34.4%
Permits loans from plan.	87.3%
Permits hardship withdrawals.	84.8%
Plan assets invested in company stock among plans that offer company stock funds.	18.2%

Source: Plan Sponsor Council of America, 54th Annual Survey of Profit Sharing and 401(k) Plans (2010). Figures for employer contributions are for 401(k) plans and combination plans and exclude "profit sharing" plans, which account for only 2.7% of the sample.

III. THE FEDERAL POLICY FRAMEWORK

We turn now to the federal policy framework, which provides a set of rules and incentives for both employers' decisions in designing these choice architectures for retirement savings and for employees' decisions within them. In the interest of brevity, we focus on just three aspects of this policy framework: the income tax treatment, payroll tax treatment, and nondiscrimination rules that apply to employer-sponsored retirement

savings plans.³⁶

A. Subsidizing Employer Plans: Income Tax Treatment of Employer-Sponsored Retirement Savings Plans.

From the foregoing it is clear that employer-provided retirement savings plans are a major part of the choice architecture of retirement savings in the United States. An obvious question this raises is why employers play this role. There is no necessary reason for the predominance of employer-based plans in private retirement savings. Rather, this outcome is in large part an artifact of the federal tax code, which enables employees to pay less tax if they save through an employer-sponsored plan than they would if employees saved for retirement outside such a plan.³⁷

The preferential income taxation treatment of “qualified plans” sponsored by employers results from three sections of law. First, the employer may immediately deduct amounts contributed to the plan.³⁸ Second, the trust holding the assets of a qualified plan is exempt from taxation.³⁹ Finally, employees do not include amounts contributed to a qualified retirement plan in gross income until the amounts are actually distributed to the employee by the plan.⁴⁰ When distributions are made, trust earnings are also taxable to the employee.⁴¹ Assuming constant tax rates, this tax treatment is equivalent to exempting the investment’s return from tax during the period of deferral. The practical effect is to convert the baseline income tax system into the equivalent of a consumption tax for

³⁶ The policy framework related to pension plans includes other important components omitted from our discussion here. These omitted components include (1) mandated disclosure rules aimed at promoting informed decision-making; (2) the fiduciary duties similar to those in trust law to prevent mismanagement and abuse of trust assets; and (3) regulation of defined benefit plans aimed at ensuring that employees receive their promised benefits. See PETER J. WIEDENBECK, *ERISA: PRINCIPLES OF EMPLOYEE BENEFIT LAW* 14–19 (2010) (discussing ERISA’s principal policies).

³⁷ Other explanations for employer-based pensions include employers’ superior access to information about employees’ future wages and hence optimal savings patterns, employers’ lower agency costs than competing retirement financial service providers, and employers’ relatively cheap access to the capital markets. Zvi Bodie, *Pensions as Retirement Income Insurance*, 28 J. ECON. LITERATURE 28, 37–38 (1990). Employers might also use pensions to create good incentives for their workers. Professor Ed Lazear argues that employers’ retirement packages act as a bonus that incentivizes workers to work hard for the firm for a long time. Edward P. Lazear, *Why Is There Mandatory Retirement?*, 87 J. POL. ECON. 1261, 1283 (1979).

³⁸ I.R.C. §§ 404(a)(1)–(3) (2012). Certain deduction limitations designed to prevent manipulation of the tax benefit apply. *Id.*

³⁹ I.R.C. § 501(a) (2012).

⁴⁰ See I.R.C. § 83(e)(2) (2012) (referring to property transferred in connection with performance of services); I.R.C. § 402(a) (2012) (referring to taxability of beneficiary of exempt trust); I.R.C. § 403(a)(1) (2012) (referring to taxability of beneficiary under qualified annuity plan).

⁴¹ I.R.C. §§ 83(e)(2), 402(a), 403(a)(1).

retirement savings.⁴²

Individual Retirement Accounts (IRAs) provide for a similar income tax treatment for individuals' retirement savings outside of an employer-based plan.⁴³ However, IRAs are subject to contribution limits that favor employer-sponsored plans. Tax-deductible contributions to an IRA were capped at \$5,500 in 2014,⁴⁴ significantly lower than the \$17,500 employees were allowed to voluntarily defer to 401(k) plans and the \$52,000 employees were allowed to save in tax-subsidized defined contribution plans through a combination of employer and employee contributions.⁴⁵

The favorable tax treatment of employer-sponsored retirement plans, relative to what individuals can achieve on their own, provides strong incentives for employers to provide these plans. We defer to Part IV a more detailed examination of the incentives for plan design created by the labor market, but the simple first-order effect of this tax treatment should be obvious: employers that provide qualified retirement plans in effect provide more after-tax compensation to employees than employers that do not. If workers are rational, then competition for workers in the labor market should therefore provide incentives for employers to offer such plans.

⁴² Shaviro, *supra* note 1, at 1227 (stating that deferred taxation in employer-sponsored retirement plans provides roughly consumption tax-like treatment by taxing neutrally the choice whether and how much to save).

⁴³ Individuals are allowed to make tax-deductible contributions to a qualified IRA. I.R.C. § 219(a) (2012). Parallel to the treatment of qualified trusts in employer-sponsored plans, the IRA itself is exempt from tax, resulting in a deferral of taxation until contributions and investment earnings are actually distributed. I.R.C. §§ 408(e)(1), 408(d)(1) (2012). Additionally, individuals may contribute to a Roth IRA instead of a traditional IRA. I.R.C. § 408(a) (2012). The key difference between the two types of IRAs is the income tax treatment of contributions and distributions. I.R.C. §§ 408(c)–(d) (2012). Contributions to Roth IRAs come from post-tax dollars, but distributions are not taxed. I.R.C. §§ 408A(a), (c)(1), (d)(1) (2012). Traditional IRAs involve pre-tax contributions, but distributions are taxed. I.R.C. § 219 (2012). The contribution limits to Roth IRAs and traditional IRAs are linked, and both utilize income phase-outs. I.R.C. §§ 219(b), 408A(c)(2). Under certain assumptions including constant tax rates, taxpayers are indifferent between saving in a traditional IRA or Roth IRA. See Shaviro, *supra* note 1, at 1226 (“[I]f the tax rate is the same both when you contribute funds to an IRA and when you withdraw them, traditional and Roth IRAs can be effectively equivalent.”).

⁴⁴ I.R.C. § 219(b) (2014) (setting a tax-deductible contribution limit of \$5,500); I.R.C. § 415(d) (2012) (requiring limits to be adjusted annually to account for cost-of-living-adjustments); see also I.R.S. Pub. No. 590-A, 10 (2014) (stating that the maximum contribution to IRAs in 2014 is \$5,500). Individuals over 50 years of age are allowed to make additional catch-up contributions of up to \$1,000 annually above the \$5,500 limit in 2014. I.R.C. § 219(b)(5), § 402(g), § 415 (2006).

⁴⁵ I.R.C. §§ 415(a), (c), (f)(1)(B) (2012); see also I.R.S. Pub. No. 560, tbl. 1 (2014) (providing updated maximum contribution amounts to qualified plans for the year 2014). Many employees that participate in employer-sponsored plans are not eligible to make IRA contributions, or may only do so subject to diminished contribution caps. The maximum tax-deductible contribution allowed is phased out if the taxpayer or the taxpayer's spouse participates in an employer-based retirement plan and the taxpayer's adjusted gross income exceeds certain thresholds. I.R.C. § 219(g) (2012).

B. Taxing Choice: Payroll Tax Treatment of Employer-Sponsored Retirement Savings Plans.

But this is just the beginning of our tax story. A second major, but much less well-known, tax preference for employer-provided retirement plans is found in the exemption of certain contributions to qualified plans from payroll taxes. The Medicare tax and the Social Security tax amount to 1.45% and 6.2% of wages, respectively, imposed separately on both the employer and the employee.⁴⁶ These two taxes combined, known as the Federal Insurance Contributions Act (FICA) tax, amount to 15.3% of taxable wages.⁴⁷ The exemption of certain contributions to qualified plans from these taxes thus further subsidizes employer-based retirement plans.

However, the exemption from payroll taxation does not apply equally across all retirement savings plan designs. Only employer contributions, including both non-elective and matching contributions, to plans like 401(k)s are exempt from payroll taxes, whereas elective contributions made by employees are not.⁴⁸ This differential tax treatment of voluntary

⁴⁶ I.R.C. § 3101(b) (2012) (establishing the rate of Hospital Insurance (Medicare) taxes on individuals); I.R.C. § 3111(b) (2012) (establishing the rate of Hospital Insurance (Medicare) taxes on employers); I.R.C. § 3101(a) (2012) (establishing the rate of Old-Age, Survivors, and Disability Insurance (Social Security) taxes on individuals); I.R.C. § 3101(a) (2012) (establishing the rate of Old-Age, Survivors, and Disability Insurance (Social Security) taxes on employers).

⁴⁷ I.R.C. §§ 3101(a), 3111(a) (2012). Here is the arithmetic: $1.45 * 2 + 6.2 * 2 = 15.3$. Additionally, the employer pays a tax in the amount of six percent on the first \$7,000 of annual wages under the Federal Unemployment Tax Act (FUTA). I.R.C. §§ 3301, 3306(b) (2012). Employer contributions are also exempted from the FUTA tax, but since it only applies to the first \$7,000 in wages, this exemption has little practical effect.

⁴⁸ The definition of “wages” subject to the Social Security, Medicare, and unemployment taxes expressly carves out employer contributions. I.R.C. § 3121(a)(5) (2012) (excluding from wages subject to FICA tax “any payment made to, or on behalf of, an employee or his beneficiary . . . from or to a trust described in section 401(a) which is exempt from tax under section 501(a)”; I.R.C. § 3306(b)(5) (2006) (excluding from wages subject to FUTA tax on employer “any payment made to, or on behalf of, an employee or his beneficiary . . . from or to a trust described in section 401(a) which is exempt from tax under section 501(a)”). Prior to 1983, this rule exempted employer contributions and employee elective contributions from payroll taxes. *See infra* note 49. But I.R.C. § 3121(v), added in 1983, requires employee elective deferrals in cash-or-deferred-arrangements, like 401(k) plans, to be included in the FICA tax base. I.R.C. § 3121(v) (2006). A similar rule applies to the treatment of employee elective contributions to qualified retirement plans for purposes of the FUTA tax. *See* I.R.C. § 3306(b)(5)(D) (2006) (exempting from “wages” payments made “under or to an annuity contract described in section 403(b), other than a payment for the purchase of such contract which is made by reason of a salary reduction agreement”); I.R.C. § 3306(r)(1) (2006) (including in the term “wages” employer contributions under sections 401(k) and 414(h)(2)). Plans sponsored by nonprofit employers under Section 403(b) are governed by different statutory language than 401(k) plans, but the effect is the same. “Wages” for the purposes of FICA and FUTA taxes do not include payments made to or on behalf of an employee under a Section 403(b) annuity plan, except for payments made by reason of a “salary reduction agreement.” I.R.C. § 3306(b)(5)(D). In regulations, the IRS defines “salary reduction agreement[s]” to include most employee-elective deferral contributions. The regulations state that the term “salary reduction agreement” means:

contributions relative to mandatory contributions means that the federal scheme here *taxes choice*. That is, the federal government taxes more heavily employment arrangements in which the employer preserves a wide scope for employee choice in retirement savings than it taxes arrangements in which the employer requires greater mandatory savings through employer contributions.

This was not always so. Prior to 1983, employee elective contributions were treated as employer contributions for all tax purposes, including the payroll tax.⁴⁹ Congress exempted employer contributions to pension plans from Social Security taxes in 1939.⁵⁰ One historical account attributes the exemption as a concession to lobbyists from corporations and insurance companies with an interest in favorable tax treatment.⁵¹ Another account points to the administrative difficulties of calculating the taxable wages attributable to individual employees from a lump sum of money deposited into a fund that would later pay benefits from a defined benefit pension.⁵²

However, Congress deliberately chose to include employee elective deferrals to a qualified trust under the definition of wages for the purposes of payroll taxes in the Social Security Amendments of 1983.⁵³ The House

[A] plan or arrangement (whether evidenced by a written instrument or otherwise) whereby payment will be made by an employer, on behalf of an employee or his or her beneficiary, under or to an annuity contract described in section 403(b)—(1) If the employee elects to reduce his or her compensation pursuant to a cash or deferred election as defined at § 1.401(k)-1(a)(3) of this chapter; (2) If the employee elects to reduce his or her compensation pursuant to one-time irrevocable election made at or before the time of initial eligibility to participate in such plan or arrangement (or pursuant to a similar arrangement involving a one-time irrevocable election); or (3) If the employee agrees as a condition of employment (whether such condition is set by statute, contract, or otherwise) to make a contribution that reduces his or her compensation.

26 C.F.R. § 31.3121(a)(5)-2 (2007).

⁴⁹ See, e.g., William L. Sollee, *Cash or Deferred Arrangements (Section 401(k)): Legal Issues and Plan Design*, WM. & MARY L. SCH. SCHOLARS REPOSITORY 75, 82–83 (1983), <http://scholarship.law.wm.edu/cgi/viewcontent.cgi?article=1462&context=tax> (“[Q]ualify[ing] section 401(k) elective contributions are treated as employer contributions for all tax purposes . . .”); see also H.R. REP. NO. 98-47, 145-47 (March 24, 1983) (conf. rep.) (summarizing then-present law related to employer contributions to qualified plans and describing changes to current law in the House, Senate, and Conference versions of the bill).

⁵⁰ Social Security Act Amendments of 1939, Pub. L. 76-666, §§ 201, 209(a)(3), 53 Stat. 1360, 1362–63, 1373.

⁵¹ JACOB S. HACKER, *THE DIVIDED WELFARE STATE: THE BATTLE OVER PUBLIC AND PRIVATE SOCIAL BENEFITS IN THE UNITED STATES* 115 (2002).

⁵² See generally JAMES A. WOOTE, *THE EMPLOYEE RETIREMENT INCOME SECURITY ACT OF 1974: A POLITICAL HISTORY* 6 (2004).

⁵³ Social Security Amendments of 1983, Pub. L. 98-21§ 324(a)(1), 97 Stat. 122. This law partially supersedes the Supreme Court’s decision in *Rowan Companies* in which the Supreme Court held that “Congress intended its definition [of “wages”] to be interpreted in the same manner for FICA and FUTA as for income-tax withholding.” *Rowan Cos., Inc. v. United States*, 452 U.S. 247, 263 (1981); see also *Canisius Coll. v. United States*, 799 F.2d 18, 21 (2d Cir. 1986) (describing how the Social

Report indicates that Congress was worried that the exclusion of employee-elective deferrals to qualified plans from the FICA tax base “would make [FICA taxes] partially elective” and thereby “undermine the FICA tax base.”⁵⁴ The Report noted that employees would have to pay FICA taxes if they elected to receive that compensation as cash instead of as deferred compensation.⁵⁵ To our knowledge, the legislative history contains no discussion of why Congress did not choose to make non-elective and matching contributions by employers to qualified plans part of the FICA tax base as well.

One reason preferential payroll tax treatment of mandatory contributions relative to voluntary contributions did not arise until 1983 is that elective contributions to qualified retirement plans of the sort exercised by contemporary participants in 401(k) plans did not exist before Section 401(k) was added to the tax code in 1978. Prior to this, deferred compensation plans that included employee elective contributions faced limitations under the doctrine of constructive receipt.⁵⁶ The IRS still allowed employee elective contributions to qualified plans in certain instances before 1978, but elective deferrals in these plans were subject to more limitations than contemporary 401(k) participants face.⁵⁷

Security Amendments of 1983 partially codified *Rowan* with respect to coverage of meals and lodging, but also superseded *Rowan* with respect to, among other things, certain contributions to qualified plans).

⁵⁴ H.R. REP. NO. 98-25, at 79 (1983).

⁵⁵ *Id.*

⁵⁶ This doctrine provides that a cash-basis taxpayer has gross income in the taxable year in which he or she has unrestricted control over determining when the amount is received, defeating the purpose of a deferred compensation plan. Treas. Reg. § 1.451-2(a) (2009); see also *Davis v. Commissioner*, T.C. Memo. 1978-12 (1978) (in order to constructively receive income, the taxpayer must have notice of the attempt to transfer funds to the taxpayer); *Hornung v. Commissioner*, 47 T.C. 428 (1967) (holding that a car located in New York awarded to a football player in Wisconsin on December 31 was not constructively received by the player in 1961 since it would be unreasonable to expect the player to travel to New York that very day to receive it); *Veit v. Commissioner*, 8 T.C. 809 (1947) (agreement to defer compensation was not a sham to avoid paying taxes because it was part of an arms length transaction and therefore amounts deferred are not subject to constructive receipt); *Veit v. Commissioner*, 8 T.C.M. 919 (1949). In *Hicks v. United States*, the Fourth Circuit applied this doctrine to find that a taxpayer had income in the current year for an employee elective contribution to a profit-sharing plan. 314 F.2d 180 (4th Cir. 1963).

⁵⁷ The first plan with cash-or-deferred-arrangement in the official record appears in an IRS Revenue Ruling from 1956. Rev. Rul. 56-497, 1956-2 C.B. 284 (made obsolete by Rev. Rul. 80-16, 1980-1 C.B. 82). The profit-sharing plan at issue allocated contributions from the current year's profits to employees in proportion to their compensation. Before the end of the year, each employee had to elect whether to take her share of the profits in cash, as a contribution to the plan, or as one-half in cash and one-half as contribution. Importantly, the plan did not distribute cash or contributions to the plan until after the close of the year, so that the election had to take place before the employee was eligible to receive the cash. Additionally, the plan treated all money contributed to the plan identically and did not have special rules that applied to contributions considered to be employer or contributions considered to be employee contributions. Revenue Ruling 63-180 confirmed that employee elective

Another wrinkle here is that the Social Security component of the payroll tax is not a pure tax on employees but rather is itself a form of forced savings. In particular, the Social Security benefit formula uses taxable "wages" in its calculation, so the inclusion of employee-elective contributions in taxable wages adds to the employee's accrual of Social Security benefits.⁵⁸ Nonetheless, employees may still perceive the payroll tax as a pure tax if the link between the Social Security payroll tax and the future benefits received under the program is not salient to the employee.⁵⁹ Moreover, for higher-income workers, Social Security provides, in effect, a negative return on the taxes that they pay into the system due to its progressive benefits structure.⁶⁰ The Medicare tax, in contrast, is for everyone unambiguously a pure tax on employee-elective deferrals compared to employer contributions to qualified plans.⁶¹

An articulated policy rationale for this differential treatment remains elusive, but its practical effect is to encourage employers to provide mandatory features in their retirement savings plans. You might expect then that the introduction of this feature of the tax code would have resulted in a proliferation of plans based more heavily on employer contributions, and a shift away from voluntary plans. In fact, this policy change in 1983 occurred around the time of an inflection point in a shift in the *opposite* direction. The IRS had issued proposed regulations confirming that 401(k) plans based on elective employee contributions were eligible for preferential tax treatment just two years prior, in 1981.⁶²

contributions of the type at issue in Revenue Ruling 56-497 were subject to preferential income tax treatment as long as they met the other requirements of a qualified plan.

⁵⁸ Jeffrey B. Liebman, *Redistribution in the Current U.S. Social Security System*, in *DISTRIBUTIONAL ASPECTS OF INVESTMENT-BASED SOCIAL SECURITY REFORM* 11, 16 (Martin Feldstein & Jeffrey B. Liebman eds., 2002). Since the Social Security benefits formula has redistributive characteristics, the extent to which a Social Security beneficiary comes out ahead or behind on the payroll tax depends on individual specific factors such as expected lifespan and income. *Id.* Other things being equal, lower-income workers and workers who outlive expected lifespans are more likely to come out ahead than higher income workers and workers that do not outlive expected lifespans. *Id.* at 16-17.

⁵⁹ See, e.g., Shaviro, *supra* note 1, at 1229-30 (citing Laurence J. Kotlikoff & Jeffrey Sachs, *It's High Time to Privatize*, 15 *BROOKINGS REV.* 16, 18 (1997) (noting that the payroll tax may be perceived by workers as a pure tax on work rather than as a wage tax followed by a wage subsidy)).

⁶⁰ Jeffrey B. Liebman, *Redistribution in the Current U.S. Social Security System*, in *THE DISTRIBUTIONAL ASPECTS OF SOCIAL SECURITY AND SOCIAL SECURITY REFORM* 15 (2002) ("[T]he system has become more progressive because the increased payroll tax rates have resulted in higher-income individuals' paying substantially more taxes in present-value terms than they receive in benefits.").

⁶¹ I.R.C. § 3101 (2012). The six percent FUTA tax is also a pure tax on employee-elective deferrals, but since this tax is only imposed on the first \$7,000 of wages, it generally does not provide marginal incentives for employers to make mandatory or matching contributions. *Id.* §§ 3301, 3306(b).

⁶² Section 401(k) was added in the Revenue Act of 1978, providing the authority for the proposed IRS regulations in 1981. H.R. REP. NO. 95-1800, at 24 (1978) (Conf. Rep.). As early as 1980, the IRS recognized that certain types of profit-sharing plans with cash-or-deferred arrangement features

Despite the way we have described that the code taxes choice-based plans, employers shifted to plans based largely on employee elective contributions in droves.⁶³

This history provides a (strong) hint that understanding employer plan design requires more than an understanding of the tax code. Part IV below offers our labor-market-based explanation for why employers provide wide scope for employee choice in these plans, despite the tax on choice.

C. Regulating Plan Design: The Nondiscrimination Rules.

Preferential tax treatment of employer-sponsored retirement plans is conditioned on certain requirements that also influence their design. In particular, the employer must meet the requirements of “qualified pension, profit-sharing and stock bonus plans” under Section 401(a) of the Internal Revenue Code.⁶⁴ Among the most consequential of these requirements are the nondiscrimination rules.⁶⁵ These rules require broad employee participation in qualified plans so that rank-and-file workers share in the benefits of the retirement savings tax subsidy.⁶⁶ They thus provide

resembling a profit-sharing bonus, like the one at issue in Rev. Rul. 56-497, 1956-2 C.B. 284, qualified as a Section 401(k) plan. Rev. Rul. 80-16, 1980-1 C.B. 82. The proposed regulations in 1981 confirmed that 401(k) contributions could be made from employee wages and salary, not just from employer contributions in the form of a profit-sharing bonus, as long as the employee elected in advance to have the funds taken from her pay and contributed to the plan. Certain Cash or Deferred Arrangements Under Employee Plans, 46 Fed. Reg. 55,544, 55,546 (Nov. 10, 1981) (codified at 26 C.F.R. pt. 1). The IRS provided taxpayers safety in relying on the proposed regulations when it issued Internal Revenue Notice 82-1 by stating that the IRS would apply the proposed regulations for purposes of issuing determination letters and rulings related to 401(k) plans until final regulations would be promulgated. Rev. Notice 82-1, 1982-1 C.B. 353.

⁶³ See U.S. GOV'T GEN. ACCOUNTING OFFICE, GAO/GGD-97-1, PRIVATE PENSIONS: MOST EMPLOYERS THAT OFFER PENSIONS USE DEFINED CONTRIBUTION PLANS 4-7 (1996) (discussing the increased provision of defined contribution plans across companies of all sizes and industries); John A. Turner & Gerard Hughes, *Large Declines in Defined Benefit Plans Are Not Inevitable: The Experience of Canada, Ireland, the United Kingdom, and the United States*, PENSION INST. 31 (2008), <http://perma.cc/K9SC-HB33> (depicting the gradual decline in the provision of defined benefit plans and the concurrent rise in the provision of defined contribution plans).

⁶⁴ I.R.C. § 401(a) (2012). If a retirement plan does not meet the requirements of qualified plans, the compensation associated with the retirement plan is taxed subject to general income tax principles. Generally, income is taxable in the year in which it is properly attributable under the taxpayer's method of accounting. *Id.* §§ 446(a), 451(a). If an employer transfers property to an employee as compensation for services, the property is taxable income to the employee in the first taxable year in which such employee's rights in the property become transferable or not subject to a substantial risk of forfeiture. *Id.* § 83(a). A substantial risk of forfeiture exists if the rights of a person in the property are conditioned upon the future performance of services by any individual. *Id.* § 83(c)(1). Qualified retirement plans avoid this general income tax treatment because Section 83(e)(2) specifically exempts these plans from the provisions of Section 83. *Id.* § 83(e)(2). The statutory scheme requires qualified plans to meet the numerous requirements of Section 401(a) to qualify for preferential tax treatment. *Id.*

⁶⁵ *Id.* § 401(a)(4).

⁶⁶ For the purposes of these rules, employers must treat employees of a controlled group of businesses as employed by a single employer. *Id.* §§ 414(b), (c), 1563(a), (f)(5).

incentives for employers to offer non-elective and matching contributions to defined contribution plans.

To see this, consider the actual deferral percentage (ADP) test that applies to retirement plans utilizing 401(k) accounts.⁶⁷ Employers must classify all eligible and non-excludable employees as either highly compensated employees (HCEs) or non-highly compensated employees (NHCEs).⁶⁸ The ADP measures the group average of 401(k) savings by HCEs and NHCEs using the percentage of each employee's compensation placed in a 401(k) account for the relevant year, including both employer and employee contributions.⁶⁹ Generally speaking, the rules require that the ADP of HCEs may exceed the ADP of NHCEs by no more than two percentage points.⁷⁰ The amount of tax-advantaged compensation HCEs can receive is therefore limited by the amount of tax-advantaged compensation received by NHCEs. If NHCEs at a particular company exhibit a low level of voluntary 401(k) savings, then in order to allow its HCEs to utilize a high amount of 401(k) savings, the employer would have to increase NHCE 401(k) savings. One straightforward way to do so is through non-elective or matching employer contributions. Where the nondiscrimination rules are binding, they act as a form of forced savings for NHCEs.⁷¹ If workers are rational, then this forced savings causes a deviation from efficient labor compensation contracts.⁷²

⁶⁷ Nondiscrimination testing of qualified plans that do not utilize 401(k) accounts are subject to three main tests. First, the ratio percentage test measures the participation ratio of HCEs and NHCEs. *Id.* §§ 401(a)(3), 410(b)(1), 410(b)(1)(B). Defined benefit plans are subject to a minimum coverage test. *Id.* § 401(a)(26)(A). Finally, qualified plans must also show, under a qualitative and a quantitative test, that the contributions or benefits provided under the plan do not discriminate in favor of HCEs. *Id.* § 401(a)(4).

⁶⁸ HCEs are defined as employees that either were five percent owners at any time during the current or preceding year or employees whose compensation from the employer for the preceding year exceeded \$80,000, indexed for inflation (\$120,000 in 2014). *Id.* § 414(q)(1). Companies may elect to limit the HCE category to the group composed of the highest-paid twenty percent of employees. *Id.* §§ 414(q)(1)(B)(ii), (q)(3), (q)(5).

⁶⁹ The actual deferral percentages are calculated as the group averages of eligible HCEs and of eligible NHCEs of the ratios, calculated separately for each HCE and NHCE group member for the relevant year, of 401(k) contributions (both employer and employee contributions) to employee compensation. *Id.* § 401(k)(3)(B).

⁷⁰ Discrimination testing for 401(k) plans is satisfied under either of two tests. First, it is satisfied if the ADP of eligible HCEs for the plan year "is not more than the actual deferral percentage of all other eligible employees multiplied by 1.25." *Id.* § 401(k)(3)(A)(ii)(I). Discrimination testing is also satisfied if "[t]he excess of the actual deferral percentage for the group of eligible highly compensated employees over that of all other eligible employees is not more than 2 percentage points, and the actual deferral percentage for the group of eligible highly compensated employees is not more than the actual deferral percentage of all other eligible employees multiplied by 2." *Id.* § 401(k)(3)(A)(ii)(II).

⁷¹ See Joseph Bankman, *Tax Policy and Retirement Income: Are Pension Plan Anti-Discrimination Provisions Desirable?*, 55 U. CHI. L. REV. 790, 806 (1988) (noting that additional pension benefits required by the anti-discrimination provisions reduces the cash salary available to employees).

⁷² *Id.*

Further incentives for employer contributions are produced by a set of safe harbors that provide alternative ways to comply with the nondiscrimination rules. Under one safe harbor, the employer must match NHCE deferrals dollar-for-dollar (or more generously) up to three percent of compensation; must match NHCE deferrals between three and five percent at a rate of at least fifty percent; and must provide an NHCE matching rate at least as high as the HCE matching rate for any level of elective contributions.⁷³ Under an alternative safe harbor, the employer must make a non-elective contribution for each eligible NHCE of at least three percent of compensation.⁷⁴

These nondiscrimination rules are the standard explanation in the literature for the high prevalence of employer matching contributions in defined contribution plans.⁷⁵ The idea is that employers offer the match either to increase NHCEs' contribution rates or to meet one of the safe harbors so that they can provide greater tax-advantaged compensation to HCEs. In Part IV below we offer a different explanation: employers offer matches because myopic workers overvalue them.

IV. EQUILIBRIUM RETIREMENT SAVINGS CHOICE ARCHITECTURES

The primary motivation for federal retirement savings policy—including both Social Security and the special subsidies for saving through employer-sponsored retirement plans—is the view that many households, if left to their own devices, will make mistakes in planning and saving for retirement.⁷⁶ Modern behavioral economics suggests a range of behavioral biases that lead to such mistakes. For example, some workers have bounded willpower: they suffer from self-control problems that lead them to consume more, and save less, than their long-term retirement savings

⁷³ I.R.C. §§ 401(k)(12)(A)(i)(k)(12), (B) (2012).

⁷⁴ *Id.* §§ 401(k)(12)(A)(i)(k)(12)(C), (C). The Pension Protection Act of 2006 added an additional safe harbor to encourage adoption of 401(k) plans that utilize automatic enrollment. Pub. L. No. 109-280 § 902, 120 Stat. 1033 (2006) (codified at I.R.C. § 401(k)(13)(2012)). To meet the safe harbor, the plan must automatically enroll employees into a three percent contribution rate during the first year. I.R.C. § 401(k)(13)(C)(iii)(I) (2012). The plan must also automatically increase each employee's contribution rate by one percentage point each year until it reaches six percent. I.R.C. § 401(k)(13)(C)(iii)(I)-(IV) (2006). In addition, the employer must make certain matching or non-elective contributions. *Id.* §§ 401(k)(13)(D)(i)(I), (II). The employer may either make matching contributions on behalf of each employee who is not a HCE at one-hundred percent of pay up to one percent of compensation and make fifty percent matching contributions from one to six percent of compensation, or make a non-elective contribution to the plan on behalf of each employee who is not an HCE in an amount equal to at least three percent of the employee's compensation. *Id.*

⁷⁵ See, e.g., ALICIA H. MUNNELL & ANNICA SUNDÉN, COMING UP SHORT: THE CHALLENGE OF 401(K) PLANS 5 (2004) ("The need for broad participation [under the nondiscrimination rules] explains why matching contributions are a common feature of 401(k) plans."); RICHARD IPPOLITO, PENSION PLANS AND EMPLOYEE PERFORMANCE: EVIDENCE, ANALYSIS AND POLICY 165 (1997).

⁷⁶ Laurence J. Kotlikoff, *Justifying Public Provision of Social Security*, 6 J. POL'Y ANALYSIS & MGMT. 674, 675 (1987).

plan calls for.⁷⁷ In addition, some workers suffer from bounded rationality: they have difficulty thinking through the complex set of problems that retirement planning entails, leading to a range of mistakes, such as choosing a retirement investment portfolio with excessive fees or insufficient diversification.⁷⁸

Suppose that this behavioral account of the retirement savings policy problem is right and consider: what does that imply about the retirement savings plans that employers will offer their workers? Employers craft their retirement plans, subject to the policy framework described above, to attract workers in the labor market. The operation of the labor market creates powerful incentives for plan design. Those incentives depend critically on workers' preferences across alternative plan designs, which in turn depend on workers' intertemporal consumption preferences and behavioral biases.

Put simply, the labor market gives employers incentives to craft plan designs that cater to what biased workers perceive to be of value. The same behavioral biases that produce worker mistakes in saving for retirement will also typically lead workers to prefer plans that fail to correct their mistakes and that can even exacerbate them. The result is an equilibrium set of choice architectures that fails to effectively address the basic retirement savings policy problem.

To illustrate this general conceptual point, we focus our analysis on the structure of employer contributions. We show how the presence of myopic workers and inattentive passive workers affects the types of employer contributions that employers will provide. To show how the labor market interacts with the policy framework, we begin by ignoring the differential payroll tax treatment of employee and employer contributions. We then consider how introducing this "tax on choice" affects the set of plan designs that emerge in equilibrium. Our main message is that when workers undersave due to behavioral biases, then employers have incentives to design employer contributions in a way that fails to address the undersaving problem and indeed that can even actively exploit the undersavers. We then generalize the point by considering how the operation of the labor market also produces potentially perverse employer incentives with respect to three other important aspects of plan design: default rules governing participation in the plan, whether to offer a defined benefit plan, and the menu of investment options in the plan.

⁷⁷ Christine Jolls et al., *A Behavioral Approach to Law and Economics*, 50 STAN. L. REV. 1471, 1479 (1998).

⁷⁸ *Id.* at 1477.

A. *Equilibrium Plan Design with No Tax on Choice.*

Consider a (large) set of firms that offer labor contracts to workers that consist of a wage plus some tax-subsidized retirement plan. We assume a perfectly competitive labor market to simplify, but a similar analysis would apply even if firms had some degree of market power. Also for simplicity, we ignore many important features of retirement plan design and consider just two elements: an employer non-elective contribution (or promised benefit) and an employer match rate for worker contributions. Workers can also choose to contribute to the plan themselves in order to get any employer match as well as additional tax benefits.

We assume in this subpart that employer contributions and employee elective contributions are given the same tax treatment. Our analysis here would apply not only to the (counterfactual) case in which such non-differential tax treatment is the law of the land, but also to the case in which the differential payroll tax treatment is simply not salient to firms or workers.

1. *The Neoclassical Benchmark.*

We begin with the neoclassical benchmark by supposing that all workers are *rational*; they make savings and consumption decisions to maximize their lifetime utility. Importantly, workers in the neoclassical model discount future consumption in a time-consistent way. A rational worker at the start of her career will look to the future and calculate the optimal amount to save in each of her working years in order to fund a happy retirement in her golden years. The key goal is to choose overall savings rates to smooth consumption over time. And crucially, the worker will then be happy to implement that savings plan as she proceeds through her working years. The initial savings and consumption plan will continue to be optimal through time, setting aside unexpected changes in income or consumption needs. Formally, such time-consistent savings and consumption behavior is implied by the standard neoclassical assumption of “exponential discounting”: workers discount at a constant rate utility from consumption in future periods.⁷⁹

Because the labor market is assumed to be perfectly competitive, the total compensation—wage plus any retirement benefits—received by workers will be equal to the value of their marginal product.⁸⁰ The key

⁷⁹ See, e.g., Shane Frederick et al., *Time Discounting and Time Preference: A Critical Review*, 40 J. ECON. LITERATURE 351, 358 (2002) (explaining the assumption of constant discounting in the Discount Utility model); Paul A. Samuelson, *A Note on Measurement of Utility*, 4 REV. ECON. STUD. 155, 155–56 (1937) (identifying time discounting as one of four assumptions used in the theoretical measure of the marginal utility of income to an individual over a certain period).

⁸⁰ Shelby D. Hunt & Robert M. Morgan, *The Comparative Advantage Theory of Competition*, J. MARKETING, Apr. 1995, at 1, 3.

question is, among such compensation contracts, which will provide workers with the highest utility?

First, note that due to the preferential income-tax treatment of employer-provided pension plans, the equilibrium contract will provide workers some retirement plan, if only a purely elective one. Rational workers will prefer saving through an employer-provided plan, rather than accepting a job that does not provide such a plan, in order to enjoy this tax subsidy.

However, employer non-elective contributions are not useful to rational workers. Fixing total compensation, any contract that provides employer non-elective contributions must offer a lower wage than one that does not. But workers can achieve the same tax benefit provided by employer contributions by instead making elective contributions. Workers are thus indifferent among contracts that provide non-elective contributions of less than their planned total retirement savings. They will simply adjust their elective contributions to achieve the total retirement savings that maximizes their utility. And rational workers are made worse off if the employer makes non-elective contributions greater than the workers' optimal total retirement savings amount, unless they can borrow against these contributions to move consumption forward.

Uncertainty about future consumption needs can make employer non-elective contributions more costly. Suppose, for example, that a member of the worker's household becomes sick and the family faces large medical bills. If the worker's retirement plan provides for only elective employee contributions, then the worker can cut back on those contributions to manage this unexpected expense. In contrast, a compensation package with a substantial employer contribution, which means a lower wage, is less flexible, making it less attractive. So in this setting, employer contributions can only hurt and never help workers.

Matching contributions are also harmful to rational workers, indeed unambiguously so, although the reason is subtler. Matching contributions distort the worker's incentive to save, much like distortionary subsidies generally. The worker wants to equate her marginal utility of consumption during her working years and of saving for consumption in retirement. But the match makes consumption in retirement *cheaper* than consumption while working. And because total compensation must be equal to the value of the worker's marginal product, these matching contributions must be funded by reductions in wages. The result is that the matching contributions lower the worker's utility by encouraging too much savings. The worker would receive more utility from being paid this money as wages rather than as matching contributions.

So the neoclassical benchmark prediction in this setting is that the equilibrium compensation contract will provide a retirement plan based largely on employee elective contributions, with no matching and at most

modest amounts of non-elective employer contributions.

2. *Alternative Behavioral Types*

Let us now consider a richer setting with more varied and interesting worker behavior. Imagine that only some, not all, workers are (at least approximately) rational, in the sense described above. Others are *myopic* (or present-biased): they discount consumption at an especially steep rate between the present and the future, and then at a more modest rate between future periods.⁸¹ As a consequence, they have time-inconsistent preferences.⁸² A myopic worker will also devise a savings plan at the start of her career that calls for considerable savings for retirement. However, she will find that in the moment, she will want to consume more and save less in her working years than her original long-term plan had called for.

Myopic workers differ in the extent to which they are aware of this self-control problem. We will initially consider two polar cases. First, some are *sophisticated* in the sense that they are fully aware of their time-inconsistency.⁸³ That is, while they would like to save more starting tomorrow, they know today that tomorrow they will not actually be willing to save more. Sophistication about their time-inconsistency problem implies a demand for commitment devices—institutions that allow sophisticates today to tie their hands tomorrow and force their future self to save more.⁸⁴ Sophisticated myopes know that they can improve their well-being by making such a binding commitment.

Naïve myopic workers, in contrast, are wholly unaware that they have a time-inconsistency problem.⁸⁵ Myopic workers want to save more, but not until tomorrow. And naïve myopic workers believe that they actually *will* save more tomorrow. But when tomorrow arrives, they will again prefer to defer saving. Because they fail to anticipate that their future selves will not save as much as they in the present would like, naïve myopic workers see no need for commitment devices. They (wrongly) trust their future selves to do the right thing by their current selves' lights.

As a final type, consider *inattentive passive* workers. The defining characteristic of these workers, let us assume, is that they follow a simple rule-of-thumb of saving some fixed amount for retirement each year.⁸⁶

⁸¹ Shaviro, *supra* note 1, at 1217–18. Workers who possess time-inconsistent preferences of this type are called “hyperbolic discounters.” See David Laibson, *Golden Eggs and Hyperbolic Discounting*, 112 Q.J. ECON. 443, 445 (1997) (“Hyperbolic discount functions are characterized by a relatively high discount rate over short horizons and a relatively low discount rate over long horizons.”).

⁸² Laibson, *supra* note 81, at 445–46.

⁸³ Shaviro, *supra* note 1, at 1248.

⁸⁴ Gharad Bryan et al., *Commitment Devices*, 2 ANN. REV. OF ECON. 671, 673 (2010).

⁸⁵ Shaviro, *supra* note 1, at 1246–47.

⁸⁶ *Id.* at 1249–51.

Importantly, the amount they voluntarily put away is independent of any employer contributions. They simply ignore these other sources of saving and sock away the same amount each year on their own.

While this type of passive savings behavior has been well-documented in the economics literature,⁸⁷ it is not clear how such passive savers think about the choice among compensation contracts and in particular how they value retirement benefits. Since such workers are *inattentive* to the details of their retirement benefits when they make their savings decisions, it seems plausible that they are similarly inattentive to retirement benefits at the time they choose which contract offer to accept in the labor market. Hence, we assume that they simply choose the contract offer with the highest wage. But there are other ways that workers who exhibit passive savings behavior might think about alternative plan designs when contracting ex ante. For example, they might believe ex ante that they will in fact optimize their savings behavior based on the plan design. If that is right, then they will behave much like naïve myopic workers in our model.

With this richer typology of workers in place, consider again how firms will design their retirement plans to attract workers. We make the simplifying assumption in what follows that workers perfectly sort into their preferred compensation contract based on their bias type.⁸⁸ This is unrealistic. Employers often offer only one type of retirement plan. As we discuss in detail below, the sorting we analyze would then imply that some firms would employ only rationals and naïves, other firms would employ only sophisticated workers, and other firms would employ only inattentive passives. It is implausible that workers perfectly sort across firms in this way based only on their bias type. Rather, you should think of our analysis as identifying the types of pressures that the labor market puts on retirement savings designs based on the preferences of different types of workers.

First, note that rational and naïve myopic workers have the same ex ante preferences over retirement plan designs. The reason is that naïve myopic workers (naïvely) believe that they are rational, time-consistent planners over savings and consumption. This means that rationals and naïves will generally be attracted to the same type of compensation contract. You might (naïvely?) think, then, that in this richer setting, rationals and naïves will get a contract that looks like our neoclassical

⁸⁷ See Chetty et al., *supra* note 8, at 1141 (documenting passive savings behavior among Danish households).

⁸⁸ Our approach is in the spirit of Michael Rothschild & Joseph Stiglitz, *Equilibrium in Competitive Insurance Markets: An Essay on the Economics of Imperfect Information*, 90 Q.J. ECON. 629 (1976). Formally, we define an equilibrium as a set of contracts such that (1) all workers choose the equilibrium contract they prefer; (2) each contract makes nonnegative profits, given the type(s) of workers who choose it; and (3) there is no contract outside of the equilibrium set that some type of worker would strictly prefer and that would make nonnegative profits.

benchmark contract: mostly voluntary employee contributions, no matching contributions, and few non-elective employer contributions. Not so. It is true that naïves do not like non-elective employer contributions (although they should—that's the naïveté). But in this richer setting with multiple types of workers, market forces will result in both naïves and rationals being attracted to matching contracts.

To see why, note that for employers, offering matching contributions to naïve workers is less costly than doing so to rational workers. The reason is that, for any given matching rate, naïves will end up taking advantage of the match less than rationals will, due to their present bias. The naïves put more weight on present consumption than rationals do, and hence will choose to save less and get less of a match. But—and this is the kicker—at the time that they are choosing among competing compensation contracts in the labor market, naïves *will overvalue employers' offers to match* since they will overestimate how much they will in fact save for retirement.

A numerical example can help make this more concrete. Suppose an employer offers a salary of \$100 and also offers to match the worker's first \$5 in retirement savings dollar-for-dollar. Suppose a naïve myopic worker believes he will save \$5 under this contract and therefore thinks it will generate \$105 in total compensation. But once he takes the contract, that naïve myopic worker will save only \$2, say, and hence actually receive only \$102 in compensation.

From the employer's perspective, matching delivers great bang for their buck in attracting naïve workers. In our example, offering matching to naïves costs the employer only \$2, but the naïve *believes* it will generate \$5 for them. This means that naïves' compensation will be bid up by firms in the form of offers to match.

Rationals too will find these matching contracts attractive. The difference is that rationals *should* find these contracts attractive because they actually will end up receiving the amount of matching contributions that they anticipate when they accept the contract. Matching still distorts rationals' incentives toward consuming too much in the future, as in the neoclassical benchmark case, and that distortion continues to be costly to rationals. But the existence of naïves who do not take full advantage of the match results in the contract offering a wage to go along with the match that is sufficiently high to make rationals prefer the matching contract to a contract without matching, despite this costly distortion.⁸⁹

To see this, note that in the neoclassical model with only rationals, for every dollar in compensation paid to each rational in the form of a

⁸⁹ Note as well that for rationals for whom the cap on the match is inframarginal—who will save more than the maximum amount matched by the employer—there is no such distortion.

matching contribution, the wage must be reduced by a dollar. But here, since rationals and naïves pool together in the same matching contract, every additional dollar in matching contributions *offered* by the employer that will be received by rationals, over the relevant range, costs the employer less than a dollar, since the naïves do not take full advantage. The result is that the wage is reduced by less than a dollar, so that the rationals prefer the matching contract.

So, the labor market will produce compensation contracts with offers to match that are accepted by both rationals and naïves, but the rationals will do better under these matching contracts than the naïves will. Indeed, the arrangement will lead to cross-subsidization of the rationals by the naïves. The rationals will end up being paid *more* than their marginal product, while the naïves will be paid less, so that the weighted average of the compensation of the two types will be roughly equal to the value of their marginal product. There is an important sense in which matching exploits naïve myopic workers: it results in them receiving lower total compensation. The extent of this redistribution from naïves to rationals depends on the relative proportion of those types in the relevant group of workers.⁹⁰

On the plus side, however, matching contributions can help mitigate to some extent naïves' present-bias problem. The match helps make future consumption *cheaper*, which counterbalances the excessive weight that myopic workers place on present consumption. Matching provides a type of partial commitment device, but one much less effective than employer non-elective contributions. Whether the upside of matching for naïves in terms of commitment outweighs the downside in terms of lower compensation depends critically on the equilibrium contract that would emerge if matching were not allowed. We return to this issue in our discussion of partial sophisticates below.

Note that perfect competition thus results in employers not coming out ahead on average by offering matching contracts. But if instead firms have some degree of market power, then matching can increase firms' profits at the expense of naïve workers. Consider, for example, a monopsonist employer. Such an employer will choose wages in order to attract a supply of workers at a level and price that maximizes its profits. Offering a match results in naïve myopic workers overvaluing the employer's compensation offer, which can allow the monopsonist to attract labor supply at lower cost, increasing the firm's profits.

⁹⁰ To be a little more precise, the magnitude of the cross-subsidization of rationals by naïves depends on the heterogeneity of saver types within groups of workers that appear to employers as having the same marginal product of labor and hence will be offered a contract with the same expected value of compensation. Note as well that we are assuming that employers cannot distinguish rationals and naïves *ex ante*.

Sophisticated myopic workers, by contrast, do better than the naïves. Sophisticates understand that the matching contract would cross-subsidize rationals and lower their compensation. They gravitate instead to compensation contracts that include non-elective employer contributions. Such mandatory savings features pose benefits and costs to sophisticates. On the plus side, they serve as a commitment device that enables sophisticates to tie the hands of their future selves to save more for retirement, and they do so without resulting in the harmful cross-subsidization of rationals by naïves produced by matching. But to achieve this commitment, sophisticates have to give up some flexibility to adjust their savings in response to unexpected consumption needs. In equilibrium, then, sophisticates will balance the costs and benefits by demanding a substantial amount of non-elective employer contributions, but not enough to fully smooth their consumption over time. They thus do not do as well as the rationals do in the neoclassical benchmark case, because rationals can preserve flexibility while at the same time save optimally. Note, however, that federal rules permit employers to allow withdrawals in cases of “financial hardship,” which makes the commitment device more flexible.⁹¹ To the extent such financial hardships are distinguishable from consumption motivated by present-bias, then sophisticates can achieve some degree of the flexibility in consumption enjoyed by rationals while still addressing their time-inconsistency problem.

So far we have considered just the two extreme cases of complete naïveté or complete sophistication about the individual’s myopia. Consider now the intermediate case of partial sophistication (or equivalently partial naïveté) in which a myopic worker is aware that they have some time-inconsistency problem, but they underestimate its extent. Partial sophisticates recognize that left to their own devices, their future selves will undersave. However, because they are not fully aware of the extent of their self-control problem, partial sophisticates nonetheless overestimate how much they save, much like complete naïves. Partial sophisticates will thus also gravitate toward a contract that provides matching contributions and end up cross-subsidizing the rational (or less myopic) workers who also find the matching contract attractive. Our basic analysis with partially sophisticated myopic workers remains similar to our analysis of fully naïve myopic workers.

But now consider what would happen if matching were banned. If matching were not allowed, then partial sophisticates would demand non-elective employer contributions to solve their commitment problem, much like fully sophisticated myopic workers do. Those non-elective employer contributions allow a partial sophisticate to tie the hands of his future self

⁹¹ See *supra* note 32 and accompanying text.

to save more than he otherwise would, mitigating his myopia. This would be true even for myopic workers who grossly underestimate the extent of their problem but have at least some inkling that they have a self-control problem with respect to savings. If there are enough rationals so that a significant amount of cross-subsidization occurs, then banning matching would make these partially sophisticated myopic workers better off, since they would get a commitment device in a non-redistributive form rather than in the form of matching. Put another way, the matching contract can crowd out the superior commitment device of non-elective contributions.

Finally we have the inattentive passives, who by assumption just consider the up-front wage and ignore retirement benefits. They thus gravitate toward a compensation contract that pays them the full value of their marginal product in the form of wages. It thus looks a bit like the neoclassical benchmark, but since the rationals go elsewhere, joining the naïves in the matching contract, there is little incentive for employers to bear the cost of setting up a purely voluntary retirement plan in the pure wage contract. So we expect many inattentive passives to not get an employer-provided retirement savings plan, and hence, to not receive the tax subsidy enjoyed by other types of workers who do save through such plans.

To summarize, labor market competition will produce three basic types of compensation contracts in equilibrium: matching-based contracts for naïves and rationals, non-elective employer contribution-based contracts for fully sophisticated myopic workers, and contracts with no retirement plans for inattentive passives. This contrasts sharply with the neoclassical benchmark, which entails only elective-contribution-based retirement plans.

Our behavioral contract theory perspective on retirement savings thus provides a new explanation for the prevalence of employer matching contributions: they are not just an artifact of the nondiscrimination rules, but also emerge to compete for naïve myopic workers by, in effect, exploiting their optimism about how much they will save under the match.⁹²

Matching has potentially pernicious consequences for myopic workers. First, it reduces their income by resulting in cross-subsidization of rationals by myopic workers. Matching thus lowers the total compensation of myopic workers. Strictly speaking, in our model this is only a problem for (at least partially) naïve myopes, since fully sophisticated myopes would

⁹² Richard Ippolito provides a different, efficiency-based justification for matching in a neoclassical framework. RICHARD IPPOLITO, PENSION PLANS AND EMPLOYEE PERFORMANCE: EVIDENCE, ANALYSIS AND POLICY 130 (1997). He assumes that workers with high discount rates have lower productivity than low discounters but that employers cannot observe productivity. Employers offer matching in order to better align pay with workers' marginal product. *Id.*

never accept a matching contract that made them worse off.⁹³ But this is an artifact of our simplifying assumption that the only consideration of workers in choosing what job to take is the wage and retirement plan offered. In the barren landscape of our theoretical analysis, workers perfectly sort into their preferred retirement plan. In the real world, many other considerations and frictions are at play that result in even fully sophisticated myopes being employed by the same firms—and with the same matching-based retirement plan—as the rationals and naïves. They hence can suffer from the same cross-subsidization problem.

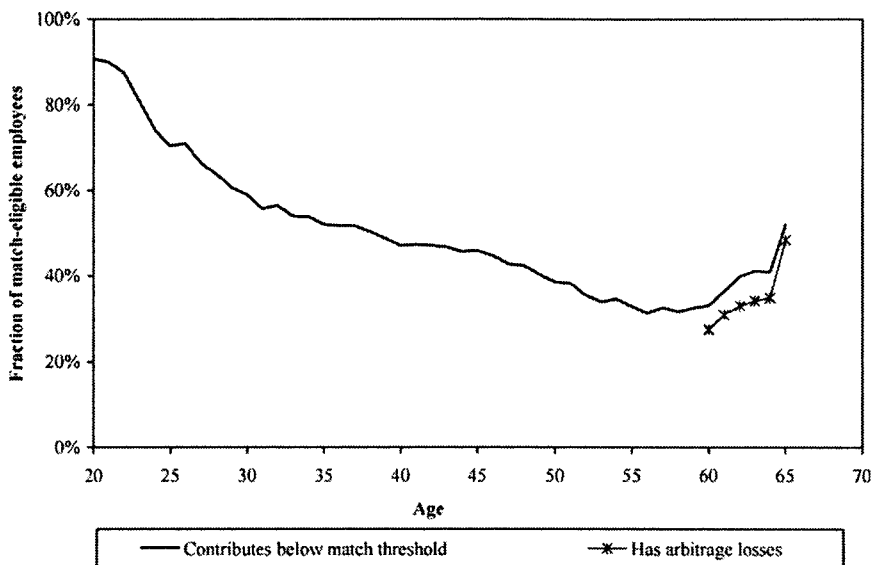
Second, while matching provides some degree of commitment to mitigate naïves' undersaving problem, it crowds out the non-redistributive commitment device of non-elective employer contributions that partial naïves would demand if matching were not allowed. If matching were banned, the resulting equilibrium might provide commitment devices in the form of non-elective employer contributions, which do not result in myopic workers cross-subsidizing rational workers.

A key empirical prediction of our explanation for matching is that a substantial fraction of workers will not take full advantage of employers' offers to match. And indeed, it is common for workers in such plans to fail to make sufficient elective contributions to receive the maximum match possible. For example, Professor James Choi and coauthors examine seven large plans that offer matching and find that the percentage of eligible workers aged fifty-nine and a half or younger who did not contribute enough to receive the maximum match in each plan ranged from a low of 30.6% to a high of 70.6%.⁹⁴

One might think that with more experience in the labor market, workers would learn about the value of employer offers to match, and about their own savings behavior, and would either start taking full advantage of these matching contributions or move to a pure wage contract to avoid cross-subsidizing those that do. Figure 1 below shows data from the study by Choi et al on the fraction of match-eligible employees at each age who failed to contribute enough to get their employer's full match. And indeed, the fraction declines with age. But it remains over 30% for all age groups, indicating that the cross-subsidization problem that we have identified remains substantial even for experienced workers.

⁹³ When they do accept such a contract, it is because it is better for them despite the lower wage.

⁹⁴ James J. Choi et al., *\$100 Bills on the Sidewalk: Suboptimal Investment in 401(k) Plans*, 93 REV. ECON. STATISTICS 756, tbl. 5 (2011). For the plan with 70.6% of workers failing to get the full match, workers had to contribute only 4% of their salary to receive the maximum match. *Id.*

FIGURE 1⁹⁵

More stunningly, many workers do not take full advantage of matching benefits even after they reach age fifty-nine and a half, when workers are allowed to withdraw funds from their 401(k) account with no penalty.⁹⁶ This is depicted in Figure 1 in the data series labeled “Has arbitrage losses.” For these workers, failing to get the full match is like leaving “\$100 bills on the sidewalk.” If they simply increased their contributions up to the amount needed to get the full match, and then immediately withdrew those additional employee contributions, the result would be an increase in the balance of their 401(k) (because of the resulting increase in employer matching contributions) but the same exact amount of money outside of the plan. Yet 36% of match-eligible individuals in this age group across the seven companies studied did not take full advantage of this arbitrage opportunity by getting the full match.⁹⁷ The average amount of free money foregone by these individuals in the older age category across the seven companies was 1.6% of annual compensation.⁹⁸ This is powerful evidence of both the extent of cross-subsidization caused by matching and, perhaps more importantly, the depth of behavioral failings in this area.

⁹⁵ Figure 1 is from Choi et al., *\$100 Bills on the Sidewalk*, *supra* note 94, at 757.

⁹⁶ *Id.* at 748–49, 757.

⁹⁷ *Id.* at 748–49. No such arbitrage opportunity exists for younger workers since those younger than fifty-nine and a half must show a financial hardship to withdraw money from their 401(k). I.R.C. § 401(k)(2)(B) (2006); Treas. Reg. § 1.401(k)-1(d) (2009).

⁹⁸ Choi et al., *\$100 Bills on the Sidewalk*, *supra* note 94, at 749.

B. *Equilibrium Plan Design with a Tax on Choice.*

So far we have been assuming that employer contributions and worker contributions are given the same payroll tax treatment. Consider now what happens if employer contributions are exempt from the payroll tax and employee contributions are not, as under current law, and that workers and firms understand this.⁹⁹

1. *The Neoclassical Benchmark.*

Rational workers now have a reason to demand employer contributions: it will lower their tax bill. This tax benefit is balanced against the loss of flexibility that such non-elective contributions entail. We expect the equilibrium compensation contract to provide for substantial employer non-elective contributions, but also to entail some amount of elective employee contributions to maintain flexibility.

Another outcome of the exemption of employer contributions from the payroll tax is that the tax code is now providing better-than-neutral treatment of retirement savings vis-à-vis present consumption. The income tax treatment of savings under these plans, in which tax is merely deferred until the funds are distributed in retirement, results in neutrality.¹⁰⁰ But the exemption of employer contributions from the payroll tax does not merely defer the tax—it eliminates it.

Both of these effects are welfare reducing in the neoclassical model. The loss of flexibility and the better-than-neutral tax treatment of future consumption versus present consumption result in distortions that lower workers' utility relative to a scheme that subjects both employer and employee contributions to the payroll tax.

2. *Alternative Behavioral Types*

Once again, things are much more interesting in the richer world populated by our behavioral menagerie. Consider the outcome for the rational and naïve workers. The preferential tax treatment of employer contributions makes such mandatory savings a cheaper vehicle for delivering consumption in retirement than elective savings. Accordingly, with a sufficiently large tax differential, in equilibrium rationals and naïves will end up in a compensation contract that includes a substantial amount of non-elective employer contributions and will receive less of their compensation in the form of employer matching contributions.

This outcome produces two benefits for naïves, relative to the outcome

⁹⁹ A qualitatively similar analysis would apply if only firms and not workers understood the differential payroll tax treatment (which seems plausible).

¹⁰⁰ See Shaviro, *supra* note 1, at 1223 ("Since a consumption tax is neutral between immediate and deferred consumption (so long as its rate remains constant over time), it differs from an income tax in avoiding discouragement of retirement (and other) saving.").

without differential tax treatment of employer contributions. First, because matching is a smaller part of the compensation contract, there is less cross-subsidization of the rationals by the naïves. This means that the total pay of the naïves is greater. Second, non-elective employer contributions are a much more effective commitment device than matching, so naïve myopic workers also save more.

In addition to reducing the amount of cross-subsidization caused by matching, the introduction of a tax subsidy for non-elective employer contributions also affects the outcome for naïve myopic workers if matching were banned. Recall that a key issue in evaluating matching is the equilibrium plan design that would emerge if matching were not allowed. If that plan design would entail substantial non-elective employer contributions, then naïve myopic workers would end up with a superior (non-redistributive) form of commitment to the one matching provides. The tax subsidy now provides an additional reason to expect employers to offer non-elective contributions if matching were banned: to avoid taxes. By encouraging the use of a superior commitment device, the “tax on choice” thus undercuts the commitment benefits of allowing matching.

The outcome for sophisticated myopic workers and inattentive passives is much the same as before. Sophisticates now have even more reason to gravitate toward compensation contracts with relatively large amounts of non-elective employer contributions. Inattentive passives stick to their wage-only contracts.

C. Labor Market Incentives for Other Aspects of Plan Design.

Our analysis of employer incentives in designing the structure of employer contributions illustrates a more general point about equilibrium retirement plan design when workers suffer from behavioral biases. To frame the larger point, it is useful to introduce a way of conceptualizing behavioral biases. One way to model behavioral biases is by distinguishing between “decision utility” and “experienced utility.”¹⁰¹ The decision utility function is what agents maximize at the time they make some choice. The experienced utility function is what determines the agent’s welfare under that choice and hence is the appropriate normative criterion. In the neoclassical model, these two functions are one-in-the-same, and the market outcome will generally maximize social surplus, absent some form of market failure like externalities.

Behavioral biases can be modeled as entailing a disjuncture between these two utility functions. For example, a naïve myopic agent would make choices across compensation contracts based on her overoptimistic

¹⁰¹ See Sendhil Mullainathan et al., *A Reduced-Form Approach to Behavioral Public Finance*, 4 ANN. REV. ECON. 511 (2012).

expectations of her future savings behavior. Her decision utility would be based on relatively high projections of future savings, whereas her experienced utility would be based on her actual, lower savings under the contract.

When firms contract with biased agents, like consumers or workers, the resulting contracts will maximize surplus as measured by the agents' *decision utility*. Since this is now not the same as true social surplus, which is determined by the agents' experienced utility, we might refer to this as the "fictional surplus."¹⁰² The maximization of fictional surplus will generally entail catering to and exploiting, rather than resolving or offsetting, the agents' behavioral biases. As a result, the market outcome will not be welfare maximizing.

All of the standard forms of behavioral bias that are hypothesized to affect retirement savings and therefore to justify retirement savings policy can be modeled as entailing a disjuncture between decision utility and experienced utility, including any form of bounded rationality that results in cognitive errors in saving and investing for retirement, as well as self-control problems in which agents are less than perfectly aware of the extent of their problem. Delegating the design of choice architecture for retirement savings to employers through the special tax subsidies given to employer-sponsored retirement plans is a recipe for maximizing fictional surplus, not social surplus. In other words, for any given hypothesized behavioral bias, the relevant aspects of choice architecture that will emerge in equilibrium will not effectively address the problem.

We turn now to three other aspects of retirement plan design to illustrate further the types of insights our behavioral contract theory perspective can generate.

1. *Default rules governing participation in the plan.*

One of the classic findings in the behavioral literature on retirement savings is that the default rule governing participation in the plan has a huge effect on initial participation rates. If the default is non-participation, so that new hires have to affirmatively opt in to participate, then initial participation rates are relatively low—thirty-seven percent in the classic study on this issue.¹⁰³ If instead new hires are automatically enrolled, initial participation rates are much higher—eighty-six percent in that same study.¹⁰⁴

The standard interpretation of this phenomenon is that the increase in initial participation rates stems from a group of workers who want to save

¹⁰² See Stefano DellVigna & Ulrike Malmendier, *Contract Design and Self-Control: Theory and Evidence*, 119 Q.J. ECON. 353 (2004).

¹⁰³ Madrian & Shea, *supra* note 8, at 1159.

¹⁰⁴ *Id.*

but procrastinate in turning in the form to enroll.¹⁰⁵ Based on these empirical findings suggesting that automatic enrollment in 401(k) plans has the potential to increase the savings rates of procrastinators, behavioral economists advocated that employers adopt automatic enrollment.¹⁰⁶ Further, a group of economists at the Brookings Institution designed and successfully lobbied for the passage of legislative reforms in the Pension Protection Act (PPA) of 2006 to encourage employers to adopt automatic enrollment by shielding them from fiduciary liability for plans that automatically enroll employees¹⁰⁷ and by providing a new safe harbor from the nondiscrimination rules for automatic enrollment plans.¹⁰⁸ In response, employers have adopted automatic enrollment in droves,¹⁰⁹ and today the PPA is heralded as “an example of good choice architecture.”¹¹⁰

On its surface, this narrative of the discovery of automatic enrollment by social scientists and its adoption by employers seems like a great success story and is in some apparent tension with our behavioral contract theory perspective on employer-sponsored plans. The optimistic interpretation is that employers design these plans paternalistically to improve the welfare of their employees so that once the innovation of automatic enrollment was discovered and regulatory barriers to its adoption removed, employers quickly adopted it.

However, this widely-believed success story obscures an underlying troubling reality: the adoption of automatic enrollment by employers has in fact reduced the retirement savings of many households and may in fact have reduced overall retirement savings in the United States. The reason is that any automatic enrollment plan must, by definition, choose a default contribution rate. The most common default contribution rate chosen by

¹⁰⁵ See John Beshears et al., *The Importance of Default Options for Retirement Saving Outcomes: Evidence from the United States*, in SOCIAL SECURITY POLICY IN A CHANGING ENVIRONMENT 167, 170 (Jeffrey R. Brown et al. eds., 2009) (“Recent research suggests that when it comes to savings plan participation, the key behavioral question is not whether individuals participate in a savings plan, but rather how long it takes before they actually sign up.”); Madrian & Shea, *supra* note 8, at 1177.

¹⁰⁶ See, e.g., William G. Gale et al., *The Automatic 401(k): A Simple Way to Strengthen Retirement Savings*, in AGING GRACEFULLY, at 19–20; THALER & SUNSTEIN, *supra* note 18, at 1172–73.

¹⁰⁷ See 29 U.S.C. § 1104(c)(5) (2012); 29 C.F.R. § 2550.404c-5 (2013).

¹⁰⁸ I.R.C. § 401(k)(13) (2006 & Supp. IV 2010). For an account of the passage of the PPA, see John Beshears et al., *Public Policy and Saving for Retirement: The Autosave Features of the Pension Protection Act of 2006*, in BETTER LIVING THROUGH ECONOMICS 274 (John J. Siegfried ed., 2010).

¹⁰⁹ *How America Saves 2012: A Report on Vanguard 2011 Defined Contribution Plan Data*, VANGUARD 5 fig. 31 (2012) (reporting that from 2007 to 2011 the fraction of plans it administers that use automatic enrollment almost doubled from 15% to 29%).

¹¹⁰ Shlomo Benartzi et al., *Choice Architecture and Retirement Savings Plans*, in THE BEHAVIORAL FOUNDATIONS OF PUBLIC POLICY 261 (Eldar Shafir ed., 2013).

employers is three percent of salary.¹¹¹ So the positive effect that automatic enrollment has on participation rates can be thought of as moving some workers who would have initially contributed zero percent to the plan to contributing three percent to the plan. But the default contribution rate is also sticky for workers who *would* have enrolled on their own in a traditional opt-in design, including those who would have enrolled at rates far higher than three percent. For these households, automatic enrollment has *reduced* retirement savings.¹¹² On net it appears that this latter negative effect on savings outweighs the positive effect, as reflected in the fact that average savings rates in 401(k) plans have fallen over the same period that employers adopted automatic enrollment.¹¹³

Another common practice that complicates the happy paternalism story of automatic enrollment is employers' choices of the default contribution rate relative to the structure of the employer matching contributions. Employer plans that use automatic enrollment commonly also offer matching contributions.¹¹⁴ In a plan that offers to match contributions up to some cap as a percentage of salary—say six percent—where would a paternalistic employer set the default contribution rate? It is almost certainly best for employees to set the default at least as high as the minimum amount needed to get the full match, given the huge subsidy represented by the matching contributions. And yet employers typically choose a default *below* that amount.¹¹⁵

Consider, then, what incentives do employers have in choosing a default contribution rate, either a rate of zero percent (as in a traditional opt-in design) or some non-zero rate? One plausible possibility is that workers express no meaningful preference over the default contribution rate itself in their choices in the labor market. Rational workers would be indifferent, since they will simply opt out of any default that is not at their optimal savings rates. This is also true of any worker type who expects to opt out of the default, including myopic workers who expect to make an active decision over how much to contribute. Inattentive passive workers seem likely to be inattentive to such a detail at the time they are choosing their retirement savings. The only type of worker that would care about the

¹¹¹ See Bubb & Pildes, *supra* note 25, at 1609 (observing that employers typically set the default rate at 3%); see also *How America Saves 2014*, *supra* note 5, at 21 fig. 17 (documenting that the majority of plans under Vanguard management using automatic enrollment use a 3% default contribution rate).

¹¹² Bubb & Pildes, *supra* note 25, at 1618.

¹¹³ See *id.*

¹¹⁴ See John Beshears et al., *The Impact of Employer Contributions on Savings Plan Participation Under Automatic Enrollment*, NBER Working Paper 13352, 3 (2007) ("All of the companies in which automatic enrollment has been studied to date have also offered an employer matching contribution.").

¹¹⁵ *Id.* at 21 tbl. 4 (examining nine companies that offer both a match and automatic enrollment and showing that in eight out of nine, the default contribution rate was below the minimum amount needed to get the full match).

default contribution rate at the ex ante contracting stage would be a worker who understands that they would procrastinate on making their own election of how much to contribute to the plan, attends to this detail of plan design at the labor contracting stage, and affirmatively values automatic enrollment as a way to mitigate their tendency to procrastinate. Suppose that this type of worker is so rare that at the time of labor contracting, workers are basically indifferent among alternative default contribution rates in the relevant range, *ceteris paribus*.

The labor market nonetheless may provide strong incentives here. To see this, think back to the analysis in subpart III.A. of the matching contract that appeals to naïves and rationals. Suppose that the employer can also choose the default contribution rate. We need to enrich our behavioral typology to account for the empirically documented stickiness of the default contribution rate. For simplicity, suppose that in an opt-in design (i.e., with a default contribution rate of zero), a random fraction of naïve myopes will procrastinate and not contribute. In contrast, if the employer automatically enrolls workers in the plan (i.e., chooses a non-zero default contribution rate), a higher random fraction of both naïves and “rationals” will stick at the default contribution rate, for example because they perceive it as implicit advice from the employer.¹¹⁶ But assume that even for workers for whom the default is sticky, the level of the default is not salient at the time of labor contracting. What default contribution rate will the employer choose?

The employer will choose the default contribution rate that *minimizes* contributions to the plan, since with fewer matching contributions, the employer can then offer a higher wage.¹¹⁷ You might intuitively think that that default contribution rate is the smallest one possible, i.e., zero. But it is in fact a (low) non-zero contribution rate, since such a default reduces the savings of workers who, under an opt-in design, would enroll at a higher contribution rate, as has been empirically documented in the literature.¹¹⁸ This behavioral contract theory perspective thus explains the pattern of low default contribution rates combined with matching that employers in fact commonly choose.

A similar analysis would apply if the employer's use of matching is

¹¹⁶ We put quotes around “rationals” because we have now assumed that they are not, in fact, neoclassical rational maximizers. Think of these as time-consistent but boundedly rational agents.

¹¹⁷ Use of this strategy is constrained to some extent by the nondiscrimination rules. If the plan does not qualify for a safe harbor, the default contribution rate of the 401(k) plan would have to be set so that the ADP of HCEs does not exceed the ADP of NHCEs by more than two percentage points. See *supra* notes 67–70. But adding this constraint to the employer's optimization problem does not fundamentally alter our analytic point. Moreover, there is a safe harbor to the nondiscrimination rules provided for automatic enrollment plans that utilize matching. See I.R.C. §§ 401(k)(12)(A)(i)(k)(12), (B) (2012).

¹¹⁸ See Madrian & Shea, *supra* note 8, at 1163.

motivated by the structure of the tax subsidy combined with limited utilization of matching by myopic workers. Recall that elective employee contributions to a 401(k) plan are capped at \$17,500 each year, but an additional \$34,500 in tax-deductible *employer* contributions is also allowed. Employer contributions are thus essential to giving the highly-compensated as much tax-advantaged compensation as they would value. An attractive way for employers to structure these employer contributions is in the form of matching contributions rather than non-elective contributions. Since matching contributions are only paid to workers that make their own elective contributions, they are in a sense “cheaper” than non-elective contributions. That is, for any level of non-elective employer contributions, a lower total amount of matching contributions are needed to achieve the same increase in tax-advantaged compensation for the highly compensated who value it. As a consequence, by using matching contributions rather than non-elective contributions to achieve this goal, the employer can pay higher wages. And under this account as well, the employer would have an incentive to choose the default contribution rate that minimizes the amount of employer matching contributions.

2. *The choice between defined benefit and defined contribution plans.*

Another important dimension of plan design is whether to offer a defined benefit plan or a defined contribution plan. In defined contribution plans, the employer creates a unique account for each individual and deposits money into that account on behalf of the individual.¹¹⁹ Subject to vesting and withdrawal restrictions, the employee owns all the funds in the account and may use the funds at his or her discretion. Defined benefit plans, in contrast, specify the benefits a retiree will receive upon retirement rather than the payments into the account.¹²⁰ The defined benefit typically takes the form of a life annuity at retirement.

Beginning in the 1980s, shortly after the addition of Section 401(k) to the Internal Revenue Code, employers began to shift away from defined benefit plans toward providing defined contribution plans. From 1984 to 1993, the percentage of private employers that offered only defined benefit plans declined from twenty-four percent to nine percent.¹²¹ Over the same period, the percentage of private employers that offered only defined contribution plans increased from sixty-eight percent to eighty-eight

¹¹⁹ The Internal Revenue Code defines a defined contribution plan as “a plan which provides for an individual account for each participant and for benefits based solely on the amount contributed to the participant’s account, and any income, expenses, gains and losses, and any forfeitures of accounts of other participants which may be allocated to such participant’s account.” I.R.C. § 414(i) (2006).

¹²⁰ The Internal Revenue Code defines a defined benefit plan as “any plan which is not a defined contribution plan.” I.R.C. § 414(j) (2006).

¹²¹ U.S. GOV’T ACCOUNTABILITY OFFICE, GAO-97-1, PRIVATE PENSIONS: MOST EMPLOYERS THAT OFFER PENSION USE DEFINED CONTRIBUTION PLANS 4 (1996).

percent.¹²²

Our behavioral contract theory perspective suggests a mechanism behind this shift. Suppose that a significant number of workers undervalue annuities due to behavioral biases. Such a bias is not merely conjectural. In neoclassical consumption models, individuals will annuitize a significant portion of their wealth at retirement.¹²³ The basic motivation is to insure longevity risk—the risk of outliving one’s assets. Yet very few households actually do annuitize their wealth at retirement.¹²⁴ The neoclassical literature provides no satisfactory explanation for this so-called “annuity puzzle.”¹²⁵ In contrast, a range of behavioral shortcomings has been offered to explain aversion to annuities.¹²⁶

If workers undervalue annuities, then employers have incentives to provide defined contribution plans, in which the retirement savings are available in a lump sum, rather than a defined benefit plan with a life annuity. Holding costs fixed, an employer can offer more perceived compensation by offering a defined contribution plan than by offering a defined benefit plan. Our theory also implies that employers have no incentive to add mandatory, or even default, annuitization features to defined contribution plans.

Similarly, employers are increasingly converting defined benefit plans to hybrid cash balance plans.¹²⁷ In a cash balance plan, the employer credits a specified percentage of compensation to each employee’s individual account annually and credits each account with interest earned at a specified rate. Cash balance plans typically allow employees at

¹²² *Id.*

¹²³ See Menachim Yaari, *Uncertain Lifetime, Life Insurance, and the Theory of the Consumer*, 32 REV. ECON. STUDIES 137 (1965) (showing that under certain neoclassical assumptions, individuals are better off if they annuitize all of their wealth); see also Thomas Davidoff et al., *Annuities and Individual Welfare*, 95 AM. ECON. REV. 1573 (2005) (showing that the Yaari result holds even when most assumptions are relaxed).

¹²⁴ Jeffrey R. Brown, *Rational and Behavioral Perspectives on the Role of Annuities in Retirement Planning* 7–10 (Nat’l Bureau of Econ. Research, Working Paper 13537, 2007) (presenting empirical evidence that individuals do not behave as if they value annuities as highly as theory predicts).

¹²⁵ See *id.* for a literature review. Reasons advanced include adverse selection in annuity markets, pre-existing annuitization from Social Security, risk sharing in couples, desire to give a bequest, and incomplete annuity markets. *Id.* at 11–19.

¹²⁶ See Jeffrey R. Brown et al. *Why Don’t People Insure Late-Life Consumption? A Framing Explanation of the Under-Annuitization Puzzle*, 98 AM. ECON. REV. PAPERS & PROCEEDINGS 304 (2008) (arguing that the framing of annuities as an investment frame rather than a consumption frame explains some of the annuity puzzle); Wei-Yin Hu & Jason S. Scott, *Behavioral Obstacles in the Annuity Market*, 63 FIN. ANALYSTS J. 71 (2007) (arguing that numerous behavioral phenomena may explain the annuity puzzle, including the availability heuristic, hyperbolic discounting, and ambiguity aversion); Brown, *supra* note 124, at 20–26 (providing behavioral explanations for the annuity puzzle).

¹²⁷ The Pension Protection Act of 2006 eliminated questions of whether cash balance plans were illegal because they committed age discrimination. That statute changed the tax code to specifically allow for these types of hybrid plans. I.R.C. §§ 411(a)(13), (b)(5) (2009).

retirement to withdraw the accumulated amount as a lump sum.¹²⁸ The conversions to cash balance plans have continued even though the Government Accountability Office found that most workers would have received greater benefits under a traditional defined benefit plan relative to a converted cash balance plan.¹²⁹ Our approach also helps explain this shift within defined benefit plans toward lump sum distributions and away from annuities.

3. *The menu of investment options.*

Finally, in a qualified defined contribution plan, employers provide workers with a menu of fund options in which plan participants must invest their savings under the plan.¹³⁰ A typical menu might consist of anywhere from three to more than a hundred fund options, each with its own risk and return characteristics and investment fees.¹³¹ These menus have received heavy criticism, however, for charging excessive fees, higher than those charged by low-cost index fund providers like Vanguard.¹³² One recent study shows that many plans include so-called “dominated funds,” defined as funds that provide little additional diversification and that charge in excess of fifty basis points more in fees than otherwise similar funds.¹³³ Even more troubling, the service providers that employers commonly contract with to set up and administer their plans, including by selecting investment options for the plans, often receive some share of the fees charged by the offered funds.¹³⁴ In return, the service provider offers the employer services at reduced or no cost.¹³⁵

While employers are subject to a fiduciary duty standard in providing investment options,¹³⁶ those duties do not provide much incentive for employers to avoid offering investment options with high fees. In particular, ERISA provides a safe harbor shielding employers from liability as long as they provide a sufficiently diversified menu of investment

¹²⁸ U.S. GOV'T ACCOUNTABILITY OFFICE, GAO-97-1, PRIVATE PENSIONS: INFORMATION ON CASH BALANCE PLANS 13 (2005), available at <http://www.gao.gov/new.items/d0642.pdf>.

¹²⁹ *Id.* at 8.

¹³⁰ See Ian Ayres, *Menus Matter*, 73 U. CHI. L. REV. 3 (2006).

¹³¹ Jill E. Fisch & Tess Wilkinson-Ryan, *Why Do Retail Investors Make Costly Mistakes? An Experiment on Mutual Fund Choice*, 162 U. PA. L. REV. 608, 615 (2014).

¹³² See James Kwak, *Improving Retirement Savings Options for Employees*, 15 U. PA. J. BUS. L. 483, 483 (2013).

¹³³ See Ian Ayres & Quinn Curtis, *Beyond Diversification: The Pervasive Problem of Excessive Fees and “Dominated Funds” in 401(k) Plans*, 124 YALE L. J. 1476, 1481 (2015).

¹³⁴ GOVERNMENT ACCOUNTABILITY OFFICE, 401(K) PLANS: IMPROVED REGULATION COULD BETTER PROTECT PARTICIPANTS FROM CONFLICTS OF INTEREST, REPORT GAO-11-119 (2011).

¹³⁵ *Id.* at 17.

¹³⁶ 29 U.S.C. § 1104(a)(1) (2006).

options.¹³⁷ Courts have generally interpreted this safe harbor to preclude fiduciary duty claims based on excessive fees so long as the menu of investment options is sufficiently broad.¹³⁸

Our analytic approach offers a straightforward explanation for the high fees paid by participants in employer-sponsored defined contribution plans. There is evidence that many investors make systematic mistakes in investment decisions. For example, when presented with a menu of investment options, many individuals simply split their investments equally across all of the funds presented, a phenomenon referred to as “naïve diversification.”¹³⁹ Other investors “chase returns” by investing in funds that achieved high investment returns in the most recent period, even though there is little persistence in such excess returns.¹⁴⁰ This type of investor behavior leads to a preference for actively managed funds over passive funds and insufficient consideration of fund expenses.¹⁴¹ More generally, investors commonly underweight the importance of fund fees in choosing among investment options.¹⁴²

Given these wide-spread investment mistakes made by employees, employers have strong incentives to offer menus of investment options that systematically lead their employees to pay excessive fees. Indeed, employers that do not do so face a disadvantage in the labor market. The reason is because offering plan menus that result in high investment fees charged to workers ultimately leads to discounts from the service providers to the plan. The resulting lowering in costs to the employer of providing benefits then enables the employer to offer at least somewhat higher wages. Note that as a result, workers who make larger mistakes and pay higher fees ultimately cross-subsidize workers who are more adept at choosing among the options within the plan. Such cross-subsidization among workers by their degree of behavioral bias is a key theme of our analysis in this Article.

¹³⁷ 29 C.F.R. § 2550.404c-1(b)(3)(i)(B) (2013). To meet the diversification requirements, the sponsor must provide a menu with at least three diversified investment options with materially different risk and return characteristics.

¹³⁸ See Ayres & Curtis, *supra* note 133, at 1491–95.

¹³⁹ Shlomo Benartzi & Richard H. Thaler, *Naive Diversification Strategies in Defined Contribution Saving Plans*, 91 AM. ECON. REV. 79 (2001); Jill E. Fisch & Tess Wilkinson-Ryan, *Why Do Retail Investors Make Costly Mistakes? An Experiment on Mutual Fund Choice*, 162 U. PA. L. REV. 608 (2014).

¹⁴⁰ Warren Bailey et al., *Behavioral Biases of Mutual Fund Investors*, 102 J. FIN. ECON. 1, 3–5 (2011).

¹⁴¹ See Andrea Frazzini & Owen A. Lamont, *Dumb Money: Mutual Fund Flows and the Cross-Section of Stock Returns*, 88 J. FIN. ECON. 299 (2015).

¹⁴² *Id.* at 3–5; James J. Choi et al., *Why Does the Law of One Price Fail? Experiment on Index Mutual Funds*, 23 REV. FIN. STUDIES 1405 (2010); see also Brad M. Barber et al., *Out of Sight, Out of Mind: The Effects of Expenses on Mutual Fund Flows*, 78 J. BUS. 2095, 2097 (2005) (observing that mutual fund investors perceive front-end fees as more salient than ongoing fees).

V. IMPLICATIONS FOR RETIREMENT SAVINGS POLICY

Our primary goal in this Article is descriptive. We aim to map out the connection between different types of behavioral biases on the one hand and the incentives that the labor market provides for employers in designing retirement savings plans on the other. But our descriptive analysis suggests two different types of policy responses that we sketch in brief here. First, the regulation of employer-provided retirement plans could be reformed to address the problems with employer incentives that we have identified. Second, our analysis suggests that employers might be the wrong party to whom to delegate the design of choice architecture for retirement savings. A shift away from our predominantly employer-based private retirement savings system might well be in order.

A. *Reforming the Regulation of Employer Plans.*

We have shown how behavioral biases that affect workers' retirement savings decisions produce perverse incentives for employer plan design. One general type of response would be to regulate plan design to address these incentive problems. To illustrate this, we focus here on the structure of employer contributions.

One of our main findings is that employer matching contributions can have perverse consequences for naïve myopes. Matching crowds out the superior (and non-redistributive) commitment device of non-elective employer contributions. Furthermore, it lowers naïves' total compensation by cross-subsidizing rationals. This latter concern is about a form of redistribution caused by matching.

ERISA's nondiscrimination rules are intended to prevent tax-subsidized employer-provided retirement plans from providing disproportionate benefits to certain workers.¹⁴³ The nondiscrimination rules do not, however, address the redistribution away from myopes toward rationals caused by matching and might even exacerbate it.

First, the nondiscrimination rules focus on the distribution of plan benefits to groups of workers defined by income, requiring that highly compensated employees do not receive a disproportionate share of plan benefits.¹⁴⁴ The form of redistribution we have identified, however, occurs among workers *with the same salary*. At any given salary level, matching redistributes income from the naïve myopic workers who fail to take full advantage of the match to the rational workers who do. Existing nondiscrimination rules provide no check on this form of redistribution.

¹⁴³ See Regina T. Jefferson, *Increasing Coverage in Today's Private Retirement System*, 6 DREXEL L. REV. 463, 472 (2014) ("[T]he rules are designed to encourage broad participation and prevent excessive disparity in participation between non-highly and highly-compensated employees.").

¹⁴⁴ See *supra* notes 69–80 and accompanying text.

Second, the nondiscrimination rules include a safe harbor based on an employer *providing* matching contributions.¹⁴⁵ This safe harbor is presumably based on a view that some additional inducement like matching is needed to encourage lower-income employees to contribute. A substantial fraction of workers earn incomes so low that the income tax deferral benefit given to contributions to qualified plans is of no value.¹⁴⁶ Matching can make it rational for such low-income workers to contribute to the plan. Perhaps matching was also seen as good for myopic workers, since it encourages them to save more.

But as we have shown, with competitive labor markets, matching contributions must be funded by reductions in the wage, since total compensation will roughly equal workers' marginal products. So the safe harbor based on matching does not even effectively address distributive concerns with respect to workers at various levels of income. Moreover, as we have shown, such matching creates a different set of problems, including redistribution from naïve myopes—the very people that the overall federal retirement scheme is intended to help—toward rationals.

These nondiscrimination rules are thus perverse. One modest reform suggested by our analysis would be simply to eliminate matching from the nondiscrimination rules' safe harbors and provide a safe harbor only for plans that provide a certain amount of non-elective employer contributions. These non-elective employer contributions would significantly improve outcomes for myopic workers who are harmed by matching under the current regulatory framework.

As a brief aside, note that there is an interesting parallel between the safe harbor from the nondiscrimination rules provided for matching-based plans and the nondiscrimination rules that apply to tax-free fringe benefits that effectively require some co-contribution by the employee. Consider, for example, an airline that has a policy of allowing its employees to fly first class on any intercontinental flight for free as long as there is an open first class seat on the flight. The Internal Revenue Code treats this type of fringe benefit as a "no-additional-cost service." The imputed income from the free intercontinental plane flight is therefore not included in the employee's taxable income.¹⁴⁷ The free flight parallels the matching contribution because a trip to Paris, for example, has significant back-end costs that the employee must cover on his own in tandem with the

¹⁴⁵ See *supra* note 73 and accompanying text.

¹⁴⁶ Cf. Daniel Shaviro, *supra* note 1, at 1257–60 (discussing an empirical study that found that a nudge consisting of the IRS offering tax refund recipients government bonds in lieu of cash failed to induce lower-income refund recipients to opt for the bonds instead of the cash). The Tax Policy Center estimates that forty-three percent of Americans paid no income taxes in 2013. Roberton Williams, *Tax Notes* 1615 (Tax Pol'y Ctr., Sept. 30, 2013).

¹⁴⁷ I.R.C. § 132(a)(1), (b) (2012).

employer benefit. Once in Paris, the employee will have to pay for a hotel room and other expenses associated with the trip. In practice, low-level employees are likely to take up the flight to Paris much less frequently than the CEO because of the back-end expenses. Other tax-free fringe benefits, such as qualified employee discounts¹⁴⁸ and qualified tuition reduction programs,¹⁴⁹ also resemble the structure of an employer matching contribution. However, the nondiscrimination rules for these employee fringe benefits generally require only that the employer make the benefit available to all employees, regardless of actual utilization rates of the benefit.¹⁵⁰

Employers might also be required to design matching in a way that lessens the exploitation of naïve myopes. First, our analysis above shows that the labor market will produce equilibrium matching contracts that myopes overvalue.¹⁵¹ Crucial to their overvaluation is the fact that the firm offers to match employee elective contributions above the amount of contributions that myopes will actually end up making.¹⁵² One way to solve this problem would be to regulate the form of matching contracts to ensure that myopes correctly value them. This could be accomplished by permitting matching only up to a relatively low amount of employee elective contributions. So long as the match ends at an employee contribution amount that is inframarginal for myopes—that is, below the amount myopes will in fact contribute—naïve myopes will correctly value the matching offer and the match will not result in cross-subsidization of rationals by naïves. But note that allowing matching only up to a savings level that is inframarginal for most myopes would result in the match providing incentives only on the extensive, plan participation margin, not on the intensive, contribution amount margin. Given this, it might make more sense to simply ban matching and require all employer contributions to be non-elective, a possibility we discuss below.

Second, many employers offer matching to employees only after the employee has been with the company for a year.¹⁵³ Such delayed eligibility makes it harder for workers to get the full match, since now workers must either choose a high enough contribution rate a significant time prior to

¹⁴⁸ I.R.C. § 132(a)(2), (c) (2012).

¹⁴⁹ I.R.C. § 117(d) (2012).

¹⁵⁰ The tax-free fringe benefits are tax free to any highly compensated employee “only if such fringe benefit is available on substantially the same terms to each member of a group of employees which is defined under a reasonable classification set up by the employer which does not discriminate in favor of highly compensated employees.” I.R.C. § 132(j)(1) (2012). A similar nondiscrimination rule applies to the qualified tuition reduction. I.R.C. § 117(d)(3).

¹⁵¹ *Id.*

¹⁵² See *id.* (“[N]aives will overvalue firms’ offer to match since they will overestimate how much they will in fact save for retirement. . . . [O]ffering matching to naïves allows a firm to offer a contract that only costs it \$1 (say) for every \$2 that the naïve believes the contract term will provide [her].”).

¹⁵³ See *How America Saves 2014*, *supra* note 5, at 5.

actually receiving the match or remember to adjust their contributions when they become eligible for the match. Both are difficult for myopic workers prone to procrastination. Requiring employers to make any matching contributions available to workers immediately upon their eligibility for the plan might usefully improve outcomes for naïve myopes and inattentive passive workers.¹⁵⁴

A more significant reform would be to ban matching from qualified plans. Such a reform would be consistent with the basic goals of the current nondiscrimination rules. Matching contributions in a sense discriminate against the very workers that the federal retirement savings policy scheme is intended to help.

Banning matching would result in an increase in the use of non-elective employer contributions. There are two basic motivations for such contributions: as a commitment device for myopic workers and as a way to reduce taxes on the employment relationship, given their exemption from the payroll tax. When matching is allowed, the presence of naïve myopic workers leads employers to offer matching contracts that offer relatively low amounts of non-elective employer contributions. With matching banned, employers would then increase the amount of non-elective employer contributions. Such a prohibition could make naïve myopic workers better off. Rationals would be made worse-off, since they would lose their cross-subsidy.

Our analysis also suggests reforms to the regulation of other aspects of plan design. It might be sensible to regulate employers' choice of default contribution rate in automatic enrollment plans by requiring it to be greater than the commonly chosen three percent. Regulation could encourage or require greater annuitization of plan assets. Tighter regulation of the fees charged by funds offered in employer plans seems long overdue.

One potential concern with any regulation of employer-sponsored plans is that these plans might serve as useful aspects of incentive contracting. For example, pensions might be designed to give workers incentives to stay with the employer. However, these sorts of incentive contracting goals can be achieved through payments outside of tax-advantaged retirement plans. To the extent regulation of plan design inhibits the use of pensions for efficient incentive contracting purposes, employers can offer substitutes in other aspect of the compensation package.

¹⁵⁴ See *supra* Part IV.A.2 (noting that *inattentive passive* workers save some fixed amount for retirement each year independent of employer contributions and therefore simply choose the employment contract offer with the highest wage irrespective of employer-provided retirement benefits).

B. Ending Delegation of Choice Architecture to Employers.

Our analysis also calls into question a more fundamental policy issue. Why delegate to employers responsibility for designing choice architecture for workers' retirement savings? Employers play this role largely as a consequence of the preferential tax treatment of employer-sponsored retirement plans under current law.¹⁵⁵ A central insight of this Article is that employers have incentives that conflict with the goal of providing workers with an optimal retirement savings choice architecture.¹⁵⁶ This suggests a more far-reaching overhaul of retirement savings policy: supplanting employers as choice architects.

Indeed, the problem with employer-sponsored plan design that we have identified is only one of the perversities of the current system's heavy reliance on employers. Another set of problems with this approach stems from worker mobility. The average person born between 1957 and 1964 held 11.3 jobs from ages eighteen to forty-six.¹⁵⁷ In the current system, every job change threatens to upend workers' retirement savings.¹⁵⁸ One of the biggest problems involves "leakage" from retirement plans.¹⁵⁹ Federal law allows workers to withdraw funds from their employer-sponsored retirement accounts when they change jobs,¹⁶⁰ and many workers do, to the tune of \$74 billion each year.¹⁶¹ In 2013, cashouts at job separation resulted in as much leakage as did hardship withdrawals and (defaulted) loans from plans combined.¹⁶² While hardship withdrawals address important liquidity needs, it seems likely that cashouts at job change are merely a by-product of embedding retirement savings vehicles in the labor contract. The result

¹⁵⁵ *Id.*

¹⁵⁶ See *supra* Part IV (arguing, *inter alia*, that employers are incentivized as a result of labor market forces to offer matching contribution plans to attract both rationals and naïve myopes, even though the latter will be exploited by such plans and receive lower total compensation).

¹⁵⁷ News Release, Bureau of Labor Statistics, Number of Jobs Held, Labor Mkt. Activity, & Earnings Growth Among the Youngest Baby Boomers: Results from A Longitudinal Survey 1 (June 25, 2012), available at <http://perma.cc/U8JQ-MJRL>.

¹⁵⁸ See U.S. GOV'T ACCOUNTABILITY OFFICE, GAO-09-715, POLICY CHANGES COULD REDUCE THE LONG-TERM EFFECTS OF LEAKAGE ON WORKERS' RETIREMENT SAVINGS 17–21 (2009) (noting that the cashout, hardship withdrawal, and loan default components of "leakage," at the time of job separation, significantly and negatively impact workers' retirement savings).

¹⁵⁹ See *id.* at 1 (noting that leakage from 401(k) accounts "can result in a permanent loss of retirement savings").

¹⁶⁰ I.R.C. § 401(k)(2)(B)(i)(I) (allowing employers to distribute funds in a qualified cash or deferred arrangement under § 401(k) at the time an employee is severed from employment).

¹⁶¹ U.S. GOV'T ACCOUNTABILITY OFFICE, GAO-09-715, *supra* note 158, at 17 fig. 5.

¹⁶² See Alicia H. Munnell & Anthony Webb, *The Impact of Leakages on 401(k)/IRA Assets*, CENTER FOR RETIREMENT RES. B.C. Fig. 2 (Feb. 2015), http://crr.bc.edu/wp-content/uploads/2015/01/IB_15-2.pdf (reporting that for "[a]nnual [l]eakages [o]ut of Vanguard Accounts as a [p]ercentage of [a]ssets," the sum of "hardship withdrawals" (0.3%) and "loan defaults" (0.2%) was equivalent to the 0.5% of "cash outs").

is a substantial loss of retirement savings.¹⁶³

In addition to this leakage problem, the current linking of retirement savings plans with employment also results in lower participation rates for workers prone to procrastination. The delay in signing up for employers' retirement savings plan upon a job change results in much lower savings relative to a system in which retirement savings vehicles and contribution elections carry over from job to job.

Accordingly, a more ambitious response to these problems with employer-sponsored retirement plans would be to scrap the whole scheme and instead create a federally-sponsored defined contribution plan that would be supplemental to Social Security.¹⁶⁴ Others have proposed a universal 401(k) program before, but these proposals do not address the central concern we have raised: that employers do not have good incentives to design choice architectures that address the mistakes households make in planning and saving for retirement.¹⁶⁵ The new federal defined contribution plan should rely on employers only in the way Social Security does—by requiring employers to facilitate the funding of these defined contribution plans through payroll deductions.¹⁶⁶

A federal defined contribution plan would have at least three significant advantages over the current employer-provided defined contribution plan system. First, by severing the link between the retirement savings vehicle and the worker's job, a federal plan could result in less leakage of retirement savings at job changes, as well as relieve workers of the burden of redoing all of their retirement savings elections at each job change. This effect alone would substantially improve the choice architecture for retirement savings.

Second, many employers lack the expertise to design plans based on the latest insights from social science on optimal retirement savings choice

¹⁶³ U.S. GOV'T ACCOUNTABILITY OFFICE, GAO-09-715, *supra* note 158, at 19–20.

¹⁶⁴ For previous proposals along these lines, see TERESA GHILARDUCCI, WHEN I'M SIXTY-FOUR 260–93 (2008); *see also* Bubb & Pildes, *supra* note 25, at 1637 (“[E]mployer-sponsored DC plans could be scrapped in favor of a federally sponsored mandatory individual retirement account that is funded by payroll deductions, invested in a state-of-the-art lifecycle investment fund, and paid out upon reaching requirement age in the form of an annuity that supplements Social Security.” (internal citation omitted)); Gene B. Sperling, *A 401(k) for All*, N.Y. TIMES, July 22, 2014, at A25 (stating that the way to fix the United States’ “‘upside-down’ tax incentive system for retirement savings” would be to implement “401(k)s with automatic payroll deductions and matching incentives . . . for everyone . . . which would encourage employers to keep contributing to savings”).

¹⁶⁵ For example, Sperling’s proposal would also allow the government to contribute to defined contribution retirement savings plans. However, the enhanced choice architecture features in Sperling’s proposal seem to be driven largely by the desire to correct distributional unfairness, not the undersaving problem we have identified in this Article for certain types of workers. Sperling actually recommends more matching, not less, a proposal that is in direct tension with our analysis. Moreover, Sperling’s universal 401(k) proposal is intended to supplement employer-provided retirement savings benefits, it does not displace those benefits. Sperling, *supra* note 164.

¹⁶⁶ *See* Bubb & Pildes, *supra* note 25, at 1637.

architecture. A federal agency would be in a better position than employers to acquire and use expertise in designing retirement savings choice architecture.¹⁶⁷

Third, the government would not be subject to the same incentives as employers that conflict with the interests of workers with respect to retirement savings. That being said, we are under no illusion that the government always designs good choice architecture.¹⁶⁸ Moreover, much of our analysis of workers' preferences across retirement plan designs in the labor market would also apply to workers' preferences over government policy with respect to retirement savings.¹⁶⁹ In particular, both rationals and naïves would support government policies that result in matching contributions. Nonetheless, a federal agency might well be able to improve on the current market outcome.

VI. CONCLUSION

Federal retirement savings policy has long delegated to employers responsibility for designing the choice architecture for their workers' retirement savings. Our behavioral contract theory perspective on retirement savings produces a number of novel insights. The operation of the labor market gives employers strong incentives to offer matching contributions that exploit the undersavers that federal retirement savings policy largely aims to help. Naïve myopic workers overvalue matches because they overestimate how much they will save. The result is both cross-subsidization of rational workers by naïve workers and crowd-out of the superior commitment device of non-elective employer contributions. Our theory also explains the use of low default contribution rates in automatic enrollment plans, the shift of employer-sponsored plans away from annuities toward lump sum distributions, and the offering of investment options with excessive fees.

Our analysis suggests several promising avenues for reform. Employer-provided plan design could be regulated to reduce the

¹⁶⁷ There is evidence that the government already does a superior job of creating choice architecture for retirement savings provisions through its "Thrift Savings Plan" relative to employers' plans in the private sector. See Rowland Davis et al., *The Promise and Peril of a Model 401(k) Plan*, CENTER FOR AM. PROGRESS ACTION FUND 3 (Apr. 2010), <https://cdn.americanprogressaction.org/wp-content/uploads/issues/2010/04/pdf/401k.pdf> (comparing the current 401(k) employer-defined plan to the "Thrift Savings Plan" (TSP), which has "much lower fees and slightly higher employer contributions" and results in "a worker saving through the TSP [to be] four times more likely to have sufficient retirement income compared to one saving through a standard 401(k) plan").

¹⁶⁸ See *id.* at 3 ("[D]espite the clear advantages of being able to save through the TSP, a worker doing so would still face the substantial risk of having an inadequate income in retirement if this retirement savings plan were offered to all workers.").

¹⁶⁹ See generally Patrick L. Warren & Daniel H. Wood, *The Political Economy of Regulation in Markets with Naïve Consumers*, 12 J. EUR. ECON. ASS'N 1617 (2014).

exploitation of behavioral biases. More fundamentally, our analysis calls into question the long-standing delegation of retirement savings choice architecture to employers. The current heavy reliance on employers to design and provide retirement savings vehicles results in perverse outcomes, especially for the very undersaving workers that are the main subjects of regulatory concern. Supplanting the current system of employer-provided pension plans with a new federal defined contribution plan, designed by a federal agency and not linked to any particular job, could improve savings outcomes at little to no fiscal cost to the government.