

The Income Tax as a Market Correction

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I confess. As a tax professor, it has long hurt my feelings that economists label tax as a market distortion. My field is summed up as an impurity on the otherwise pristine complexion of the economist's pure market. I like to think that tax scholars are not so disparaging of economics. We do not view economically motivated action as a distortion to our tax system, but as a component of it. It is tax planning. This Article proposes that tax should be viewed as a component of a market system. Just as tax scholarship acknowledges that an imagined world in which tax is imposed in isolation does not and cannot exist, might economic scholarship similarly concede that it lacks a robust basis to characterize tax as a distortion to the market, as opposed to a component of it? After all, could a market exist without government enforcement of market rules, and could a lasting, functioning government exist without tax?

This Article argues that an income tax is the vestibular system of our market economy. It can balance the market and help send better information to our brains. Without an income tax to balance the otherwise harmful effects of excessive risk aversion, narrow framing, and the disposition effect, transactions would be made by brains that are preoccupied with avoiding loss. The market system would lean inefficiently against risk. Luckily, an income tax ramps up risk-taking and counterbalances risk aversion. Viewing tax as a component of a market system, rather than viewing it in isolation, reveals that the income tax corrects the market. It mitigates the harmful economic consequences of loss aversion.

The implications of this insight are significant. They support arguments that: higher income tax rates might fuel economic growth, loss offsets encourage risk-taking better than preferred rates do, and the realization requirement offers additional corrective power.

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INTRODUCTION

The market is not perfect. The invisible hand does not exist. To the contrary, the market is socially constructed and reconstructed by human brains. Humans collectively decide which projects and investments to fund. We collectively determine how much reward is necessary to compensate for various levels of risk in projects and investments. If the anticipated compensation is insufficiently high for our appetites, the investment or project goes unfunded.

Yet, for decades, we have seen strong evidence that our brains make systemic, predictable errors. We are preoccupied with avoiding loss. Thus, we demand inflated rates of return as compensation for bearing risk, collectively skewing funds towards conservative projects that cause investors to forfeit returns and deprive the economy of innovation. Some scientists believe that these errors are not just shared biases; they are biological limitations—like our appetites for unhealthy foods—that date back thirty-five million years. Although these errors harm us, both individually and socially, they are extremely difficult to overcome.

Luckily, we have a silent partner in our investments that can motivate us to take on more risk—the government. Its influence on our economic decisions is wielded through the design of tax rules. Currently, we presume that tax’s influence on our economic decisions is harmfully distortive and should be minimized. However, this Article argues that tax’s influence is often helpfully corrective. Instead of seeking to minimize tax’s influence on our economic decisions, we should seek to calibrate it so that tax can have a better—and perhaps even greater—impact on our risk-taking.

This Article proceeds in four parts: Part I argues that tax revenues are necessary to functioning economic markets and that the income tax causes the government to collect investment returns only after sharing investment risk. Thus, the collection of tax should be viewed as internal to economic markets, rather than external to and distortive of those markets. Part I critiques the notion of an assumed “free market” baseline as one that lacks rigor and incorporates a slew of silent value judgments, including the presumption that tax’s influences are inherently harmful.

The remaining Parts explain how an income tax can be, contrary to the “free market” presumption, helpful to economic markets. Part II provides a primer on how an income tax encourages taxpayers to take on higher-risk, higher-reward investments. Part III argues that by encouraging taxpayers to take on higher-risk investments, the income tax helpfully corrects the excess risk aversion that we suffer due to human biases. By making riskier investments more attractive, the income tax can reduce the excess risk premium investors currently demand to bear risk, can increase the funding available for risky projects, and can contribute to higher tax revenues while growing the economy.

Finally, Part IV argues that the realization requirement, while often viewed as “the most intractable problem in the income tax”¹ provides an underappreciated benefit by offsetting investors’ irrational instincts to quickly realize gains while “riding losses” to avoid regret. Further, it argues that the realization requirement, which remains hotly contested following the United States Supreme Court decision in *Moore v. United States*², helps ramp up risk-taking.

Scholars including Robert Reich, Cass Sunstein, and Joseph Stiglitz explore the implications of the government constituting the market, casting doubt on the notion that government involvement is distortive. Scholars including E. Cary Brown, Evsey Domar, and Richard Musgrave observe that when the government imposes an income tax, it acts as an investment partner, sharing in both the risk and the reward of investments. Finally, scholars including Joseph Bankman and Thomas Griffith establish that the major feature of the income tax is to encourage investors to ramp up their risk-taking, but they do not conclude that this feature is desirable, assuming instead that human decisions regarding investment risk are either correct or incorrect in unpredictable and offsetting ways.³

The contribution of this Article is to consider whether the government’s influence as an investment partner exacerbates weaknesses in the market or mitigates them. It concludes that by imposing an income tax, the government generally counterbalances weaknesses in the market. Further, the Article identifies various ways that the income tax could be better calibrated to benefit individual investors and the macroeconomy, suggesting that this might be achieved through tools like greater loss offsets, elimination of the preferred rate on capital gains, and strategic use of the realization requirement.

This Article rejects the notion that the influence of tax should be seen as external to the market, and therefore distortive of it. Viewing the income tax as a feature of the economic market that can balance other features like excess risk aversion, narrow framing, and the disposition effect that currently skew the market offers tremendous potential to increase tax revenues while simultaneously growing the economy.

1. David M. Schizer, *Realization as Subsidy*, 73 N.Y.U. L. REV. 1549, 1551 (1998).

2. See generally 144 S. Ct. 1680 (2024) (holding that Congress engaged in a constitutional exercise of its taxing authority when, in 2017, it imposed the Mandatory Repatriation Tax, which taxed American shareholders on their shares of the realized but undistributed income of American-controlled foreign corporations).

3. See *infra* notes 74–84 and accompanying text.

I. TAX AS A MARKET FEATURE

A. THE LANGUAGE OF MARKET “DISTORTIONS” CONCEALS VALUE JUDGMENTS AND LACKS RIGOR

Economists speak of market “distortions” as tax scholars speak of tax “expenditures.” Once something is labeled as a market “distortion” or a tax “expenditure,” it is assumed to be bad, and efforts turn to minimizing it. However, as to tax expenditures, scholars recognize that labeling only appears to be objective and, through that appearance of objectivity, labeling conceals value judgments and exerts a persuasive power in excess of its rigor. We recognize that such labeling “has a dual character. It is both a purportedly objective descriptive tool and a weapon of political combat. Its use as a political weapon, however, is parasitic on its claim to offer objective description.”⁴

This Article argues that labeling tax as a market “distortion” similarly purports to be objectively descriptive but similarly conceals value judgments and exerts a persuasive power in excess of its rigor. When the power of the label is removed, tax can be viewed as a component of the market system and the income tax can be viewed as a feature that helps balance that system.

B. WE RECOGNIZE THE POWER AND THE PROBLEMS OF PURPORTEDLY OBJECTIVE LABELS WHEN WE SPEAK OF “TAX EXPENDITURES”

Tax scholars have sought to identify and combat “tax expenditures” for decades. In 1967, then Assistant Secretary for Treasury Stanley Surrey coined the term “tax expenditure” to describe a tax perk⁵ that is not a component of accurately measuring *net* income, but instead subsidizes an activity.⁶ For example, a deduction for business expenses is a component of accurately

4. Daniel N. Shaviro, *Rethinking Tax Expenditures and Fiscal Language*, 57 TAX L. REV. 187, 190 (2003).

5. A perk can be defined formally or functionally. See, e.g., Congressional Budget and Impoundment Control Act of 1974, Pub. L. No. 93-344, 88 Stat. 297, 299 (1974) (defining “tax expenditures” formally as “revenue losses attributable to provisions of the Federal tax laws which allow a special exclusion, exemption, or deduction from gross income or which provide a special credit, a preferential rate of tax, or a deferral of tax liability”); STAFF OF JOINT COMM. ON TAX’N, JCX-34-18, ESTIMATES OF FEDERAL TAX EXPENDITURES FOR FISCAL YEARS 2017-2021, at 2 (2018) [hereinafter JCX-34-18] (defining “tax expenditures” functionally as “reductions in income tax liabilities that result from special tax provisions or regulations that provide tax benefits to particular taxpayers.”). A functional definition is more inclusive, making it easier to identify accelerated depreciation, for example, as a tax perk.

6. Shaviro, *supra* note 4, at 209. To take a simple example, when the tax base is net income, then a deduction—like the section 162 deduction—for the expenses of earning income is not a tax expenditure. Such a deduction is integral to measuring net income. A business that pays \$20,000 expenses to earn \$100,000 gross receipts needs to take the section 162 deduction to properly calculate \$80,000 net income. In contrast, a deduction—like the section 170 deduction for charitable contributions—is a tax expenditure. While the charitable contribution deduction does not help measure net income, it is nonetheless included in the Internal Revenue Code as a government subsidy for charitable giving.

measuring the net income of a business (thus not a tax expenditure), while a deduction for charitable contributions is not a component of measuring net income (thus is a tax expenditure).⁷ Surrey led the Treasury Department to compile a “tax expenditure budget” to identify various tax rules that were “departures from the accepted concepts of net income,”⁸ estimate the revenue consequences of those departures, and subject them to greater scrutiny.⁹ Surrey hoped that “once tax expenditures were identified and clearly displayed as Government spending substitutes,”¹⁰ they would be exposed as “poorly targeted or inefficient, when compared either to an actual government spending program, or (in most cases) when compared to not expending government resources at all.”¹¹ Thus, the “‘expenditure control’ agenda would be advanced.”¹² Since 1974, federal law has required the Treasury to publish an annual tax expenditure budget, a practice that continues to this day.¹³

As the charitable contribution deduction example perhaps foreshadowed, tax expenditures have survived the sunlight that Surrey hoped would disinfect them.¹⁴ In fact, Congress’s use of tax expenditures “has accelerated over the years.”¹⁵ Tax expenditure analysis is plagued by its lack of theoretical rigor in

7. At each end of the spectrum, it is easy to identify tax perks that are not tax expenditures (e.g., the section 162 deduction for the ordinary and necessary expenses of earning trade or business income) and those that are tax expenditures (e.g., the section 170 deduction for charitable contributions). But nearer the middle of the spectrum, the distinction is fuzzy or perhaps nonexistent.

8. Shaviro, *supra* note 4, at 210.

9. See, e.g., Edward D. Kleinbard, Chief of Staff, Joint Comm. on Tax’n, Address to the Chicago-Kent College of Law Federal Tax Institute: Rethinking Tax Expenditures (May 1, 2008) (available at <https://www.jct.gov/publications/2008/rethinking-tax-expenditures/>) (“Surrey hoped that the regular publication of a ‘tax expenditure budget’ would induce Congress to abandon narrowly-constructed tax incentives and subsidies.”). Surrey argued that because tax expenditures function similarly to direct expenditures—in that they cause the government to forgo or spend revenue to achieve desired ends—tax expenditures should receive the same level and frequency of political scrutiny as direct expenditures do. This analogy remains powerful. See, e.g., JCX-34-18, *supra* note 5, at 2 (“Special income tax provisions are referred to as tax expenditures because they may be analogous to direct outlay programs and may be considered alternative means of accomplishing similar budget policy objectives.”).

10. Kleinbard, *supra* note 9, at 1–2.

11. *Id.*

12. *Id.*

13. Kleinbard, *supra* note 9, at 2.

14. Over forty years after Surrey began identifying and scrutinizing tax law’s departures from the project of measuring net income, Edward D. Kleinbard declared that “Surrey’s original hope that tax expenditure analysis would have a salutary effect on budget transparency (and through that, on actual budget outlays) has not been realized . . .” Kleinbard, *supra* note 9, at 3.

15. *Id.*

defining a baseline against which deviations are measured,¹⁶ silent incorporation of a slew of value judgments,¹⁷ and ill-founded claim of objectivity.¹⁸

C. WE SHOULD RECOGNIZE THE POWER AND THE PROBLEMS OF
PURPORTEDLY OBJECTIVE LABELS WHEN WE SPEAK OF MARKET
DISTORTIONS

When orthodox economics¹⁹ imagines a free market and seeks to label deviations from it as distortions, it too lacks theoretical rigor in defining a

16. See, e.g., Shavero, *supra* note 4, at 214 (“To an extent, relying on the ‘normal’ or ‘normative’ form of a given tax base . . . simply hides the ball. For example, it may cause the double corporate tax, realization requirement, and the lack of inflation adjustment to be built into the ‘normative’ baseline without sufficient consideration of their decidedly non-normative character.”).

17. See, e.g., Boris I. Bittker, *Accounting for Federal “Tax Subsidies” in the National Budget*, 22 NAT’L TAX J. 244, 259 (1969) (critiquing the tax expenditure budget’s “silent incorporation” of “a host of unexplained, and perhaps even subconscious decisions” about which features of tax law are part of the normative baseline and which features deviate from it and cautioning that the project “succeeded in bringing some issues to the fore only to conceal others.”); STAFF OF JOINT COMM. ON TAX’N, JCX-37-08, A RECONSIDERATION OF TAX EXPENDITURE ANALYSIS 30 (2008) (“Since the publication of Bittker’s essay, many other observers, representing a wide range of political and policy perspectives, have echoed his criticism of the ‘normal’ tax base as a subjective compilation of judgments without a rigorous formal basis.”).

18. See, e.g., Victor Thuronyi, *Tax Expenditures: A Reassessment*, 1988 DUKE L.J. 1155, 1166 (1988) (“Surrey’s normative tax reflected his vision of what the U.S. income tax should look like, given the constraints of politics. By incorporating ‘generally accepted’ concepts, though, Surrey endeavored to shield this subjective vision behind the authority of a consensus of experts.”); Douglas A. Kahn & Jeffrey S. Lehman, *Tax Expenditure Budgets: A Critical View*, 54 TAX NOTES 1661, 1663–64 (1992) (arguing that the project of measuring tax laws against an assumed normative tax baseline “presumes that some of us should be deemed to know the answers better than others,” when instead the ideal tax structure is “a contestable, contingent, political decision”).

19. This Article will use the term orthodox economics to include classical and neoclassical economics. For purposes of this Article, the key is that orthodox economists view the market as self-correcting and government interventions as presumptively distortive. See, e.g., Warren J. Samuels, Marianne F. Johnson & William H. Perry, *The Invisible Hand and the Economic Role of Government*, in ERASING THE INVISIBLE HAND: ESSAYS ON AN ELUSIVE AND MISUSED CONCEPT IN ECONOMICS, 179, 179 (Warren J. Samuels ed., 2011) (“[Classical economics] is sometimes called laissez-faire or noninterventionism, [and it is] notably the ideology largely embraced by the discipline of economics”); RICHARD D. WOLFF & STEPHEN A. RESNICK, *CONTENDING ECONOMIC THEORIES: NEOCLASSICAL, KEYNESIAN, AND MARXIAN* 2 (2012) (“For the neoclassical view and its proponents, the proposed fix for capitalism’s instabilities is very simple: leave the machine [also known as the private, competitive market] alone so that it can and will correct itself.”); Neil Buchanan, *The Role of Economics in Tax Scholarship*, in BEYOND ECONOMIC EFFICIENCY IN UNITED STATES TAX LAW 11, 13 (David A. Brennan, Karen B. Brown & Darryl Jones eds., 2013) (“One of the most important theoretical claims in modern economics is that ‘properly behaved’ markets will reach a Pareto Efficient equilibrium on their own, without any need for planning or guidance on the part of the government (or any other extra-market entity). This claim is, therefore, simply a modernized version of Adam Smith’s famous ‘invisible hand,’ in which a well-defined market allows self-interested individuals to act on their own behalf, seeking out advantage in transactions in a way that guarantees that every good and service ends up being consumed by the person who values it most highly. If that is true, then it necessarily follows that any change in tax policy (which, in this simplified world, means the introduction of any tax or subsidy) would disturb a market’s Pareto Efficient outcome, creating deadweight loss where none had existed before. This means that the government’s decision to tax or subsidize *anything* must reduce the total well-offness generated by a market, compared to a market in which the government has not intervened. In short, the standard economic analysis ends up being a brief for non-intervention by the government in markets, that is, for a *laissez-faire* approach to governing.”).

baseline against which deviations are measured,²⁰ silently incorporates a slew of value judgments,²¹ and makes an ill-founded claim of objectivity.²²

20. See, e.g., LIAM MURPHY & THOMAS NAGEL, *THE MYTH OF OWNERSHIP: TAXES AND JUSTICE* 33 (2002) (“There is no natural or ideal market. There are many different kinds of market system[s], all of them equally free, and the choice among them will turn on a range of independent policy judgments. . . . [thus, it] cannot be said that pretax outcomes are simply market outcomes. They are, instead, the returns generated by a market regulated in accordance with a certain set of government policies.”); Buchanan, *supra* note 19, at 17 (“[T]he question of defining a baseline ultimately implicates even more fundamental issues of ownership and rights. Recall that the basic idea behind any measurement of Pareto Efficiency is that people will buy and sell goods and services in ‘free markets.’ What is generally unacknowledged is the wide range of possible rules under which such ‘free’ markets might operate. Even the freest of markets operates in the shadow of the law.”); *id.* at 15–16 (speculating that assumed baselines persist despite being a “mirage” due to the “combination of incentives facing various scholars—non-economists, who are understandably hesitant to engage in deep critiques of established economic theory (if, for no other reason, because they do not feel competent in the nuances of a highly technical field), and economists who must accept the basic presumptions of their field—creates a dynamic in which the deep assumptions underlying economic analysis are generally ignored or suppressed”); Joseph Stiglitz, *There Is No Invisible Hand*, *GUARDIAN* (Dec. 20, 2002, 3:19 EST), <https://www.theguardian.com/education/2002/dec/20/highereducation.uk1> (“Adam Smith’s invisible hand—the idea that free markets lead to efficiency as if guided by unseen forces—is invisible, at least in part, because it is not there,” that markets are “not, in general, efficient,” and that the prevalence of rational expectations models “especially in America’s graduate schools, despite evidence to the contrary, bears testimony to a triumph of ideology over science.”); Rebecca Hollander-Blumoff & Matthew T. Bodie, *The Market as Negotiation*, 96 NOTRE DAME L. REV. 1257, 1257 (2021) (“The law often treats markets as discrete entities, with a native intelligence and structure that provides clear answers to questions about prices and terms. In reality, of course, markets are much messier—they are agglomerations of negotiations by individual parties.”).

21. See, e.g., William M. Hayes & Gary D. Lynne, *Towards a Centerpiece for Ecological Economics*, 49 *ECOLOGICAL ECON.* 287, 298 (2004) (arguing that “[t]here appear to be good grounds for adding empathy as a component to the economic model and thereby transforming it,” for without the addition of empathy, the self-interested ego at the heart of economic models leads to “overwhelming consumptive habits being out of control, to the point of threatening human existence”); WENDY BROWN, *UNDOING THE DEMOS: NEOLIBERALISM’S STEALTH REVOLUTION* 17 (“[N]eoliberalism, a peculiar form of reason that configures all aspects of existence in economic terms, is quietly undoing basic elements of democracy.”); CASS R. SUNSTEIN, *FREE MARKETS AND SOCIAL JUSTICE* 4 (1997) (“[I]mportant forms of equality—including race and sex equality—can be undermined, not promoted, by free markets. Race discrimination is often fueled by market forces.”); Duncan Kennedy, *Cost-Benefit Analysis of Entitlement Problems: A Critique*, 33 *STAN. L. REV.* 387, 388–89 (1981) (“If we wish to use economic analysis to generate a determinate ideal private law regime, we have to make a series of value judgments that are more controversial, because more overtly political, than that involved in saying that we should make changes whose benefits to the gainers exceed the costs to the losers. Inasmuch as liberal scholars think their policy recommendations are based only on efficiency, they are mistaken.”); *id.* at 413 (“[A] whole new area of bias—of value-laden choice—is introduced when we pick one of the possible base lines for defining what is and what is not a ‘change.’”); *id.* at 407 (“[T]here is no consensus among economists about how to perform the valuation of externalities from entitlements” instead claims that an outcome is efficient are often “implicit about the value judgments they have hidden in supposedly apolitical efficiency calculus.”).

22. See, e.g., Alfred S. Eichner & J.A. Kregel, *An Essay on Post-Keynesian Theory: A New Paradigm in Economics*, 13 *J. ECON. LIT.* 1293, 1309–10 (1975) (criticizing neoclassical economics for appearing to be a descriptive theory that “explain[s] the real world as observed empirically” when, instead, it is a normative theory that “demonstrate[s] the social optimality if the real world were to resemble the model”); WOLFF & RESNICK, *supra* note 19, at 6 (“How we think about the economy is influenced by how we think about nature, human community, politics, religion, causation, and so on.”); Joseph E. Stiglitz, *Another Century of Economic Science*, 101 *ECON. J.* 134, 134 (1991) (“[W]hile economists of many persuasions may agree about the tools to be employed . . . the tools are not strong enough to discriminate among fundamentally different hypotheses, or at

This Article calls for a recognition that orthodox economics lacks a robust basis to characterize tax as a distortion to—as opposed to a component of—the market.²³ After all, economic markets depend on government involvement to function.²⁴ “A market—any market—requires that the government make and enforce the rules of the game. In most modern democracies, such rules emanate from legislatures, administrative agencies, and courts. Government doesn’t ‘intrude’ on the ‘free market.’ It creates the market.”²⁵ Continuous government involvement is necessary to enforce the rule of law, establish and protect property rights, respond to monopolies, enforce contracts, provide a stable currency, and facilitate exchange.²⁶ Government involvement cannot

least not strong enough to overcome differences in prior beliefs, beliefs which are often influenced by ideological concerns.”).

23. See, e.g., Eckehard F. Rosenbaum, *What is a Market? On the Methodology of a Contested Concept*, 58 REV. SOC. ECON. 455, 456 (2000) (“No less an authority than Ronald Coase has observed that the role of markets in modern economic theory is even more opaque than that of enterprises. Thus, even though its frequent use in economic discourse seems to suggest that there must be some agreement on the meaning and context of the concept of a market, closer inspection immediately reveals a wide range of meaning and contents. This diversity is in turn rooted in the fact that the market concept itself is hardly if ever analyzed in a systematic fashion with a view to identifying the constituting or essential elements of a market.”); *id.* at 463 (“[D]efining a market is essentially a *normative* enterprise that has to be judged by its usefulness for the chosen purpose rather than its truth or falsity.”); Buchanan, *supra* note 19, at 19 (“[I]t is simply impossible to define a neutral baseline against which we could say that a Pareto Efficiency analysis of all market decisions must be based”); *id.* at 20 (“[O]ne person’s imperfection is another person’s baseline law.”); *id.* at 21 (“[T]he ‘baseline problem’ . . . undermines claims that one can engage in amoral assessments of market outcomes”); LIAM MURPHY & THOMAS NAGEL, *THE MYTH OF OWNERSHIP: TAXES AND JUSTICE* 32–33 (2002) (“[T]he pretax distribution of resources can be regarded as the distribution produced by a free market. But, in fact, this is deeply incoherent. There is no market without government and no government without taxes; and what type of market there is depends on laws and policy decisions that government must make. In the absence of a legal system supported by taxes, there couldn’t be money, banks, corporations, stock exchanges, patents, or a modern market economy—none of the institutions that make possible the existence of almost all contemporary forms of income and wealth. It is therefore logically impossible that people should have any kind of entitlement to all their pretax income. All they can be entitled to is what they would be left with after taxes under a legitimate system, supported by legitimate taxation—and this shows that we cannot evaluate the legitimacy of taxes by reference to pretax income. Instead, we have to evaluate the legitimacy of after-tax income by reference to the legitimacy of the political and economic system that generates it, including the taxes which are an essential part of that system.”).

24. ROBERT B. REICH, *SAVING CAPITALISM FOR THE MANY NOT THE FEW* 3 (2016) (“Few ideas have more profoundly poisoned the minds of more people than the notion of a ‘free market’ existing somewhere in the universe, into which the government ‘intrudes.’”).

25. *Id.* at 5.

26. See, e.g., *id.* at 8 (“In order to have a ‘free market,’ decisions must be made about Property: what can be owned, Monopoly: what degree of market power is permissible, Contract: what can be bought and sold and on what terms, Bankruptcy: what happens when purchasers can’t pay up, [and] Enforcement: how to make sure no one cheats on any of these rules.”); SUNSTEIN, *supra* note 21, at 5 (“The notion of ‘laissez-faire’ is a grotesque misdescription of what free markets actually require and entail. Free markets depend for their existence on law. We cannot have a system of private property without legal rules, telling people who owns what, imposing penalties for trespass, and saying who can do what to whom. Without the law of contract, freedom of contract, as we know and live it, would be impossible. . . . [M]arkets should be understood as a legal construct, to be evaluated on the basis of whether they promote human interests, rather than as a part of nature and the natural order, or as a simple way of promoting voluntary interactions.”).

simultaneously be necessary to an economic market and “outside” or “external” to it, as is the claim of orthodox economics.²⁷

The government is not just a necessary creator and convener of the market; rather, through the imposition of tax, it is an ongoing market participant. For example, when a government imposes an income tax that allows investment losses to be deducted at the same tax rate as applies to gains and:²⁸ allows the interest on debt-financed investments to be deducted,²⁹ authorizes the immediate expensing of investments,³⁰ or allows an above-the-line deduction

27. See, e.g., WOLFF & RESNICK, *supra* note 19, at 3 (“The direction in which neoclassical theory points is clear for its followers: very little or even no ‘outside’ (meaning by the state) intervention is necessary to manage (regulate) capitalism’s cycles. The market economy will best manage itself if left to its own devices. No matter how well intentioned, *external (that is, state) interventions* aimed at managing the economy—for example, by regulating market transactions—will only undermine the market system’s otherwise successful self-corrective properties.” (emphasis added)). In order to solve the conflict of government intervention being an unfunded mandate in free market economics, the so-called optimal taxation theory seeks to raise revenue in a way (for example, through a lump-sum head tax) that least interferes with the market. This theory, of course, assumes that any tax-motivated changes to individual behavior distort the market, an assumption at odds with this Article. For more on optimal taxation theory, see *infra* note 61 and accompanying text.

28. See, e.g., *infra* note 35; Louis Kaplow, *Taxation and Risk Taking: A General Equilibrium Perspective*, 47 NAT’L TAX J. 789, 796 n.3 (1994) (“It has been remarked that the effect of a proportional tax on investment returns is somewhat like making the government a partner in the enterprise subject to the tax or is analogous to the government purchasing futures or shares.”).

29. See Joseph E. Stiglitz, *Taxation, Corporation Financial Policy, and the Cost of Capital*, 2 J. PUB. ECON. 1, 26 (1973) (“In the absence of uncertainty, the corporate profits tax with the interest deductibility provision is completely non-distortionary. It does not shift resources (at the margin) from the corporate to the non-corporate sector. It is an infra-marginal tax on the return to capital (or pure profits) in the corporate sector.”); *id.* at 27 (“If we can ignore bankruptcy, the same result, that the corporate profits tax is non-discretionary, obtains in the presence of uncertainty.”); ANTHONY B. ATKINSON & JOSEPH E. STIGLITZ, LECTURES ON PUBLIC ECONOMICS 145 (1980) (“If the tax system allows true economic depreciation [as opposed to accelerated depreciation], and there is full interest deductibility, . . . the tax system may be said to be ‘neutral’”; *id.* at 148–49 (“Where investment is financed at the *margin* . . . by bond finance, the provision of true economic depreciation means that the first-order conditions for investment are unaffected by taxation (the cost of capital is unchanged). In this sense the tax is neutral.”). The intuition is this: if the government proportionately shares in gains (which it does by taxing gains) and losses (which it does by allowing losses to be deducted), then the final component is to proportionately contribute capital to finance the investment. The government can effectively contribute capital by allowing immediate expensing—since immediate expensing produces tax savings in the year of purchase equal to the purchase price times the purchaser’s marginal tax rate. Alternatively, debt can be incurred to finance the investment. If an investment is debt-financed, then the cost of raising capital is interest. If that interest is deductible, then the government’s share of the cost of raising capital is the interest times the purchaser’s marginal tax rate. In either case, the government is proportionately sharing either the initial capital contribution or the cost of having used debt to raise capital. And, of course, interest used for trade or business or investment activities often is deductible. See I.R.C. § 163(a), (d).

30. See, e.g., E. Cary Brown, *Business-Income Taxation and Investment Incentives*, in INCOME, EMPLOYMENT, AND PUBLIC POLICY: ESSAYS IN HONOR OF ALVIN H. HANSEN 300 (1948); ATKINSON & STIGLITZ, *supra* note 29, at 145–46 (finding that immediate expensing, by which a firm “can write off at once the entire investment. . . . [A]lso leaves the first-order condition unaffected”). The intuition is this: if a taxpayer makes an investment and can immediately expense its cost, then in the year of purchase, the taxpayer saves taxes equal to the purchase price times the purchaser’s marginal tax rate. Thus, the purchase price can be seen as paid proportionately by the government and the taxpayer with the government paying a share equal to taxpayer’s

for contributions to investments,³¹ the government acts as a taxpayer's nonvoting³² investment partner, proportionately funding the taxpayer's investment as well as proportionately sharing in gains and losses. Similarly, when unrealized appreciation³³ or retained earnings finance an investment,³⁴ or when the government imposes an income tax with less-than-full loss offsets,³⁵ the government acts as a taxpayer's nonvoting but close-to-proportionate investment partner. Thus, the collection of income taxes can properly be viewed as a nonvoting investor collecting returns on an investment that it proportionately (or nearly proportionately) funded³⁶ and in which it

marginal tax rate and the taxpayer paying the remaining share. Investment gains and losses will also be shared according to these proportions, assuming that the taxpayer's marginal rate is unchanged. Thus, through immediate expensing, the government contributes a proportionate share of capital in addition to taking proportionate shares of gains and losses. *Id.* at 149 (“[Tax] neutrality can also be achieved by free depreciation [aka immediate expensing] with no interest deductibility.”).

31. See, for example, I.R.C. § 62(a)(6)–(7), which allows an above-the-line deduction for contributions to certain retirement accounts. The intuition is this: if a taxpayer contributes money to their retirement account and can deduct the amount contributed, then in the year of contribution, the taxpayer saves taxes equal to the amount contributed multiplied by the taxpayer's marginal tax rate. Thus, the total contribution can be seen as paid proportionately by the government and the taxpayer. The government and taxpayer will share distributions according to this same proportion, assuming that the taxpayer's marginal rate is unchanged.

32. The nonvoting nature of the government's activity may be an advantage. See, e.g., Rebecca N. Morrow, *Government as Investor: The Case of Immediate Expensing*, 106 KY. L.J. 1, 8 (2017) (observing that because the government is not involved with picking or declining various investments; rather, its investment arises due to the action of a taxpayer, the government is not problematically picking winners and losers among businesses or sectors).

33. Unrealized appreciation is a form of economic income that is not yet taxed. The tax savings that the owner enjoys due to the realization requirement can be viewed as the government's property while the remainder is the owner's property. Yet, the owner can use the full value of the appreciated property to help finance a new investment by, for example, using the appreciated property as collateral for a debt. Since the government is entitled to a share of the appreciated property, the use of this share to fund an investment can be viewed as a contribution to capital. The owner would not have the use of that share but for the failure to tax unrealized appreciation. In addition to making a capital contribution, the interest on the loan is deductible, which can be viewed as the government paying a share of interest equal to the taxpayer's marginal tax rate.

34. See, e.g., ATKINSON & STIGLITZ, *supra* note 29, at 146 (describing investments financed by retained earnings as another type of “investment financed by the government as a sleeping partner”). In each dollar of retained earnings is a share equal to the firm's marginal rate that will be paid to the government as the owner-level tax on income and a share equal to 1-the firm's marginal rate that, on an after-tax basis, is owned by the firm's shareholders. *Id.*

35. Evsey D. Domar & Richard A. Musgrave, *Proportionate Income Taxation and Risk-Taking*, 58 Q.J. ECON. 388, 389 (1944) (“By imposing an income tax on the investor, the Treasury appoints itself as his partner, who will always share in his gains, but whose share in his losses will depend on the investor's ability to offset losses against other income.”); *Id.* at 409 (“[F]ull loss offset means that whenever the investor suffers a loss, the Treasury reimburses him for a fraction of the loss equal to the tax rate. The Treasury thus becomes a partner who shares equally in both losses and gains.”).

36. See *supra* notes 29–31 and accompanying text.

proportionately (or nearly proportionately) bears risk.³⁷ In these scenarios, tax collection is investment activity.³⁸

By resisting the instinct to label tax as external to and distortive of the market, valuable opportunities for tax to balance currently unchecked and inefficient leanings in the economy can be identified and employed. For example, insofar as an income tax increases “the demand for higher returns” and reduces “resistance to bearing more risk,” the macroeconomic benefits are significant.³⁹ “[G]reater risk-taking should lead to an increased demand for risky assets which should lower the cost of risky capital and lead to an increase in the economy’s capital stock and growth rate.”⁴⁰ Indeed, some scholars point to investors’ collective willingness to bear risk as a leading indicator of “why some nations become rich while others stay poor.”⁴¹ When we instinctively assume that whenever tax influences investment behavior, it “distorts” the market, we squander opportunities to use the income tax to efficiently ramp up risk.

37. See *supra* note 28.

38. See Terrence R. Chorvat, *Apologia for the Double Taxation of Corporate Income*, 38 WAKE FOREST L. REV. 239, 267 (2003) (describing the income tax with full loss offsets as one according to which “[t]he government could collect revenue from essentially owning a portfolio comprised of the investments chosen by private investors.”); *id.* at 267 n.184 (explaining that with such an income tax, the government “collects revenue because the expected return of these investments is positive. Of course, in some years, there may be a net loss in investment for the economy as a whole. In this case, the tax would not collect revenue.”).

39. Patrick K. Asea & Stephen J. Turnovsky, *Capital Income Taxation and Risk-Taking in a Small Open Economy*, 68 J. PUB. ECON. 55, 56 (1998).

40. *Id.*; See Alexander Ljungqvist, Liandong Zhang & Luo Zuo, *Sharing Risk with the Government: How Taxes Affect Corporate Risk Taking*, 55 J. ACCT. RSCH. 669, 670 (2017) (“[R]isk taking is essential for both firms and economies to grow in the long run.”).

41. See, e.g., Asea & Turnovsky, *supra* note 39 (“Understanding the interaction between taxation, risk-taking and growth is important because it is central to one of the most challenging questions facing academics and policymakers—why some nations become rich while others remain poor.”); *id.* at 84 (“The share of private investment in GDP is arguably the single most important determinate of differences in cross-country growth performance. Private investment requires entrepreneurs to bear risk. Taxes affect the propensity of individuals to take risk and thus to accumulate capital through investment.”); *id.* at 85 (noting that “casual evidence on the importance of entrepreneurship and risk-taking in recent growth ‘miracles’” makes it important to understand how taxation affects risk-taking); Michael S. Knoll, *Taxing Prometheus: How the Corporate Interest Deduction Discourages Innovation and Risk-Taking*, 38 VILL. L. REV. 1461, 1504–05 (1993) (“Although scholars have quibbled over the numbers, the conclusion is clear: U.S. income growth has overwhelmingly come from increasingly skilled workers applying new and better technology. The same holds true for the other industrialized nations. Thus, the important role that technological advance plays in fueling economic growth supports remedying the [reduction to risk-taking] caused by the corporate interest deduction.”); *id.* at 1505–06 (“The argument for eliminating the differential treatment of debt and equity is strengthened by studies showing that, at least for major technological advances, only a small portion of the benefit is captured by the innovator, the remainder going to imitators and other competitors, upstream and downstream producers, and consumers. Thus, the differential tax treatment [that encourages debt over equity], by discouraging innovative activity, is discouraging activities that produce large external benefits. Given such benefits, the social costs of discouraging these activities through the tax laws could be staggering, and are likely to exceed any offsetting second-best effects.”).

II. THE INCOME TAX ENCOURAGES RISK-TAKING

A. THE INCOME TAX CAUSES INVESTORS TO RAMP UP RISK

Tax scholars have long understood that an income tax⁴² does not primarily tax returns to risk-bearing, which constitute the bulk of investment returns. In a static sense, an income tax does tax returns to risk-bearing. However, in a dynamic sense, it does not.

Let's begin with the static sense. When an income tax is imposed on investment returns, the gains are taxed, and the losses are deducted. Let's imagine that \$1,000 is invested and if the investment succeeds, it will grow to \$1,200; whereas if the investment flops, it will shrink to \$900. The expected return on this investment is \$50.⁴³ An investor agrees to take on the risk of a flop because the \$50 expected return from the investment is sufficient to compensate the investor for bearing the associated risk of loss. And now enters the income tax. Let's imagine that a 20 percent income tax would be imposed on the \$200 gain in the case of an investment win and that, if the investment lost, the \$100 loss would be deductible at 20 percent. The consequence of this 20 percent income tax is that if the investment succeeds, \$1,160 is returned (\$1,000 investment + \$200 gain - \$40 tax on gain⁴⁴); whereas if the investment flops, \$920 is returned (\$1,000 investment - \$100 loss + \$20 tax savings from the loss deduction). The after-tax expected return of the investment is \$40. On a static basis, the 20 percent income tax reduced the investor's returns to risk-bearing.

But an investor can change their⁴⁵ behavior to avoid this outcome. If the investor's preferences were expressed by their pre-tax decisions (meaning that, for this investor, a \$50 expected return is sufficient to compensate for an equally likely loss of \$100 or gain of \$200), then the after-tax world can replicate those preferences. Replication is not achieved, of course, by a \$40 expected return compensating for an equally likely loss of \$100 or gain of \$200. The investor demanded a \$50 expected return to bear that risk. But the imposition of the income tax did not just reduce the expected return by 20 percent, it also caused the government to bear 20 percent of the investment's risk. In the case of a \$200 gain, the investor retains 80 percent of the gain (\$160 after-tax), while the

42. A normative income tax, also referred to as a Haig-Simons income tax, has full loss offsets (all losses are deducted at the same rate as gains are taxed) and taxes income as it is earned (without the need for a realization event). HENRY C. SIMONS, *PERSONAL INCOME TAXATION* 36–37 (1938).

43. This expected return assumes that a win (\$1,200) and a flop (\$900) are equally likely. Thus, the expected return of \$50 = (\$200 profit in case of win - \$100 loss in case of flop) / 2. An equally likely win of \$200 or loss of \$100 parallels a choice presented by Paul Samuelson to his colleague that is described in more detail below. Paul Samuelson, *Risk and Uncertainty: A Fallacy of Large Numbers*, 98 *SCIENTIA* 49, 108–13 (1963).

44. \$200 gain * 20% tax = \$40 tax on the gain.

45. This Author is embracing the singular they/them/theirs to represent an individual taxpayer.

government receives 20 percent through taxes (\$40). In this way, the government acts as an investment partner. Similarly, in the case of a \$100 loss, the investor bears 80 percent of the loss (\$80 after-tax), while the government absorbs 20 percent by allowing a \$100 loss deduction, reducing the taxes collected by \$20. The government effectively bears 20 percent of both upside and downside risk. Since the government bears 20 percent of both upside and downside risk, the investor's risk is reduced commensurate with investor's reduction in return.

To replicate their pre-tax preferences, the investor simply needs to take on more pre-tax risk. By taking on more pre-tax risk, the investor will receive more pre-tax reward. In this way, the investor accounts for the 20 percent of both risk and reward that the income tax system allocates to the government and replicates their preferences in the after-tax world.⁴⁶

If investors increase their investment risk-taking to the full extent predicted by models, specifically by adjusting their pre-tax risk-taking to $1/(1-\text{tax rate})$, they can theoretically replicate their pre-tax preferences after accounting for taxes. For instance, in our hypothetical scenario, if the investor ramped up risk to $1/(1-20 \text{ percent income tax rate})$ or 125 percent, they could achieve an after-tax outcome that replicated their pre-tax preferences. An investment with 125 percent of the prior risk would result in \$1,250 in the case of a win and \$875 in the case of a loss. This investment is riskier than the first. On the \$1,000 invested, \$125 could now be lost instead of just \$100. However, with more risk comes more reward, thus, the pre-tax expected return of this riskier investment is \$62.50.⁴⁷

46. An investor's ability to eliminate the tax burden on returns to risk-bearing can properly be viewed either as a partnership in which the government bears risk and shares losses and returns through a conceptual partnership interest equal to the tax rate, or as a ramp-up opportunity by which the individual investor can erase the role of the government partner by taking on greater pre-tax risk. See, e.g., David Elkins & Christopher H. Hanna, *Taxation of Supernormal Returns*, 62 TAX LAW. 93, 95-96 (2008) ("The first view is generally referred to as the partnership view or the total exemption view and is utilized in analyzing the return on capital in a cash-flow consumption tax. Dr. Cary Brown advanced this view in the tax law literature in 1948; it generally treats the investor as being in a partnership with the government. The second view is generally referred to as the gross-up view or the tax savings view. Drs. Evsey Domar and Richard Musgrave advanced this view in the tax law literature in 1944 in the context of an income tax system. Dr. Musgrave later utilized this view in the context of a cash-flow consumption tax. Under this second view, the investment is grossed up to counter the effects of taxation. . . . Under the partnership view, the fact that a cash-flow consumption tax does not tax the risk-free return and the risk premium on investments is demonstrated by focusing on the taxpayer's investment and treating the taxpayer as being in a partnership with the government. The taxpayer will contribute capital to the partnership, and the government will also contribute capital to the partnership. Any return on the government's capital is not a tax—rather, it is merely a return on the government's investment in the partnership."). The partnership view and the ramp-up-opportunity view are two ways of explaining the same finding.

47. This expected return assumes that a win (\$1,250) and a flop (\$875) are equally likely. Thus, the expected return of \$62.50 = (\$250 profit in case of win - \$125 loss in case of flop) / 2.

Comparing the two \$1,000 investments on a pre-tax basis demonstrates that the ramped-up investment has 125 percent of the prior risk and 125 percent of the prior reward:

	If Win	If Lose	Expected Return
Initial Investment	\$200 gain	\$100 loss	\$50
Ramped-Up Investment	\$250 gain	\$125 loss	\$62.50

But now enters the income tax to take its share of the ramped-up investment. Let's again imagine that a 20 percent income tax would be imposed on a \$250 gain or that a \$125 loss would be deductible at 20 percent. The consequence of this income tax is that, on an after-tax basis, if the investment succeeds, \$200 is gained (\$250 - \$50 tax⁴⁸); whereas if the investment flops, \$100 is lost (\$125 loss - \$25 tax savings from the loss deduction). Now, the after-tax expected return of the investment is \$50.⁴⁹

An investor who compares an after-tax measure of their ramped-up investment to a pre-tax measure of their initial investment will find equivalence:

	If Win	If Lose	Expected Return
Pre-Tax Initial Investment	\$200 gain	\$100 loss	\$50
After-Tax Ramped-Up investment	\$200 gain	\$100 loss	\$50

On a dynamic basis, which assumes that investors will ramp up pre-tax investment risk, the income tax does not tax the returns to risk-bearing. Instead, the income tax causes the government to take a share of risk by sharing in both gains (through the tax on gains) and losses (through the deduction of losses). In addition to sharing risk, the government takes a commensurate share of returns for risk-bearing.⁵⁰ If an investor preferred the outcomes prior to the government's partnership, the investor can replicate those outcomes by ramping up pre-tax risk. The Domar-Musgrave ("DM") model thus explains that a normative income tax should cause taxpayers to increase the pre-tax riskiness of their investment portfolios by $1/(1-\text{tax rate})$, at which point their after-tax risk and returns match their preferences.⁵¹ We call the total risk of the investment

48. $\$250 \text{ gain} \times 20\% \text{ tax} = \$50 \text{ tax on the gain.}$

49. Since a win and loss are equally likely, the after-tax expected return reflects $(\$200 \text{ after-tax win} - \$100 \text{ after tax loss}) / 2$.

50. See *supra* note 46; *infra* note 181.

51. Domar & Musgrave, *supra* note 35, at 411.

“social risk,”⁵² which, in our example, is +250 / -125, while we call the investor’s after-tax share “private risk,”⁵³ which, in our example, is +200 / -100.

When predictable behavior by investors is accounted for, the income tax does not impose a tax on returns to risk-taking. It does not reduce the returns to risk-taking from \$50 to \$40, as was calculated in the static example. Instead, the income tax causes taxpayers to increase the pre-tax riskiness of their investment portfolios by $1/(1-\text{tax rate})$, such that the bite of the income tax is eliminated and investors’ pre-tax preferences for risk and reward are replicated in the after-tax world. “What in effect happens is that private risk-taking is the same in both”⁵⁴ a no-tax situation and a situation where a normative income tax is imposed, “but the government is taking more risk in the income tax case so that social risk-taking is higher.”⁵⁵

Since pre-tax preferences can be restored, the investor suffers no net cost from the income tax. While the income tax has an apparent initial cost, the investor can avoid it by ramping up the pre-tax risk of their investments which will cause the investor to neither receive less reward nor bear more risk on an after-tax basis.

To the extent that investors make portfolio adjustments to ramp up the pre-tax risk of their investments, the major impact of the income tax is on the economy. With more investors willing to put \$1,000 in investments that could lose \$125 (and not just \$100) or gain \$250 (and not just \$200), riskier projects will be funded. Viewed in isolation, this makes the income tax appear dangerous, as it would skew the economy towards underinvestment in less risky projects and overinvestment in more risky projects.

However, the thesis of this Article is the opposite. The approach of this Article is not to view either the income tax or the economic market in isolation. When viewed in the proper economic context, the ramping up of social risk-taking in investments corrects inefficiencies caused by widespread risk aversion.⁵⁶ Instead of causing an underinvestment in less risky projects, the income tax mitigates our current overinvestment in them.⁵⁷ Similarly, instead of

52. ATKINSON & STIGLITZ, *supra* note 29, at 88.

53. *Id.* at 88.

54. *Id.*

55. *Id.*

56. Risk aversion is “the hesitation over risky monetary prospects even when they involve an expected gain.” Matthew Rabin & Richard H. Thaler, *Anomalies: Risk Aversion*, 15 J. ECON. PERSP. 219, 219 (2001).

57. See, e.g., Thomas E. MaCurdy & John B. Shoven, *Stocks, Bonds, and Pension Wealth*, in TOPICS IN THE ECONOMICS OF AGING 61, 62 (David Wise ed., 1992) (“Our findings have important implications for pension investment policies, and they suggest that the vast majority of people choose the wrong accumulation strategies. Not only are our results applicable to defined contribution plans, but they are also relevant for defined benefit pension programs and for other long-horizon saving targets.”); *id.* at 66 (“On average, a 100 percent stock strategy would have resulted in more than two and a half times as much retirement wealth as a 100 percent long-

causing an overinvestment in riskier projects, the income tax mitigates our current underinvestment in them.⁵⁸ The income tax's incentive to increase pre-tax risk-taking causes the income tax to counterbalance collective biases in the market in a way that neither the consumption tax⁵⁹ nor the wealth tax⁶⁰ does. The market corrective nature of the income tax is worthy of celebration. Like a vestibular system for the economy, the income tax helps achieve balance.

Before proceeding with the argument that predictable investor responses to an income tax help mitigate widespread biases observed in the market, a word of caution is appropriate. The observation that there are widespread biases demonstrates that investors do not engage in fully rational, utility-maximizing behavior. If they did, it would follow that they would ramp up their pre-tax risk by $1/(1-\text{tax rate})$. But it would also follow that they would not demand an excess risk premium, engage in narrow framing, or demonstrate the disposition effect. This Article does not assume fully rational, utility-maximizing behavior, and thus cannot assume that investors will fully ramp up their risk in response to an income tax.

Instead of assuming that investors will fully ramp up their pre-tax investment risk to avoid the "bite" of the income tax, this Article has five responses to the probability that many investors will fail to do so. First, if many investors fail to ramp up or only partially ramp up their pre-tax investment risk, then orthodox economics should view this "failure" of the income tax as a success—a tax's failure to change investment behavior is, in the view of orthodox economics, non-distortive.⁶¹ Second, if some investors even partially ramp-up their pre-tax investment risk to decrease the bite of the income tax, then its imposition beneficially—if incompletely—helps balance existing anti-risk biases in the market. This effect might be strengthened through taxpayer

term corporate bond strategy [for a twenty-five year career]."); *id.* at 72–73 ("Despite the fact that stocks have outperformed bonds over long holding periods, many people saving for retirement use bonds or savings accounts as accumulation vehicles. The same is true for many other investors with presumably long horizons such as universities and foundations."); *id.* at 75 ("[T]he result implies a massive, and highly costly, degree of ignorance and irrationality on the part of investors."); *infra* note 104 and accompanying text.

58. See, e.g., MaCurdy & Shoven, *supra* note 57; *infra* note 104 and accompanying text; Hui Guo, *A Simple Model of Limited Stock Market Participation*, 83 FED. RES. BANK ST. LOUIS REV. 37, 37 (2001) (suggesting that "many people do not hold stocks" even though "stocks outperform government bonds by a large margin" because of "market imperfections" including differential investment opportunities, credit market imperfections, and differential access to intergenerational wealth through inheritance); *id.* (observing that the mere 48.8% of U.S. households that own stocks are highly skewed towards households with high levels of intergenerational wealth).

59. See *infra* notes 71–72 and accompanying text.

60. See *infra* note 73.

61. See, e.g., Frank Ramsey, *A Contribution to the Theory of Taxation*, 37 ECON. J. 47, 58–60 (1927) (arguing that the most efficient taxes do not influence economic behavior); R.A. Musgrave, *A Brief History of Fiscal Doctrine*, in 1 HANDBOOK OF PUBLIC ECONOMICS 1, 25–28 (Alan J. Auerbach & Martin S. Feldstein eds., 1985) (summarizing modern efficient tax theory).

education about the possibility to and consequences of ramping up pre-tax investment risk. Third, experimental data, rather than theoretical prediction alone, demonstrates that the income tax likely causes investors to increase risk-taking.⁶² Fourth, additional features of tax law—including the realization requirement—might be used to further ramp up risk-taking if the income tax alone proved insufficient to counter existing biases. Finally, even if investor behavior was assumed to remain wholly unchanged in response to an income tax (an assumption that is undermined by the prevalence of tax planning), our fears of economic losses and our views of the income tax should soften. For example, when the government imposes a 20 percent income tax on a \$1,000 investment that might succeed and grow to \$1,200 or flop and shrink to \$900, it is easy to perceive that the government is taking a 20 percent share of the expected return on an investment in which the taxpayer risks losing \$100. However, on an after-tax basis—which is to say on the basis that matters to the investor's pocketbook—the government is taking a 20 percent share of the expected return on an investment in which the taxpayer risks losing \$80.⁶³ Knowing that we suffer economic losses neither alone nor completely hopefully makes it easier for us to both suffer economic losses and pay the income tax.

B. INCREASING INVESTMENT RISK-TAKING IS THE MAJOR FEATURE OF THE INCOME TAX

In *Is the Debate Between an Income Tax and a Consumption Tax a Debate About Risk? Does it Matter?*,⁶⁴ a canonical article in tax scholarship,⁶⁵ authors Joseph Bankman and Thomas Griffith explain that the income tax should cause taxpayers to increase the pre-tax riskiness of their investment portfolios until the

62. See *infra* Part.III.B. This effect might be strengthened through education about the possibilities for and consequences of ramping up pre-tax investment risk.

63. Similarly, while it is easy to perceive that we alone contribute the \$1,000 capital to make the investment, in many instances, we receive tax savings in the year we make an investment that equal our tax rate times the amount invested. Thus, in our example, the investment of \$1,000 would save the taxpayer \$200 in the year of investment. In this sense, on an after-tax basis, in the year of investment, we put up \$800 and the government puts up \$200 (in the form of our tax savings) of investment capital. This occurs, for example, when the income tax authorizes immediate expensing of a capital investment or an above-the-line deduction for contributions to an investment. See *supra* notes 30–31. Similarly, investments are often debt-financed. When the interest on debt that finances an investment is deductible, the government similarly shares in the cost of capital for an investment. See *supra* note 29. Finally, capital contributions are close-to-proportionately shared when an investment is funded using unrealized appreciation or retained corporate earnings. See *supra* notes 33–34.

64. Joseph Bankman & Thomas Griffith, *Is the Debate Between an Income Tax and a Consumption Tax a Debate About Risk? Does it Matter?*, 47 TAX L. REV. 377 (1992).

65. Joseph Bankman and Thomas Griffith credit Professor Barbara H. Fried for making many of the same points in an article published the same year. *Id.* (recognizing Professor Fried's work in *Fairness in the Consumption Tax*, 44 STAN. L. REV. 961 (1992)).

point that their after-tax risk and return match their preferences.⁶⁶ Thus, to track the example above, if an investor wishes to have an expected return of \$50 from risking \$1,000 turning into either \$1,200 or \$900, that investor should ramp up the riskiness of their pre-tax investment by $1/(1-\text{tax rate})$ to achieve the equivalence described above. Bankman and Griffith note that such equivalence is not precisely available because a \$50 expected return is not solely the market's compensation for risk-bearing, which can be ramped up, but also the market's compensation for timing.⁶⁷ Even if an investor was guaranteed, for example, to receive \$1,200 from an investment of \$1,000, the market would need to compensate that investor for the delay between the investment of \$1,000 (time 1) and the receipt of \$1,200 (time 2). The riskless rate of return, which compensates for delay in the use of investment funds, cannot be ramped up unless the investor agrees to bear a commensurate further delay. However, as the authors explain, the main feature of an income tax is to ramp up risk, while the role of the riskless rate of return is minor by comparison.

Over the past sixty years [1932-1992], the real, riskless rate of return has been near zero; substantially all of the real return has been attributable to investment risk. The riskless rate of return is higher today than it has been in the past and may be higher still in future years. Nonetheless, it seems likely that the bulk of real return on investments such as common stock will continue to reflect compensation for risk, rather than deferral. The debate between the income tax and a consumption tax may be restated, in large part, as a debate over the manner in which the two tax bases treat risky investments⁶⁸

An investor who ramps up the riskiness of their investments on a pre-tax basis can “offset the effects of government taxation of the risk premium”⁶⁹ such that the income tax will only take a bite out of their riskless return. Assuming that investors will ramp up their investments, this means that the income tax only takes a bite out of a small portion of the overall investment return.⁷⁰

66. Bankman & Griffith, *supra* note 64; see also David A. Weisbach & Joseph Bankman, *The Superiority of an Ideal Consumption Tax over an Ideal Income Tax*, 58 STAN. L. REV. 1413, 1416 (2006) (“There is a long line of literature showing that ideal, flat-rate income and consumption taxes treat risky returns and economic profits the same way, leaving the risk-free rate of return as the only difference.”).

67. See Bankman & Griffith, *supra* note 64, at 397 (“In most years, there is a positive real, riskless interest rate and this rate cannot be offset by portfolio adjustments. However, this rate historically has been near zero.”).

68. Bankman & Griffith, *supra* note 64, at 403; see also *id.* at 387–88 (“The most recent and widely cited study to use this methodology [which isolates the premium received for deferral and no default risk] to determine the components of investment return found that during the years 1926-1989, the average riskless, real rate of return was just [0].5%. This same study estimated the annual inflationary return, or premium at 3.1% and the annual risk premium for investment in Standard and Poor’s composite index of common stocks at 6.5%. . . . The studies, therefore, do not accurately isolate the premium received for deferral alone. These earlier studies are perhaps responsible for the widespread belief that the long-term riskless rate of return has been significantly positive.”).

69. Bankman & Griffith, *supra* note 64, at 378.

70. *Id.*

Investors can adjust their investment portfolios to eliminate the tax on their risk premium (the bulk of the investment return) and suffer only the tax on their riskless rate of return. Thus, Bankman and Griffith argue that whether the income tax is justified depends *not* on whether taxation of the risk premium is justified (a static and illusory measure) but on whether its predictable consequence of ramping up risk in investment portfolios (a dynamic measure) is desirable.⁷¹ Although Bankman and Griffith focused on the debate between an income tax and a consumption tax, as between an income tax and a wealth tax, similar considerations apply.⁷² Whether compared to a consumption tax or a wealth tax, the primary difference is the income tax's predictable consequence of ramping up risk in investment portfolios.⁷³

Bankman and Griffith conclude their article with a brief discussion of "whether paternalistic or altruistic concerns favor increased . . . risk taking."⁷⁴

71. The debate over the desirability of the income tax was reframed in the way Bankman and Griffith hoped. See, e.g., Adam H. Rosenzweig, *Imperfect Financial Markets and the Hidden Costs of a Modern Income Tax*, 62 SMU L. REV. 239, 242 n.7 (2009) ("The taxation and risk literature has made an invaluable contribution to understanding the nature, incidence, and distributive impact of an income tax, and has served as the foundation for the modern choice of tax base debate. Proponents of replacing the income tax with a consumption tax contend that this model establishes that an income tax is both ineffective in raising necessary revenue and inefficient in trying to tax returns on capital investment. Proponents of the income tax counter that abandoning an income tax could violate norms of distributive justice inherent in an income tax, under the theory that those with little to no capital investments—mostly working poor—would be forced to bear a greater proportion of the total tax burden. Regardless, due to the results of this model, the debate over income versus consumption tax has primarily focused on the taxation of risk.").

72. Kaplow, *supra* note 28, at 789 (demonstrating that a taxpayer's after-tax returns and the government's tax receipts can be made the same whether the tax system is a one-period capital income tax or an ex-ante wealth tax); Robin Morgan, *Are There Differences Between Wealth and Income Taxation? Yes, But Less Than We Think*, 76 TAX L. REV. 325, 327 ("I find that distinctions between wealth and capital income taxes have been dramatically overstated such that the discussion has largely been a debate of semantics rather than one of substance. The two taxes are almost completely equivalent."); *id.* at 329 ("The first and most important takeaway is that there are virtually no differences between income and wealth taxation. . . . This means that the growing debate on whether to tax wealth or income has limited implications for tax policy, though it may have value in terms of galvanizing the public and generating the necessary political capital for wholesale legal reform.").

73. Morgan, *supra* note 72, at 330 ("[W]ealth taxes are almost completely equivalent to capital income taxes, with the main difference being that a wealth tax encourages less private risk-taking and lowers demand for risky assets compared to an otherwise equivalent income tax."); *id.* at 345–46 ("It has been argued that wealth taxation causes taxpayers to engage in riskier investment behavior. . . . Despite [that] intuition being wrong, there is nonetheless a difference in aggregate risk-taking under a wealth tax compared to an otherwise equivalent capital income tax. The direction of the incentive, however, is exactly in the opposite direction as suggested by the above argument. Rather than encouraging risk-taking, a wealth tax would instead result in less aggregate risk-taking compared to the capital income tax."); *id.* at 347 ("To see how the gross-up is smaller under the wealth tax, note that through the application of Domar-Musgrave to both wealth and income taxation, taxpayers can undo the effects of a tax such that they are in the same after-tax position regarding returns and risks compared to the no-tax scenario. Since the wealth tax has a larger base than the income tax, measuring an asset's total value rather than simply its return, this means that the otherwise equivalent wealth tax rate is lower compared to the income tax rate. The direct result of the comparable capital income tax rate being higher is that the Domar-Musgrave gross-up will be higher under the capital income tax, hence the taxpayer will demand assets with greater return and risk.").

74. Bankman & Griffith, *supra* note 64, at 403.

If paternalistic or altruistic concerns favor increased risk-taking, then a normative income tax is desirable because it causes investors to assume more risk. If these concerns do not favor increased risk-taking, then a normative consumption tax is desirable because it does not cause investors to assume more risk.

They explain that a “paternalistic argument for increased risk taking . . . might be based on an individual’s misperception of her utility schedule,”⁷⁵ and that an individual who overestimates her declining marginal utility of money might be excessively risk-averse and as a result of “this sort of misperception will reject some gambles that would increase her expected welfare.”⁷⁶ Similarly, an individual might have an anti-loss bias causing her to fear “that she will be filled with regret if she decides to gamble and the gamble turns out unsuccessfully. If, in fact, the individual will not experience the imagined regret, then this individual, too, will turn down gambles that would increase her expected welfare.”⁷⁷ Despite identifying two potential biases that would cause individuals to make poor choices about investment risk, Bankman and Griffith find “that there is no reason to think that individuals would systematically misperceive the effects of risk taking in a way that makes gambles seem less attractive.”⁷⁸ And, even if there was such a misperception, the authors view that individual’s errors as idiosyncratic, and thus balanced by equal offsetting errors by other market actors.⁷⁹ They rely on an intuition “that most individuals select a risk portfolio based on an accurate assessment of their reaction to favorable and unfavorable outcomes, and that individuals who do not accurately gauge their reaction to such outcomes are as likely to select a portfolio with too much risk as too little risk.”⁸⁰

Similarly, they assume that increased risk-taking would not have altruistic benefits.⁸¹ Altruism is concerned with benefits to others, and Bankman and Griffith define others quite narrowly, considering whether an investor’s increased risk-taking would benefit that investor’s heirs. They find that it would not. Taking the example of an “elderly investor” who “is deciding how much of

75. *Id.* at 404.

76. *Id.*

77. *Id.*

78. *Id.*

79. The Authors view excess risk aversion as idiosyncratic. *Id.* at 404–05 (“The possibility that an individual would overestimate the rate at which the marginal utility of additional wealth declines appears balanced by the possibility that an individual would underestimate the rate of decline. For example, an individual may feel additional wealth would contribute greatly to her happiness, when in fact its contribution would be quite modest.”). The Authors also view loss aversion as idiosyncratic. *Id.* (“In a similar vein, an individual may feel that the potential loss of wealth due to an unsuccessful gamble will produce little regret when, in fact, such a loss would produce overwhelming regret.”).

80. *Id.* at 404.

81. *Id.* at 404–05.

her portfolio should consist of risky assets,” they find no reason to believe that the “investor will misperceive the beneficiaries’ preferences so as to purchase an overly safe, as opposed to overly risky portfolio.”⁸² This Article disagrees,⁸³ and importantly defines altruistic benefit more broadly.

A central claim of this Article is that increased risk-taking has significant altruistic benefits when one focuses on benefits of risk-taking to the macroeconomy, taxpayers, and the beneficiaries of government spending.

While admirably deferential, Bankman and Griffith’s assumptions that investors “are as likely to select a portfolio with too much risk as too little risk”⁸⁴ are inaccurate.⁸⁵ To the contrary, human biases cause investors to misperceive and, thus, take on too little risk. Because these biases are widespread,⁸⁶ the errors of excessively risk-averse investors are not sufficiently offset by the errors of excessively risk-seeking investors. Thus, tax policies that encourage increased risk-taking benefit individual investors⁸⁷ and the economy as a whole.

82. *Id.* at 405.

83. There are several reasons that investors take on insufficient risk while in later stages of life. Although expected utility theory provides that risk should be as attractive to younger investors as to older investors, standard financial planning advice encourages older investors to shift to bonds and other low-risk investments because they cannot “wait out” an economic downturn. *See, e.g., supra* note 57; Ryan Wesslen, Alireza Karduni, Douglas Markant & Wenwen Dou, *Effect of Uncertainty Visualizations on Myopic Loss Aversion and Equity Premium Puzzle in Retirement Investment Decisions*, 28 IEEE TRANSACTIONS ON VISUALIZATION & COMPUT. GRAPHICS, 454, 455 (2022) (“[A]sset allocation should be independent of the time horizon of the investor.”). If investors behaved this way, then Target Date retirement funds would not exist; instead “[t]his counter-intuitive notion” would have a 35-year-old and a 65-year-old investing in the same asset allocation. *Id.*

84. *See supra* note 80 and accompanying text.

85. *See, e.g.,* Brad M. Barber & Terrance Odean, *The Behavior of Individual Investors*, in 2B HANDBOOK OF THE ECONOMICS OF FINANCE, 1533, 1534 (George M. Constantinides, Milton Harris & Rene M. Stulz eds., 2013) (“A large body of empirical research indicates that real individual investors behave differently from investors in these [rational-behavior-based] models. Many investors hold under-diversified portfolios. Many apparently underinformed investors trade actively, speculatively, and to their detriment. And, as a group, individual investors make systemic, not random, buying and selling decisions.”).

86. *See, e.g.,* Stiglitz, *supra* note 20 (“Kahneman, a psychologist, has demonstrated how individuals systematically behave in ways less rational than orthodox economists believe they do. His research shows not only that individuals sometimes act differently than standard economic theories predict, but that they do so regularly, systematically, and in ways that can be understood and interpreted through alternative hypotheses, competing with those utilized by orthodox economists. To most market participants—and, indeed, ordinary observers—this does not seem like big news. Wall Street brokers who peddled stocks they knew to be garbage exploited the irrationality that Kahneman and Smith exposed. Much of the mania that led to the bubble economy was based on exploiting investor psychology.”).

87. Increased risk-taking primarily benefits the economy as a whole since, following the imposition of the income tax, individual investors who have ramped up their investments will experience near equivalence to what was demonstrated in the table on page 15. *See also* notes 54–55 and accompanying text. However, there are likely to be individual benefits because knowing that economic losses are suffered neither alone nor completely may reduce the regret felt from an economic loss. Further, associated tax law changes like enhanced loss offsets and use of the realization requirement will result in financial benefit for individual investors.

III. WE SHOULD ENCOURAGE RISK-TAKING IN OUR EXCESSIVELY-RISK AVERSE MARKET

A. INVESTORS ARE RISK AVERSE TO AN INEFFICIENT EXTENT

Humans are excessively risk averse. We demand surprisingly high rates of return in order to bear risk, and when not compensated with those high rates of return, we seek solace in low risk/low reward investments.⁸⁸ As a consequence, low risk/low reward investments are overfunded and risky projects with less-than-the-excess-premium-rewards go unfunded. When investors collectively take on too little risk, the market suffers.

1. *The Equity Premium Reflects Extreme Risk Aversion*

Historically, investors demand excessively high rates of return in order to bear risk. Economists Rajnish Mehra and Edward Prescott studied the “[o]ver ninety-year period [of] 1889-1978”⁸⁹ and found that “the average real annual yield on”⁹⁰ stocks in the S&P 500 “was seven percent, while the average yield on short-term debt was less than one percent.”⁹¹ In other words, less than one percent annually was required to compensate an investor for the time value of money (the so-called “risk free rate” of return)⁹² while an additional six percent annually (the so-called “risk premium”)⁹³ was required to compensate an investor for the displeasure of bearing the greater risk associated with S&P 500 stocks as compared to short-term debt. A greater than six percent annual risk premium was *far* larger than what standard economic models could predict. Mehra and Prescott noted “the large discrepancy between theory and observation”⁹⁴ and concluded that the magnitude of the equity premium is a “puzzle.”⁹⁵

There is good reason to initially assume that risk aversion is efficient—that it maximizes the utility of individual investors. Because risk aversion is widely shared and a matter of individual choice, there must be some wisdom to it. If we assume, as orthodox economics does, that individuals rationally maximize their expected utility, then individuals’ risk aversion is partially explained by the

88. See, e.g., *supra* notes 57–58 and *infra* notes 111, 174 and accompanying text.

89. Rajnish Mehra & Edward C. Prescott, *The Equity Premium: A Puzzle*, 15 J. MONETARY ECON. 145, 145 (1985).

90. *Id.*

91. *Id.*

92. See *id.* at 155 (“The average real return on relatively riskless, short-term securities over the 1889-1978 period was 0.8 percent.”).

93. See *id.* at 155–56 (“The average real return on the Standard and Poor’s 500 Composite Stock Index over the ninety years considered was 6.98 per annum. This leads to an average equity premium of 6.18 percent.”).

94. *Id.* at 156.

95. *Id.* at 158.

declining marginal utility of money.⁹⁶ Although an equal chance of losing \$499,900 or gaining \$500,200 has a positive expected return, many individuals rationally should reject that gamble because the pleasure they get from consuming the \$499,900 below their existing wealth exceeds the pleasure they could get from consuming \$500,200 above their existing wealth.⁹⁷ As one's wealth increases, the satisfaction derived from each additional dollar decreases. But while the declining marginal utility of money "is psychologically intuitive, and surely helps explain some of our aversion to large-scale risk . . . this theory also implies that people are approximately risk neutral when stakes are small."⁹⁸ An equal chance of losing \$100 or gaining \$200 has the same positive expected return as the larger bet, but a much smaller impact on wealth. Thus, far fewer individual investors can accurately say that the pleasure they get from consuming the \$100 below their existing wealth exceeds the pleasure they could get from consuming \$200 above their existing wealth.⁹⁹

Unfortunately, although far fewer individual investors can *accurately* say that the pleasure they get from consuming the \$100 below their existing wealth exceeds the pleasure they could get from consuming \$200 above their existing wealth, individual investors consistently avoid risk as though this was true.¹⁰⁰ The levels of risk aversion evidenced by the market-demanded risk premium¹⁰¹ and consistently exhibited by individuals toward small- and medium-sized risks are not efficient—they do not maximize the utility of individual investors.¹⁰²

96. See, e.g., Matthew Rabin, *Risk Aversion and Expected-Utility Theory: A Calibration Theorem*, 68 *ECONOMETRICA* 1281, 1281 (2000) ("Using expected-utility theory, economists model risk aversion as arising solely because the utility function over wealth is concave.").

97. See, e.g., *id.* ("We dislike vast uncertainty in lifetime wealth because a dollar that helps us avoid poverty is more valuable than a dollar that helps us become very rich.").

98. *Id.*

99. *Id.* at 1281–82 ("[A] theorem that calibrates a relationship between risk attitudes over small and large stakes . . . shows that, within the expected-utility model, anything but virtual risk neutrality over [small or] modest stakes implies manifestly unrealistic risk aversion over large stakes."); *id.* at 1282 ("[W]ithin the expected-utility framework, turning down a modest-stakes gamble means that the marginal utility of money must diminish very quickly for small changes in wealth.").

100. *Id.* at 1286 ("[E]xpected utility theory tells us that people will be virtually risk neutral in decisions on the scale of laboratory stakes," but because people consistently demonstrate high levels of risk aversion in laboratory settings, "then we know that they are not expected-utility maximizers.").

101. See, e.g., Wesslen, Karduni, Markant & Dou, *supra* note 83, at 454 ("A seminal study by Mehra and Prescott found a surprising reluctance to take on risk, in that standard economic models [including expected utility theory] could not account for the large historical premium for riskier investments."); *id.* at 455 ("Mehra and Prescott found that to account for the average 6% equity premium" the average investor would need to be 'extremely risk-averse' and 'implausibly representative.'").

102. In classical utility theory, investors must be consistent in their risk preferences. See, e.g., Christine Jolls, Cass R. Sunstein & Richard Thaler, *A Behavioral Approach to Law and Economics*, 50 *STAN. L. REV.* 1471, 1488 (1998) ("A person might be deemed rational if her behavior . . . is internally consistent"). If money has a declining marginal utility, it mustn't decline steeply sometimes, slowly other times, and occasionally not at all. Yet, Matthew Rabin and Richard H. Thaler, find that when presented with a

There is “no plausible value of risk aversion”¹⁰³ that can explain the magnitude of the market-demanded risk premium. We demand excessive compensation for bearing risk and fail to fund high risk, high reward projects when those projects fall short of the excess compensation demanded. In so doing, we forfeit significant returns. For example, “a dollar invested in stocks in 1926 would, at the end of 1997, be worth over \$1800, while a dollar invested in treasury bills would have accumulated less than \$15.”¹⁰⁴ Yet we under-invest in stocks and over-invest in lower-risk, lower-reward alternatives.¹⁰⁵

Although “expected utility theory is simply not a plausible explanation for the many instances of risk aversion that economists study,”¹⁰⁶ it persists.¹⁰⁷ It appears to persist, for example, in Bankman and Griffith’s assumptions “that there is no reason to think that individuals would systematically misperceive the effects of risk taking” and “that most individuals select a risk portfolio based on an accurate assessment of their reaction to favorable and unfavorable outcomes . . .”¹⁰⁸ To the contrary, experimental studies demonstrate that investors typically misperceive the effects of risk-taking, causing them to select an investment portfolio with too little risk.¹⁰⁹ And it appears to persist in their belief

low/moderate stakes gamble—the equal opportunity to either win \$11 or lose \$10—investors often reject the gamble, which “means that the marginal utility of money must diminish very quickly.” Rabin & Thaler, *supra* note 56, at 221. Specifically, it implies a “10 percent decline in marginal utility for each \$21 in additional lifetime wealth.” *Id.* “This rate of deterioration for the value of money is absurdly high, and hence leads to absurd risk aversion.” *Id.* at 222. For example, it should mean that “from an initial wealth level of \$340,000,” a person should turn down an equal opportunity to either win \$5.5 million or lose \$10,000. *Id.*

103. Jolls, Sunstein & Thaler, *supra* note 102, at 1485.

104. *Id.*

105. See *supra* note 58.

106. Rabin & Thaler, *supra* note 56, at 221.

107. See, e.g., Daniel Kahneman & Amos Tversky, *Prospect Theory: An Analysis of Decision Under Risk*, 47 *ECONOMETRICA* 263, 263 (1979) (“Expected utility theory has dominated the analysis of decision making under risk. It has been generally accepted as a normative model of rational choice and widely applied as a descriptive model of economic behavior.”).

108. See *supra* note 80 and accompanying text; see also Kahneman & Tversky, *supra* note 107, at 263 (explaining that in the analysis of decision making under risk, “it is assumed that all reasonable people would wish to obey the axioms of the [expected utility] theory, and that most people actually do, most of the time.”).

109. See Richard H. Thaler, Amos Tversky, Daniel Kahneman & Alan Schwartz, *The Effect of Myopia and Loss Aversion on Risk Taking: An Experimental Test*, 112 Q.J. *ECON.* 647, 657 (1997) (“The effect of myopia on risk taking was studied by compelling some subjects to adopt a nonmyopic framing of both decisions and outcomes: they had to commit themselves for multiple periods, and received feedback relatively infrequently. This manipulation also eliminated the experience of losses (by statistical aggregation), and it also increased the preference for stocks [over lower risk, lower reward bonds]. Thus, the roles of myopia and loss aversion were both confirmed.”); *Id.* at 659 (“Myopia and loss aversion may well be general features of human cognition; in general, these features do not produce good decision making. However, some features of the environment can make it easier or more difficult for myopic loss-averse investors to avoid the mistakes to which they are prone. Providing such investors with frequent feedback about their outcomes is likely to encourage their worst tendencies. The subjects in the monthly condition had more information and more freedom than the subjects in the yearly and five-yearly condition, but more is not always better. The subjects with the most data did the worst

“that individuals who do not accurately gauge their reaction to such outcomes are as likely to select a portfolio with too much risk as too little risk.”¹¹⁰ Again to the contrary, if investors were as likely to select a portfolio with too much risk as too little risk, then a market aggregate measure—like the historic risk premium—should be explainable using expected utility theory. Instead, the equity premium demonstrates that *collectively* “investors tend to hold overly conservative portfolios that provide meager payoffs over time.”¹¹¹ Risk aversion thus negatively affects the market as a whole and the returns of individual investors.

In a delightful response to the persistence of the incorrect theory that observed levels of risk aversion can be explained as an efficient method of maximizing expected utility, behavioral economists Matthew Rabin and Richard Thaler liken the theory to the parrot in the famous *Monty Python Flying Circus* sketch in which a disgruntled customer and insistent shopkeeper argue about whether the parrot that the shopkeeper nailed to a perch and sold the customer thirty minutes earlier is—in fact—dead.¹¹² “We feel much like the customer in the [*Monty Python’s Flying Circus*] pet shop, beating away at a dead parrot. . . . For nearly 50 years, economists have been fending off researchers who have identified clear departures from expected utility.”¹¹³ While expected utility theory predicts certain results, those predictions are frequently false. Investors are more risk averse than expected utility theory would imply. As Rabin and Thaler explain,

[a]ttempts to refute these problems more and more resemble the shopkeeper’s surreal denials that the parrot was dead, and attempts to ignore the problems more and more resemble the shopkeeper’s attempts to change the subject. Expected utility theory implies that people depart from risk neutrality only when facing prospects that might have a major effect on lifetime wealth. That is plainly false. In terms of mathematical elegance, tractability, and normative appeal, the expected utility model clearly has ‘beautiful plumage.’ But when the model is plainly wrong and frequently misleading, at some point economists must concede that the plumage doesn’t enter into it. Even the obstinate shopkeeper finally admitted the parrot was

in terms of money earned, since those with the most frequent data invested the least in stocks (and thus earned the least). This can occur in any domain in which losses are a factor. For example, Kahneman and Lovallo . . . show that what they call ‘narrow framing’ (e.g., evaluating projects one at a time) can induce severe risk aversion in an organizational context.”); *supra* notes 172–178 and accompanying text.

110. See *supra* note 80 and accompanying text. But see Kahneman & Tversky, *supra* note 107, at 263 (noting that there are “several classes of choice problems in which preferences *systematically* violate the axioms of expected utility theory. In light of these observations . . . utility theory, as it is commonly interpreted and applied, is not an adequate descriptive model” to explain human decision making under risk (emphasis added)).

111. Clayton Arlen Looney & Andrew M. Hardin, *Decision Support for Retirement Portfolio Management: Overcoming Myopic Loss Aversion via Technology Design*, 55 MGMT. SCI. 1688, 1688 (2009).

112. BBC, *Monty Python’s Flying Circus: Dead Parrot*, YOUTUBE (Dec. 7, 1969), <https://www.youtube.com/watch?v=4vuW6tQ0218>.

113. Rabin & Thaler, *supra* note 56, at 230.

dead and conceded: ‘I had better replace it then.’ What should expected utility theory be replaced with? We think it is clear that loss aversion and the tendency to isolate each risky choice must both be key components of a good descriptive theory” of risk aversion.¹¹⁴

While rational-behavior-based models like expected utility theory cannot explain the “extreme risk aversion”¹¹⁵ we observe in the market, the biases of loss aversion and the tendency to isolate each risky choice (also known as mental accounting or myopia) “have combined to provide a theoretical explanation of the equity premium puzzle.”¹¹⁶ The level of risk aversion we consistently observe in laboratory settings and in the macroeconomy appears to result from these widely-shared human biases.¹¹⁷ Indeed, when the behavior of a representative human investor with these biases is modeled, instead of the hypothetical utility-maximizing investor, the equity premium is no longer puzzling.¹¹⁸

114. *Id.*; see also Rabin, *supra* note 96, at 1282–83 (“[T]his and previous papers make clear that expected-utility theory is manifestly not close to the right explanation of risk attitudes over modest stakes . . . it can be very misleading.”).

115. See, e.g., Joshua D. Coval & Tyler Shumway, *Do Behavioral Biases Affect Prices?*, 60 J. FIN. 1, 6 (2005) (“Perhaps the most salient feature of prospect theory is that of extreme risk aversion.”).

116. See, e.g., Michael S. Haigh & John A. List, *Do Professional Traders Exhibit Myopic Loss Aversion? An Experimental Analysis*, 60 J. FIN. 523, 530–31 (2005) (“Two behavioral concepts, loss aversion and mental accounting [aka the tendency to isolate each risky choice or each investment], have recently been combined to provide a theoretical explanation of the equity premium puzzle. Although only a few empirical tests have been carried out to explore the predictive power of the theory, the experimental tests to date have provided results consistent with the theory To provide initial insight into the robustness of the extant literature, we recruited futures and options traders to participate in an experiment. Making use of undergraduate students as our control group, we find an unexpected result: While the data suggest that both traders and students exhibit investment behavior in line with MLA, traders exhibit this behavior to a *greater* extent than students. At a fundamental level, this result is important, since our traders, who are vital components of the price discovery process, exhibit more evidence of this type of behavior than any other subject pool that has been evaluated to date . . . our findings suggest that expected utility theory may not model professional traders’ behavior well, and this finding lends credence to behavioral economics and finance models, which are beginning to relax inherent assumptions used in standard financial economics.” (emphasis added)).

117. See, e.g., Jolls, Sunstein & Thaler, *supra* note 102, at 1488 (“[S]cholars have documented departures from expected utility theory for nearly fifty years, and prospect theory seems to predict behavior better.”); *id.* (“A person might be deemed rational if her behavior (1) conforms to the axioms of expected utility theory, (2) is responsive to incentives, . . . (3) is internally consistent, (4) promotes her own welfare, or (5) is effective in achieving her goals We observe departures from most of these definitions” thus, instead of relying on rational behavior-based models, the law should account for humans’ actual behavior.”).

118. Coval & Shumway, *supra* note 115, at 6–7 (“Benartzi and Thaler (1995) and Barberis et al. (2001) model the behavior of a representative investor with such preferences [consistent with prospect theory] and generate implications that help account for the equity premium puzzle.”).

2. *The Biases of Relativity and Loss Aversion*

Humans collectively and predictably make relative assessments of risk and seek to avoid losses far more than we seek to obtain gains of equal amounts. This makes us highly risk averse.¹¹⁹

Cognitive Psychologist Laurie Santos explains that individuals do not select a risk portfolio that accurately maximizes our utility, nor are we as likely to select too little risk as too much. Indeed humans—and even our primate “evolutionary relatives,”¹²⁰ capuchin monkeys—instead predictably make bad decisions against efficient risk-taking. We are far more fearful of losses than of equal size gains. In a famous TED Talk, Dr. Santos explains, “most of us, when put in certain contexts, will actually make very specific mistakes. The errors we make are . . . predictable, [w]e make them again and again, . . . [and our errors are] immune to lots of evidence.”¹²¹ Humans are so committed to our own errors that Professor Santos wonders “how is a species that’s as smart as we are capable of such bad and such consistent errors all the time?”¹²²

Dr. Santos presented a hypothetical where each audience member receives \$1,000 for certain, plus an option to either get \$500 extra for certain or an equal chance of either \$1,000 extra or \$0 extra. Humans generally prefer the \$1,500 for certain over the equal chance of either \$2,000 or \$1,000.¹²³

However, when we are presented the same choice, framed differently, our biases are revealed. Imagine, Dr. Santos prompts, that each audience member receives \$2,000. But there is a catch. Each member must either give back \$500 for certain or take an equal risk of losing either \$1,000 or \$0. Framed this way, humans generally prefer the equal chance of either \$2,000 or \$1,000 over the certain \$1,500.¹²⁴ While the numeric outcomes are identical, human preferences flip depending on how the choice is framed.

119. *Id.* at 6 (arguing that prospect theory, which encompasses both relativity and loss aversion biases explains humans’ “extreme risk aversion”).

120. See Laurie Santos, *A Monkey Economy as Irrational as Ours*, TED, at 2:13–4:36 (July 29, 2010), https://www.ted.com/talks/laurie_santos_a_monkey_economy_as_irrational_as_ours (explaining that the brown capuchin monkey is “a really really distant, but albeit evolutionary, relative” to humans and that by studying monkeys, researchers hope to understand whether the common errors that humans make regarding economics and risk-taking are due to human processing biases or due to complicated financial environments that introduce these errors).

121. *Id.* at 1:40–2:00.

122. *Id.* at 2:00–2:13.

123. *Id.* at 10:38–11:30.

124. *Id.* at 11:30–12:08.

Humans generally flip preferences due to prospect theory,¹²⁵ which is “the result of at least two biases that we have at the psychological level:”¹²⁶ relativity and loss aversion. First, “we have a really hard time thinking in absolute terms.”¹²⁷ Thus, we often fail to recognize that each choice is between \$1,500 for certain or an equal chance of either \$2,000 or \$1,000. “Instead, we find it very easy to think in very relative terms”¹²⁸ and we go to great lengths to avoid the perception of a loss.¹²⁹ The moment of imagining receiving \$2,000 makes us change our reference point to one from which we try to avoid any loss. Our framing bias, thus, decides the baseline that divides perceived losses from perceived gains. Instead of evaluating the absolute merits of an outcome, we evaluate an outcome relative to our selected baseline. Second, we are loss averse. “[W]e really hate it when things go into the red.”¹³⁰

In an ingenious experiment, Dr. Santos trained capuchin monkeys in currency and exchange,¹³¹ and “gave the monkeys the same kinds of problems that humans tend to get wrong in certain kinds of economic challenges.”¹³² She found that monkeys “do the same irrational thing that people do.”¹³³ Like humans, monkeys evaluate financial decisions “in relative terms and actually treat[. . .] losses differently than they treat gains.”¹³⁴ Unfortunately, discovering that monkeys “systematically get things wrong in the same ways that we do”¹³⁵ may mean that our shared errors of relativity and loss aversion are not just biases

125. Prospect theory finds that attitudes towards equal amounts of risk depend on whether individuals face potential gains or potential losses. Potential losses are suffered more than equal potential gains are enjoyed. Thus, an individual’s choice about whether to bear risk depends on what the individual perceives as a loss. Current wealth often creates the framing against which losses are perceived; however, sometimes expectations create that framing as well. *See, e.g.,* Kahneman & Tversky, *supra* note 107, at 263–91.

126. Santos, *supra* note 120, at 12:41–12:46.

127. *Id.* at 12:47–12:50.

128. *Id.* at 12:51–12:58.

129. *Id.* at 13:00–13:13.

130. *Id.* at 13:13–13:19; *see also id.* at 13:15–13:52 (“We really hate it when we have to lose out on some money. And this means that sometimes we’ll actually switch our preferences to avoid this. What you saw in that last scenario is that subjects get risky because they want the small shot that there won’t be any loss. That means when we’re in a . . . loss mindset, we actually become more risky, which can actually be really worrying. These kinds of things play out in lots of bad ways in humans. They’re why stock investors hold onto losing stocks longer—because they’re evaluating them in relative terms. That’s why people in the housing market refused to sell their house—because they don’t want to sell at a loss.”).

131. *Id.* at 5:38–6:01; *id.* at 7:39–7:42 (“And so our monkey marketplace was born.”).

132. *Id.* at 10:23–10:33.

133. *Id.* at 15:53–15:59.

134. *Id.* at 16:00–16:11; *see also id.* at 14:30–14:47 (explaining that when monkeys start with a certain 1 grape—like when humans start with a certain \$1,000—they prefer certain additions of 1 grape—like humans prefer certain additions of \$500—to the equal chance of an addition of either 0 or 2 grapes); *id.* at 15:20–15:44 (explaining that, in a reversal of their risk/reward preferences, when monkeys start with 3 grapes—like when humans start with \$2,000—they work hard to avoid perceived losses and prefer the equal chance of a loss of either 0 or 2 grapes to the certain loss of 1 grape).

135. *Id.* at 16:24–16:28.

but “biological limitations.”¹³⁶ Dr. Santos analogizes these biases to humans’ “evolutionary predilection for sweet things, fatty things like cheesecake.”¹³⁷ Although these predilections do not currently serve us well, they appear to be widely-shared and extremely durable. “In fact, they might be due to the very nature of our evolutionary history. . . and, if we believe the capuchin monkey results, [it] means that these duncey strategies might be 35 million years old.”¹³⁸ Dr. Santos concludes,

the irony is that it might only be in recognizing our limitations that we can really actually overcome them. The hope is that you all will think about your limitations, not necessarily as unovercome-able, but to recognize them, accept them and then use the world of design to actually figure them out. That might be the only way that we will really be able to achieve our own human potential¹³⁹

Although the biases, or biological limitations, of relativity and loss aversion are pervasive and persistent in human and even primate decision making regarding risk, this Article will argue that an income tax according to which losses are deducted at the same rate as gains are taxed—which is to say a tax that makes our losses easier to bear—can be part of the world we design to offset them. A tax according to which the government shares in every investment risk we take can mitigate the biases that currently harm us. First, however, it will argue that highly trained economists behave like monkeys, just like the rest of us do.

3. *Myopic Loss Aversion*

Myopia—the human tendency to evaluate economic choices involving risk from a narrow frame—is pervasive and inflates our already high levels of risk aversion. When we isolate economic choices, instead of evaluating them in the context of our entire economic portfolio, we are far less willing to bear risk in exchange for reward. Myopia also causes us to evaluate investments over a short evaluation period even when our investment horizon is long. Unfortunately, myopia discourages risk-taking and causes us to invest in overly conservative portfolios that deprive us of returns and collectively slows macroeconomic growth.

The human tendency to isolate each risky choice is expressed not only in aggregate measures—like the equity risk premium¹⁴⁰—but in the risk

136. *Id.* at 18:30–18:35.

137. *Id.* at 17:30–17:40.

138. *Id.* at 17:00–17:20.

139. *Id.* at 18:52–19:17.

140. *See supra* notes 115–118 (noting that the magnitude of the equity premium can be explained by observed levels of loss aversion and the tendency to isolate each risky choice).

preferences of highly trained economists.¹⁴¹ Paul Samuelson's short but influential essay "Risk and Uncertainty: A Fallacy of Large Numbers" opens with a conversation:

a few years ago, I offered some lunch colleagues to bet each \$200 to \$100 that the side of a coin they specified would not appear at the first toss. One distinguished scholar . . . gave the following answer: 'I won't bet because I would feel the \$100 loss more than the \$200 gain. But I'll take you on if you promise to let me make 100 such bets.'¹⁴²

In sum, Samuelson's colleague ("SC")¹⁴³ refused an equal chance of either losing \$100 or gaining \$200 but would have accepted one hundred such chances. Samuelson responded by publishing a proof showing this was irrational.¹⁴⁴ In Samuelson's view, SC should have rejected one hundred bets because with one hundred bets, SC's total risk of loss increases.¹⁴⁵ "Thus, if you would always [at any wealth level] refuse to take favorable odds on a single [coin] toss, you must rationally refuse to participate in any (finite) sequence of such tosses."¹⁴⁶ Samuelson explains that adding new risks—the risks of losses occurring from the 2nd through 100th coin flip—does not increase utility; only subdividing (also known as spreading) risks does.¹⁴⁷ By using expected utility theory and assuming that SC had rationally rejected the single bet, Samuelson concluded that SC should also reject one hundred such bets. Failing to do so was, as the title suggested, "a fallacy of large numbers."¹⁴⁸

SC, "an MIT economics professor, presumably no fool,"¹⁴⁹ expressed preferences that many share.¹⁵⁰ The simplest explanation for SC's preferences is

141. See also Haigh & List, *supra* note 116 (describing study in which professional futures and options traders exhibited greater myopic loss aversion than did undergraduate students).

142. Samuelson, *supra* note 43, at 108–09.

143. The distinguished scholar who rejected the single bet but sought multiple bets has been referred to as SC (Samuelson's colleague), a convention that this Author will follow. See, e.g., Shlomo Benartzi & Richard H. Thaler, *Risk Aversion or Myopia? Choices in Repeated Gambles and Retirement Investments*, 45 MGMT. SCI. 364, 365 (1999) (following that convention).

144. Samuelson, *supra* note 43, at 111 ("[Providing the proof that] if you would always refuse to take favorable odds on a single toss, you must rationally refuse to participate in any (finite) sequence of such tosses.").

145. *Id.* at 109.

146. *Id.* at 111.

147. *Id.* at 112 ("Undoubtedly this is what my colleague really had in mind. In rejecting a bet of \$100 against \$200, he should not then have specified a sequence of 100 such bets. That is adding risks. He should have asked to subdivide the risk and asked for a sequence of 100 bets, each of which was 100th as big (or \$1 against \$2). If the money odds are favorable and if we can subdivide the bets enough, any expected-utility-maximizer can be coaxed into a favorable-odds bet - for the obvious reason that the utility function's curvature becomes more and more negligible in a sufficiently limited range around any initial position. For sufficiently small bets we get more-than-a-fair game in the utility space, and my basic theorem goes nicely into reverse.").

148. *Id.* at 108.

149. Benartzi & Thaler, *supra* note 143, at 365.

150. See, e.g., Lola L. Lopes, *Notes, Comments, and New Findings Decision Making in the Short Run*, 7 J. EXPERIMENTAL PSYCH.: HUM. LEARNING AND MEMORY 377, 380 (1981) (arguing that it is human that "[i]n

that they demonstrate loss aversion coupled with his isolation of the risky opportunity from the rest of his economic portfolio.

Loss aversion is “empirically the most firmly established feature of risk preferences”¹⁵¹ and holds “that people are significantly more averse to losses relative to the status quo than they are attracted by gains. . . .”¹⁵² Scholars have estimated the *typical* “loss-aversion-to-gain-ratio to be about 2:1”¹⁵³ Stated differently, “losses are weighted about twice as much as gains”¹⁵⁴ SC, in rejecting the single bet, perceives that he would “feel the \$100 loss more than the \$200 gain.”¹⁵⁵ Although this perception is common, there is significant evidence that it stems from human limitations in framing decisions about economic risk rather than from a rational process of maximizing utility.

Although the declining marginal utility of money can explain some loss aversion, it is far from explaining this magnitude of loss aversion. For example, if the utility of dollars declined as quickly as the rejection of this bet indicates,

evaluating gambles such as these, we do not consider the large amounts that we are prodigiously unlikely to get but, rather, consider the amounts that we are likely to get most of the time.”); *id.* at 385 (emphasis added) (arguing that many humans will consider the “probability of coming out ahead” in addition to seeking greater utility); *id.* (concluding that it is expected utility theory—rather than SC’s expressed preferences—that needs to change because although there is “little doubt that a revision of our conception of rationality along such lines may be displeasing to some because of its inelegance, its vagueness, and its essentially inductive character, this may be the price that has to be paid if we are to have the kind of useful decision technology that captures and clarifies the concerns of real people in real environments.”). Now, gentle reader, you may be thinking that you would take a single bet of a 50% +\$200 or 50% -\$100. Thus, there would be no inconsistency in you also taking 100 such bets. However, this Author wonders if your (admittedly more risk tolerant than SC) preferences might still prove the point that risk can be tolerated more comfortably with larger numbers because larger numbers dramatically improve both expected returns and the chance of coming out in the black. Ask yourself if there is a point at which you would turn down an individual fair bet with a positive expected return. This Author confesses that she would turn down an individual bet of 50% +\$120 or 50% -\$100. And yet, like SC, she would eagerly accept 100 such bets and even more eagerly accept 1,000 such bets. For this Author as for SC, it would always be preferable to be in the repeat bet scenario, always preferable to have a higher number of repeat bets, and even preferable to not have to suffer by watching individual losses as the repeat bets were tallied. As long as one agrees that for any bet with a positive expected return, repeat bets are preferable, higher numbers of repeat bets are even more preferable, and avoiding the emotion of focusing on individual losses improves investment outcomes, then the point of this Section should hold.

151. Rabin, *supra* note 96, at 1288 (“Indeed, what is empirically the most firmly established feature of risk preferences, loss aversion, is a departure from expected-utility theory that provides a direct explanation for modest-scale risk aversion.”).

152. *Id.*

153. *Id.* at 1288 n.13 (citing Amos Tversky & Daniel Kahneman, *Loss Aversion and Riskless Choice—A Reference-Dependent Model*, 106 Q.J. ECON., 1039, 1053–54 (1991)) (“Tversky and Kahneman (1991) and others have estimated the loss-aversion-to-gain-ratio to be about 2:1.”); Daniel Kahneman & Dan Lovallo, *Timid Choices and Bold Forecasts: A Cognitive Perspective on Risk Taking*, 39 MGMT. SCI. 17, 18 (1993) (observing that loss aversion “coefficients in the range of 2 to 2.5 have been observed in several studies, with both risky and riskless prospects.”).

154. Benartzi & Thaler, *supra* note 143, at 365.

155. See *supra* note 142 and accompanying text.

then SC should also reject “a 50-50 chance to lose \$200 or win \$20,000.”¹⁵⁶ Thus, although loss aversion is irrational at observed levels, it is a pervasive and significant bias.

However, even irrationally high levels of loss aversion do not explain why SC would reject a single bet and accepted one hundred bets.¹⁵⁷ For this, we need “myopic” loss aversion. It appears that SC’s decision-making was myopic because he evaluated “the [single] gamble at too close a cognitive distance” before rejecting it.¹⁵⁸ Had he “incorporated the gamble into his wealth[,] he likely would have accepted it.”¹⁵⁹ This would involve SC considering whether he would accept the equal chance of either having his “current wealth plus \$200”¹⁶⁰ or his “current wealth minus \$100.”¹⁶¹ Eminent professors like SC “can surely afford a loss of \$100.”¹⁶² “Indeed, he probably *was* playing a less attractive version of this bet every day (passively) simply by holding some of his retirement portfolio in stocks.”¹⁶³ Proposing 100 risky bets allowed the risk to be evaluated in a broader context.¹⁶⁴ Thus, authors Shlomo Benartzi and Richard Thaler conclude that while SC’s preferences are common and understandable,¹⁶⁵ they nonetheless reflects biases. In rejecting the single bet, “SC fell victim to . . . myopic loss aversion.”¹⁶⁶ Had SC framed the single bet as offering equal opportunities for his current wealth plus \$200 or his current wealth minus \$100, he would have recognized the risk as acceptable.¹⁶⁷ But by isolating the risky choice, he perceived the risk as unacceptable.¹⁶⁸

156. Benartzi & Thaler, *supra* note 143, at 365 n.3 (“In fact, Rabin (1997) uses the same assumptions as Samuelson to show that a rational individual who turns down one play of the \$200/\$100 bet must also turn down a 50-50 chance to lose \$200 or win \$20,000. His results depend only on concavity. Rabin’s conclusion, like ours, is that turning down a single bet must be wrong.”).

157. As Samuelson notes, 100 bets increase the total risk of loss. *See supra* note 145 and accompanying text.

158. Benartzi & Thaler, *supra* note 143, at 365.

159. *Id.*

160. *Id.*

161. *Id.*

162. Amos Tversky & Maya Bar Hillel, *Risk: The Long and the Short*, 9 J. EXPERIMENTAL PSYCH.: HUM. LEARNING, MEMORY & COGNITION 713, 717 (1983).

163. Benartzi & Thaler, *supra* note 143, at 366.

164. *See id.* at 365 (“The other sense in which turning down one bet is myopic is that if Samuelson offered a single play of the bet every day at lunch SC would never get to his desired portfolio of 100 bets unless he was willing to take the first one.”).

165. *Id.* at 365 (“Of course, SC’s choices *are* understandable. The one-shot gamble entails a 50% chance of going home and explaining a loss of a nontrivial sum of money . . . ; on the other hand, the series of 100 bets offers an expected gain of \$5000 and a chance of losing money of less than half a percent.”).

166. *Id.*

167. *See* Tversky & Bar Hillel, *supra* note 162, at 717 (“Following prospect theory and the analysis of framing, we propose that this phenomenon of loss aversion is induced by framing the choice so that the status quo serves as a reference point and the outcomes are evaluated as a gain of 200 and a loss of 100, not as asset positions of $w[\text{ealth}] + 200$ and $w[\text{ealth}] - 100$.”).

168. *Id.*

Humans demonstrate that our already high risk aversion is inflated by evaluating economic decisions at “too close a cognitive distance.”¹⁶⁹ Our myopia is powerful and harmful. Thus, for example, having an evaluation period that is shorter than our investment horizon¹⁷⁰ generally causes humans to perceive stocks and other higher-risk, higher-reward investments as unattractive even though “stocks become more attractive as the evaluation period increases.”¹⁷¹ In fact, researchers estimate that the historic equity risk premium, of about 6.5 percent,

is consistent with an evaluation period of one year. If the evaluation period were two years, the equity premium would fall to 4.65 percent. For five, ten, and twenty-year evaluation periods, the corresponding figures are 3.0 percent, 2.0 percent, and 1.4 percent. One way to think about these results is that for someone with a twenty-year investment horizon, the psychic costs of evaluating the portfolio annually are 5.1 percent per year! That is, someone with a twenty-year horizon would be indifferent between stocks and bonds if the equity premium were only 1.4 percent, and the remaining 5.1 percent is potential rents payable to those who are able to resist the temptation to count their money often. In a sense, 5.1 percent is the price of excess vigilance.¹⁷²

Even viewing investment returns over too short an evaluation period causes us to skew retirement investments too conservatively. For example, studies show that when we are presented with thirty-year returns for a portfolio of stocks versus a portfolio of bonds, we allocate 81 percent of our total retirement account to stocks, whereas when presented with one-year returns on the same portfolios, we allocate only 63 percent to stocks.¹⁷³ Viewing investment returns for a time horizon that is shorter than our investment horizon, like considering investment decisions in isolation, exacerbates human biases in favor of “overly conservative

169. See *supra* text note 158 and accompanying text.

170. See Shlomo Benartzi & Richard H. Thaler, *Myopic Loss Aversion and the Equity Premium Puzzle*, 110 Q.J. ECON. 73, 80 (1995) (observing that errors of insufficient risk-taking are especially likely when an investor's horizon is long but their evaluation period is short, for example, “[a] young investor” who is “saving for retirement 30 years off in the future, but nonetheless” experiences “the gains and losses of his investment every quarter when he opens a letter from his mutual fund” is likely to take on too little risk).

171. *Id.* at 86.

172. *Id.* at 86–87; see also Jeremy J. Siegel & Richard H. Thaler, *Anomalies: The Equity Premium Puzzle*, 11 J. ECON. PERSPS. 191, 197 (1997) (“When investors have loss averse preferences, their attitude towards risk depends crucially on the time horizon over which returns are evaluated. For example, an investor with these preferences who computed the value of her portfolio every day would find investing in stocks very unattractive, since stock prices fall almost as often as they rise on a daily basis, and losses are psychologically doubled.”); *id.* (contrasting the “every day” evaluator with an investor who evaluated returns over a 20-year period and finding that the latter would find stocks highly attractive).

173. See Benartzi & Thaler, *supra* note 143, at 385.

portfolios”¹⁷⁴ and causes us to earn less.¹⁷⁵ Insufficient risk-taking in retirement accounts is one of the many domains in which humans’ excess risk aversion harms us.¹⁷⁶ In contrast, when we avoid myopic framing, our “extreme aversion to risk is reduced or eliminated.”¹⁷⁷

B. THE INCOME TAX CORRECTS RISK AVERSION’S DISTORTION OF THE MARKET

Luckily, although myopic loss aversion discourages investors from taking on efficient levels of investment risk, inflates the risk premium, and prevents the funding of projects whose returns fail to meet that inflated premium, real-world data encouragingly demonstrates that an income tax can help mitigate these distortions. By mitigating myopic loss aversion and the excess risk aversion that it causes, the income tax improves investors’ decisions about which investments to fund.

That investors in the real world ramp up their risk in response to an income tax according to which losses are deducted at the same rate as gains are taxed should not be surprising. Part II.A above detailed how an income tax with full loss offsets encourages higher risk, higher reward investing. The risk-ramp-up consequences of the income tax have been replicated in a variety of economic models over decades.¹⁷⁸ As Part II.B above describes, increasing risk-taking is the major feature of the income tax and what primarily distinguishes the income

174. Looney & Hardin, *supra* note 111, at 1688 (“[I]nvestor conservatism diminishes when . . . [they are presented] prospective probabilities and payoffs over long time horizons. In contrast, short-term information horizons constitute a major stumbling block for investors. However, when confronted with short-term information horizons, risk aversion can be successfully counteracted by . . . [designs that] either restrict the frequency of decisions or suggest a relatively aggressive portfolio allocation.”).

175. Gary Charness & Uri Gneezy, *Portfolio Choice and Risk Attitudes: An Experiment*, 48 *ECON. INQUIRY* 133, 136 (2010) (“[I]nvestors are more willing to invest a greater proportion of their portfolio in risky assets if they evaluate their investments less frequently; people who received the most frequent feedback took less risk and earned less money.”).

176. See Benartzi & Thaler, *supra* note 143, at 380 (“The findings are particularly important (and troubling) in the practical domain we have investigated, asset allocation in pension plans.”).

177. See Tversky & Bar Hillel, *supra* note 162, at 717.

178. For a history of the economic modeling of the effects of taxation on risk-taking leading up to and following Domar-Musgrave, see M.G. Allingham, *Risk-Taking and Taxation*, 32 *J. ECON.* 203, 204 (1972); Martin Feldstein, *Personal Taxation and Portfolio Composition: An Econometric Analysis*, 44 *ECONOMETRICA* 631, 632 (1976) (“Early results by Tobin, Hall, and Richter based on expected utility maximization supported the original conclusion of Domar and Musgrave that taxation increases the demand for the risky asset.”). *But see id.* (“the generality of this result was later challenged by Feldstein, Mossin, and Stiglitz who showed that the conclusion depends upon important restrictive assumptions.”).

tax from the consumption tax,¹⁷⁹ the wealth tax,¹⁸⁰ or a lump-sum tax.¹⁸¹ The income tax increases risk-taking in investments and even in entrepreneurship.¹⁸² However, people do not always act in ways that economic models predict. Thus, real-world data helps us understand the interaction between economic modeling and the human brain.

In the real world, it appears that the income tax can offset excess risk aversion, particularly when loss offsets are generous. “The most comprehensive study that has attempted to test the effect of taxes on portfolio choice found that an increase in marginal [income] taxes did, in fact, increase the allocation of portfolio capital to riskier investments.”¹⁸³ That study considered the portfolio composition¹⁸⁴ of approximately two thousand households¹⁸⁵—in particular the high-income households that have the largest investments and thus, greatest impact on what assets and projects receive investment funds—and found that “the effect of taxes on the ownership of assets is very important.”¹⁸⁶ Higher income tax rates are associated with higher risk-taking, including, for example, a 31 percent increase in the proportion of investment held in common stock (a higher-risk, higher-return asset) rather than bonds and bank accounts (very low risk, low return assets).¹⁸⁷ Thus, it appears that the “personal income tax has a very powerful effect on individuals’ demands for portfolio assets, after adjusting

179. See *supra* note 71 and accompanying text.

180. See *supra* note 73 and accompanying text.

181. E. Cary Brown, *Mr. Kaldor on Taxation and Risk Bearing*, 25 REV. ECON. STUD. 49, 51 (1957) (“[I]f it is assumed only that the investor attempts to maximize the utility from the expected income of a portfolio, and that the marginal utility of income is decreasing at a constant rate, it can be shown that there must be more risk-taking under a proportional income tax than under a lump-sum tax. By the same token, the income tax would not be neutral, as would a lump-sum tax. It would actively distort investments towards riskiness.”).

182. See, e.g., Leandra Lederman, *The Entrepreneurship Effect: An Accidental Externality in the Federal Income Tax*, 65 OHIO ST. L.J. 1401, 1402 (2004) (arguing that the U.S. federal income tax subsidizes and encourages entrepreneurial risk even more than investment risk because: 1) entrepreneurial risk is often greater than the risk of investing in “established ventures,” and 2) losses from entrepreneurial activities can often offset other income whereas investment losses are often limited by basketing rules); *id.* at 1406 (applying the Domar-Musgrave model to observe that “[i]n effect, the government subsidizes business activity by bearing a portion of the risk. It is as if the individual faced with the investment decision . . . would have a silent partner to bear a portion of any losses a business might experience.”).

183. Chorvat, *supra* note 38, at 269.

184. Portfolio composition considers the portion of investing in each of seven investment types: (1) common stock, (2) preferred stock, (3) taxable bonds, (4) state and local tax-exempt bonds, (5) U.S. savings bonds, (6) bank accounts, and (7) interests in trusts. Feldstein, *supra* note 178, at 637.

185. *Id.* at 636 (one portion of the study considered 2,557 households); *id.* at 647 (a later portion considered 1,799 of those households).

186. *Id.* at 643; (“For five of the asset types, the relation [between income tax and portfolio composition] is significant at the 95 per cent level or higher; for the remaining asset (savings bonds), the relation is significant at the 90 per cent level.”); see also *id.* at 641 (“These results stand in sharp contrast to some previous assertions that tax rates have only a small effect. The substantial increase in common stock holding at high tax rates is also contrary to the report by Butters, et al. that investors reported that high tax rates generally induced those who altered their investments to hold a more conservative portfolio.”).

187. *Id.* at 639–40.

for the effects of net worth, age, sex, and the ratio of human to nonhuman capital.”¹⁸⁸ By encouraging increased risk-taking, “[t]he current system of taxation appears to encourage a socially more productive allocation of portfolio wealth than would otherwise have prevailed.”¹⁸⁹

Real-world studies of the effects of income tax systems on risk-taking are complicated by complexities of both real-world tax systems (which exclude income, offer preferred rates for certain types of investing, and contain loss limitations), and real-world investment portfolios (which allow investments to be held in retirement accounts or other tax-deferred forms).¹⁹⁰ However, it is encouraging that “studies on portfolio choice conducted in other countries” that have income tax systems “which are in many ways closer to the Domar-Musgrave model than the United States tax system” also find that increases in income tax rates “increase the allocation of portfolio capital to riskier assets.”¹⁹¹ For example, studies from the Netherlands and Sweden, which “allow for greater use of losses to offset income than does the United States system”¹⁹² found that “increased [income] tax rates correlate with a greater investment in risky assets”¹⁹³ Thus, particularly when loss offsets are generous, real-world data indicates that the income tax mitigates myopic loss aversion by encouraging greater investment risk-taking.

188. *Id.* at 648; see also James M. Poterba, *Taxation, Risk Taking and Household Portfolio Behavior*, in 3 HANDBOOK OF PUBLIC ECONOMICS 1109, 1160 (Alan Auerbach & Martin Feldstein eds., 2002) (“The substantial theoretical and empirical literature on how taxation affects household portfolio behavior and risk-taking suggests a wide range of potential . . . [effects]. The empirical literature, while not offering universal support, generally suggests that taxation plays an important role in determining the set of assets households own, the amount that they invest in each of the available assets, when they sell assets, and the way risk is shared throughout the private economy.”); *id.* at 1110 (“taxation exerts a systematic influence on the nature of risk-taking and the structure of household portfolios.”).

189. Feldstein, *supra* note 178, at 648.

190. See, e.g., Poterba, *supra* note 188 at 1126 (“A number of empirical studies have investigated the links between the structure of household portfolios and the taxation of capital income. These studies broadly suggest that taxes do affect asset-ownership patterns” However, empirical studies are extremely difficult because 1) “there are very few datasets that include any information on the high net-worth households whose behavior is central to studies of taxation and portfolio behavior,” 2) it is difficult to measure stock ownership when some stocks are held directly and others are held through mutual funds, 3) mutual funds hold mixed assets including varying amounts of stocks and bonds, and 4) “[a]lmost no households hold” a diverse set of assets, which may impede portfolio adjustments.”).

191. Chorvat, *supra* note 38, at 269.

192. *Id.* at 269 n.206.

193. *Id.* at 269 n.207 (“Both studies took into account the effects of higher income on risk-taking; hence, they show the effect of tax rate alone.”). Although a 2017 experiment at George Mason University showed mixed results, particularly when the income tax rate was set high (for example to 60%), that study included only 75 participants. Terrence R. Chorvat, W. Gavin Ekins & Elizabeth Chorvat, *The Effect of Income Taxation on Risky Investment: An Experimental Test of the Domar-Musgrave Hypothesis* 8 (Geo. Mason Univ. L. & Econ. Paper No. 17-32, 2017), <https://papers.ssrn.com/sol3/papers.cfm>.

C. LOSS LIMITATIONS INTERFERE WITH THE CORRECTIVE POWER OF THE INCOME TAX

When a government imposes an income tax with full loss offsets (which is to say an income tax according to which all losses are deductible at the same rate as gains are taxable and without delay), that government becomes a partner in the investment. The government proportionately shares, in a share equal to the taxpayer's marginal rate, both risk and reward. Although the individual investor did not elect to have the government as their investment partner, they can nonetheless ramp up the pre-tax riskiness of their investments to nearly eliminate the net effect of tax and restore their pre-tax preferences for both risk and reward.¹⁹⁴

However, no one wants a partner who enjoys a share of returns but does not suffer that same share of losses. When upside risk is shared while downside risk is not, an individual investor will be even less willing to take on risk.

Let's return to an investor who was willing to invest \$1,000 with an equal expectation of \$1,200 or \$900. The expected return of \$50 is sufficient to compensate the investor for a 50 percent risk of a \$100 loss. However, if a 20 percent income tax is imposed on the gain of \$200, reducing that gain to \$160, but the potential loss of \$100 cannot be deducted, then the expected after-tax return is \$30.¹⁹⁵ An investor who might have accepted a \$50 expected return to bear the risk of loss is far less likely to accept a \$30 expected return to bear that same risk of loss. Since the risk of loss is born by the investor alone, ramping up the pre-tax riskiness of the investment only makes the problem worse.¹⁹⁶ Thus, an investor who must share upside risk but must also unilaterally bear downside risk is likely to seek *less* risky investments.¹⁹⁷

Not surprisingly, empirical studies demonstrate that investors decrease risk-taking in response to income taxes with loss limitations, which we will call asymmetrical income taxes. One study in the U.S. exploiting differences in state

194. The risk-free rate of return on a ramped-up investment will still cause a net effect from the imposition of tax, although this effect is likely to be small. See Bankman & Griffith, *supra* note 64, at 387–88.

195. $(\$160 \text{ (in the case of after-tax win)} - \$100 \text{ (in case of nondeductible loss)}) / 2 = \30 .

196. For example, if the investor ramped up the pre-tax riskiness of their investment by $1/(1-20\% \text{ income tax rate})$ or 125 percent, then the risk of loss increases. The investor now has a 50% chance of losing \$125 instead of just \$100. Since a \$50 expected return was necessary to compensate the investor for a 50 percent chance of losing \$100, then a more than \$50 expected return is necessary to compensate the investor for a 50 percent chance of losing \$125. Unfortunately, the expected return from the ramped-up investment is only \$37.50 (reflecting $+200 \text{ (in the case of after-tax win (a 250 win-50 tax))} / -125 \text{ (in case of nondeductible loss)}) / 2 = \37.50).

197. See, e.g., Joseph Stiglitz, *The Effects of Income, Wealth, and Capital Gains Taxation on Risk-Taking*, 83 Q.J. ECON. 263, 278 (1969) ("These results do tend to support the presumption that 'social' risk-taking will be reduced by income taxes without loss-offset provisions."); *id.* at 276 ("[I]t is easy to show that there will always be less risk-taking [in the case of a proportional income tax with no loss offsets] than with full loss-offset."); Ljungqvist, Zhang & Zuo, *supra* note 40, at 670 (hypothesizing that if losses are not deductible "firms should respond to a tax increase by choosing safer projects and thereby reducing the risks they take.").

income tax laws found that when loss limitations are imposed with an income tax, firms appear to recognize that “the government shares in a firm’s upside but not in its downside,” thus, “the average firm reduces its risk in response to a tax rate increase . . .”¹⁹⁸ Similarly, “U.S. firms reduce risk when state-level [loss] offset rules become less generous.”¹⁹⁹

Unfortunately, although firms *reduce* risk-taking when asymmetrical income tax rates increase, they do not—and sometimes cannot—*increase* risk-taking when these rates drop. Although “firms *should* respond to [such tax] cuts by increasing risk,”²⁰⁰ commitments to bondholders and other creditors may prevent this ramp up, despite its potential benefit to the firm and the macroeconomy. “As the literature on risk-shifting emphasizes, higher risk reduces the value of claims held by creditors.”²⁰¹ Bondholders and other creditors generally do not share in upside risk as much as they potentially suffer from downside risk. Thus, they have an incentive to discourage firms from taking risks. “Whether a firm can respond to a tax cut by increasing risk then depends on the extent to which creditors constrain this behavior, for example, by means of debt covenants. In the presence of such constraints, the effect of a tax cut on risk-taking is likely attenuated for many firms.”²⁰²

The finding that bondholders constrain firms from ramping up risk, even in response to tax policies that make losses more easily deductible, provides additional motive to encourage more stock investing and less bond investing. The macroeconomy benefits when firms are less constrained by debt covenants and can more efficiently ramp up the risk they take.²⁰³

Studies from other countries confirm that investors decrease risk-taking in response to income taxes with significant loss limitations. A study in South Africa, which at the time offered taxpayers “no ability to offset losses on an investment against other income,”²⁰⁴ found that investors ramp *down* their risk

198. Ljungqvist, Zhang & Zuo, *supra* note 40, at 672 (“When we sort firms by their ability to offset tax losses, we find that the negative effect of tax increases on risk taking is largely driven by firms with a limited ability to offset losses.”); *Id.* (finding that firms “asymmetrically reduce risk when their ability to carry back losses is reduced” but do not increase risk when their ability to carry back losses is increased, perhaps due to debt covenants preventing them from increasing risk).

199. *Id.* at 674 n.6.

200. *Id.* at 671 (emphasis added).

201. *Id.*

202. *Id.* at 671.

203. *See id.* at 672 (“[F]irms face constraints on their ability to increase risk, for example, in the form of covenants imposed by their creditors . . . [thus] we expect firms with low financial leverage to face fewer constraints and so to be more responsive to tax cuts. Consistent with this conjecture, we find that low-leverage firms increase risk in response to tax cuts (by 6-7% for each percentage-point cut in taxes). High-leverage firms, on the other hand, do not.”).

204. Chorvat, *supra* note 38, at 269–70 n.207.

when asymmetrical income tax rates increase.²⁰⁵ This is predictable when taxpayers anticipate sharing gains with the government but unilaterally suffer losses. Similarly, a study in Spain found that firms who became subject to new loss limitations by virtue of having revenues above 20 million Euro significantly ramped down their risk, whereas firms who were not subject to those limitations did not.²⁰⁶

Because loss limitations discourage risk-taking, changes should be made to the tax system to reduce loss limitations when possible.²⁰⁷ In some cases, like the § 1211 limitation on the deductibility of capital losses, eliminating loss limitations could be coupled with eliminating other features of current U.S. federal income tax law—like preferred tax rates for net capital gains and the step-up in basis of inherited property—that help justify those loss limitations.²⁰⁸

Many features of current U.S. federal income tax law that help justify loss limitations, including preferred tax rates for net capital gains and the step-up in basis of inherited property independently impede the market corrective power of the income tax.²⁰⁹ Luckily, although preferred rates purport to encourage

205. Asea & Turnovsky, *supra* note 39, at 58 (“[A] higher tax rate decreases the probability of holding risky assets in our sample.”); *Id.* at 83 (“[I]ncreasing the tax on a risky asset increases the holdings of the risky asset. . . . [B]ased on a situation in which loss-offsets are fully allowed If losses are not fully deductible against other income, such that the tax lessens the advantage of holding risky portfolios there will likely be a switch from more risky to less risky investments. A progressive personal income tax such as that in South Africa with no loss-offsets provision will almost certainly have a net disadvantageous effect on investment in risky ventures.”); Chorvat, *supra* note 38, at 269 n.207 (“One should note that one study conducted in South Africa found that higher taxes did not encourage risk-taking. That study looked at the reaction in South Africa to changes in income taxes and the willingness of investors to take on more risk. However, in the South African tax system at the time, there was no ability to offset losses on an investment against other income. Given these facts, one would predict *a priori* under the Domar-Musgrave model that the allocation to the risky assets would be lower than prior to the imposition of the tax. This study does not disprove the Domar-Musgrave model, but rather is consistent with it.” (describing the Asea & Turnovsky study)).

206. Ljungqvist, Zhang & Zuo, *supra* note 40, at 674 n.6; See Dominika Langenmayr & Rebecca Lester, *Taxation and Corporate Risk-Taking*, 93 ACCT. REV. 237, 237 (2018) (“We study whether the corporate tax system provides incentives for risky firm investment. We analytically and empirically show two main findings: first, risk-taking is positively related to the length of tax loss periods because the loss rules shift some risk to the government; and second, the tax rate has a positive effect on risk-taking for firms that expect to use losses, and a weak negative effect for those that cannot. Thus, the sign of the tax effect on risky investment hinges on firm-specific expectations of future loss recovery.”).

207. See also Mark Campisano & Roberts Romano, *Recouping Losses: The Case for Full Loss Offsets*, 7 NW. U. L. REV. 709, 709 (1981).

208. For example, the preferred rate for net capital gains motivates the existence of § 1211(b), which provides that for individuals, capital losses are deductible to the extent of capital gains plus up to \$3,000. Without § 1211(b), individual investors would have a strong incentive to “cherry pick” capital gains in one year (so that those gains would be taxed at low, preferred rates) and capital losses in another year (so that those losses would be deducted at high, ordinary income rates). Section 1211(b), together with the carry forward provision in § 1212, aims to recouple capital losses with capital gains such that losses and gains occur at the same level of tax.

209. An income tax encourages risk-taking to the extent that it applies to investment returns. Section 1014 prevents the income tax from applying to investment returns that come in the form of pre-death appreciation. Thus, when anticipating that they will hold investments until death, taxpayers have little incentive to ramp up risk.

investment risk-taking,²¹⁰ they appear ineffective²¹¹ and may actually discourage risk-taking.²¹²

In other cases, eliminating loss limitations is more difficult. For example, the graduated, progressive income tax rate schedule itself can cause losses to be deducted at lower rates than gains are taxed, with the result that the government can suffer a smaller share of losses and enjoy a larger share of gains.²¹³ However, this *de facto* loss limitation can be offset by other features of tax law, including for example the realization requirement. A taxpayer can use the realization requirement to deduct losses in years when their tax rate is high and to recognize gains in years when their tax rate is low, potentially flipping the effect of the graduated, progressive rate schedule and causing the government to suffer a larger share of losses and enjoy a smaller share of gains.

Finally, when loss limitations apply because the investor has not, as a matter of economic reality, assumed any substantial risk of loss, then loss limitations are generally appropriate.²¹⁴ The government need not take a real share of a risk of loss that is illusory for the taxpayer, which might occur, for example, if a taxpayer sought to deduct a loss in excess of amounts that the taxpayer actually put “at risk” in the investment.²¹⁵ However, theory and empirical evidence indicate that loss limitations can interfere with, and even reverse the market corrective power of the income tax and should be highly scrutinized.

D. THE GOVERNMENT CAN SAFELY ASSUME MORE RISK

This Article argues that, by increasing pre-tax risk-taking, the income tax mitigates excessive risk aversion and helps balance the market. However, if the government becomes a proportionate silent partner in higher-risk investments, then the government’s overall investment portfolio becomes riskier. “[T]ax

210. See, e.g., Stiglitz, *supra* note 197, at 274 (“[O]ne of the main justifications for the special capital gains provisions is that they encourage risk-taking. This, however, may not always be the case.”).

211. See, e.g., David A. Weisbach, *Taxation and Risk-Taking with Multiple Tax Rates*, 57 NAT’L TAX J. 229, 238 (2004) (demonstrating that, after portfolio adjustments to ramp up pre-tax risk by $1/(1-\text{tax rate})$, the existence of a preferred rate causes risk-free returns alone (and not risky returns) to be taxed at say 15% instead of say 35%. But because risk-free returns are near zero, the subsidy of a lower, preferred tax rate “will often be small” and unlikely to change taxpayer behavior).

212. Because eliminating the bite of the income tax requires an investor to ramp up the pre-tax risk of their investments by $1/(1-t)$, an investor will need to ramp up their pre-tax risk more to eliminate the bite of an ordinary income tax rate of say 35 percent ($1/0.65=153.8\%$) than a preferred rate of say 15 percent ($1/0.85=117.6\%$). However, of course, the interaction of tax rates and risk-taking is probably far less precise than these numbers imply.

213. See, e.g., Larry Zelenak, *The Sometimes-Taxation of the Returns to Risk-Bearing Under a Progressive Income Tax*, 59 SMU L. Rev. 879, 893–94 (2006); Frank Cowell, *Some Notes on Progression and Risk-Taking*, 42 ECONOMICA 313, 313–18 (1975).

214. See, e.g., I.R.C. § 465 (limiting losses based on amounts that a taxpayer put at economic risk).

215. *Id.*

revenues are not burned after they are collected.”²¹⁶ Thus, it is worthwhile to consider the consequences of the government’s portfolio becoming riskier.

To the extent that taxpayers ramp up idiosyncratic risk in response to an income tax, tax revenues should remain stable. Because gambles like coin tosses involve purely idiosyncratic risk, now is a good time to return to the example of Samuelson’s colleague. SC rejected a coin toss bet with an equal chance of winning \$200 or losing \$100.²¹⁷ Although loss aversion and narrow framing appear to have prevented SC from accepting the bet, the income tax could encourage SC to accept it, and if SC accepted it, the government would benefit. For example, if a 20 percent income tax according to which losses are deducted at the same rate as gains are taxed was imposed on SC, then SC would only have to face the risk of a \$80 after-tax loss.²¹⁸ If SC was willing to accept this smaller loss, then the government would benefit from becoming a silent partner in more bets. Because the tax system makes the government a silent partner in the investments of all taxpayers (not just SC), the government would in the position that SC wanted—the position of receiving the benefit of one hundred such bets and not having to watch them play out individually. While the bet saddled SC with a 50 percent chance of loss, the government, by virtue of sharing in one hundred such bets, would enjoy a share of “an expected gain of \$5,000 and a chance of losing money of less than half a percent.”²¹⁹ Due to its uniquely high level of diversification, the government will collect stable returns even if taxpayers take on more idiosyncratic risk in response to the income tax.

Risks need not be purely idiosyncratic, like a coin flip, for the government to solve them through diversification. Rather, as long as risks are imperfectly correlated, the government’s uniquely high level of diversification should keep tax revenues relatively stable even if the government’s share of imperfectly correlated risks is increased.²²⁰ In general, the government is naturally uniquely well-diversified, and automatically and constantly rebalances to maintain that

216. Chorvat, *supra* note 38, at 267; *see id.* at 267 n.186 (“This is often referred to as a general equilibrium analysis, as opposed to partial equilibrium analysis, which only considers the effects of the tax.”).

217. Samuelson, *supra* note 43, at 109.

218. Although gambling losses are deductible only to the extent of gambling winnings, the SC example is used to model investment decisions and deductions for investment losses are more generous. *See infra* note 302.

219. Benartzi & Thaler, *supra* note 143. Of course, the government’s expected return and likelihood of coming out in the black both increase as the number of bets increases. For example, if the 50% +\$200 or 50% - \$100 bet was replicated 800 times, the expected payout would be \$80,000 and there would be a 99.999999% chance of coming out in the black.

220. ATKINSON & STIGLITZ, *supra* note 29, at 96 (“In any case, there appear circumstances where the return to different assets which different individuals purchase is imperfectly correlated, where there may be possibilities for risk-sharing effectively through the intermediation of the government, which are not possible through the private market.”).

diversification.²²¹ Thus, the government bears imperfectly correlated risk far better than individual investors can.

However, to the extent that taxpayers ramp up systemic risk in response to an income tax, tax revenues could become less stable. In down markets, greater exposure to systemic risk could cause government revenues to contract, potentially forcing cuts to social programs or tax rate spikes.²²² Luckily, even as to systemic risk, the government bears risk more efficiently than individual investors because the government has a uniquely high ability to spread risk.²²³ Further, the government is uniquely able to build surpluses in “up” markets and then spend those surpluses and use deficit spending in “down” markets.²²⁴ Although other market participants can also borrow money to smooth systemic risk, creditors know that all other market participants might default or take advantage of limited liability laws to avoid repayment.²²⁵ In contrast, the “government, with its ability to tax, is not subjected to some of the same limitations as are private borrowers”²²⁶ and has greater access to credit. Because the government can borrow more easily, more cheaply, and for a longer duration, it “can suffer losses to its portfolio (that is, run a deficit) for a much longer period than an individual can. Hence, it can take a longer-term perspective” on risk.²²⁷ As we have seen, “[i]ncreasing the time-horizon simply a few years significantly decreases the required risk premium for equity investment.”²²⁸ Thus, because the government’s investment horizon is essentially unlimited and deficit

221. See, e.g., Chorvat, *supra* note 38, at 267–68 (“[I]ndividuals generally do not have diversified portfolios...even if all individuals have completely diversified portfolios of stocks and bonds, their portfolios would still not be as diversified as the government’s. The government can collect tax revenue from all kinds of income. It has literally the most diversified portfolio possible.”).

222. Kaplow, *supra* note 28, at 795 (“Bulow and Summers (1984) and Gordon (1985) favor the view that the government cannot absorb systemic risk beyond what the market can accomplish because risk ultimately is borne by individuals. By contrast, others suggest that market imperfections raise the possibility that the government can enhance welfare by absorbing some risk (presumably nonsystemic risk), although the particular imperfections usually are not specified. The government’s ability to absorb risk depends not only on imperfections in financial markets but also on the nature of government expenditures.”).

223. See, e.g., Roger H. Gordon, *Taxation of Corporate Capital Income: Tax Revenues Versus Tax Distortions*, 100 Q.J. ECON. 1, 6 (1985) (“The government, however, might be able to reallocate the risk more efficiently, in which case the market risk premium ought to fall, stimulating investment as well as increasing efficiency [T]he government might create an efficiency gain by exchanging risks among individuals where this cannot occur adequately in the market, as between generations not alive simultaneously.”); ATKINSON & STIGLITZ, *supra* note 29, at 96 (“there are strong reasons to believe that the capability of the market to share and spread risks is limited.”).

224. See *infra* notes 225–228 and accompanying text.

225. ATKINSON & STIGLITZ, *supra* note 29, at 96.

226. *Id.*

227. Chorvat, *supra* note 38, at 268.

228. *Id.*; see also *supra* notes 170–172 and accompanying text (demonstrating that the equity risk premium drops by almost 80 percent—from 6.5 to 1.4—if investors evaluate risk over a 20-year rather than a 1-year evaluation horizon).

spending can smooth systemic risk across that horizon, its greater exposure to systemic risk should not cause either cuts to social programs or tax rate spikes.

IV. THE REALIZATION REQUIREMENT CORRECTS THE DISPOSITION EFFECT

A so-called normative income tax—including that used in the Domar-Musgrave model²²⁹—is an accrual tax, one that taxes gain and deducts loss based on “annual fluctuations in the value of a taxpayer’s property.”²³⁰ However, the United States uses a realization-based income tax system.²³¹ Thus, unrealized appreciation is not taxed even though it constitutes economic income. To the contrary, U.S. taxpayers generally are taxed on gain only when (and if) they choose to sell, exchange, or otherwise dispose of an asset.²³² “Perhaps no concept in tax law is so well established, and yet so widely criticized as realization.”²³³

Viewed in isolation, the realization requirement causes the income tax to distort the market.²³⁴ For decades, the realization requirement’s “distortive effects have drawn stern criticism. Realization has been called ‘an intricate and unwieldy edifice,’ ‘the Achilles’ heel’ of the tax system,’ ‘the root of many tax evils,’ and, indeed, ‘what most scholars believe to be the most intractable problem in the income tax.’”²³⁵ It encourages taxpayers to sell loss assets sooner and hold gain assets longer than they otherwise would.²³⁶ Indeed, the significant value that investors can enjoy from unrealized appreciation is, for many scholars, a strong argument for eliminating the realization requirement,²³⁷

229. Domar & Musgrave, *supra* note 35, at 392.

230. *Cottage Sav. Ass’n v. Comm’r*, 499 U.S. 554, 559 (1991).

231. *See, e.g., Helvering v. Horst*, 311 U.S. 112, 115 (1940) (“From the beginning the revenue laws have been interpreted as defining ‘realization’ of income as the taxable event . . .”).

232. *See, e.g., Eisner v. Macomber*, 252 U.S. 189, 213 (1920); *Comm’r v. Glenshaw Glass Co.*, 348 U.S. 426, 432–33 (1955); *Helvering v. Bruun*, 309 U.S. 461, 467 (1940).

233. Schizer, *supra* note 1, at 1551.

234. *See, e.g., William D. Andrews, The Achilles’ Heel of the Comprehensive Income Tax*, in *NEW DIRECTIONS IN FEDERAL TAX POLICY FOR THE 1980S*, at 278, 280 (Charles E. Walker & Mark A. Bloomfield eds., 1983) (describing the difficulty of taxing unrealized appreciation as the “Achilles’ heel” of the income tax); Daniel I. Halperin, *Interest in Disguise: Taxing the “Time Value of Money”*, 95 *YALE L.J.* 506, 552 (1986); Daniel I. Halperin & Alvin C. Warren, Jr., *Understanding Income Tax Deferral*, 67 *TAX L. REV.* 317, 334 (2014); Thomas J. Brennan & Alvin C. Warren Jr., *Realization And Lock-In When Interest Rates Are Low*, 152 *TAX NOTES* 1151, 1155 (2016).

235. Schizer, *supra* note 1, at 1551.

236. The sale of investment property that has lost value since the investor acquired it triggers the recognition of a deduction. The tax savings from that deduction can then be reinvested to produce returns. In contrast, the sale of investment property that has gained value since the investor acquired it triggers the recognition of gain and the tax payment required due to that gain is better deferred than paid now. Time value of money principles encourage seeking immediate deductions and deferral of tax liabilities.

237. *See, e.g., supra* note 234.

taxing wealth instead of income,²³⁸ expanding mark-to-market rules.²³⁹ However, even these scholars generally acknowledge that “significant administrability hurdles discourage Congress from replacing realization.”²⁴⁰ Thus, some scholars suggest that a more feasible change would be “to wait for a sale before imposing the tax, as under current law, but to add an interest charge for the deferral”²⁴¹ of tax on unrealized appreciation. In any case, the realization requirement’s incentive to sell loss assets and retain gain assets has long been lamented as a market distortion that harms investors and the economy.

When combined with other features of current U.S. federal income tax law, especially the preferred rate on net capital gain income and the step-up in basis for inherited property, the realization requirement likely significantly distorts the market.²⁴² However, if we work towards an income tax system in which the preferred rate and step-up in basis were eliminated, then role of realization in an income tax can be evaluated. David Schizer explored “a justification for realization not seriously considered in the academic literature: that it is a subsidy for private savings and investment.”²⁴³ This Article explores two additional justifications for realization: that it offsets the disposition effect and encourages increased investment risk-taking.²⁴⁴

Although a realization-based income tax influences market behavior, this influence is not necessarily distortive. To the contrary, when viewed with behavioral biases that skew investment decisions in the opposite direction, the realization requirement may help balance the market. A bias known as the disposition effect describes the instinct to sell gain assets too quickly and to hold loss assets too long. Empirical evidence encouragingly demonstrates that when investors are thinking about tax consequences, the disposition effect is at least partially mitigated.

238. *But see* Morgan, *supra* note 72, at 6 (seeking to reframe the income vs. wealth tax debate as a debate over an accretion or realization-based system).

239. *See, e.g.,* Clarissa Potter, *Mark-to-Market Taxation as the Way to Save the Income Tax—A Former Administrator’s View*, 33 VAL. U. L. REV. 879, 880 (1999).

240. Schizer, *supra* note 1, at 1593.

241. *Id.* at 1596–97; *id.* (describing a retrospective method “variations of which have been proposed by Professors Auerbach, Blum, Fellows, Land, Shakow, Vickrey, and Warren . . .”).

242. *See, e.g.,* Poterba, *supra* note 188, at 1138 (“[O]ptimal asset-trading strategies in an efficient capital market with [a realization requirement] may generate startling outcomes. In particular, astute investors and tax planners could in some cases generate negative capital-gains liability in all periods until their death, and then use basis step-up to extinguish all of their lifetime capital-gains tax liability on accrued gains.”).

243. Schizer, *supra* note 1, at 1552.

244. Although *Realization as Subsidy* observes that the realization requirement creates a “bias toward risky assets,” it does not take a position on whether that bias is advantageous. *See* Schizer, *supra* note 1, at 1612. Indeed, “given Congress’s repeated interest in a savings subsidy,” *Realization as Subsidy* does “not attempt to resolve . . .” the question of “whether we should have a subsidy for savings at all.” *Id.* at 1617.

A. INVESTORS DON'T KNOW WHEN TO HOLD 'EM; KNOW WHEN TO FOLD 'EM

Kenny Rogers taught, "You got to know when to hold 'em / Know when to fold 'em / Know when to walk away / And know when to run."²⁴⁵ But when we are acting as investors, we can't seem to do what's good for us. To the contrary, we foolishly hold losses and fold gains.

Once an individual owns an asset, orthodox economics assumes they will make utility-maximizing decisions about whether to sell it.²⁴⁶ It is imagined that the investor will "carefully assess the risk and return of all possible investment options to arrive at an investment portfolio that suits their level of risk aversion."²⁴⁷ In the absence of transaction costs, an investor should retain an asset they would buy that day and sell an asset they would not. The decision to retain or sell an asset should not depend on whether, for a particular investor, the asset has already gained value or lost it. But of course, it does.

Investors love to recognize gains and hate to recognize losses; thus, we tend to "sell winners too early and ride losers too long."²⁴⁸ Behavioral finance calls this bias the "disposition effect"²⁴⁹ and attributes it to a combination of prospect theory (humans seek to avoid losses from a baseline far more than we seek to achieve gains from that baseline);²⁵⁰ regret aversion (resisting "the realization of a loss because it stands as proof" that the decision we made to invest "was wrong");²⁵¹ mental accounting (treating each investment as though it was separate when deciding whether our investments are performing well);²⁵² and insufficient self-control (investors "sell winners 'too quickly' . . . to hasten the feeling of pride at having chosen correctly in the past.").²⁵³

The disposition effect is large. For example, "trading records for 10,000 accounts at a large U.S. discount brokerage"²⁵⁴ demonstrate that "[i]ndividual investors have a strong preference for selling stocks that have increased in value since bought (winners) relative to stocks that have decreased in value since bought (losers)."²⁵⁵ They "realize their gains at about a 50% higher rate than

245. KENNY ROGERS, *The Gambler*, on THE GAMBLER (United Artists Grp. 1978).

246. See Barber & Odean, *supra* note 85, at 1533 ("The bulk of research in modern economics has been built on the notion that human beings are rational agents who attempt to maximize wealth while minimizing risk.").

247. *Id.*

248. Hersh Shefrin & Meir Statman, *The Disposition to Sell Winners Too Early and Ride Losers Too Long: Theory and Evidence*, 40 J. FIN. 777, 778 (1985).

249. *Id.*

250. *Id.* at 779.

251. *Id.* at 781.

252. *Id.* at 780.

253. *Id.* at 782.

254. Barber & Odean, *supra* note 85, at 1555.

255. *Id.* at 1551.

their losses and . . . this difference is not explained by informed trading, a rational belief in mean-reversion, transaction costs, or rebalancing.”²⁵⁶ The disposition effect causes investors to sacrifice investment performance and wealth.²⁵⁷

Unfortunately, the disposition effect is a shared bias. It is a “remarkably consistent and robust phenomenon,”²⁵⁸ and “among the most widely replicated observations regarding the behavior of individual investors.”²⁵⁹ It is exhibited by many types of investors,²⁶⁰ including professional investors,²⁶¹ and in many economic environments.²⁶²

Shared biases threaten to distort the market. While idiosyncratic errors counterbalance each other in market economies, collective errors do not.²⁶³ Thus, the disposition effect threatens to distort markets. It can cause market prices to diverge from fundamental values and delay the incorporation of information into prices.²⁶⁴

256. *Id.* at 1555.

257. William J. Bazley, Jordan Moore & Melina Murren Vosse, *Taxing the Disposition Effect: The Impact of Tax Awareness on Investor Behavior*, 57 J. FIN. & QUANTITATIVE ANALYSIS 2724, 2725 (2022) (“The disposition effect . . . ultimately lead[s] to lower performance and wealth.”).

258. Barber & Odean, *supra* note 85, at 1551.

259. *Id.* at 1534.

260. *See, e.g., id.* at 1552 (summarizing studies finding the disposition effect in investors in the U.S., Finland, Israel, Australia, China, Taiwan, and Sweden); Maximilian Koestner, Benjamin Loos, Steffen Meyer & Andreas Hackethal, *Do Individual Investors Learn from Their Mistakes?*, 87 J. BUS. ECON. 669, 701 (2017) (finding that the disposition effect exhibited by German retail investors does “not decline as investors gain experience”).

261. *See, e.g., Zur Shapira & Itzhak Venezia, Patterns of Behavior of Professionally Managed and Independent Investors*, 25 J. BANKING & FIN. 1573, 1584 (2001) (finding that professional investors exhibit the disposition effect); Ryan Garvey & Anthony Murphy, *Are Professional Traders Too Slow to Realize Their Losses?*, 60 FIN. ANALYSTS J. 35, 35 (2004) (finding that “proprietary stock traders . . . [who] account for 16 percent of daily NASDAQ/NYSE share volume” and who “earned more than \$1.4 million in intraday trading profits . . . realized their winning trades at a much faster rate than their losing trades” and that their disposition effect “lowered their profitability”); Sina Wulfmeyer, *Irrational Mutual Fund Managers: Explaining Differences in Their Behavior*, 17 J. BEHAV. FIN. 99, 99–100 (2016) (finding that U.S. mutual fund managers exhibit the disposition effect).

262. Bazley, Moore & Vosse, *supra* note 257 (“The disposition effect is one of the most robust behavioral biases, affecting investors and asset prices over a wide range of markets.”).

263. *See, e.g.,* William N. Goetzmann & Massimo Massa, *Disposition Matters: Volume, Volatility and Price Impact of a Behavior Bias* 4 (Nat’l Bureau of Econ. Rsch., Working Paper No. 9499, 2003) (“Considerable theoretical analysis suggests that behavioral biases could affect asset prices. For example, . . . [widespread] loss aversion induces investors to demand a higher risk premium for risk associated with negative market returns.”).

264. *See* Bazley, Moore & Vosse, *supra* note 257 (“Growing evidence indicates that investors’ disposition impedes the incorporation of news into prices and affects stock returns, volatility, and trading volume, all of which have implications for the aggregate market.”); *id.* at 2728 (“[T]he disposition effect slows the impounding of news into prices and generates divergence between fundamental values and market prices.”); Goetzmann & Massa, *supra* note 263, at 17 (explaining that the disposition effect “is associated with lower ex post returns”); Terrance Odean, *Are Investors Reluctant to Realize Their Losses?*, 53 J. FIN. 1775, 1795 (1998) (explaining that the disposition effect can cause a stock price to be sticky “near prices at which substantial trading has previously taken place”).

B. THE REALIZATION REQUIREMENT CORRECTS THE DISPOSITION EFFECT

Experimental and real-world data encouragingly demonstrate that tax helps to mitigate the disposition effect, which improves investors' decisions about which investments to sell and when. This should not be surprising. The realization requirement's encouragement to accumulate unrealized appreciation offsets the disposition effect's rush to "sell winners too early"²⁶⁵ Similarly, the realization requirement's encouragement to accelerate the realization of losses offsets the disposition effect's urge to "ride losers too long."²⁶⁶ The trick may be to encourage investors to think about tax more, so that the realization requirement can provide a more effective offset to the disposition effect.

Experiments indicate that "[s]imply observing the tax implications of stock trades may moderate one's disposition effect, a behavioral bias that reduces individuals' portfolio returns and affects asset prices."²⁶⁷ Experiments allow researchers to "isolate the causal impact of tax salience on trading decisions."²⁶⁸ Researchers William Bazley, Jordan Moore, and Melina Murren Vosse conducted a trading experiment that gave subjects \$350 in experimental currency and the choice to invest in stocks or to hold their cash.²⁶⁹ During successive rounds of the experiment, subjects received price updates for each stock and were prompted to either hold or sell them.²⁷⁰ At first, all subjects were informed that realized losses would be deducted at a rate of 15 percent and realized gains would be taxed at 15 percent.²⁷¹ Further, when any subject sold a stock, that subject's "cash balance in the following period" was net of the tax implications of any sales.²⁷² Thus, "[s]imilar to the prevailing tax law in the United States," the experiment provided an opportunity for subjects to strategically "realize capital losses immediately and defer capital gains."²⁷³ Nonetheless, all subjects exhibited the disposition effect,²⁷⁴ implying that the disposition effect influences typical investment behavior more than realization strategy.

Promisingly, however, when investors are reminded of the tax implications of sales, their disposition effect is partially offset. For example, subjects whose

265. See Shefrin & Statman, *supra* note 248.

266. *Id.*

267. Bazley, Moore & Murren Vosse, *supra* note 257, at 2758.

268. *Id.* at 2747.

269. *Id.* at 2731.

270. *Id.* at 2732.

271. *Id.* at 2733.

272. *Id.* at 2726.

273. *Id.* at 2738; *see also id.* at 2733 (explaining that participants in the study were incentivized to maximize their experimental portfolio balances because those with higher balances received higher compensation for participating in the study).

274. *See id.* at 2736 ("In the High-Salience group, the average disposition effect is about 0.09. In contrast, the mean disposition effect is about 0.17 in the control condition [the Low-Salience group].").

price update screens showed the amount of tax that they would save or owe due to a stock sale (which was simply 15 percent of gain or loss in the stock),²⁷⁵ exhibited the disposition effect 47 percent less than did those whose price update screens did not show tax implications.²⁷⁶

The researchers thus concluded that while investors are generally prone to the disposition effect, “raising individuals’ awareness of the tax consequences of trading” reduces their disposition effect by up to 47 percent.²⁷⁷ “Tax awareness affects both dimensions of the disposition effect” by making investors less quick to cash out gains and less likely to ride losses.²⁷⁸ Subjects with higher tax awareness “have better trading performance; they earn 7 basis points more per trading period.”²⁷⁹

In a move that is rare in either economic or tax circles, the researchers identified tax and tax salience as a tool for market correction rather than a presumed market distortion. Tax mitigates widespread human biases that skew the market, cause investors to miss out on gains, and inhibit macroeconomic growth. Bazley, Moore, and Vosse argue that “[l]imits to attention and cognitive constraints may lead investors” to make “systematic mistakes,” but “making the tax implications of trading salient can improve investor’s decision-making by moderating behavioral biases, particularly the disposition effect.”²⁸⁰ As “a growing literature in behavioral financial economics . . . documents evidence of cognitive shortcomings, which lead to investment biases with deleterious impacts on individuals’ welfare,”²⁸¹ and “recent efforts are turning toward reducing these shortcomings,”²⁸² tax holds promise. Tax influences behavior in ways that offset cognitive shortcomings. Thus, “raising tax awareness could serve as a novel policy tool to improve households’ financial decision-making.”²⁸³ Instead of lamenting the ways that tax influences economic behavior, tax law’s influences can be celebrated and expanded.

In the real world, like in the experimental setting, it appears that the realization requirement partially offsets the disposition effect. Thus, despite having the opportunity to save taxes by accelerating the realization of losses and deferring the realization of gains, investors in the aggregate “realize their gains at about a 50 percent higher rate than their losses.”²⁸⁴ In contrast to longstanding

275. *Id.* at 2733, 2734 fig.2.

276. *Id.* at 2737.

277. *Id.* at 2726.

278. *Id.*; see also *id.* at 2740 (finding that the High-Salience group was 10.5% less likely to cash out gains on appreciated stock and 12% more willing to sell depreciated stock).

279. *Id.* at 2726.

280. *Id.* at 2724.

281. *Id.* at 2728.

282. *Id.*

283. *Id.* at 2725.

284. See *supra* note 256 and accompanying text.

and widespread concerns that investors will use the realization requirement to the excess,²⁸⁵ field data indicates that many investors do the opposite.²⁸⁶

However, field data shows that when investors are most influenced by tax, they are least affected by the disposition effect. Thus, for one month only, “when investors are most likely to pay attention to the tax implications of their trades,”²⁸⁷ tax succeeds in being more influential than the disposition effect.²⁸⁸ Brokerage records demonstrate that “[i]n December, losses are realized at a higher rate relative to gains than during the rest of the year, indicating that investors are realizing tax losses in December.”²⁸⁹ Some experts speculate that investors use the close of a tax year as a “self-control measure.”²⁹⁰ “They reason that investors are reluctant to sell for a loss but recognize the tax benefits of doing so. The end of the year is the deadline for realizing these losses.”²⁹¹ Thus, in December, investors finally “require themselves to sell losers before the deadline passes.”²⁹² While we might view the realization requirement as “distorting” the market in December by encouraging the realization of losses and the retention of gains, on an annual basis, the disposition effect appears to be more influential than realization strategy.²⁹³ By partially mitigating the disposition effect, the realization requirement provides a previously ignored, yet significant, benefit—it helps to balance the market and reduce the deleterious effects of investment bias.

C. THE REALIZATION REQUIREMENT ENCOURAGES INVESTORS TO RAMP UP RISK

Thus far, we have considered how an income tax with full loss offsets can encourage greater investment risk-taking. However, we may find that some loss limitations are intractable²⁹⁴ or too desirable to eliminate.²⁹⁵ We may find that

285. See, e.g., *supra* notes 233–242 and accompanying text.

286. See, e.g., Poterba, *supra* note 188, at 1139 (“The degree to which investors pursue capital loss generation strategies is an empirical issue. Poterba (1987) presented data based on the 1985 IRS Sales of Capital Assets file. These data show that less than one fifth of investors, and possibly only one tenth, realize the maximum deductible level of net capital losses, as the foregoing analysis would suggest.”).

287. Bazley, Moore & Vosse, *supra* note 257, at 2730.

288. See Odean, *supra* note 264, at 1783 tbl.1 (demonstrating that in January through November, paper gains are realized at a rate (0.152) that is far greater than paper losses are realized (0.094) while in December, paper gains are realized at a rate (0.108) that is slightly less than paper losses are realized (0.128)).

289. *Id.* at 1787; see also Poterba, *supra* note 188, at 1144 (“[Describing studies finding] a higher concentration of transactions that generate losses in December than in any other month.”).

290. Odean, *supra* note 264, at 1778 (citing Shefrin & Statman, *supra* note 248).

291. *Id.*

292. *Id.*

293. See *id.* at 1783 tbl.1 (demonstrating that for the entire year, paper gains are realized at a rate (0.148) that is far greater than paper losses are realized (0.098)).

294. See, e.g., *supra* note 213 and accompanying text.

295. See, e.g., *supra* note 214 and accompanying text.

investors do not ramp up their investment risk-taking to the extent that models predict. We may find that *even if* investors ramp up their investment risk-taking to the full extent that models predict, which is to say that they ramp up their pre-tax risk-taking by $1/(1-\text{tax rate})$, that ramp up might not be sufficient to counter aggregate myopic loss aversion. In any of these cases, it is beneficial that the realization requirement independently incentivizes increased risk-taking.

While an accretion-style²⁹⁶ income tax with full loss offsets allocates to the government a proportionate share of gain and loss, the realization requirement instead allocates to the government a more-than-proportionate share of loss and a less-than-proportionate share of gain. A taxpayer can require the government to assume a more-than-proportionate share of loss by selling loss assets in high tax rate years or by accelerating losses, such that from a time value of money perspective, the tax savings that losses produce are more valuable. On the flip side, a taxpayer can require the government to collect a less-than-proportionate share of gains by selling gain assets in low tax rate years or by deferring gains, such that from a time value of money perspective, the tax liabilities that gains produce are less costly. In this way, the realization requirement can cause the income tax to become an “asymmetric tax”²⁹⁷ that makes investments “not just less risky”²⁹⁸ for taxpayers “but more favorable.”²⁹⁹

While this is an area where empirical research would be particularly helpful to guide policymaking, it is worthwhile to consider the potential benefits of an “asymmetric tax” by virtue of which the government takes a greater share of losses than of gains. These benefits are worthy of consideration not just because the realization requirement remains hotly contested following the United States Supreme Court decision in *Moore v. United States*,³⁰⁰ and not just because some

296. See *supra* note 230 and accompanying text (explaining that an accretion-style income tax imposes tax based on “annual fluctuations in the value of a taxpayer’s property”).

297. In Subpart.III.C., we encountered asymmetrical income taxes that favor the government by limiting the share of losses that is allocated to the government. The realization requirement presents the flip side, in that it causes an asymmetrical income tax that favors the taxpayer by allocating to the taxpayer a disproportionately small share of loss. See *supra* text accompanying note 198.

298. See, e.g., Schizer, *supra* note 1, at 1620–21 (“If instead a tax reduction offers the taxpayer a larger share of gains than losses—as does realization, because of the timing and rate options discussed above—the taxpayer is better positioned than if she simply took more risk [in response to an income tax with full loss offsets]. Under such a asymmetric tax, an investment becomes not just less risky . . . but more favorable.” (footnotes omitted)).

299. *Id.*

300. On December 5, 2023, the U.S. Supreme Court Justices heard oral arguments in *Charles G. Moore v. United States*, in which the question presented was “[w]hether the Sixteenth Amendment authorizes Congress to tax *unrealized* sums without apportionment among the states.” Brief for the United States in Opposition at 22–23, *Moore v. United States*, 144 S. Ct. 1680 (2024) (No. 22-800) (emphasis added). Because Congress can impose an *income* tax without apportionment among the states, the pleadings and arguments considered whether the realization requirement in the current U.S. federal income tax is required by the Sixteenth Amendment because realization is effectively baked into the Constitution’s use of the word “income” or whether the

form of realization requirement is extremely likely to have a long life ahead,³⁰¹ but because the disposition effect is strong and myopic loss aversion is high and widespread.

Let's return to the example of Samuelson's colleague, who rejected a bet with an equal chance of gaining \$200 or losing \$100. Thinking of its silent partnership role, the government would very much like SC to take this bet. Indeed, because the tax system makes the government a silent partner in the investments of all taxpayers (not just SC's investments), even if the government proportionately shared in all losses from the bet,³⁰² it would very much like SC plus ninety-nine more taxpayers to take this bet—or better yet, 799 more taxpayers. If the government succeeds in being a silent partner in one hundred such bets, it shares in “an expected gain of \$5,000 and a chance of losing money

realization requirement is instead a long-standing—if inconsistently imposed—rule of administrative convenience. Oral Argument at 00:22, *Moore v. United States*, 144 S. Ct. 1680 (2024) (No. 22-800), https://www.supremecourt.gov/oral_arguments/audio/2023/22-800. The Ninth Circuit decision in *Moore* had held that “realization of income is not a constitutional requirement” for Congress to lay an “income” tax exempt from apportionment. *Moore v. United States*, 36 F.4th 930, 936 (2022). The Supreme Court affirmed the Ninth Circuit's holding that the federal government could—through imposition of the 2017 Mandatory Repatriation Tax (MRT)—tax U.S. shareholders on the undistributed income of certain foreign corporations. *Moore v. United States*, 144 S. Ct. 1680, 1697 (2024). However, unlike the Ninth Circuit, the Supreme Court found that the “the MRT *does* tax realized income—namely, income realized by the corporation.” *Id.* at 1688. Because it found that the MRT taxes realized income, the Supreme Court focused on whether income realized at the entity level can be allocated and taxed to the owners even if not distributed to them. It ruled that the MRT was a proper allocation of realized income from foreign corporations to their U.S. owners. *Id.* at 1696. However, the Supreme Court did not decide whether realization is a constitutional requirement. *See id.* at 1691 n.3 (“Because the MRT taxes realized income—namely, income realized by the corporation and attributed to its shareholders—we do not address the Government's argument that a gain need not be realized to constitute income under the Constitution.”); *see also id.* at 1689 n.2 (“[O]ur analysis today does not address the distinct issues that would be raised by (i) an attempt by Congress to tax *both* the entity and the shareholders or partners on the entity's undistributed income; (ii) taxes on holdings, wealth, or net worth; or (iii) taxes on appreciation.”). It appears to have implied that the Ninth Circuit was gratuitous in purporting to overrule *Eisner v. Macomber* and in reaching the constitutionality of the realization requirement. In sum, the question presented in *Moore* remains at issue following its decision.

301. *See, e.g., supra* note 240 and accompanying text; Deborah Schenk, *A Positive Account of the Realization Rule*, 57 TAX L. REV. 355, 355–56 (2004) (“[A] richer positive account of the realization rule can be developed by focusing on the political impossibility of repeal, particularly the popular conception that ‘paper gains’ do not constitute income.”). *But see* Deborah Schenk, *An Efficiency Approach to Reforming a Realization-Based Tax*, 57 TAX L. REV. 503, 503 (2004) (“Since neither an accrual tax or a pure realization rule is viable, the task for policymakers is to determine where along the continuum between the two to draw the line.”).

302. Of course, gambling losses are deductible only to the extent of gambling gains and if this was SC's only gamble, the \$100 loss would not be deductible. I.R.C. § 165(d). However, the example is used by Samuelson and this Article to model investment decisions involving risk. *See, e.g., Benartzi & Thaler, supra* note 143, at 366 (“This line of research has more than just academic interest. There are interesting parallels between repeated plays of independent gambles (essentially addition problems) and investing over time where returns are compounded (essentially multiplication problems).”); Robert Scarborough, *Colloquium on Capital Gains: Risk, Diversification and the Design of Loss Limitations Under a Realization-Based Income Tax*, 48 TAX L. REV. 677, 683 n.18 (1993) (“Modeling the return from investments in securities as a random variable, like the outcome of a wager, is a cornerstone of modern finance theory.”).

of less than half a percent,”³⁰³ and for eight hundred such bets, it shares in an expected gain of \$80,000 and a chance of losing money of less than 0.0000001 percent.

The government should happily take a proportionate share of losses. Unfortunately, it appears that SC would deprive the government of that opportunity. SC’s rejection of the bet established that the hope of a \$200 gain was not sufficient to offset SC’s aversion to the thought of a \$100 loss. But must proportionately sharing gains and losses—and thus missing out on valuable opportunities—be the government’s only option? If the government instead took a 30 percent share of loss in exchange for a 20 percent share of gain (by imposing an asymmetrical tax), then SC would be more likely to take the risk. It is not outlandish to imagine that the government might properly be willing to bear slightly more than its fair share of loss and to demand slightly less than its fair share of gain to encourage a world where one hundred or eight hundred more such risks are taken.

Although taking an outsized share of losses—as taxpayers’ strategic use of realization can force the government to do—reduces the government’s expected return from investments, offsetting taxpayers’ myopic loss aversion might be worth that cost. While myopic loss aversion discourages investment in riskier assets, realization provides a counterbalance by encouraging such investment.³⁰⁴

This Article advocates making loss offsets more generous and strategically using the realization requirement to facilitate the government taking an outsized share of losses. At some point, however, even the encouragement of risk-taking might not outweigh the costs in terms of lost revenue, distributional harms, or risk of abuse.³⁰⁵ Empirical work should guide efforts to achieve balance.

303. Benartzi & Thaler, *supra* note 143. Of course, the government’s expected return and likelihood of coming out in the black both increase as the number of bets increases. For example, if the 50% +\$200 or 50% - \$100 bet was replicated 800 times, the expected payout would be \$80,000 and there would be a 99.999999% chance of coming out in the black.

304. See, e.g., Schizer, *supra* note 1, at 1612 (“[R]ealization favors riskier assets. These assets are especially likely to appreciate—and thus to render the realization subsidy more generous. Admittedly, risky assets are also especially likely to depreciate, but, under the timing option, realization preserves the value of losses by allowing an immediate deduction. By thus subsidizing gains without penalizing losses, the rule favors the assets most likely to produce dramatic gains.”); Scarborough, *supra* note 302, at 685 (“[N]eutrality towards risk is not possible under a realization-based income tax. Risk is encouraged to the extent that losses are allowable without limitation because of the potential for selective realization of losses; risk, however, is discouraged to the extent losses are subject to limitation and thus are unusable if the taxpayer has no gains from offsetting positions.”); Reed Shuldiner, *A General Approach to the Taxation of Financial Instruments*, 71 TEX. L. REV. 243, 260 (1992) (observing that by giving taxpayers the opportunity to strategically time the realization of losses and gains, the realization requirement “increases investment in risky activities”).

305. Taxpayers who make strategic use of the realization requirement can engage in significant abuse. See, e.g., *supra* notes 234, 242 and accompanying text. Loss limitations are often employed to limit potential abuses of the realization requirement. See, e.g., Weisbach, *supra* note 211, at 237 (“The realization rule allows taxpayers to defer gains and accelerate losses, which means that absent a loss limitation rule, the effective tax rates on

Helpfully, David Weisbach has observed that the cost of the realization requirement is less than we have historically assumed. Although the realization requirement encourages taxpayers to delay realizing gains, tax law's failure to adjust the basis of investments for inflation discourages this delay and makes it less costly to the government.

The Domar / Musgrave (1944) analysis means failure to index for inflation becomes relatively much more important than we might have thought because inflation is a relatively larger component of the tax on capital. For example, suppose we thought the risky portion of return was taxed. If inflation is low, say two percent, the risk-free (real) rate of return is two percent, and the full (nominal) return is ten percent, failure to index for inflation may not look that important because inflation is a relatively small component of the total return. If, however, the risky return is not taxed, a tax on inflation becomes relatively much larger. In this example, where the risk-free return and inflation are at the same rate, failure to index for inflation doubles the tax rate on real returns. It is possible that at recently seen levels of inflation, the tax rate on the real, risk-free return would exceed 100 percent.³⁰⁶

In sum, by encouraging increased risk-taking, the realization requirement counterbalances myopic loss aversion, perhaps at a lower cost to the government than has traditionally been assumed. This effect is helpful if we are to understand the ways that tax corrects market distortions.

Finally, to the extent that the realization requirement proves helpful in correcting myopic loss aversion, but excessive in scope, its impact can be moderated. The government could continue "to wait for a sale before imposing the tax [on gain], as under current law, but . . . add an interest charge for the deferral."³⁰⁷ The amount of interest charge is flexible. Thus, to the extent that the realization requirement overcorrected myopic loss aversion, a small interest charge could be introduced to restore balance.

CONCLUSION

Viewing the income tax as a feature of the economic market that can balance other features like excess risk aversion, narrow framing, and the disposition effect holds promise to increase tax collections while balancing an already skewed economy. Instead of asking how to minimize tax's influence on investment decisions, this view would focus future research on calibration questions. How can the interacting tax rules regarding loss deductions,

gains will be much lower than on losses. Loss limitations can be seen as a crude attempt to equalize the effective tax rates."'). However, loss limitations exacerbate the effects of myopic loss aversion. Thus, this Article would suggest that better responses to realization abuses include eliminating preferred rates for net capital gains and qualified dividends, eliminating the step-up in basis for inherited property, and eliminating exclusions of gain from gross income.

306. Weisbach, *supra* note 211, at 238.

307. See *supra* note 241 and accompanying text.

realization, immediate expensing, and interest deductibility be modified so that the government's silent partnership role works well for both partners? Do individual investors perceive losses deducted at 20 percent to be equally valuable to losses deducted at 22 percent because mental framing makes easy-to-calculate losses feel more valuable? And how might the choice-architecture of the IRS's free tax filing software be used to mitigate the suffering that taxpayers feel both when they report economic losses and when they pay the income tax?
