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HOW SHIFTING FROM TRADITIONAL IRAS TO ROTH IRAS AFFECTS PERSONAL AND GOVERNMENT FINANCES

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ABSTRACT

In this report, we examine the different ways that Roth individual retirement accounts (IRAs) and traditional IRAs affect their investors and the government. People who want to shelter more income per dollar deposited in the account, provide larger bequests, or eliminate uncertainty about how withdrawals will be taxed will find Roth accounts more attractive (other factors held equal). From the government's perspective, however, Roth IRAs create several problems. Given policymakers' focus on the 10-year budget window, myopic representatives may use the short-term revenues from Roth accounts to pay for new spending or lower taxes, thus exacerbating long-term budget pressures. Because of their higher effective contribution limits, Roth IRAs reduce the present value of future revenues. Additionally, when people use Roth IRAs, the government misses a vital opportunity to be a silent partner on investment returns and thus diversify its financial risks.

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INTRODUCTION

Individual retirement arrangements (colloquially called individual retirement accounts, or IRAs) provide a significant portion of retirement income for many households. The accounts offer taxpayers both a valuable opportunity for tax-subsidized saving and a convenient vehicle to accept rollovers from 401(k) plans and other defined-contribution plans.

IRAs come in different forms, each with different rules, especially regarding taxation and withdrawals. Traditional IRAs are “front loaded”: contributions to the account are tax-deductible, but withdrawals are taxable. In contrast, Roth IRAs are “back loaded”: contributions are made with after-tax income, but withdrawals generally are not taxed. In both types of accounts, income from assets accrues tax free. In 2017, almost 44 million households owned at least one type of IRA, and many held both: 35 million owned a traditional IRA and 25 million owned a Roth IRA. At the end of 2016, traditional IRA balances totaled $6.9 trillion while Roth IRA balances totaled $700 billion.

Both traditional and Roth IRAs are tax-free savings vehicles (assuming the money is held until retirement age and income tax rates do not change over time), but the accounts have different effects on personal and governmental finances. Other factors held equal, an investor will favor Roth accounts to the extent that he or she (1) wants more tax-free income per dollar deposited than traditional IRAs can accommodate; (2) expects to face higher tax rates in retirement than during working years; (3) wants to eliminate uncertainty about how withdrawals will be taxed; or (4) wants to maximize tax-free accruals before bequeathing the assets at death. In contrast, traditional IRAs are generally the better option for taxpayers who are not constrained by the IRA contribution limits or for those who expect their tax rates to fall in retirement.

Federal policymakers are sometimes attracted to Roth IRAs because the non-deductibility of contributions increases government revenues relative to traditional accounts within the 10-year budget window used for federal finances. Nevertheless, a policymaker with a long view should prefer traditional IRAs to Roth IRAs for several reasons. First, the improvement in the 10-year budget window is illusory because (a) assuming constant tax rates, the long-run impact on the federal budget of a given after-tax contribution to either account will be the same, and (b) the effective contribution limits associated with any statutory limit on Roth IRAs are significantly higher than those on traditional IRAs. As a result, expanding Roth IRAs at the expense of traditional IRAs *reduces* the present value of long-term federal tax revenue (because some people contribute the maximum amount), even as it raises revenue within the 10-year window. Second, traditional IRAs allow the government to indirectly reap returns from investments in stocks and other risky assets that on average have higher rates of return than government bonds. Third, taxable withdrawals from traditional IRAs expand the future tax base relative to Roth IRAs, raising the productivity of any future income tax rate increases, if they become necessary to address expected future budget shortfalls.

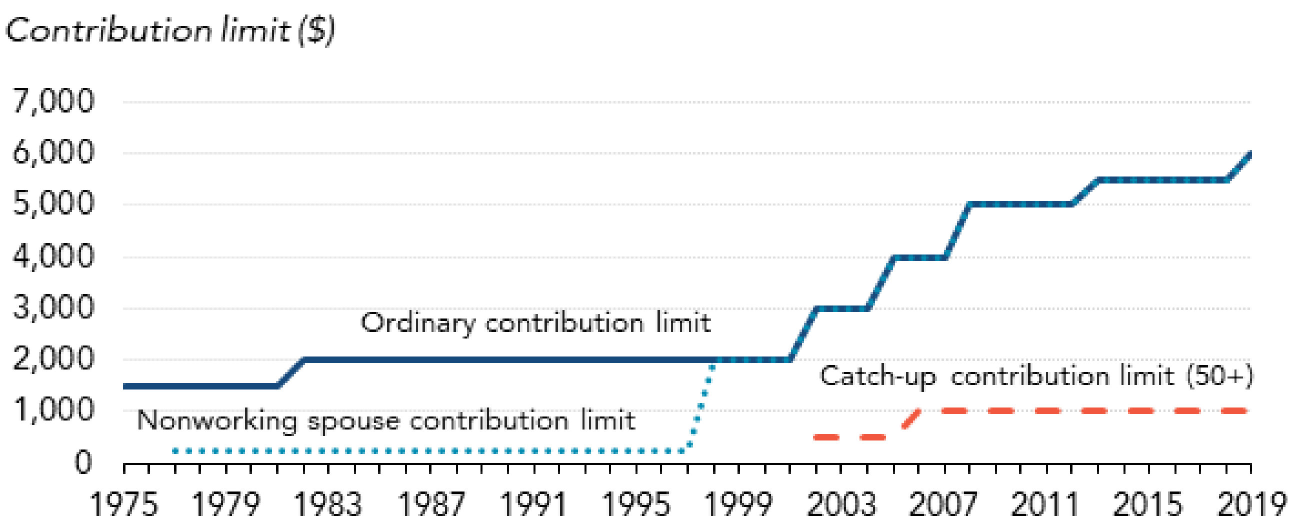
In the next section, we provide background on the history of and differences between traditional IRAs and Roth IRAs. In Incentives Facing Individual Investors, we explore the choice between accounts using theoretical and empirical analysis. In the Fiscal Implications section, we examine the relative effect of the two types of IRAs on the federal budget. We summarize our analysis in the Conclusion.

HISTORY

Traditional IRAs were established in the Employee Retirement and Income Security Act of 1974 (ERISA).[1] Taxpayers who did not have a qualified pension plan through their employer could contribute up to the lesser of $1,500 or 15 percent of earned income a year. Contributions were deducted from adjusted gross income, and earnings on the accounts were tax free. Withdrawals were fully taxable. Early withdrawals were subject to a penalty as well as income tax. Figures 1 and 2 show how nominal and inflation-adjusted contributions limits have evolved over time.

FIGURE 1

Nominal IRA Contribution Limits by Year

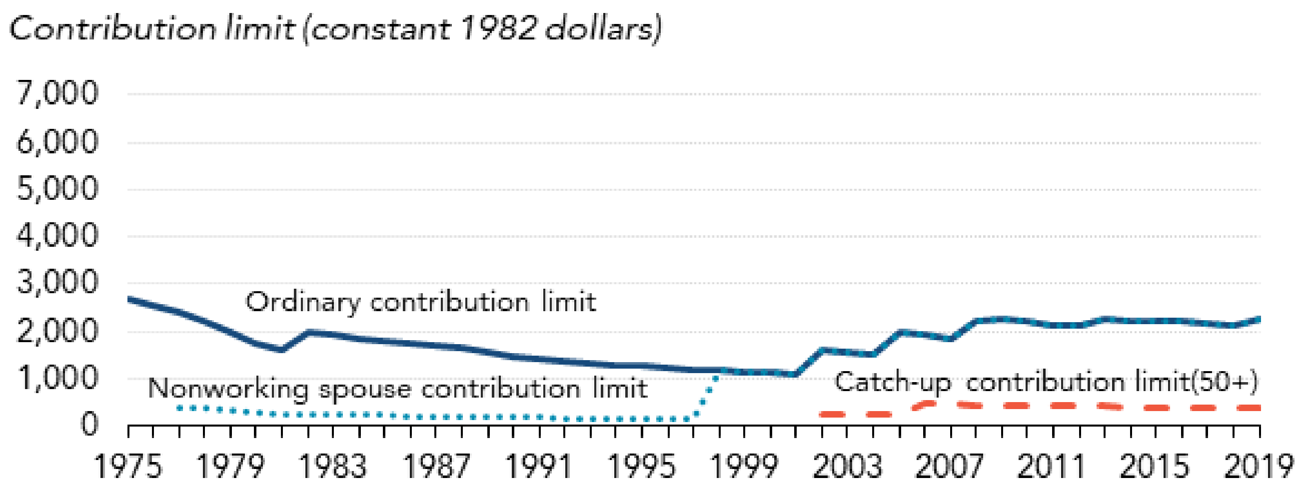


The Tax Reform Act of 1976 introduced the spousal IRA, which allowed people eligible for an IRA to make an additional contribution to a nonworking spouse's account, with a total contribution limit for the couple set at the lesser of $1,750 ($875 per account) or 15 percent of the working spouse's earned income. The Economic Recovery Tax Act of 1981 expanded IRA eligibility to all taxpayers under the age of 70 ½ regardless of whether they had access to a pension, and it changed the annual contribution limit to the lesser of $2,000 or total earnings, with an additional $250 contribution permitted for a nonworking spouse.

The Tax Reform Act of 1986 restricted eligibility for deductible contributions, phasing out the deduction for high-income taxpayers who were covered (or whose spouse was covered) by an employer plan. That law also allowed nondeductible contributions to IRAs, largely to supplement people already covered by a work-sponsored plan. Earnings on these contributions accrued were only taxed upon withdrawal. Although all workers were eligible to make nondeductible contributions, they were subject to the constraint that total contributions to all IRAs could not exceed the lesser of $2,000 or total earnings.

FIGURE 2

Real IRA Contribution Limits by Year



Note: Figures are expressed in constant 1982 dollars, using the average annual Consumer Price Index for All Urban Consumers for inflation.

In 1996, the Small Business Job Protection Act increased the contribution limit for nonworking spouses to $2,000 from $250, and the Health Insurance Portability and Accountability Act permitted penalty-free withdrawals from IRAs for specific health expenses. More significant changes followed the next year with the Taxpayer Relief Act of 1997, which raised the income thresholds for contributions from taxpayers covered by an employer plan and allowed workers without an employer plan to make deductible contributions to an IRA regardless of their spouse's coverage. The law also allowed account holders to withdraw IRA funds early without a penalty if they were being used for higher education or the purchase of a first home.

The 1997 legislation also established the Roth IRA, named after Senate Finance Committee Chair William Roth (R-DE). Roth IRAs accept after-tax contributions, and withdrawals from them are not taxed if the assets are held until age 59.5. The total allowed contribution was set at the lesser of a person's taxable compensation or $2,000, with aggregate IRA contributions (to traditional, Roth, and nondeductible accounts) also capped at $2,000. Contributions were allowed only if the individual or couple fell below an income threshold.

The Economic Growth and Tax Relief Reconciliation Act of 2001 phased in an increase in the combined individual contribution limit to $5,000 between 2002 and 2008, indexed contribution limits for inflation, and allowed those over age 50 to make $500 in "catch-up" contributions annually, increasing to $1,000 after 2005.

These changes were originally set to expire at the end of 2010, but the Pension Protection Act of 2006 made them permanent.

The Setting Every Community Up for Retirement Enhancement Act of 2019 (SECURE Act), which passed the House of Representatives in May 2019, would make several changes related to IRAs. Notably, the legislation would repeal the maximum age for traditional IRA contribution eligibility. It would also increase the age at which traditional IRA owners must begin withdrawing funds from 70 ½ to 72 years (an issue we discuss further in subsequent sections of this report). the proposed legislation also requires that if an account owner dies, assets must be distributed within 10 years of the death unless they are received by the surviving spouse, by a disabled or chronically ill person, by anyone less than 10 years younger than the account owner, or by minor children of the owner.

DIFFERENCES BETWEEN TRADITIONAL AND ROTH IRAS

Traditional IRAs and Roth IRAs differ in many respects.[2]

Taxation of Contributions and Withdrawals

With a traditional IRA, contributions are tax-deductible, while withdrawals are taxed. In Roth IRAs, these features are reversed: contributions are made with after-tax income, but withdrawals are not usually taxable. In both types of IRAS, gains on the contributions once in the account accrue tax free. In other words, traditional IRAs have an exempt-exempt-taxed structure, while Roth IRAs have a taxed-exempt-exempt structure. For this reason, traditional accounts are considered "front-loaded," while Roth accounts are considered "back-loaded."[3]

Effective Contribution Limits

The annual contribution limits on Roth IRAs and traditional IRAs are equal: in 2018, the sum of a person's contributions to all their IRAs could not exceed the lesser of taxable compensation or $5,500 ($6,500 for those over age 50), with the limit adjusted for inflation in $500 increments. But each account allows a person to shelter a different amount of future retirement consumption; traditional and Roth IRAs have different *effective* contribution limits. Contributing a given amount to a Roth IRA yields more potential retirement consumption than contributing the same amount to a traditional IRA, because Roth withdrawals do not face income tax. Investors can therefore effectively contribute (or shelter) more with a Roth IRA than a traditional IRA (Burman, Gale, and Weiner 2001).

Income-Based Eligibility

Eligibility for both types of IRA is limited by income. Taxpayers can make deductible contributions to traditional IRAs depending on the owner's modified adjusted gross income (MAGI) and whether they are covered by a work-sponsored retirement plan (table 1).[4] In tax year 2018, taxpayers who filed as single or a head of household and were not covered by a retirement plan at work could make deductible contributions. If covered by a retirement plan at work, they could deduct their entire traditional IRA contribution if their MAGI was below $63,000. The deduction phased out for MAGI between $63,000 and $73,000.

For married taxpayers filing joint returns in tax year 2018, traditional IRA contribution deductibility was based on MAGI and the work plan coverage of both partners. If the account holder was covered by a work-sponsored retirement plan and MAGI was below $101,000, contributions were deductible. The deduction phased out as MAGI rose to $121,000. If the account holder was not covered by a work-sponsored plan but their spouse was covered, the phase-out range was $189,000 to $199,000. If neither partner was covered by a work-sponsored plan, traditional IRA contributions were completely deductible regardless of income. If the taxpayer elected to file as married filing separately and lived with his or her spouse during the year, the deduction phased out between zero and $10,000 of MAGI if either partner was covered by a retirement plan at work. If neither partner was covered, traditional IRA contributions were completely deductible regardless of income.

TABLE 1

IRA Eligibility by MAGI and Filing Status

Tax Year, 2018

Filing Status	Covered by a retirement plan at work	Spouse covered by a retirement plan at work	Traditional IRA full deduction ($ MAGI)[a]	Traditional IRA deduction phase-out range ($ MAGI)[a]
Single or head of household	Yes	--	$63,000 - $73,000	$120,000 - $135,000
	No	--	No phase-out range	
Married filing jointly or qualified widow(er)	Yes	--	$101,000 - $121,000	$189,000 - $199,000
	No	Yes	$189,000 - $199,000	
		No	No phase-out range	
Married filing separately and lived with spouse during the year	Yes	--	$0-$10,000	$0-$10,000
	No	Yes	$0-$10,000	
		No	No phase-out range	

Source: Internal Revenue Service (2018d)

(a) MAGI stands for Modified Adjusted Gross Income. Below the phase-out range, accounts are fully eligible for contribution or deduction. Above the phase-out range, traditional IRA contributions are not deductible and Roth IRA contributions are not eligible. If there is no phase-out range, there is no income-based eligibility rule.

Eligibility to *contribute* to a Roth IRA depends on the account holder's MAGI (table 1).[5] In tax year 2018, single or head-of-household filers with MAGI below $120,000 were eligible to contribute to a Roth IRA. Eligibility phased out as MAGI reached $135,000. If the account holder was married and filed jointly, the comparable MAGI phase-out range was $189,000 to $199,000. Married taxpayers filing separate returns who lived with their spouse during the year were ineligible unless their MAGI was less than $10,000 or neither person was covered by an employer plan.

Early Withdrawals

In general, those who withdraw funds from traditional IRAs before age 59.5 incur a 10 percent penalty and must pay income tax on the withdrawal. A person withdraws "early" from a Roth IRA if they (a) withdraw before reaching 59.5 or (b) withdraw within five years after their first contribution (table 2). Roth IRA earnings (as opposed to initial contributions) that are withdrawn before the account holder turns 59.5 are subject to income tax and a 10 percent penalty. Balances withdrawn when the account holder is older than 59.5 do not face the 10 percent penalty, but the earnings are subject to income tax if the account is less than five years old.

These rules have some exceptions. For example, withdrawals from IRAs are not penalized (but are still taxed) for account holders below 59.5 if those withdrawals finance qualified higher education expenses, payments caused by total and permanent disability of the account holder, a first-time home purchase (up to $10,000), the Internal Revenue Service levies, certain unreimbursed medical expenses, health insurance premiums paid while unemployed, certain distributions to qualified military reservists called to active duty, an eligible rollover, and other qualifying expenses.

TABLE 2

Roth IRA Taxes and Penalties Upon Withdrawal

	Older than 59.5	Younger than 59.5
Started contributing less than five years before withdrawal	tr	$(t + p)r$
Started contributing more than five years before withdrawal	0	$(t + p)r$

Assumptions: $1 initial contribution; flat income tax rate t, penalty rate p, and return rate r; entire balance is withdrawn from Roth.

Required Minimum Distributions

Traditional IRAs impose required minimum distributions (RMDs) to ensure that taxpayers do not indefinitely postpone income tax liability; Roth IRAs do not impose RMDs. The rationale behind this different treatment is that income taxes on Roth IRA contributions were paid at the time of the contribution, whereas taxes on contributions to traditional IRAs are not paid until withdrawal. RMDs ensure that some tax will be paid during most account holders' lives. However, RMDs also limit the duration of tax-free accruals for traditional IRAs more than for Roth IRAs, which need not be closed until after the account holder dies. Parallel tax treatment would require withdrawals from Roth accounts on the same schedule as traditional IRAs.

Traditional IRA owners must make annual withdrawals (RMDs) starting April 1 of the year in which they turn 70 ½.[6] The annual RMD is the account balance at the end of the previous calendar year divided by the life expectancy at the account holder's current age, determined using a table published by the Internal Revenue Service (Internal Revenue Service 2018a).[7] (As a result, the share of the account that must be distributed increases as an account holder gets older and his or her life expectancy declines.) A 50 percent excise tax applies to any amount of the RMD not actually withdrawn.

If an account owner dies and his or her spouse becomes the sole owner of the account, the spouse can either treat the IRA as his or her own or calculate the RMD based on the original owner's age in the year of death. If the new owner is not a spouse, he or she now faces an RMD based on the younger of his or her own age or the age of the original owner at death.[8]

Investors may avoid the taxation of RMDs by taking them as a qualified charitable deduction (a payment directly to a charitable organization, which can be done for up to $100,000 a year. Such distributions are not included in adjusted gross income or taxable income. For taxpayers who would like to make donations to charity, this can be a large subsidy, and it was made much larger by the Tax Cuts and Jobs Act, which limited the state and local tax deduction and raised the standard deduction, vastly reducing the number of people who itemize and can thus claim the charitable deduction. QCDs provide a full charitable deduction as well as other tax benefits.[9]

III. INCENTIVES FACING INDIVIDUAL INVESTORS

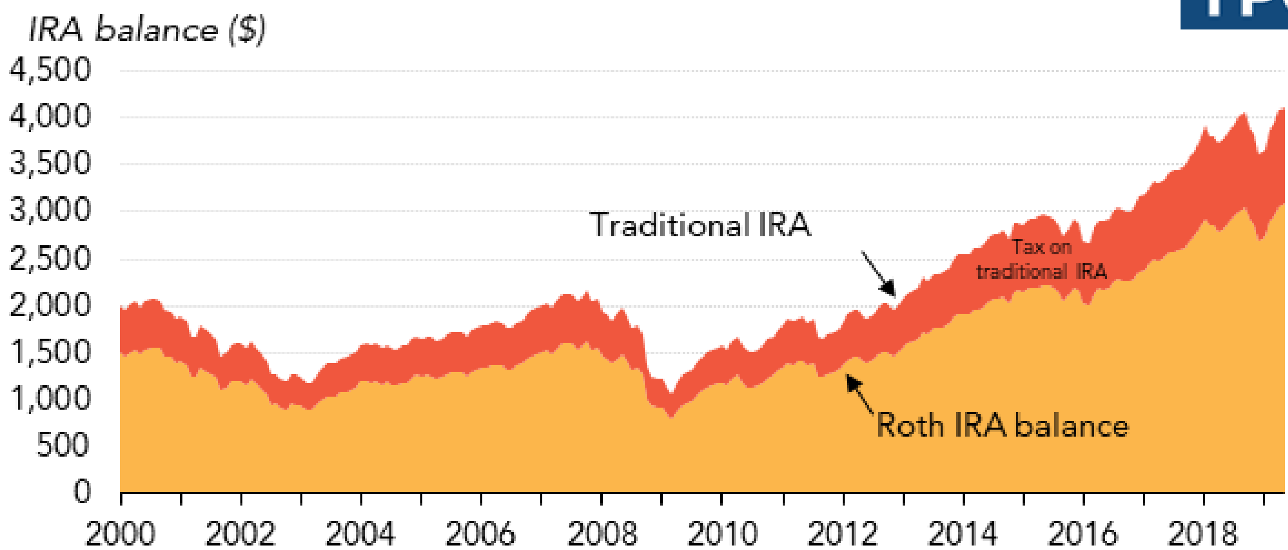
Traditional IRAs and Roth IRAs are equivalent from the investor's perspective in a very simple model where (1) tax rates never change, (2) investors contribute the same amount of after-tax dollars, and (3) the account balance is distributed before death and not subject to early-withdrawal penalties or RMD rules. In the real world, the variation in tax rates over time and the differences in rules discussed in the previous section can affect the optimal choice. Moreover, behavioral biases such as myopia and loss aversion may cause taxpayers to make suboptimal choices.

WHEN ROTH AND TRADITIONAL IRAS ARE EQUIVALENT

If tax rates do not change and early-withdrawal penalties do not apply, investment income accrued within both Roth and traditional IRAs is tax free. This is obvious for Roth IRAs because earnings on the accounts and regular withdrawals are never subject to income tax. But it's also true for traditional IRAs because the up-front deduction is the government's share of the taxpayer's investment. The remaining portion is tax-free, just as with Roth IRAs. From the investor's perspective, the value of the initial tax deduction and any subsequent earnings on that amount is a kind of tax reserve account that grows at the same rate as the overall asset. If the tax rate doesn't change and early withdrawal penalties do not apply, this balance will exactly equal tax liability on withdrawal.

FIGURE 3

Roth IRA vs Traditional IRA: $2,000 Invested in 2000



Source: Shiller (2019).

Note: A traditional IRA equals a Roth IRA plus a tax reserve account. This figure assumes investment of $2,000 in a traditional IRA or $1,500 in a Roth IRA, a constant tax rate of 25 percent, and no withdrawal penalty. Investment tracks S&P 500.

For example, compare $2,000 deposited in a traditional IRA with $1,500 invested in a Roth IRA by a taxpayer in the 25-percent tax bracket in the year 2000 (figure 3). Both deposits have the same after-tax cost because the contribution to the traditional IRA is deductible while the contribution to the Roth IRA is not. If the investment tracked the S&P 500, the balances in the two accounts would look like the lines in figure 3. The Roth IRA balance would always equal 75 percent of the balance in the traditional account. That is, the difference between the two accounts exactly equals the tax that would be due on withdrawal from the traditional IRA if the tax rate remains constant. Under the simplifying assumptions, a traditional IRA is identical to a Roth IRA with a tax reserve account fully funded by the up-front deduction.

The point can also be made using simple algebra. Let t_c be the marginal tax rate when a person contributes to an account and t_w be the marginal tax rate when withdrawing funds. Suppose a person earns X and either contributes X to a traditional IRA or $X(1-t_c)$ to a Roth IRA (because contributions are not tax-deductible). Let r denote the return on the account balance. Assume the withdrawal occurs late enough to avoid early withdrawal penalties and early enough to avoid RMDs. Under the traditional IRA, the taxpayer will be able to withdraw $X(1+r)$. After income tax is assessed, the remaining balance will be $X(1-t_w)(1+r)$. Likewise, the available Roth IRA balance will be $X(1-t_c)(1+r)$. When the two tax rates, t_c and t_w, are equal, traditional IRAs and Roth IRAs yield the same return. The Roth account will be preferred if $t_c < t_w$, and the traditional IRA will be preferred if $t_c > t_w$. Thus, with equal amounts of capital income exempt from tax in each plan, the choice between traditional IRAs and Roth IRAs depends only on whether the tax rate when the contribution is made is above or below the tax rate when withdrawals occur.

EFFECTIVE CONTRIBUTION LIMITS

However, assuming tax rates are constant over time, if traditional and Roth IRAs have the same pretax contribution limit, the Roth IRA effectively allows the investor to shelter more funds. The reason is that the entire contribution (and subsequent returns) to the Roth IRA can be consumed in retirement, whereas only $(1-t)$ times the contribution (and subsequent returns) to the traditional IRA can be consumed. The rest (t times the contribution limit and returns) is simply a prepayment of future taxes. In this situation, an investor who wishes to deposit more than $X(1-t)$ in a tax-free account may prefer the Roth IRA even if the current tax rate exceeds the future tax rate (Burman, Gale, and Weiner 2001).

The difference in effective contribution limits (X under a Roth IRA and $X(1-t)$ under a traditional IRA) can be large. For example, under a 33.3 percent marginal income tax rate, Roth IRAs allow investors to shelter returns from 50 percent more contributions than under traditional IRAs (1.0 / 0.667 = 1.5).

The higher effective contribution limit on Roth IRAs only affects people who are contributing the maximum to a traditional IRA and would like to contribute more. The tax benefits grow with the holding period (Burman, Gale, and Weiner 2001) and, unlike traditional IRAs, Roth IRAs do not require withdrawals before death, so they will be more attractive to wealthy people who do not need their retirement account to finance retirement consumption and who would prefer to bequeath some or all of their IRA balances.

INSURANCE AGAINST UNCERTAIN INCOME AND UNCERTAIN TAX RATES

Roth IRAs provide insurance against future tax rate uncertainty (Brown, Cederburg, and O'Doherty 2017; Burman, Coe, and Gale 2001). Assuming early withdrawal penalties do not apply, earnings from Roth IRAs face a tax rate of zero regardless of what happens to future tax rates. In contrast, the effective tax rate on traditional IRAs can be positive or negative depending on whether the tax rate on withdrawal (t_w) is greater or less than the tax rate on contributions (t_c). The net after-tax rate of return on a traditional IRA is thus uncertain. As a result, risk-averse taxpayers may prefer a Roth IRA even if their expected tax rate in retirement is lower than during their working years because the expected after-tax rate of return with a traditional IRA is not high enough to compensate for the uncertainty.

However, traditional IRAs have a countervailing feature. Under a progressive income tax system, traditional IRAs provide a kind of insurance against future income uncertainty. Marginal tax rates on traditional IRA withdrawals will tend to be lower if retirement income is lower, and tax rates will be higher if income is higher (Brown, Cederburg, and O'Doherty 2017). That is, even if the statutory income tax rate structure stays constant over time, a person's marginal tax rate can change if income changes. By cushioning the effects of high or low returns, the traditional IRA reduces the variation in after-tax retirement income, providing a kind of income insurance.

The relative valuation of these two effects varies across investors. Some households may choose to hold both types of account as a way to diversify risk.

EARLY WITHDRAWAL PENALTIES

The structure of early withdrawal penalties generally favors Roth IRAs over traditional IRAs. To analyze this, imagine a scenario with the same structure and early withdrawal rules described earlier, except assume that $X = 1$ for simplicity and a constant tax rate t over time. An early withdrawal from a Roth before age 59 1/2 would be taxed at $(t+p)r$, and an early withdrawal from a traditional IRA would be taxed at $(t+p)(1+r)$. Therefore, the balance available from a Roth IRA after early withdrawal penalties are paid is

$$(1-t)(1+r)-(1-t)r(t+p)=(1-t)[1+r(1-t-p)]$$

and the tax-free balance available for early withdrawal from a traditional IRA is

$$(1+r)-(t+p)(1+r)=(1+r)(1-t-p).$$

Thus, the tax advantage for a Roth IRA is

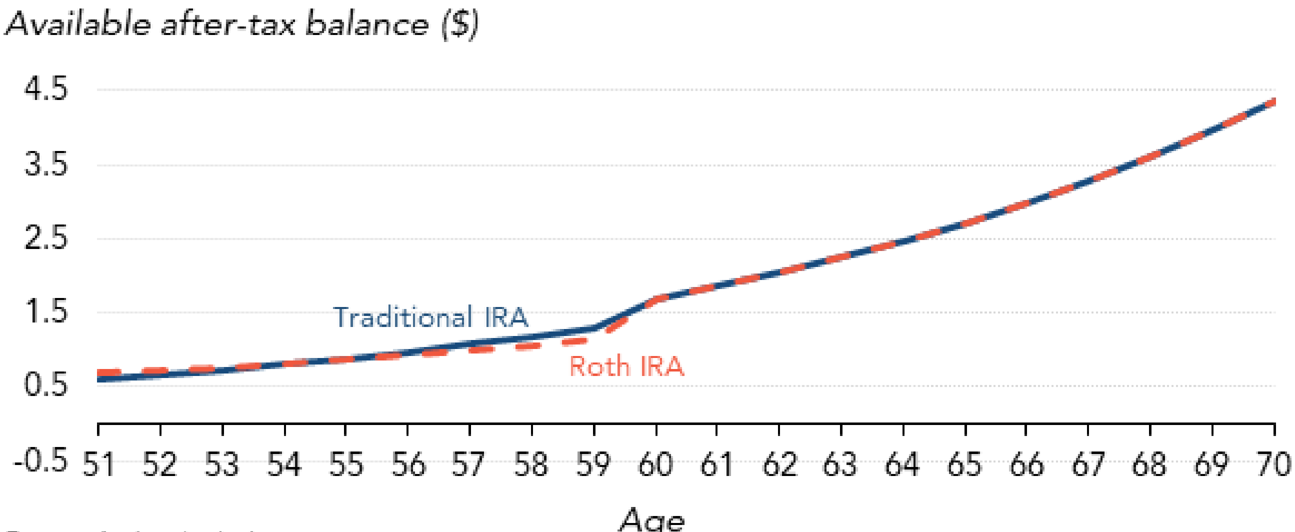
$$D \equiv (1-t)[1+r(1-t-p)]-(1+r)(1-t-p) \ = p-tr(1-t-p).$$

Roth IRAs are preferable when $D > 0$. This function is increasing in p and decreasing in r. Because the total increase in value, r, increases with the holding period, the advantage to Roth IRAs diminishes as the holding period lengthens. It is decreasing in t only if $t < (1 - p)/2$, a condition that will always hold under the current tax system because the penalty rate is 10 percent and the top marginal income tax rate is 37 percent.[10]

FIGURE 4

Available After-Tax Balance by Age

Contribution at age 50



Source: Authors' calculation.
Note: Individual contributes $1 to a traditional IRA or $0.65 to a Roth IRA at age 50. In this figure, we assume a constant tax rate of 35 percent, a penalty rate of 10 percent, and that the account grows by 10 percent annually.

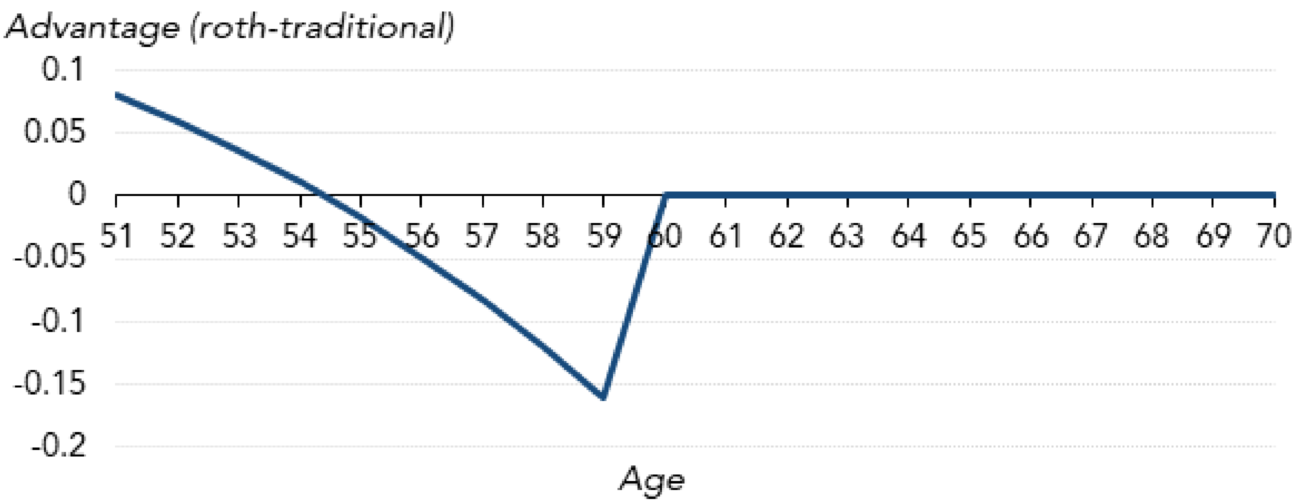
This means that Roth IRAs are more likely to be preferable for early withdrawals when r is small (because of either low returns or short holding period), p is large, or t is small. Some of these factors, such as low returns or low taxes, are more likely to hold for young or low-income people (Burman, Coe, and Gale 2001). (These differences could be eliminated by adding D to the tax assessed on the Roth IRA on early withdrawal. However, the logic of this penalty structure could be hard to explain.)

Consider, for example, a 50-year-old who faces a marginal tax rate of 35 percent, faces a penalty rate of 10 percent, and contributes to an IRA whose value appreciates by 10 percent annually. Figure 4 shows the available after-tax balance for early withdrawals if the person decides to contribute $1 to a traditional IRA or $0.65 to a Roth IRA (so that the effective contribution is the same with a 35 percent tax rate). Figure 5 shows the advantage from choosing a Roth IRA. If the advantage is positive, the Roth IRA is preferable; if the advantage is negative, the traditional IRA is preferable. As noted, the Roth IRA advantage is greater for shorter holding period. Alternative assumptions about the tax rate, penalty rate, and appreciation rate would change the advantage as described. The Roth IRA advantage is zero beginning at age 60 because withdrawals are no longer considered "early" (and are therefore no longer subject to a penalty) after age 59.5.[11]

Investors may also make early withdrawal decisions based on behavioral factors rather than the rational theory outlined above. For example, Burman and colleagues (2012) find that having to pay a penalty rate significantly reduces the likelihood of early withdrawals, controlling for the effective tax rate (i.e., the sum of the statutory tax rate and the penalty). In other words, just framing a tax as a penalty effectively discourages early withdrawal.[12]

FIGURE 5

Roth IRA Advantage for Early Withdrawal



Source: Authors' calculation.
Note: Assumes an individual contributes $1 to a traditional IRA or $0.65 to a Roth IRA at age 50. Assumes a constant tax rate of 35 percent, a penalty rate of 10 percent, and annual account growth of 10 percent.

RMDS AND BEQUESTS

IRAs held until death are included as part of the owner's estate, regardless of whether the account is a traditional or Roth IRA. Consequently, inherited IRAs count against the lifetime gift and estate tax exemption, and any value above the threshold is subject to the estate tax. However, the threshold exceeds $11 million per person, and only about 2,000 estates (less than 0.1 percent of decedents) had to pay the tax in 2018.[13]

But RMDs can affect the relative balances bequeathed in traditional IRAs compared to Roth IRAs. Suppose an investor faces income tax rate t; at age 70 the investor owns a Roth IRA with a balance of $X(1-t)$ and a traditional IRA with a balance of X; the balances in the accounts grow at rate r annually; and the investor turns 70 ½ in December. Further, let B_i be the balance in the traditional IRA at the end of the year in which the investor turns age i, D_i be the distribution period at age i, and M_i be the RMD to be paid at age i. Based on the rules outlined previously, the investor must make a minimum withdrawal $M_{70} = B_{70}/D_{70}$ by April 1. This is different from all following years because M_{70} is withdrawn *after* the new year (unlike all other RMDs). For $i >$

70, the minimum withdrawal is $M_i = B_{i-1}/D_i$. Because B_i is determined at the end of the year and M_i is withdrawn at the end of the year, $B_{i+1} = (B_i - M_i)(1 + r)$ for $i > 70$. This holds even for $i = 71$ because withdrawing M_{70} at the beginning of the current year (rather than the end of the previous year) will have a negligible effect on appreciation.

The after-tax bequest from a traditional IRA upon an investor's death at age i is $B_i(1 - t)$. The bequest from a Roth IRA is $(1 - t)(1 + r)^{i-70}$. Inheritors can choose among several different ways to recognize the inheritance for tax purposes.[14]

EMPIRICAL EVIDENCE

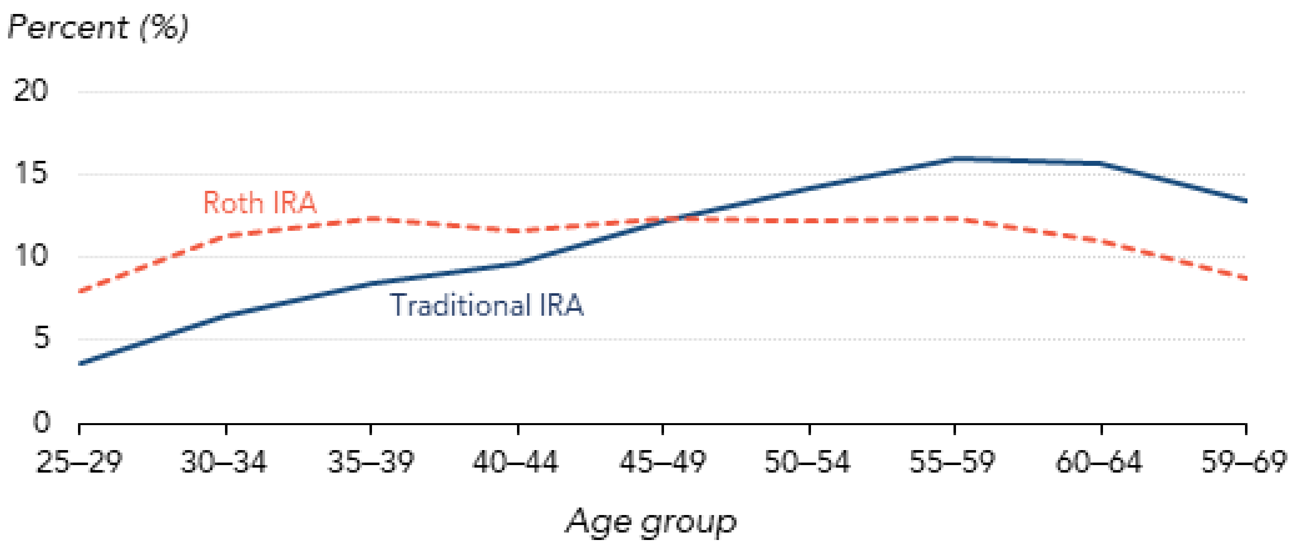
Several empirical patterns are consistent with the economic incentives outlined above for early withdrawal penalties and RMDs (Holden and Bass 2018; Holden and Schrass 2017, 2018).

First, those who hold Roth IRAs are generally younger than those who hold traditional IRAs. In 2016, 41 percent of traditional IRA holders ages 25 to 69 were below age 50; about 56 percent of Roth IRA investors in that group were below age 50 (figure 6). The ownership rate for traditional IRAs increases with age, while the likelihood of owning a Roth IRA peaks around age 50 (figure 7). In 2016, 45 percent of traditional IRA contributors between ages 25 to 69 were younger than age 50 compared with 66 percent for Roth IRAs (figure 8).

FIGURE 6

Share of IRA Investors

By age, 2016

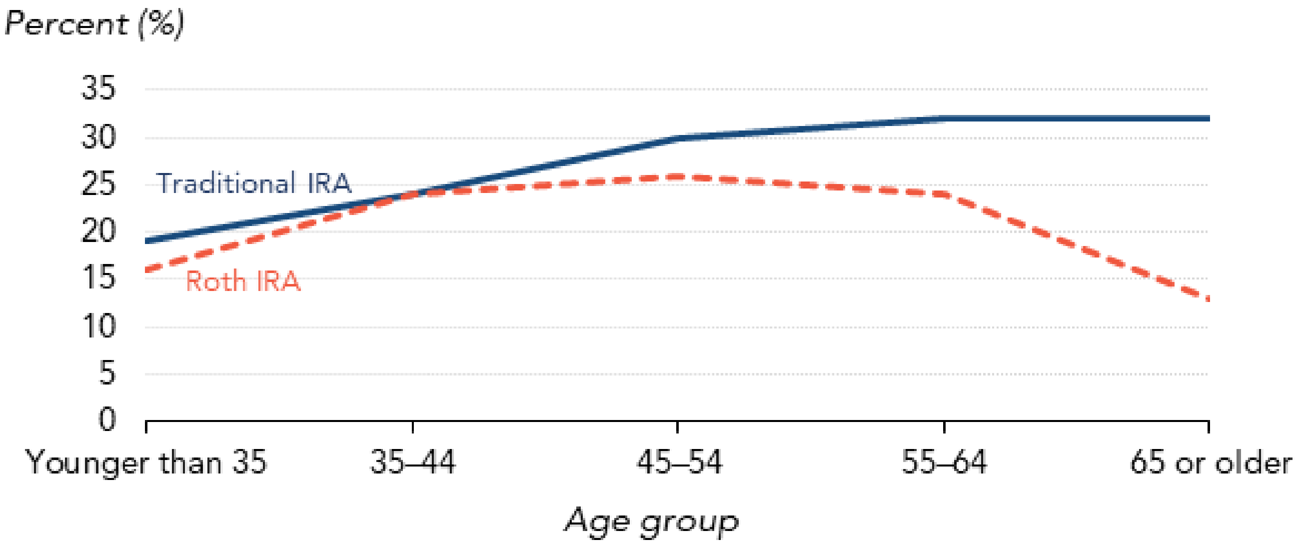


Source: Holden and Bass (2018); Holden and Schrass (2018).

FIGURE 7

Share of Households That Own an IRA

By age, 2017

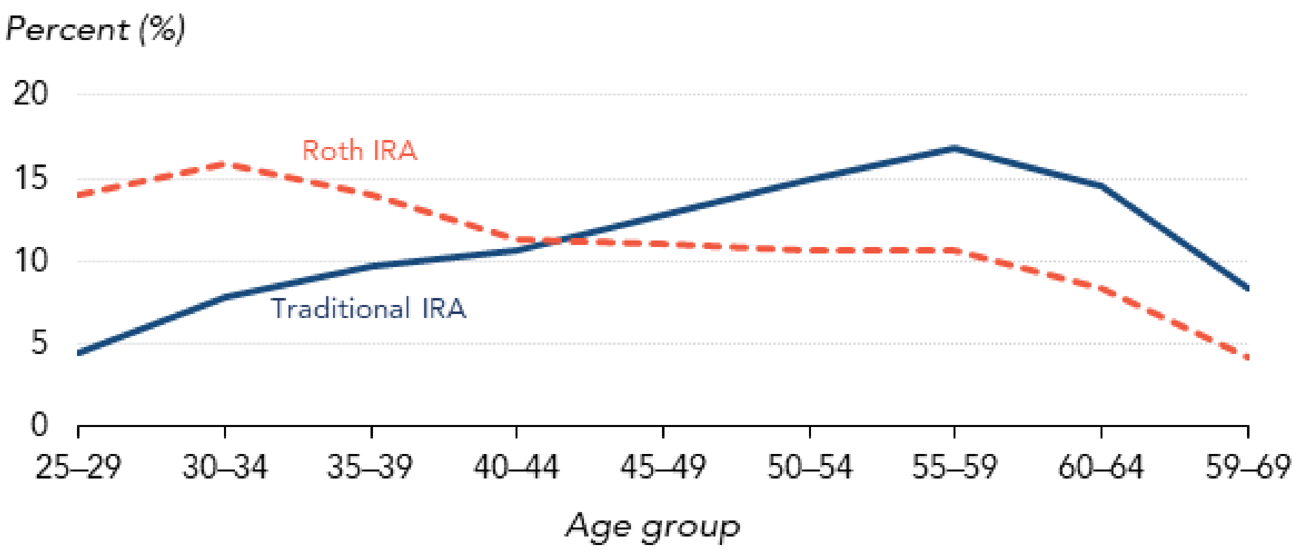


Source: Holden and Schrass (2017).

FIGURE 8

IRA Contributors

By age, 2016



Source: Holden and Bass (2018); Holden and Schrass (2018).

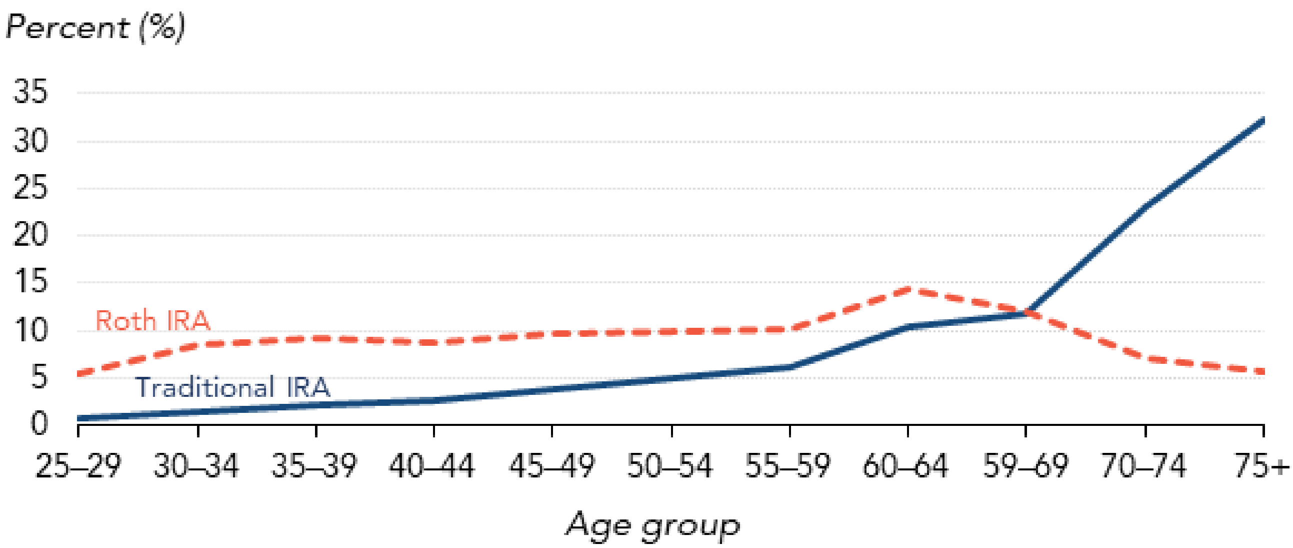
Second, among those who were too young to be affected by the RMDs, those who withdrew funds from a Roth IRA tended to be younger than those who withdrew from a traditional IRA. In 2016, about 41 percent of

Roth IRA investors age 25 or older with withdrawals were younger than age 50, compared with about 11 percent for traditional IRAs (figure 9). This is consistent with the early withdrawal analysis discussed above.

FIGURE 9

Share of Total IRAs with a Withdrawal

By owner age, 2016



Source: Holden and Bass (2018); Holden and Schrass (2018)

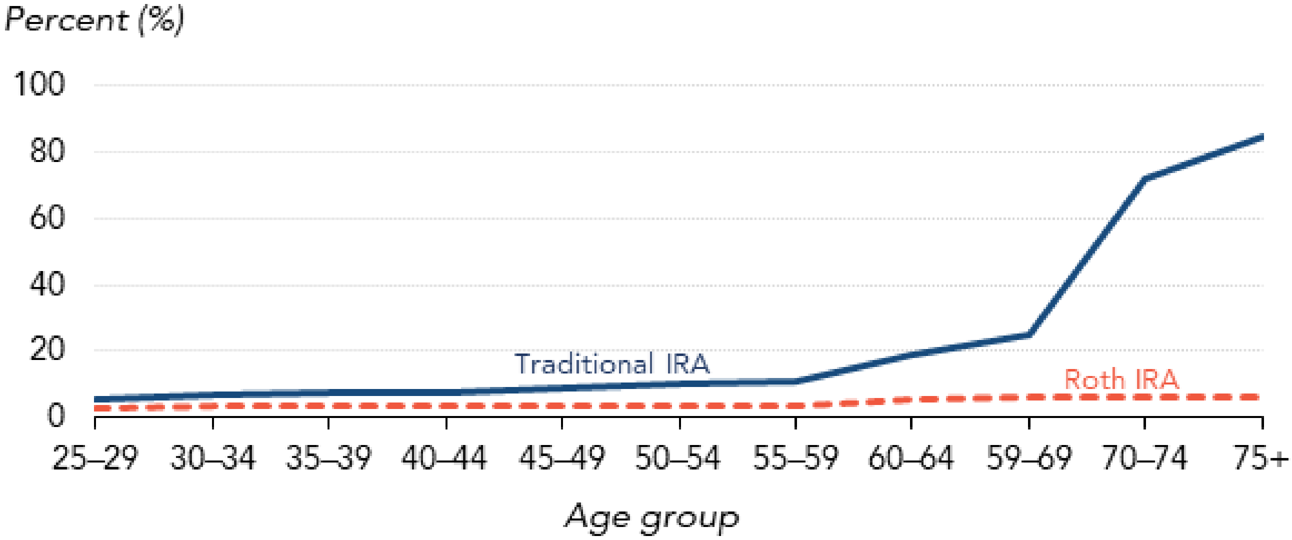
Third, in those age groups affected by the RMDs that affect traditional IRAs but not Roth IRAs, withdrawal rates for Roth IRAs are much higher. About 55 percent of those who withdrew from a traditional IRA in 2016 were older than age 70, compared with about 13 percent for Roth IRAs (figure 9). Although the share of IRA owners who withdraw from their account rises with age for both account types, there is a much greater spike later in life for traditional IRAs compared with Roth IRAs (figure 10).[15]

Previous research confirms these results. Beshears and colleagues (2013) find that Roth 401(k) participation is higher among young people, consistent with the expected response from rational investors. They also find that employees are more likely to participate in a Roth 401(k) if they start working at a company that already offers a Roth 401(k) option; workers who are enrolled in a traditional 401(K) do not usually switch once the option becomes available.

FIGURE 10

Share of IRA Owners with a Withdrawal

By age, 2016



Source: Holden and Bass (2018); Holden and Schrass (2018)

Brown, Poterba, and Richardson (2017) also find that RMDs appear to increase traditional IRA withdrawals. Approximately one-third of people in their study who withdrew an amount exactly equal to their RMD in 2008 did not take a distribution in 2009, when RMD rules were temporarily suspended. This suggests that these people would otherwise withdraw less than the RMD amount if not required to. Mortenson, Schramm, and Whitten (2019) derive similar effects for a broader sample using Internal Revenue Service administrative data on tax returns.[16]

IV. FISCAL IMPLICATIONS

The higher effective limit on Roth IRA contributions implies that shifting from traditional IRAs to Roth IRAs reduces the present value of federal revenues. But even when Roth and traditional IRAs would be identical from the perspective of the investor (constant tax rates, equal after-tax contribution limits, no RMDs, and equivalent penalties on early withdrawals), they are not equivalent from the perspective of the federal government. First, Roth IRAs shift most of the revenue losses into the future. If the government is myopic, this will tend to enable more spending or lower taxes in the near term and thus create higher debt over time. Second, traditional IRAs make the federal government a silent partner in the investments they hold. (The "tax reserve account" shown in figure 3 will rise or fall with the returns in the IRA investment.) This is not a particularly efficient way for the government to invest in equities: the government could, in principle, optimize its portfolio and save on investment fees by investing directly, but that may not be feasible for a variety of reasons, so investing through IRAs may be a second-best option to diversify the government's asset portfolio. Third, investing in equities and other risky assets has a higher expected rate of return than investment in bonds, which could improve the government's finances over time, depending on why government interest rates are currently so low (Elmendorf and Sheiner 2017; Krishnamurthy and Vissing-Jorgensen 2012). For investors, the difference in returns between equities and bonds reflects an equity premium—a fair price to compensate for the additional risk. However, the federal government has risk-pooling options not available to an investor. In particular, the government may diversify assets over time, and it is much less likely than an investor to face binding credit constraints. These differences would imply a smaller risk premium required for equity instruments. Fourth, because Roth IRAs are excluded entirely from the income tax base, the federal government loses a valuable policy instrument: the ability to raise the tax rates that apply to future withdrawals.

BUDGETARY EFFECTS IF THE GOVERNMENT IS MYOPIC

Although traditional and Roth IRAs may have similar effects on investors' finances under certain circumstances (as discussed in the previous section), they shift the timing of federal revenues significantly. The government receives revenue earlier from Roth IRAs than from traditional IRAs because contributions to traditional IRAs are deductible (reducing federal revenues immediately) while contributions to Roth IRAs are not. Thus, a switch from traditional IRAs to Roth IRAs raises revenues in the 10-year window used for scoring budget proposals.

For example, as part of his 2014 tax reform plan, former representative Dave Camp (R-MI) proposed prohibiting contributions to traditional IRAs and eliminating the income limits on contributions to Roth IRAs, among other provisions. The entire retirement account proposal would have increased revenues by more than $200 billion in the first 10 years, and it helped make the overall tax plan revenue neutral within the budget window (Joint Committee on Taxation 2014; Nunns, Eng, and Austin 2014).

A similar proposal capping traditional IRA and 401(k) contributions to shift more contributions into Roth accounts was floated in late 2017 as a way to lower the cost of the Tax Cuts and Jobs Act, although it was ultimately left out of the final legislation.[17]

If government spending and non-IRA-related tax revenues were unaffected by the shift to Roth IRAs, the timing shift itself would not be a problem. But the examples just described illustrate that the additional revenues in the short term are intended to support reductions in other current taxes on a one-for-one basis. That is, the shift is effectively a form of borrowing that does not show up in short-run budget numbers but will exacerbate our already unsustainable long-run budget situation (Gale 2019).

TRADITIONAL IRAS AS AN INDIRECT TOOL FOR GOVERNMENT PORTFOLIO DIVERSIFICATION

As noted, traditional IRAs expand the range of federal government investment holdings. For example, because slightly more than half of traditional IRA assets are held in equities, the government's stake provides a decentralized way to implicitly invest in equity markets. The tax deductions on traditional IRAs represent a sizable government asset (Hubbard and Skinner 1996). In 2018, for example, the government lost about $18 billion in revenue because of contributions to traditional IRAs (Joint Committee on Taxation 2018). Thus, one way to think about a shift from traditional to Roth accounts is that the government would be selling a valuable asset to finance current government operations.

To be clear, having the government "invest" through its future-tax share of traditional IRAs is not ideal. First, the government must hold the portfolio of assets chosen by individual investors when it might be able to earn a higher risk-adjusted return if it were free to invest directly. Second, the government has its share reduced to the extent that small investors face higher fees than the federal government would if it could invest hundreds of billions of dollars directly. Landoni and Zeldes (2018) estimate that the government effectively pays more than $16 billion in annual investment fees when it defers tax revenue.

However, the government's direct investment options are limited. The Clinton administration considered a policy that would invest a portion of the Social Security Trust Fund in equities, and it was met with concerns that government ownership of a large portion of the stock market would allow the government to exert control over private businesses and undermine the capitalist foundations of our economy (Elmendorf, Liebman, and Wilcox 2002). The Clinton administration ultimately proposed investing a substantial fraction of the trust fund in equities and implementing guardrails to prevent abuse, and others have made similar recommendations, but those proposals have never been adopted (Auerbach 2004; Burtless et al. 2016).[18]

If direct investment is politically infeasible or deemed undesirable because of concerns about corporate governance, indirect investment may be a second-best option for improving the federal government's balance sheet despite the relatively high investment costs. Shifting to Roth accounts sacrifices that potentially valuable option.

HOW HIGHER RETURNS ON RISKY INVESTMENTS AFFECT LONG-RUN FINANCES

Investing in equities, either directly or indirectly (through traditional IRAs), would raise expected future tax revenues, but whether doing so actually increases social welfare is unclear. The higher rate of return on equities is simply market-based compensation for the additional risk involved in such investments. As such, individual investors who hold both stocks and bonds are indifferent on the margin between the two assets. However, public investment in equities may involve less risk because the government can diversify risk across cohorts in a way that people themselves cannot. Bohn (1999) shows that government investment in equities can thus raise social welfare in an overlapping generations model.

Moreover, some investments in IRAs and other retirement accounts may earn super-normal returns—that is, rates of return higher than available to most market participants. In 2012, presidential candidate Mitt Romney famously revealed that he had an IRA worth between $21 million and $102 million that held stock in his private equity company, Bain Capital, which routinely produced very high returns.[19] Because it was a traditional IRA, the federal government shared in those extraordinary returns. If Romney had held a Roth IRA, the government's share would be zero.

LOSS OF POLICY FLEXIBILITY FROM REDUCTION IN FUTURE INCOME TAX BASE

The increasing average age of the population and rising health care costs mean that the federal government's future revenue needs are likely to be higher than they are now (Gale 2019). One way to address those needs is to raise income tax rates, but Roth IRAs are excluded entirely from the income tax base. A shift to Roth IRAs means that the federal government would forgo a valuable policy instrument—the ability to raise the tax rates that apply to future withdrawals.

DIRECT REVENUE LOSSES CAUSED BY A SHIFT TO ROTH ACCOUNTS

Other factors, described in the previous section, cause Roth IRAs to lose much more revenue in present value terms relative to traditional IRAs. Roth IRAs face a higher effective contribution limit. As noted, at a constant 33 percent tax rate, a Roth IRAs shelters 50 percent more income from tax than the same dollar contribution to a traditional retirement account. That means, assuming the same pattern of contributions and withdrawals, the Roth IRA contribution costs 50 percent more in present value terms than the traditional contribution. And because Roth IRAs are not subject to RMDs, people wealthy enough to make no retirement withdrawals may benefit from tax-free accruals indefinitely, whereas the tax benefits for traditional accounts have limited duration.

V. CONCLUSION

Policymakers have long been drawn to Roth IRAs because they seem to be a painless way to raise revenue. The truth is exactly the opposite. They offer people more generous tax benefits than traditional IRAs, and they are most attractive to people who do not need tax-favored retirement accounts to finance their retirement needs. Roth IRAs are already contributing to the deterioration of federal finances and shifting more investors into Roth IRAs would worsen our long-term fiscal situation.

Traditional IRAs allow the federal government to indirectly invest in stocks and other risky assets, thereby earning a higher expected return. Though inefficient, this may be the only practical way for the government to invest in equities. And given policymakers' myopia, the shift to Roth IRAs produces an illusory stream of revenues that enables bigger tax cuts or more spending, which will also exacerbate our long-run fiscal imbalance.

Despite the costs to the government, Roth IRAs are better for many individual investors. However, they also have some undesirable effects. As noted, tax benefits are maximized when the accounts are never tapped for retirement spending; the subsidy in Roth IRAs is very poorly targeted if the goal is to increase retirement security. Roth IRAs are also attractive to young people with more modest incomes because the low tax rate makes the up-front deduction in traditional IRAs less valuable. However, the penalty structure on early withdrawals from Roth IRAs may tempt young people to withdraw from their retirement accounts sooner than they would from a traditional IRA. This means those who could benefit most from additional retirement saving may also be most likely to withdraw the funds before retirement.

Future research should focus on using Internal Revenue Service administrative data to measure taxpayers' responses to various IRA features. The theory discussed in this report provides several empirical implications that could be tested with microeconomic data on tax returns.

Finally, although this discussion has focused on IRAs, most of the analysis also applies to Roth 401(k), 403(b), and 457 plans. Because the contribution limits on those accounts are much higher, their fiscal implications are even larger.

NOTES

[1] For additional historical overview, see, for example, Congressional Budget Office (2003, 2007) and Holden et al. (2005). Further details noted in this section are found in Chaikind et al. (2005); Internal Revenue Service (1998); Purcell (2007); and Storey (2004).

[2] For additional overview on the rules, see Internal Revenue Service (2018d). Kotlikoff, Marx, and Rapson (2008) provide calculations regarding the optimality of traditional IRAs versus Roth IRAs under a variety of circumstances.

[3] In contrast, Beshears et al. (2017) use the term "front-loading" with respect to Roth accounts when discussing the timing of tax payments.

[4] For traditional IRA purposes, MAGI is adjusted gross income plus any student loan interest deduction, domestic productivities deduction, foreign-earned income exclusion, foreign housing deduction, and excludable savings bond interest.

[5] For Roth IRA purposes, MAGI is adjusted gross income less any income resulting from the conversion of an IRA and a rollover from a qualified retirement plan to a Roth IRA, plus any traditional IRA deduction, student loan interest deduction, domestic production activities deduction, foreign-earned income exclusion, foreign housing deduction, excludable qualified savings bond interest, excluded employer-provided adoption benefits.

[6] As discussed in the Background section, the SECURE Act would increase this threshold to age 72.

[7] For more discussion and proposals to reform RMDs, see Iwry et al. (2019).

[8] Internal Revenue Service (2018a, 2018c). As a stylized example, consider a person turning 80 in 2019 who had a traditional IRA balance of $100,000 at the end of 2018. The distribution period for age 80 is 18.7, so by December 31, 2019, they must withdraw at least $5347.59 (=$100,000/18.7) from their account. Different rules apply if the sole beneficiary is a spouse who is more than 10 years younger than the original account owner.

[9] Qualified charitable deductions are better than taking a charitable deduction on Schedule A for two reasons. First, the donation is completely excluded from adjusted gross income and taxable income. In contrast, most taxpayers get no benefit or only a partial benefit from claiming charitable contributions as an itemized deduction. The deduction for state and local taxes is capped at $10,000, and the standard deduction for joint filers in 2019 is $24,400. For a taxpayer with the maximum SALT deduction and no other itemized deductions, the first $14,400 of charitable contributions do not affect taxable income (because they are below the standard deduction). Second, regular RMDs (not qualified charitable deductions) increase adjusted gross income, which may increase taxes by, for example, increasing the portion of Social Security that is included in taxable income. Higher AGI may also increase income-related premiums under Medicare. Qualified charitable deductions avoid both kinds of implicit taxes. See Stark (2019).

[10] Rearranging $D, p - tr(1-t-p) = p - r(t - t^2 - tp)$. $\frac{\partial D}{\partial t} = r(2t+p-1) < 0$ only if $t < (1-p)/2$. Given p = 0.10, this implies a threshold tax rate, where $\frac{\partial D}{\partial t} = 0$, at $t = 0.45$.

[11] The five-year rule is satisfied because the individual contributed when he or she was 50 years old.

[12] Investors may also make decisions about early withdrawals based on rules simpler than the rational theory. For example, they may respond to the tax and penalty as a percentage of the proceeds, rather than maximizing the after-tax payoff. If that's the case, then Roth IRAs always appear preferable, because only the earnings on the account are subject to tax, not the entire balance. This is especially true at short holding periods, because in the long-run, the earnings on the account will become a larger share of the balance in the account.

[13] In 2018, the estate tax exemption threshold was $11.2 million for single filers and $22.4 million for couples. The top estate tax rate is 40 percent (Internal Revenue Service 2018b). Estimates of estate tax coverage are from Tax Policy Center (2018).

[14] For example, inheritors can accept the funds as a taxable lump-sum distribution or transfer the assets to their own IRA. They can also use the assets to open an inherited IRA. In many cases, the rules depend on whether the original account owner was older or younger than 70 ½ at the time of death.

NOTES

[15] Among accounts that have owners older than 70 ½, the share that make withdrawals can be less than 100 percent, because the account holder may have other IRAs from which RMDs were taken.

[16] Goodman (2019) examines the extent to which withdrawals that are forced by the RMD rules are saved in other forms versus consumed.

[17] Chris Arnold, "Republicans Count Affect Americans' Retirement by Targeting 401(k) Plans," *All Things Considered*, October 23, 2017; Heather Long, "The Final GOP Tax Bill is Complete. Here's What's in It," *Washington Post,* December 15, 2017.

[18] For a debate on the topic, see Munnell and Tanner (2017).

[19] Mark Maremont, "Romney's Unorthodox IRA," *Wall Street Journal,* January 19, 2012.

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