

IS U.S. CORPORATE INCOME DOUBLE-TAXED?

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Using data from several sources, we show that the vast majority of corporate income is not double-taxed in the United States. We estimate that the taxable share of U.S. corporate equity has declined dramatically in recent years, from over 80 percent in 1965 to about 30 percent at present. We discuss the causes of these dramatic changes in the taxable share of corporate stock. Several factors explain the shift, including changes in retirement finance, demographic changes, changes in the prevalence of pass-through business organizations, and the increased globalization of capital markets. These findings are important for the development of corporate tax policy. Moving the capital tax burden to the individual income tax, as some have proposed, without reforming tax preferences that currently exempt much corporate equity from taxation under the individual income tax, would lead to a large revenue loss. These findings also have implications for other important questions in public economics, including the measurement of the cost of capital, the importance of capital gains lock-in effects, the consequences of changes in dividend taxation, and the nature of clientele effects.

Keywords: corporate taxation, tax reform

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I. INTRODUCTION

Every public finance student learns that corporations are subject to two levels of taxation — at the company level through the corporate income tax and the individual level through taxation of dividends and capital gains. Though observers frequently lament this double taxation of equity-financed corporate investment, double taxation is not important per se; the issue is the overall level of tax and disparities among different types of investment.

Moreover, double-taxation of the normal return to capital is not directly an issue for debt-financed investments — about 40 percent of corporate investment is debt-financed.

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Debt-financed investments are actually subsidized through the corporate tax system since interest payments are deductible and provisions such as accelerated depreciation allow deductions in excess of the true cost of capital. However, the relative taxation of debt and equity may be an indirect issue if disparities lead to an inefficiently high degree of leverage or favor some types of investment over others.

Still, the overall *effective* tax rate depends on both corporate and individual income taxes. Assuming that all corporate equity is subject to dividend and capital gains taxation at the individual level can imply very high overall tax burdens, although there are substantial disparities because of unequal taxation at the corporate level. Double-taxation of equity-financed investments was a major part of the motivation for several proposals to cut corporate tax rates dramatically, including recent proposals offered by House Speaker Paul Ryan and several 2016 Republican presidential contenders. Academic proposals have suggested cutting corporate tax rates and moving more of the tax burden to the individual level; see, for example, Altshuler and Grubert (2016) and Toder and Viard (2016).¹

In fact, most corporate income is not taxed at the individual level and this has important implications for tax reform. Rosenthal and Austin (2016) estimated that the taxable share of U.S. corporate stock has fallen dramatically in recent decades, from more than 80 percent in 1965 to only 24 percent in 2015. During this period, holdings of U.S. corporate shares by tax-exempt retirement accounts and by foreign account holders have increased relative to holdings in taxable individual accounts. We update these estimates using recently released data.

Rosenthal and Austin's methodology starts with Federal Reserve Flow of Funds estimates of equity held by households and nonprofits, which is the residual between total equity and holdings by other entities such as foreign investors, and they also must make a number of assumptions to infer the taxable share of individual holdings. This raises questions about the reliability of their estimates, but we are able to validate their general conclusions using data from two alternative sources. We develop an alternative methodology to infer the taxable share based on dividends paid by corporations and reported on individual income tax returns. We estimate that the taxable share of corporate equity averaged 32 percent between 2004 and 2013, slightly higher than Rosenthal and Austin's estimates, but significantly lower than previously thought. As a second test, we use data on sales of corporate stock reported on individual income

¹ Of course, there are many other distortions and problems associated with the taxation of capital through the corporate income tax that reforms may seek to address. These include distortions to the debt/equity composition of corporate finance, distortions to the organizational form of business (corporate versus pass-through), distortions among types of investments (due to accelerated depreciation, the production activities deduction, and other special provisions), and distortion to the international location of economic activity. Profit shifting across tax jurisdictions has eroded the corporate tax base in many countries. In the United States, high levels of corporate profits have not generated associated increases in corporate tax revenues, and revenue losses due to profit shifting are substantial. These distortions will be discussed in more detail in Section VI.

tax returns and find similar magnitudes and trend in taxable stock holdings to those estimated by Rosenthal and Austin.

We discuss the causes of these dramatic changes in the taxable share of corporate stock. Several factors explain the shift, including changes in retirement finance, demographic changes, changes in the prevalence of pass-through business organizations, and the increased globalization of capital markets.

These findings are important for the development of corporate tax policy. The corporate tax represents the only level of domestic tax for most corporate capital held by U.S. shareholders.² Moving the capital tax burden to the individual income tax would either cause a large revenue loss or require a reform of tax preferences that currently exempt much corporate equity from taxation under the individual income tax.

These findings also have implications for other important questions in public economics, including the measurement of the cost of capital, the importance of capital gains lock-in effects, the consequences of changes in dividend taxation, and the nature of clientele effects.

Section II provides background and discusses prior work. Section III uses data from the Federal Reserve's Financial accounts to estimate the share of U.S. corporate equities held in taxable individual accounts. Section IV discusses how these shares have varied over time. Section V draws on data from different sources to examine the reliability of these estimates. Section VI develops some policy implications. Finally, Section VII presents conclusions and areas for further research.

II. BACKGROUND

Determining the share of corporate equity in taxable individual accounts is surprisingly difficult, and prior research has often overestimated this share by including returns held in tax-exempt retirement accounts, tax-exempt 529 college saving plans, non-profits, or foreign accounts.³

We consider taxable accounts to be those whose capital gains and dividends are taxable on individual income tax returns. We exclude shares held in retirement plans, both defined-contribution and defined-benefit, which are not subject to capital gains and dividends taxation, and we exclude retirement accounts, including both traditional Individual Retirement Accounts (IRAs) and Roth IRAs. Those accounts are both untaxed since either (1) their contributions are nondeductible and earnings are nontaxable, as in the case of Roth IRAs and Roth 401(k), or (2) their contributions are deductible and earnings are taxable upon withdrawal, as in the case of traditional IRAs or 401(k) plans. The two options are identical from the perspective of the investor if the tax rate

² We do not address whether the corporate tax is falling primarily on normal returns to capital, rents, or labor. For a full treatment of these issues, see Clausing (2012, 2013).

³ The Financial Accounts identify 529 type college savings plans, but not others such as Coverdell education IRAs. Nonprofits are defined as "nonprofit organizations such as charitable organizations, private foundations, schools, churches, labor unions, and hospitals." Board of Governors (2017, p. 9).

on contributions and withdrawals is the same and assuming equal after-tax contributions, since the tax deduction for contributions plus earnings exactly equals the tax burden on withdrawals.⁴

In its Financial Accounts, the Fed reports the flow and holdings of financial assets, including corporate equity; however, the Flow of Funds estimates characterize many assets in a way that is too broad to discern the taxable share of corporate equity, as discussed in Rosenthal and Austin (2016). The Fed estimated that the “household sector” accounted directly for 39.1 percent of corporate equity in 2015.⁵ These data are the basis for many estimates, including Poterba (2004) and Auerbach (2006).

It has long been recognized that these data do not accurately represent the taxable share of U.S. corporate equity. Poterba (2004) refined the Fed estimates by excluding equity owned by defined benefit and defined contribution plans from the household sector and adding the indirect share of household ownership via mutual funds. In combination, he estimated the taxable household share of corporate equity was 57.2 percent for 2003. This estimate is now more than a dozen years old, and as we show later, the taxable share has fallen dramatically in recent years.

Using similar methods at a similar time, Auerbach (2006) estimated that U.S. households (taxable and nontaxable) directly owned approximately 42 percent of the market value of U.S. corporations in 2004, and that this share would be higher if assets held indirectly (e.g., through mutual funds) were included.⁶

Goldman Sachs (2013) observed that the Fed’s “broad category definitions can make it difficult to use the Federal Reserve Financial Accounts (Flow of Funds) data to analyze trends in the domestic public equity market.”⁷ Instead, they used proprietary company-specific ownership data to estimate that retail investors *directly* owned 23 percent of public U.S. single-stock equities in 2013 (and retail investors *indirectly* owned more through mutual funds and pension funds). But those data include ownership through IRAs, which should be excluded in estimates of taxable accounts.

Gale (2002) and Rosenberg (2012) took a different approach. They derived the household taxable share from tax return data. Gale divided total dividends reported

⁴ Consider an example where an investor has \$100 in pre-tax wages that she wants to deposit in a retirement account after paying applicable taxes. Suppose there is a flat rate 25-percent income tax. If she wants to deposit in a Roth IRA, she has \$75 after tax to deposit. After n years, she will have $\$75(1+r)^n$, which she may withdraw tax-free (where r is the annual return). If she puts the money in a traditional IRA, she can deposit the full \$100 because the deduction offsets the income tax that would otherwise be owed. At the end of n years, she will have a balance of $\$100(1+r)^n$, but she will have to pay 25 percent of that amount in tax. In other words, she will have the same $\$75(1+r)^n$ to finance retirement consumption as she would have if she had contributed to the Roth IRA. There are some more subtle advantages of Roth accounts because there are no minimum required distributions and pre-paying the tax is advantageous to those subject to the estate tax, and the effective contribution limits are higher because the tax is prepaid. Burman (2006) and Burman et al. (2001) compare the net returns to investors from front-loaded (i.e., traditional) and back-loaded (i.e., Roth) retirement accounts under various assumptions.

⁵ This is the ratio of line 11 to line 1 of Table L223 of the Board of Governors of the Federal Reserve System (2016).

⁶ See Auerbach (2006, pp. 4–8), which discusses the problems of using the Fed’s Financial Accounts data to assign corporate tax burden. To estimate U.S. holdings of U.S. equity, Auerbach netted U.S. resident holdings of foreign equity against foreign resident holdings of U.S. equity.

⁷ See Goldman Sachs (2013, p. 5).

on individual tax returns (Form 1040s) by dividends reported in the National Income and Product Accounts (NIPA) reports. Gale estimated that individuals received 46 percent of dividends paid by the corporate sector in 2000. Rosenberg took advantage of the 2003 tax law change that required separate reporting of “qualified dividends,” which allows a more accurate measure of the numerator. He also refined the denominator by using dividends reported on corporate tax returns (Form 1120). Rosenberg’s estimates had the effect of reducing both the numerator and denominator: qualified dividends exclude non-stock dividends such as those paid on money market or bond funds and 1120 dividends excludes S-corporation dividends that are included in the NIPA measure. Rosenberg estimated that individuals received 44 percent of U.S. corporate dividends in 2009. However, both Gale and Rosenberg compare dividends received by U.S. individuals from both U.S. and foreign corporations to total dividends paid by U.S. corporations to U.S. and foreign shareholders. We develop a methodology below to infer domestic holding of U.S. corporate equity held in taxable accounts.

Rosenthal and Austin (2016) made a number of adjustments to the Financial Accounts, drawing on data from the Investment Company Institute (on mutual funds) and other sources, and they estimated that the taxable share of domestic equity was 24 percent in 2015, much lower than prior estimates. They produced a time series back to 1965, which showed that the taxable share had fallen dramatically over time, from 84 percent in 1965. Over 1965–2015, foreign holdings rose sharply from 2 percent to 26 percent. Equities held in retirement accounts comprised 6 percent of all equity in 1965, but 37 percent in 2015.

In general, the downward trend in the taxable share of domestic equity seems to be driven by three factors: (1) the globalization of capital markets; (2) the shift of retirement savings into IRAs and defined contribution pension plans, which were insignificant in 1965; and (3) the growth of investment in pass-through entities, especially S-corporations, which are not subject to the corporate income tax.

We build on the analysis of Rosenthal and Austin (2016) in several ways. First, we update the estimates using the most recent revisions published by the Fed. Second, we provide a more detailed analysis of the changes in the taxable share of equity over time. Third, we discuss concerns about the Financial Accounts methodology and test the validity of the estimates using data from other sources, showing that the qualitative conclusions appear to be robust. Finally, we discuss the economic and policy implications of the shift in ownership of corporate equity.

III. DERIVING INDIVIDUAL OWNERSHIP OF U.S. CORPORATE EQUITY FROM FLOW OF FUNDS DATA

A key challenge in analyzing the Federal Reserve’s data set is that it combines individual holdings with holdings of nonprofits and others, and it also double-counts some corporate equity held by pass-through entities, as discussed by Rosenthal and Austin (2016).

Table 1 updates Tables 1 and 2 in Rosenthal and Austin (2016), basically following their methodology but presenting the calculations in a more intuitive way. The first step

Table 1
Subtract Foreign Equity and Pass-Throughs, 2015
(Dollar Amounts in Billions)

	All Corporate Equity (1)	Subtract Foreign Equity (0.226 X (1)) (2)	U.S. Equities (3)	Take Out Pass-Throughs				U.S. C Corp Equity (8)
				S Corp Equity (4)	ETFs (5)	CEFs (6)	REITs (7)	
All holders	35,756	(6,828)	28,928	(2,752)	(2,100)	(261)	(939)	22,876
Household and nonprofit	14,158	(3,198)	10,961	(2,752)	(1,062)	(132)	(207)	6,808
Foreigners	5,522	0	5,522		(95)	(12)	(56)	5,359
Insurance companies	623	(141)	482		(269)	(33)	(131)	48
Defined benefit plans	3,174	(717)	2,458		(333)	(41)	(33)	2,050
Defined contribution plans	1,366	(308)	1,057		(280)	(35)	(33)	710
Other	478	(108)	370		(62)	(8)	(56)	244
Mutual funds	8,625	(1,948)	6,677				(310)	6,368
Closed-end funds	100	(23)	77					77
Exchange-traded funds	1,709	(386)	1,323				(113)	1,211
Domestic owned equity	30,234							

Source: Board of Governors of the Federal Reserve (2016) based on Rosenthal and Austin (2016)

is to account for foreign transactions by both removing foreign-owned U.S. equity and accounting for the fact that Americans own foreign equity. In 2015, foreigners held an estimated \$5,522 billion of the \$35,756 billion of corporate equity (column 1 of Table 1). Corporate equity in the Financial Accounts includes \$6,828 billion in foreign equity held by Americans. That is 22.6 percent of domestically owned equity. Applying that percentage across the board yields the estimates in column 3. This is a rough approximation, but it is not clear how it could be refined.

The next step is to remove S-corporation stock, exchange-traded funds, closed-end funds, and real estate investment trusts. None of these pass-through entities are subject to a separate corporate level tax, and the holdings of stock represented in exchange traded funds (ETF) and closed end funds (CEF) are double-counted in the Financial Accounts (Rosenthal and Austin, 2016). Rosenthal and Austin had to estimate S-corporation equity, but the Fed now publishes their own estimates, which we use. We subtract S-corporation stock, ETFs, and CEF shares to eliminate double counting. The result in column 8 is U.S. corporate equity, which totaled \$22,876 billion in 2015.

Table 2 shows the adjustments between the Fed's estimates and our estimates of direct household ownership in taxable accounts in the form of a transition matrix. Of the estimated \$6,808 billion in the "household sector," nonprofits held about \$963 billion in 2015. The household row is also distorted by including IRAs and 529 accounts, which are tax free. We reallocate \$1,567 to those tax-free accounts. Both are subtracted from the household row. In addition, households hold a significant amount of equity in mutual funds, CEFs, and ETFs, which the Fed reports separately. We estimate that \$1,909 billion of shares in pass-throughs are actually held by households in taxable accounts, and that total is added to the household line (column 9). After these adjustments, \$6,188 of the \$22,876 in U.S. C-corporation equity, or 27 percent, is taxable corporate stock held by households either directly or in mutual funds or other kinds of pass-through accounts. This is close to the estimate of 24 percent reported by Rosenthal and Austin (2016). The difference is due to data revisions.

A great advantage of deriving these estimates from the Flow of Funds data is that it allows a detailed decomposition of holdings of corporate equity and a relatively consistent long time series dating back to 1965. As shown in the next section, this time series documents a remarkable transformation in the ownership of corporate stock. The concern about this methodology is that the household sector in the Fed data is a residual — what is left over after subtracting all of the types of corporate equity that may be measured directly. As such, relatively small errors may loom large. For example, if the overall error in measuring corporate equity is 5 percent of the value in a year, that error is small relative to the total but would represent almost one-quarter of the value of taxable household stock that we measure. In addition, as detailed in Rosenthal and Austin (2016), a number of assumptions must be made to produce these estimates. These assumptions add a range of uncertainty that could amount to 2 or 3 percent of total corporate equity (or about 10 percent of the taxable household share).

Table 2
Reallocating U.S. C Corp Equity, 2015
(Dollar Amounts in Billions)

	U.S. C Corp		Reallocation to Ultimate Owners							After Reallocation		
	Equity Before Reallocation (8)	+	Household (taxable) (9)	Foreigners (10)	IRA/529 (11)	Nonprofits (12)	Insurance (13)	DB (14)	DC (15)	Other (16)	Amount (17)	Percent (18)
All holders	22,876		963	0	0	(963)	0	0	0	0	22,876	100
Household	6,808		1,909		(1,567)	(963)					6,188	27
Foreigners	5,359			346							5,705	25
IRAs and 529s	0				3,518						3,518	15
Nonprofit	0		963			10					972	4
Insurance companies	48						981				1,029	4
Defined benefit plans	2,050							1,215			3,265	14
Defined contribution plans	710								1,019		1,729	8
Other	244									225	469	2
Mutual funds	6,368		(1,425)	(287)	(1,793)	0	(816)	(1,011)	(848)	(187)	0	0
Closed-end funds	77		(29)	(3)	(9)	(1)	(10)	(12)	(10)	(2)	0	0
Exchange-traded funds	1,211		(454)	(55)	(148)	(9)	(155)	(192)	(161)	(36)	0	0

Note: Rows add up to top row; column (17) = sum of columns (8) to (16).

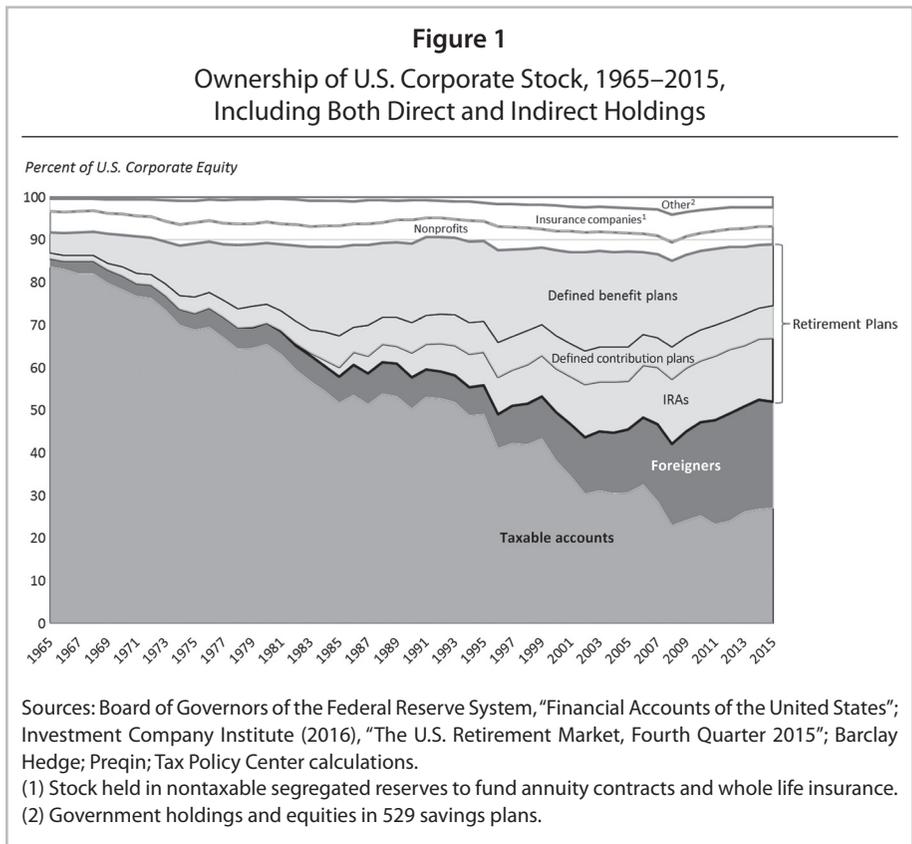
Source: Author's calculations based on methodology developed in Rosenthal and Austin (2016)

IV. THE CHANGE IN CORPORATE STOCK OWNERSHIP OVER TIME

Figure 1 decomposes corporate stock ownership over time based on data from the Flow of Funds data. In 1965, households held the vast majority of U.S. corporate equity—more than 80 percent—in taxable accounts, subject to tax on capital gains and dividends. The rest was held in pension funds and retirement accounts, by nonprofits and insurance companies, and a small amount by foreigners.

By 2015, the pattern was completely different. Households held only 27 percent of corporate equity in taxable accounts. Retirement accounts, including IRAs and defined contribution retirement plans, which were almost non-existent in 1965, now account for 37 percent of corporate equity. The other big shift is in foreign ownership, which now accounts for one-quarter of corporate equity.

Part of the shift may be due to taxation. The share of equity in taxable accounts should depend on the tax rates on dividends and capital gains — higher tax rates should reduce the share of taxable accounts. However, dividend and capital gains rates were cut markedly in 2003 and remained at historically low levels until 2012, but the share

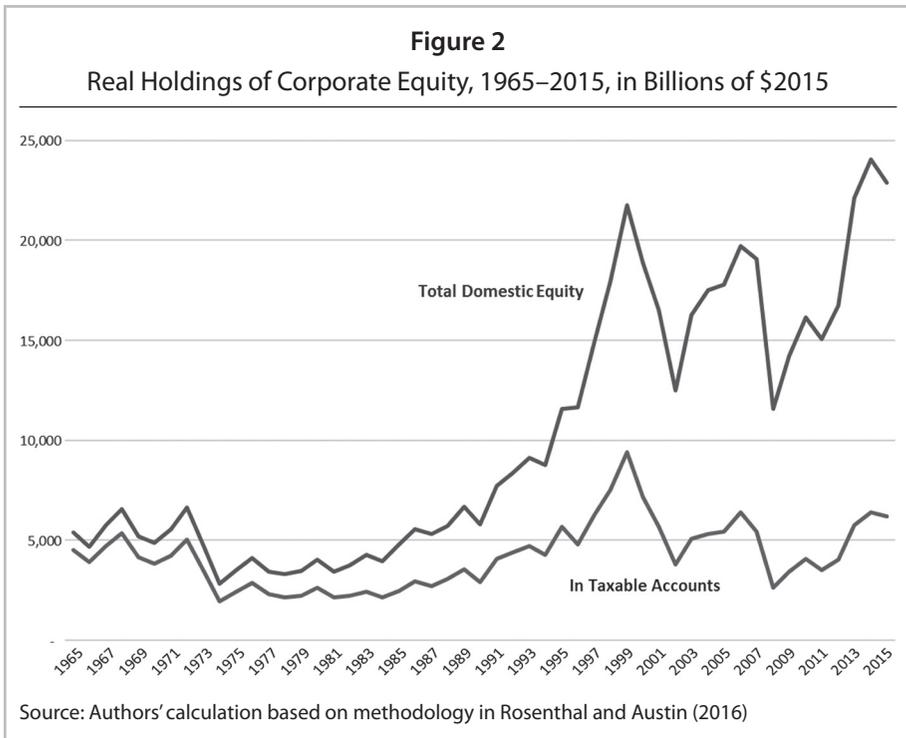


of equities in taxable accounts was low over that time period in comparison to the share that prevailed in the 1980s and 1990s, when capital tax rates were comparatively high.

Figure 2 illustrates the enormous financial shift measured in these data. The total domestic equity line rises and falls with the overall stock market. The U.S. stock market has far outstripped inflation since the early 1980s and the Flow of Funds estimates of total domestic equity reflect that. By 2015, total equity is nearly five times the real value in 1990. In contrast, the amount in taxable accounts is remarkably flat in recent years; real taxable equity holdings are virtually identical to their level of the mid-1990s. Put differently, at a time of remarkable growth in real wealth holdings (not shown), holdings of corporate equity in taxable accounts changed very little.

Three factors explain most of this shift. First, the share of corporate equity held in tax-free retirement accounts exploded over this interval. Second, increasingly global financial markets mean that much more U.S. stock is held by foreigners at the same time that Americans are holding much more foreign equity. Third, wealthy people are holding much more of their wealth in pass-through entities such as S-corporations and partnerships, which are not subject to a second level of corporate tax.

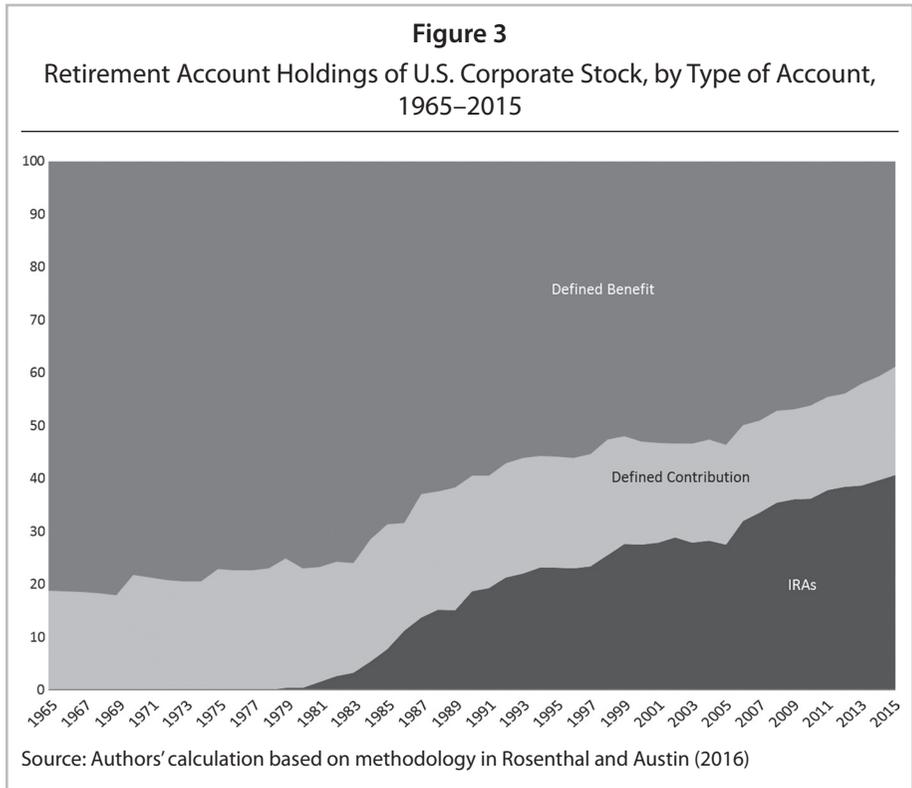
As noted, retirement accounts comprised 37 percent of corporate equity in 2015, compared with 6 percent in 1965. The composition of retirement accounts has changed markedly over time. In 1965, defined benefit plans accounted for almost all of this total.



Only 1 percent was in defined contribution retirement accounts and IRAs had not been invented yet. Through about 1980, defined benefit pensions accounted for three-quarters or more of the retirement savings held in U.S. corporate stock, but their share has fallen to about 50 percent by 2015, as the share of IRAs has increased. See Figure 3.

In 1974, Congress created IRAs. Subsequent legislation raised IRA limits, and investors also rolled over other retirement assets into IRAs. IRAs were further expanded in the late 1990s with the creation of Roth IRAs.⁸ By 2015, IRAs held 15 percent of all U.S. equity and accounted for almost one-third of retirement assets. Defined contribution accounts, such as 401(k) plans, also grew dramatically, from 1 percent of U.S. equity in 1965 to 8 percent of U.S. equity in 2015, although their share of all retirement equity remained roughly constant.

Larger demographic trends may have also contributed, as the baby boomer generation has moved into retirement. Born between 1946 and 1964, boomers are currently 53 to 71, and their retirement assets are burgeoning.

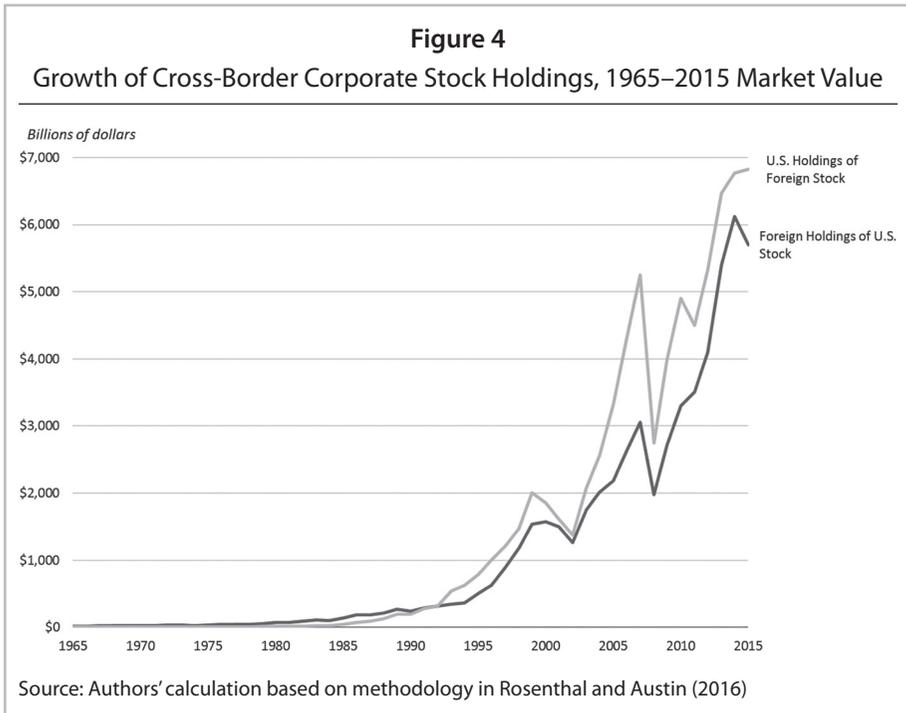


⁸ Amounts invested in a Roth IRA are not tax deductible, but the earnings are taxable at withdrawal. There are fewer restrictions on withdrawal in Roth IRAs, but eligibility to contribute is subject to income limits as with traditional IRAs. However, conversions to Roth IRAs are allowed, regardless of income.

The growth in 529 plans as tax exempt vehicles for college saving has also played a minor role in these trends (within the “other category” of Figure 1), as have increased holdings by insurance companies and nonprofits.

Over time, stock markets have become more globally integrated. From 1965 to 1990, foreign residents held negligible U.S. equity. However, recent decades have seen sharp increases in international holdings. By 2015, foreign residents directly held \$5.7 trillion, or 25 percent of all U.S. corporate equity, as reported by the Fed. Over that time period, U.S. residents increased their ownership of foreign stocks, holding \$6.8 trillion of foreign equity in 2015 (see Figure 4).

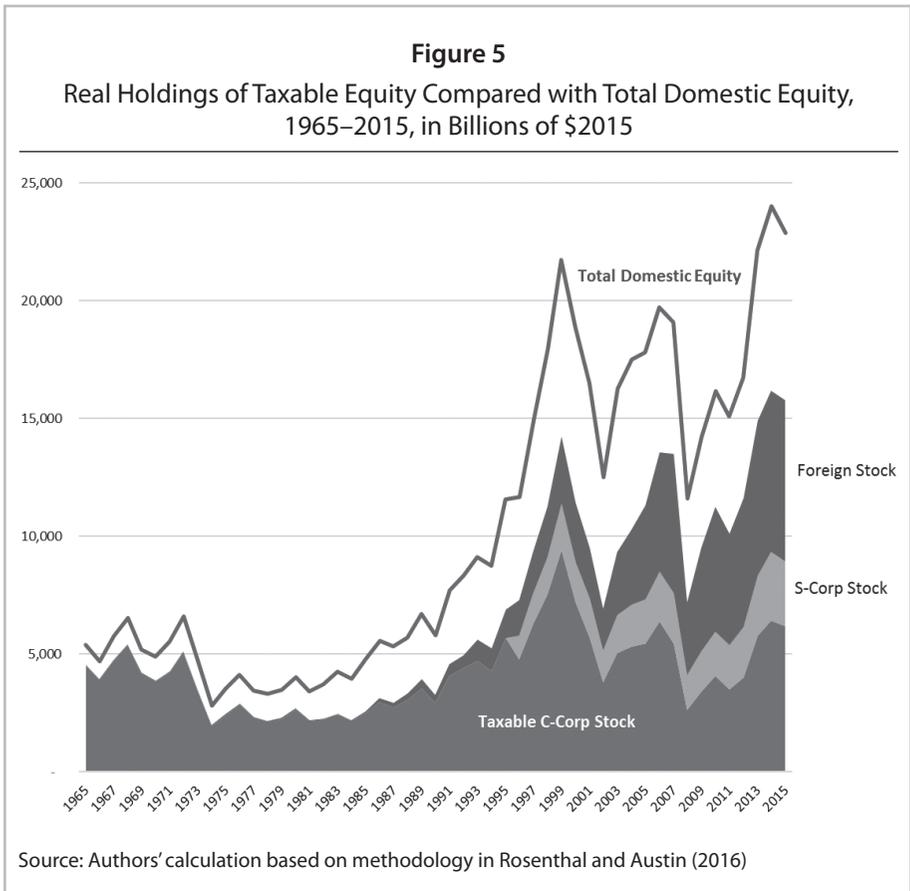
The final piece of the puzzle is the growing importance of S corporation and partnership holdings over the last 30 years. These entities avoid double taxation altogether since they are only subject to one level of tax at the shareholder/partner level.⁹ Legal changes over the last few decades have made it easier to create partnerships with limited liability, which was previously a major inducement for incorporating. Cooper et al. (2015) and DeBacker and Prisinzano (2015) found that both partnerships and S corpo-



⁹ Cooper et al. (2015) also document that many partnerships have multiple layers that make it very hard to trace partnership income to the ultimate recipients. It is possible that some wealthy investors are using these convoluted structures as a way to skirt tax obligations.

rations have increased dramatically in value compared with C corporations. DeBacker and Prisinzano (2015, pp. 1564–1566) note that the share of business income earned by C-corporations declined from 80 percent in 1980 to about 48 percent in 2012. Mean income per partnership increased by an order of magnitude between 1988 and 2011, from \$20,000 to \$217,000. Mean portfolio income per partner grew from \$1,900 to \$30,000 over the same period.

The Flow of Funds do not report data on partnership shares, but they do report S corporation shares. Adding the value of S corporation stock and holdings of foreign shares to holdings of taxable equities produces a pattern very similar to the overall corporate equity ownership. See Figure 5. In particular, investors are holding stocks of wealth that are dramatically increasing over time, even excluding partnership shares. While the overall holdings of taxable corporate stock are not increasing, wealthy investors hold substantial financial assets in other forms.



V. DERIVING THE TAXABLE CORPORATE EQUITY SHARE FROM OTHER SOURCES

As discussed in Section III, one difficulty with the Fed data is that the holdings of the household sector must be calculated as a residual; as a consequence, errors in measurement can have a magnified effect on estimates of the taxable share of equity. In addition, many assumptions are required, as discussed in Rosenthal and Austin (2016). Therefore, in this section we seek to examine the taxable share of equity using two alternative methods and data sources.

As a first alternative, we refine the methodology of Rosenberg (2012) to infer the taxable share of corporate equity issued by U.S. corporations. The IRS Statistics of Income (SOI) reports total qualified dividends reported on U.S. individual income tax returns as well as total dividends paid out by U.S. corporations reported on corporate income tax returns. A challenge is that some qualified dividends include dividends paid by foreign corporations and some of the U.S. corporate shares are held by foreign investors. Under certain assumptions, we can use data on dividend payout rates of U.S. and foreign corporations to estimate the share of corporate equity that appears on individual income tax returns.

Define D as total dividends paid by U.S. corporations and S as the total value of U.S. equity.

Divide both D and S into three components: D_t is dividends paid by U.S. corporations to taxable U.S. individual income taxpayers; D_n is dividends paid to nontaxable U.S. shareholders (such as tax-exempt retirement accounts and nonprofits); and D_f is dividends paid to foreigners. Thus $D \equiv D_t + D_n + D_f$.

Similarly, S can be broken down by ownership class as well, so that $S \equiv S_t + S_n + S_f$.

Since 2003, qualified dividends — that is, dividends paid on domestic and most foreign corporate equity — have been subject to a lower income tax rate.

D_q is qualified dividends, defined as $D_q \equiv D_t + D_x$, where D_x is qualified dividends on foreign stock held by U.S. taxpayers.

Define the dividend payout rate for each class of U.S. stock as α , again broken down by ownership.

$$(1) \quad \alpha \equiv \frac{D}{S}, \alpha_t \equiv \frac{D_t}{S_t}, \alpha_n \equiv \frac{D_n}{S_n}, \text{ and } \alpha_f \equiv \frac{D_f}{S_f}.$$

Finally, define $\alpha_x \equiv \frac{D_x}{S_x}$ as the payout rate on foreign stock and $\alpha_q \equiv \frac{D_q}{S_q}$ as the

average qualified dividend payout rate on equities held by individuals, and $S_q \equiv S_t + S_x$.

The objective is to estimate S_t/S .

With some manipulation,

$$(2) \quad \frac{S_t}{S} = \frac{D_t / \alpha_t}{S}.$$

Dividing the numerator and denominator by D ,

$$(3) \quad \frac{S_t}{S} = \frac{\frac{1}{\alpha_t} \cdot \frac{D_t}{D}}{\frac{S}{D}}.$$

Substituting the definition of α into Equation 3 and rearranging yields:

$$(4) \quad \frac{S_t}{S} = \frac{\alpha}{\alpha_t} \frac{D_t}{D}.$$

We do not observe D_t directly, but can estimate it based on D_q . Recall that $D_q = \alpha_q \cdot S_q$ and $D_t = \alpha_t \cdot S_t$. Thus,

$$(5) \quad D_t = \frac{\alpha_t \cdot S_t}{\alpha_q \cdot S_q} D_q.$$

Substituting Equation 5 into Equation 4 and rearranging yields:

$$(6) \quad \frac{S_t}{S} = \frac{\alpha}{\alpha_t} \cdot \frac{\alpha_t \cdot S_t}{\alpha_q \cdot S_q} \cdot \frac{D_q}{D}.$$

Simplifying produces the following expression:

$$(7) \quad \frac{S_t}{S} = \frac{\alpha}{\alpha_q} \cdot \frac{S_t}{S_q} \cdot \frac{D_q}{D}.$$

That is, the share of equities held in taxable accounts is the product of the ratio of the average dividend yield on U.S. securities to the average yield on securities in American shareholders' taxable portfolios, the share of domestic securities in those portfolios, and the ratio of qualified dividends to total dividends.

The ratio of qualified dividends to total dividends was 32 percent in 2013, the most recent year for which the tax data are available, but the ratio varies a lot from year to year. See Table 3. It was more than 50 percent in the prior year. It is possible that legislative changes (e.g., fear that the temporarily lower tax rate on dividends enacted as part of the Jobs and Growth Tax Relief Reconciliation Act of 2003 (JGTRRA) would expire as scheduled at the end of 2010 or 2012) or the business cycle affected the relationship between qualified dividends and overall dividends.

The average ratio of qualified dividends to total dividends post-JGTRRA was 43 percent and the average domestic share of qualifying dividends (from the Flow of Funds) was 78 percent. Together, these imply a ratio of taxable to total equity of 34 percent over the 10 years, if we assume that dividend payout rates are equal so that the ratio α/α_q is 1. In comparison, the average ratio derived from the Flow of Funds was 27 percent over that interval.

Table 3
Estimating the Taxable Share from Dividend Data, 2004 to 2013
 (Dollar Amounts in Billions)

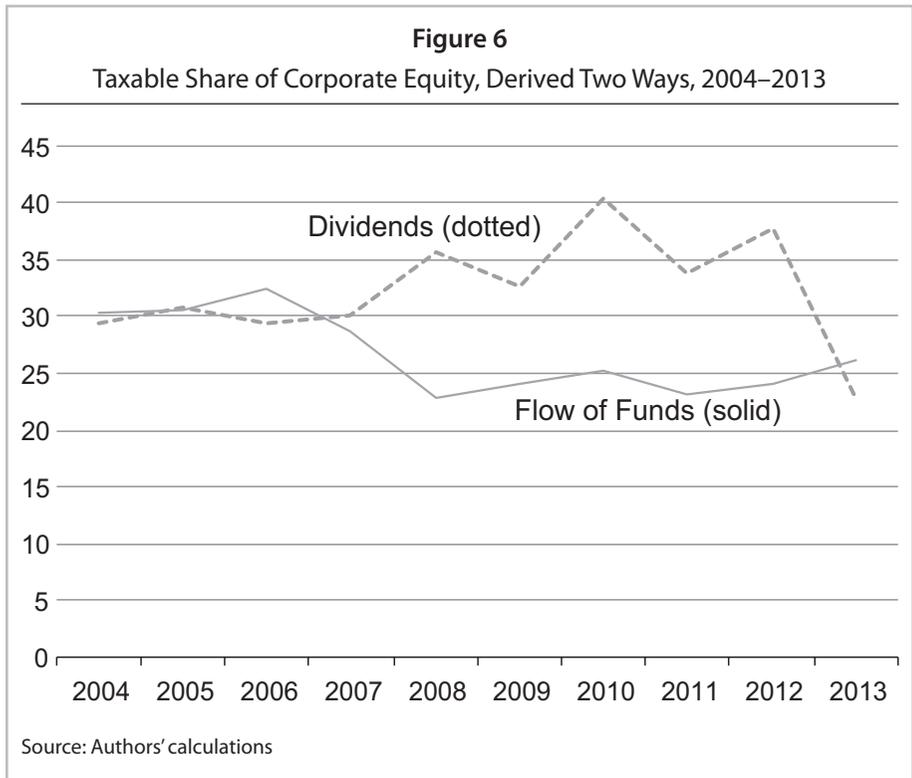
	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	Average
Qualified Dividends (D_q)	110.5	119.0	137.2	155.9	159.0	123.6	136.5	142.0	204.4	158.1	144.6
Total Dividends (D)	303.9	297.7	338.4	342.5	335.9	281.8	266.7	291.9	369.2	496.5	332.5
	In Percent										
D_q/D	36	40	41	46	47	44	51	49	55	32	43
Domestic Share (S_f/S_q)	85	82	80	77	79	77	76	76	76	77	78
S_f/S_q if $\alpha = \alpha_q$	31	33	32	35	38	34	39	37	42	25	34
U.S. average yield (α)	1.8	1.7	1.9	1.8	1.3	2.8	2.1	1.8	2.4	2.4	2.0
Foreign average yield	2.4	2.3	2.8	3.0	1.7	3.2	1.8	2.6	3.4	3.2	2.6
Weighted average (α_q)	1.9	1.8	2.1	2.0	1.4	2.9	2.0	2.0	2.6	2.6	2.1
α / α_q	95	94	91	86	95	97	104	91	90	93	94
S_f/S_q using these data	29	31	29	30	36	33	40	34	38	23	32
Flow of Funds	30	31	32	29	23	24	25	23	24	26	27

Source: Statistics of Income, IRS; National Income and Product Accounts; Yield data from Vanguard Total Stock Market Index (VTSMX) and Vanguard Total International Stock Index Fund (VGTISX).

If we use the average yields from broad domestic and foreign market indices weighted by the domestic and foreign shares of S to estimate α , we estimate that α/α_q equals 93.5 percent on average. This lowers the average share of taxable stock to 32 percent.

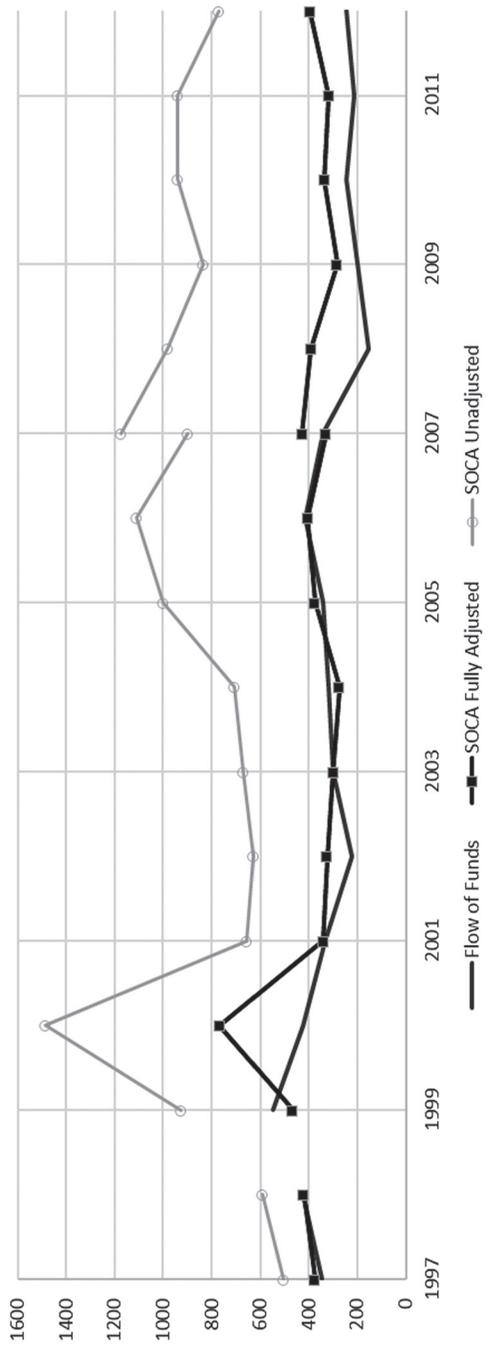
The two series do not track perfectly, but the range is comparable. See Figure 6. The Flow of Funds estimates are actually slightly higher than the estimates based on dividend data at the beginning and end of the interval, but the series diverge between 2007 and 2012. It is not clear why this is so.

As a second alternative test, we compare the Flow of Funds estimates to estimates derived from sales of capital assets (SOCA) data reported on individual income tax returns. Periodically, the IRS collects detailed information from returns that report sales of corporate stock. The data were collected in 1985 and from 1997 to 2012. The sample changed at times over that interval, reflected by gaps in Figure 7.¹⁰ Sales of corporate stock reported on tax returns obviously only reflect a fraction of holdings, but it is instructive to see if sales track the asset values we estimate (looking at only



¹⁰ Two values are reported in 2007. In that year, the IRS ended an earlier SOCA panel and started a new one based on a new sample of taxpayers. See Liu et al. (2009).

Figure 7
 Taxable Corporate Equity Derived from SOCA and from Flow of Funds, 1985–2012 (1985=100)



Source: Authors' calculations

directly held corporate equity, excluding shares held in mutual funds, ETFs, and CEFs). Although there is some similarity in trends, the overall values do not track especially closely (comparing the “SOCA Unadjusted” line with the “Flow of Funds”).

However, several adjustments to the SOCA data are warranted. First, sales include foreign-issued securities, and this share has been growing over time, as shown earlier. We multiply the SOCA data by the fraction of equity that is domestic-issued as reported in the Flow of Funds data. Second, we adjust for holding periods.¹¹ If shares are held for longer, sales volume will decrease, all else equal. We multiply sales by average holding period for each year.¹² Finally, a wealth of empirical evidence suggests that asset sales are responsive to the capital gains tax rate. This is especially true for highly liquid assets such as corporate stock (Kiefer, 1990). We assume that sales follow a semi-log specification with an elasticity of -1.0 at a tax rate of 20 percent.¹³ The top individual income tax rate on long-term capital gains tax rate was cut in 1997 and again in 2003, implying that sales would have reflected rising percentages of asset holdings over time.¹⁴

After these adjustments, the SOCA data track the Flow of Funds data very closely (Figure 7). This is further confirmation that the estimates derived from the Flow of Funds data are reasonable.

VI. IMPLICATIONS OF THE DIMINISHING TAXABLE SHARE OF U.S. CORPORATE STOCK

These findings have important implications for corporate tax policy as well as several other questions in public economics, including the measurement of the cost of capital, the importance of capital gains lock-in effects, the consequences of changes in dividend taxation, and the nature of clientele effects.

A. Corporate Tax Policy

The Treasury Department’s (1992) study of corporate tax integration was subtitled “Taxing Business Income Once.” The study laid out a variety of integration options that would be economically equivalent if all corporate income were in fact subject to two

¹¹ Holding periods are not reported between 2000 and 2006. We assume that the holding period is the average of the value in 1999 (1.5 years) and 2007 (1.6 years) for the intervening years.

¹² Some sales do not report holding periods. We assume that short-term sales without a reported holding period are held for six months. For long-term sales (held more than a year), we assume that the holding period is average for assets with holding periods reported.

¹³ The functional specification is: $Y = A \exp(-5\tau)$, where Y is sales, A is a constant, and τ is the top capital gains tax rate. This yields an elasticity of -1.0 at a tax rate of 20 percent. Dowd, McClelland, and Muthitacharoen (2016) estimate a permanent capital gains elasticity of -0.72 for all sales.

¹⁴ Prior to enactment of the Tax Reform Act of 1986, 60 percent of long-term capital gains were excluded from taxable income, yielding a top effective tax rate of 20 percent (40 percent of the top individual income tax rate of 50 percent). From 1988 to 1997, the top tax rate on long-term capital gains was set at 28 percent. The long-term capital gains tax rate was cut from 28 percent to 20 percent in 1997. We assume the average rate in that year was 24 percent (the average of the 28 and 20 percent). In 2003, the top tax rate was cut again to 15 percent. We assume that the rate in that year was 17.5 percent, and 15 percent from 2004 to 2012.

layers of taxation. More recent corporate tax reform proposals have been motivated at least in part by the desire to achieve some level of integration and reduce distortions that favor retained earnings over dividends and debt over equity. JGTRRA cut tax rates on long-term capital gains and dividends with the explicit goal of reducing these distortions (U.S. Congress, Joint Committee on Taxation, 2005).

However, since only a fraction of corporate equity is held by individuals in taxable accounts, changes to individual level taxation do little to affect the overall tax burden on corporate income or the targeted distortions. More generally, proposals to integrate capital income taxation across corporations and individuals that are economically equivalent assuming all investors are subject to individual-level taxation may not be equivalent when most corporate income avoids individual level taxes. For example, a shareholder credit for taxes paid at the corporate level would not be equivalent to a dividend deduction for corporations, since most dividends are received by tax-exempt investors such as retirement accounts, 529s, nonprofits, and foreign investors.^{15,16}

Thus, as long as corporate income remains in the U.S. tax base, it is important to retain an entity-level tax, at least as a nonrefundable withholding tax on investors. Our estimates suggest that for 68 to 73 percent of corporate equity (depending on whether the estimate is derived from dividend data or Flow of Funds), the corporate tax is the *only* level of taxation in the United States. Including foreign investors, who may be subject to U.S. withholding taxes and home country taxes on dividends, about half of U.S. corporate stock is subject to a second level of taxation.

These findings inform our understanding of influential recent proposals. Altshuler and Grubert (2016) and Toder and Viard (2016) suggest moving more of the capital tax burden from the corporate income tax to the individual income tax. Both of these proposals couple a dramatically reduced corporate tax rate with increased individual capital taxation in order to reduce the distortions associated with the corporate tax while continuing to tax the income of domestic investors. However, since only about one-quarter to one-third of stock is taxable at the individual level, these proposals would cause large revenue losses, unless accompanied by changes that buttress individual level taxation.

Toder and Viard bolster individual level taxation by imposing a mark-to-market regime for corporate securities, which effectively taxes shareholders on worldwide income and expected increases in future profits of corporations regardless of whether

¹⁵ Appendix C of U.S. Department of the Treasury (1992) discusses these issues of equivalence.

¹⁶ The forthcoming integration proposals from Senate Finance Chairman Hatch would rely on a dividends paid deduction for corporations, coupled with a withholding tax on behalf of shareholders of the same amount, which presumably would not be refundable for tax-exempt investors. This integration proposal would thus largely amount to a relabeling of the current corporate tax, although it might have some effects through the financial reporting channel. It may also affect shareholders, depending on their circumstances. See Kleinbard (2016b) and a blog post by Daniel Shaviro from June 30, 2016: <http://danshaviro.blogspot.com/2016/06/kleinbard-on-senate-finance.html>.

dividends are paid or assets are sold. The mark-to-market regime eliminates the tax advantage of holding stock to postpone tax, and it makes it impossible to avoid capital gains tax entirely by either holding assets until death or charitable donation. Toder and Viard retain a 15 percent corporate tax and would impose an additional 15 percent tax on tax-preferred retirement accounts and on nonprofits. With these reforms, the authors estimate that the proposal would still lose some revenue absent behavior responses, although if the tax base responds sufficiently, it would be approximately revenue neutral.¹⁷

Altshuler and Grubert (2016) have a similar proposal, but it relies on an interest charge assessed on deferred tax liabilities during the holding period of assets with capital gains; this avoids some of the liquidity and volatility concerns associated with mark-to-market taxation, and it also avoids valuation difficulties with assets that are not publicly traded.¹⁸ Altshuler and Grubert note that their proposal is not a simple relabeling of tax burdens from the corporation to the individual. In particular, untaxed account holders (e.g., retirement funds and non-profits) will benefit from the reduced tax at the corporate level, whereas increased individual taxes will fall in part on income earned abroad by U.S. portfolio investors. It is not clear whether this shift in tax burden is desirable.¹⁹ Also, such proposals could lead to a shift in holdings of non-profits and other nontaxable entities away from pass-through businesses in favor of more lightly taxed corporate stock (a clientele effect).²⁰

Both Altshuler and Grubert (2016) and Toder and Viard (2016) proposals originate, at least in part, out of concerns regarding corporate tax competition and tax base erosion due to profit shifting. These concerns lead the authors to prefer the individual level of taxation, without intending a net reduction in capital income taxation. Still, it is unclear that a corporate tax rate as low as 15 percent would be enough to stem profit shifting. Recent research by Dowd, Landefeld, and Moore (2017) suggests that the corporate taxable income response is highly non-linear and most responsive at very low rates. Clausing (2016a) indicates that 98 percent of profit shifting is occurring with respect

¹⁷ There is an annual static revenue loss of \$11 to \$23 billion in Table 1 (p. 722) of Toder and Viard (2016). Table 2 (p. 723) includes a behavior response whereby there is increased reporting of taxable profits in the United States as a result of the lower corporate tax rate; with the response, their proposal is approximately revenue neutral. As discussed later, the extent to which revenue would be recouped through this mechanism is an open question.

¹⁸ They include a provision for deemed capital gains realizations upon death or when an asset is given to another person. The text describes their preferred proposal; Altshuler and Grubert also consider other proposals in this paper.

¹⁹ They do not do a full revenue estimate for this proposal, but they perform some illustrative calculations that indicate that the proposal need not lose revenue, once behavioral responses are included. They also include a minimum tax on foreign income.

²⁰ Under these proposals, the effective corporate rate would fall while individual level tax would increase. This makes corporate stock relatively more attractive to nontaxable investors and less attractive to taxable investors. So, all equal, nontaxable investors would reallocate funds toward corporate assets and away from pass-through assets and taxable investors would do the opposite.

to countries with effective tax rates below 15 percent, and 82 percent is occurring with respect to just seven tax havens with effective tax rates below 5 percent. These studies indicate that even lowering the U.S. corporate tax rate to 15 percent may not be enough to substantially alter the incentive to divert income to the lowest tax-rate havens. Also, even if a tax rate cut temporarily gave the U.S. an advantage, our major trading partners would likely respond by cutting their tax rates, as they did after enactment of the Tax Reform Act of 1986.

Proposals to move the capital tax burden from the corporate to the individual level face significant political challenges. It may prove politically impossible to rescind the longstanding tax preferences for retirement accounts and non-profits. And raising capital income taxes on individuals can exacerbate existing distortions such as lock-in effects. These distortions can be addressed by accruals taxation (as in Toder and Viard), or by interest charges on capital gains as well as provisions to tax capital gains at death (as in Altshuler and Grubert). These solutions are conceptually appropriate but probably politically impossible.

Concerns about moving the burden to the individual level of taxation strengthen the argument for reforms that would retain a broad-based corporate-level tax. Still, observers note that a reform of the corporate tax is long overdue. There are many distortions and problems that reforms of the corporate income tax might address. These include distortions to the debt/equity composition of corporate finance, distortions to the organizational form of business (corporate versus pass-through), distortions among types of investments (due to varying degrees of accelerated depreciation, the production activities deduction, and other special provisions), and distortion to the international location of economic activity.

Another major concern of reform proposals is the tax treatment of multinationals. Corporate profit shifting across tax jurisdictions is a large and increasing problem for many countries. In the United States, high levels of corporate profits have not generated associated increases in corporate tax revenues, and revenue losses due to profit shifting are substantial. Estimates in Clausing (2016a) suggest that the federal revenue loss due to profit shifting is approximately \$100 billion per year.

An additional factor that reduces the corporate tax base is the relatively favorable treatment of pass-through business income, as discussed in Cooper et al. (2015). Lighter tax burdens for non-corporate businesses have led to systematic changes in the organizational form of business activity. Absent these changes, Cooper et al (2015) find that U.S. corporate tax revenues would be about \$100 billion per year higher.

Recently, there have also been radical reforms to business taxation suggested by both President Trump and the House GOP. Both plans would allow businesses to immediately expense new investments, which exempts the normal return on capital. The House GOP plan goes a step further by adding a border-adjustment tax, which is a feature of value-added taxes and which would remove U.S. taxation as a consideration in location of production facilities. Both proposals would retain individual-level taxes on dividends and capital gains, but they would substantially reduce the burden of capital income

taxation. The plans both risk large revenue losses and would disproportionately benefit those at the top of the income distribution.²¹

A more detailed catalog of reform options is beyond the scope of this paper; Clausing (2016b) discussed related issues that surround corporate tax distortions as well as possible reforms.²² Still, given distributional concerns, political constraints, and the fact that relatively little corporate stock is taxable at the individual level, retaining a broad-based corporate income tax may be the optimal second-best strategy; the corporate tax rate should be chosen with the distortions noted earlier in mind.

B. Cost of Capital

At a very basic level, individuals' taxable share of corporate equity determines, in part, the effective tax rate on returns to corporate equity. The standard model (and much political discourse) assumes that corporate equity is taxable both at the company level, under the corporate income tax, and at the individual level when profits are paid out as dividends or shares are sold and produce taxable capital gains. However, if most corporate earnings are not subject to the individual income tax, then the effective tax rate on equity-financed corporate investment is lower, and the distortion in resource allocation in favor of non-corporate capital is smaller, with a commensurately smaller deadweight loss.²³

For example, according to Rosenberg and Marron (2015), in 2014 (when bonus depreciation was in effect), the average marginal effective tax rate on new corporate investment was 26 percent under the model's standard assumption that taxable individuals held 60 percent of corporate equity.²⁴ See Table 4.

²¹ See Burman et al. (2017) and Avi-Yonah and Clausing (2017) for more discussion of the effects of the House GOP destination-based cash flow tax. The incidence of a destination-based cash flow tax, as proposed in the House GOP tax blueprint, is especially challenging to predict (Burman et al., 2017). However, it would be hard to match the progressivity of the corporate income tax. For example, based on a review of the literature, the Treasury department assigns 82 percent of the burden of the corporate tax to capital income and 18 percent to labor income, after assigning all supernormal (or excess) returns to capital income, and half of normal profits to labor and half to capital income. Treasury estimates that the highest quintile bears 76 percent of the tax burden, and the top 1 percent bears 43 percent of the burden. See Cronin et al. (2012) for details regarding their method and alternative assumptions, and Clausing (2012, 2013) for more on the incidence of the corporate tax.

²² There are several options for strengthening the corporate tax, including a minimum tax, tougher earnings-stripping, and anti-inversion rules, and other, more fundamental, reform options.

²³ Of course, the share of corporate capital held in taxable accounts is endogenous to taxation. Individuals likely hold a smaller share of corporate equity in taxable accounts at current tax rates than they would hold if their tax rates were lower (or if some of the tax preferences for retirement accounts and other holders of equities were reduced). There is a burden attributable to this shift, both in terms of risk bearing, and the rate of return earned by taxable individuals, and the potentially higher cost of capital for businesses.

²⁴ Joseph Rosenberg of the Tax Policy Center (TPC) performed these calculations using TPC's cost of capital model, which is documented in Rosenberg and Marron (2015).

Table 4
Marginal Effective Tax Rates on New Investment

Category	Fraction of Equity Return Subject to Tax				
	0 Percent	25 Percent	50 Percent	75 Percent	100 Percent
Business investment	18.3	20.3	22.4	24.5	26.6
Corporate	17.9	21.1	24.3	27.7	31.1
Pass-through	19.1	19.1	19.1	19.1	19.1
Corporate (equity financed)	23.7	27.3	31.0	34.8	38.5
Corporate (debt financed)	-6.2	-6.2	-6.2	-6.2	-6.2

Source: Calculations courtesy of Joseph Rosenberg, following methodology described in Rosenberg and Marron (2015).

If the assumed taxable share fraction is reduced instead to 25 percent, the marginal effective tax rate falls to 21 percent. For investments that are entirely financed with equity, the difference is even bigger: falling from 33 percent (under the 60 percent taxable share assumption) to 27 percent. (Note that the taxable share assumption does not affect debt-financed investments, which actually face a negative effective tax rate under current law because of tax incentives such as the research and experimentation tax credit and accelerated depreciation.)

As documented in Rosenberg and Marron (2015), tax rates vary substantially among industries, depending on both financing patterns and the types of investments within different industries. However, as Table 4 illustrates, as the taxable share of equity is lower, the tax burdens on the more highly taxed investments falls, and this also lowers the variance of tax rate treatment across investments and industries.

As shown in Figure 1, including foreigners, the share of equity subject to individual level tax could reach 52 percent (in 2015). Foreign shareholders are subject to U.S. withholding tax on dividends at rates that vary from 5 to 30 percent.²⁵ Their home country income tax may impose additional taxes on dividends and capital gains. Thus, the overall effective tax rate could be higher than implied by looking at U.S. income taxation alone. Still, since domestic shareholders strongly prefer to invest at home (Cooper, Sercu, and Vanpée (2013); Coeurdacier and Rey (2013)), domestic tax treatment is an important driver of the cost of capital.²⁶

²⁵ See https://www.irs.gov/pub/irs-utl/Tax_Treaty_Table_1.pdf (accessed May 4, 2017).

²⁶ In 2010, U.S. investors held 78 percent of their equity portfolio in U.S. stocks, whereas U.S. stocks are one-third of the world market capitalization (Cooper, Sercu, and Vanpée, 2013). While home bias is falling, it is falling very slowly, and only for rich countries.

C. Capital Gains Taxation

These findings also affect our assessment of the capital gains tax. Although there is a wide range of views on the effect of taxes on capital gains, there is a consensus that the tax discourages individuals from selling capital assets. This “lock-in” effect lowers individual welfare, and may cause prices of capital assets to react slowly to information about company performance, which can distort resource allocation. However, if most capital assets are held in accounts exempt from capital gains tax, then the lock-in effect is a smaller problem. Also, the real effects of taxing capital gains on investment and risk taking are likely to be smaller.²⁷

Another issue arises in 2016 presidential candidate Hillary Clinton’s proposed capital gains tax incentives to hold assets longer based on the notion that “patient capital” would encourage corporate managers to make more long-term investment decisions. Burman (2015) questions the rationale for the policy, but it is also likely to be ineffective if most corporate capital is not subject to the individual capital gains tax rate.

D. Dividend Taxation

The taxable share is critical to understanding how taxing dividends affects corporate decision-making and economic efficiency. One concern about dividend taxation is that it gives companies an incentive to retain profits rather than distribute them as dividends since taxable shareholders would prefer to defer paying tax. This can create corporate governance issues and result in corporations with large hordes of cash that earn lower rates of return than alternative investments that shareholders might otherwise make. As a result, capital is misallocated.

However, if most corporate dividends are not taxed, then there is relatively little tax incentive for companies to retain their earnings.²⁸ This also affects our assessment of the economic effects of changing dividends tax rates as was done in 2003, when qualifying dividends were made eligible for the lower capital gains tax rates, and again in 2012, when top dividend and capital gains tax rates increased. Besides changing the incentive to raise or lower dividend payouts, the small share of corporate equity subject to tax means that a lower tax rate on dividends may do little to lessen the distortion in

²⁷ For more discussion of the economic effects of taxing capital gains, see Burman (1999).

²⁸ There remains, however, a separate problem concerning dividend repatriation from abroad. Under the present U.S. corporate tax system, U.S. tax is due on foreign income when it is repatriated, with a foreign tax credit for any foreign tax paid. In the case of income earned in low-tax countries, this gives firms an incentive to avoid repatriation, especially if they expect the tax treatment of repatriated earnings to be more generous in the future. However, firms can borrow against these earnings to finance their investments, and there is no evidence that investment in the United States is being reduced as a consequence. Further, as long recognized, firms can even borrow against these earnings to issue dividends, and this can generate the equivalent of a tax-free repatriation (assuming away interest rate differentials). See, for example, Altshuler and Grubert (2003) and Kleinbard (2016a).

choice between debt and equity (since dividends are mainly received by tax-exempt investors — who are indifferent).

For the same reason, dividend tax cuts may also have weak effects on the cost of capital. This provides one possible solution to a puzzle posed by Yagen (2015). In a careful analysis published in the *American Economic Review*, Yagen finds that the 2003 dividend tax cut had no measurable effect on corporate investment and employee compensation, despite the fact that proponents argued that the cut (from 38.6 to 15 percent for the top rate) would spur investment by reducing the cost of capital.²⁹ Edgerton (2013) shows that there are good reasons to suspect that the 2003 dividend tax cut did not increase payouts, though Yagen (2015) argues that payouts did increase, but there was no real effect from increased payouts, just a rearranging of financial claims. Yagen (2015) interprets his as evidence in support of the new view of dividends. Our analysis provides an alternative (though not mutually exclusive) explanation.

E. Clientele Effects

Investors may sort into different types of assets based in part on their different tax treatments. For example, investors in the highest tax brackets may disproportionately invest in lower-return, tax-exempt assets like municipal bonds, relative to investors in lower tax brackets. The 2003 dividend tax cuts likely reduced the size of such clientele effects. Even beyond that, since the vast majority of U.S. corporate stock is held in nontaxable accounts, such investors are not tax sensitive. This will dilute the importance of clientele effects among those investors that are not taxed at the individual level, though taxable investors may still have a large influence on some subsets of the market.

Investors may also have different preferences for dividend issue relative to retained earnings. The higher the rate at which dividends are taxed, the greater the tax preference for letting earnings accumulate tax-free within the firm. Since the dominant share of U.S. corporate stock is not held in taxable accounts, such investors are not sensitive to dividend taxation. This dilutes the importance of anticipated dividend tax liabilities in corporate decision making.

F. Might Taxable Shareholders Still Have an Outsized Effect?

A question for further research is whether taxable shareholders might have a disproportionate effect on the cost of capital and corporate investment decisions despite their minority status in the pool of equity holders. For example, it is possible that foreign portfolio investors, who hold about 25 percent of equity, are especially sensitive to corporate taxes. There also may be clientele effects that give taxable investors a disproportionate influence in some subsets of the market. For example, if households hold

²⁹ Yagen (2015) explains the finding with alternative models that suggest that marginal investments are financed from retained earnings or debt.

little taxable stock because of double taxation, a small cut in the individual level tax rate might significantly expand the supply of corporate capital.

In addition, contributions to retirement accounts are capped at levels that most high-income investors exceed. Thus, the amounts in those accounts, even though they can grow to be quite significant as a share of all corporate capital, are inframarginal in many cases.

Wealthy individuals' marginal investment choices will be from among taxable domestic stock, foreign stock (also taxable in the United States), or alternative investment vehicles such as S corporation stock, partnership shares, or bonds.

Yagen (2015) describes models that suggest that marginal investments are financed from retained earnings or debt, so that dividend tax burdens do not affect marginal investment decisions; dividend tax cuts increase the returns on investment and the opportunity costs of investment in parallel. The results noted earlier also suggest that many investors may not be sensitive to dividend taxation simply because they are tax-exempt.

VII. CONCLUSIONS AND DIRECTIONS FOR FUTURE RESEARCH

Using more recent data, we update the research of Rosenthal and Austin (2016) and estimate that the taxable share of U.S. corporate equity has declined dramatically in recent years, from more than 80 percent in 1965 to about 27 percent at present. We test this estimate using data on dividends paid by corporations and received by taxable individuals, which produces an estimate of about 32 percent. Data from reported sales of corporate stock on individual income tax returns provides further confirmation of the overall reliability of the estimates. Therefore, for equity-financed investments, the vast majority of corporate income is not double-taxed in the United States. Also, the normal return to debt-financed investments is actually subsidized through the corporate tax system, and 40 percent of corporate investment is debt-financed. Therefore, it is unlikely that double-taxation is the foremost problem for corporate tax reform.³⁰

There are several reasons for the declining taxable share of U.S. corporate stock, but changes in dividend and capital gains tax rates do not provide an obvious explanation, since the taxable share was lower in years when individual dividend and capital gains tax rates were lower. The growth of tax-exempt retirement accounts helps explain this trend, as legal changes have increased the size and scope of tax-free savings vehicles, and demographic factors have also likely played a role. In addition, the increasing globalization of financial markets has increased the share of U.S. corporate stock in foreign accounts. Finally, the increasing prevalence of pass-through business organizations has likely played an important role in these trends.

These findings have important implications for corporate tax reform. Given that it represents the only level of domestic tax for most equity, a corporate-level tax is an indispensable component of capital income taxation. Without a corporate tax, much

³⁰ Several other problems should motivate corporate tax reform, including the tax bias toward debt-financed investment, the tax preference toward non-corporate business income, and the problem of corporate tax base erosion due to international profit shifting.

income of profitable firms would go untaxed since most equity is held in tax-exempt form. Further, replacing corporate taxation with individual taxation could generate large lock-in effects and sheltering opportunities,³¹ and most solutions to such problems raise vexing technical problems.

Thus, there are several reasons to keep a corporate-level tax in some form. It is worth preserving on pragmatic tax administration grounds, and it fills important revenue needs. Also, it contributes to the progressivity of the tax system, which seems especially important in light of trends in income inequality. Finally, recent economic theory has also buttressed the efficiency case for taxing capital, as discussed in Diamond and Saez (2011), Piketty and Saez (2012, 2013), and Conesa, Kitao, and Krueger (2009).³²

Beyond corporate tax reform, these findings also have implications for several other questions in public economics. The cost of capital is likely lower than one would expect from calculations that overestimate the share of U.S. corporate equity in taxable accounts. A lower taxable share of U.S. corporate stock lowers the sensitivity of investment to dividend tax rates, lowers the tax incentive to retain earnings, lowers capital gains lock-in effects, and reduces the importance of clientele effects.

These findings raise important questions for future research. For instance, who is the marginal investor? How does corporate decision-making reflect the tax treatment of their investors? Are there important clientele effects whereby taxable investors are more likely to invest in subsets of the market? Does this affect corporate governance in important ways?

In addition, an increasing share of business activity is organized in non-corporate form, helping to explain the diminishing taxable share in the corporate sector. This shows the appeal of corporate tax integration, but also the challenges. As legal changes have made it easier to create partnerships and S-corporations with limited liability, these sectors have become far more important. Cooper et al. (2015) note that complex partnership structures may prevent partnership income from being traced to a beneficial owner, generating the concern that firms are minimizing tax through opaque organizational forms. They show that pass-through income is generally taxed at lower effective tax rates than C-corporation income.³³ Such trends also raise important tax policy questions for future research.

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³¹ Sheltering opportunities exist when corporate rates fall below personal income tax rates and corporations retain a large share of their earnings. See Gravelle and Hungerford (2012).

³² In models with real world features such as finitely-lived households, bequests, imperfect capital markets, and savings propensities that correlate with earning abilities, capital taxation has an important role to play in an efficient tax system. See Clausing (2016b) for a longer discussion of this literature.

³³ Since pass-throughs are taxed currently on their worldwide income, it is perhaps unsurprising that most of them are domestic firms.

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DISCLOSURES

The authors have no financial arrangements that might give rise to conflicts of interest with respect to the research reported in this paper.

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