SPECIAL REPORT

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The Dwindling Taxable Share Of U.S. Corporate Stock

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In this report, Rosenthal and Austin demonstrate that the share of U.S. stocks held by taxable accounts has declined sharply over the last 50 years, and they urge lawmakers to carefully consider this shareholder base erosion when determining how best to tax corporate earnings.

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I. Introduction

Corporate earnings are generally subject to two levels of tax — first, the company pays a corporate income tax; second, the shareholders pay an individual income tax on dividends and capital gains.

Many commentators have noted the sharp decline at the first level: corporate tax receipts fell from 3.6 percent of GDP in 1965 to 1.9 percent in 2015.[1] However, observers have overlooked the substantial erosion at the second level of taxation of corporate income. Over the same 50-year period, retirement plans and foreigners displaced taxable accounts as the owners of U.S. stocks. (See Figure 1.) As a result, corporate earnings are largely exempt at this level.[2]

We estimate that the share of U.S. corporate stock held in taxable accounts fell more than two-thirds over the last 50 years, from 83.6 percent in 1965 to 24.2 percent in 2015.[3] We document this decline using data from the Federal Reserve's "Financial Accounts of the United States," previously the "Flow of Funds Accounts," which is the most commonly used data source for measuring U.S. stock ownership. Figure 1 reflects data back to 1965, but we focus on stock held in 2015, the year for which the most recent data are available.

Understanding the erosion of the taxable shareholder base is critical for determining how best to tax corporate earnings — and capital more generally.[4] Acknowledging the decline is particularly important for evaluating proposals to reform (or eliminate) the corporate income tax and collect

[1]Office of Management and Budget, "Table 2.3 — Receipts by Source as Percentages of GDP: 1934-2021."

[2]Also, the returns on the stock of the remaining shareholders are taxed lightly. The tax rates are reduced for qualified dividends and long-term capital gains. Tax on gains from appreciated stock is deferred until the stock is sold or disposed — and gains are eliminated if the stock is held until death.

[3]In constant (2015) dollars, we estimate that total taxable ownership increased slightly from $4.5 trillion to $5.5 trillion, while total outstanding stock increased more than fourfold from $5.4 trillion to $22.8 trillion.

[4]Congressional Budget Office, "Taxing Capital Income: Effective Marginal Tax Rates Under 2014 Law and Selected Policy Options" (Dec. 2014).

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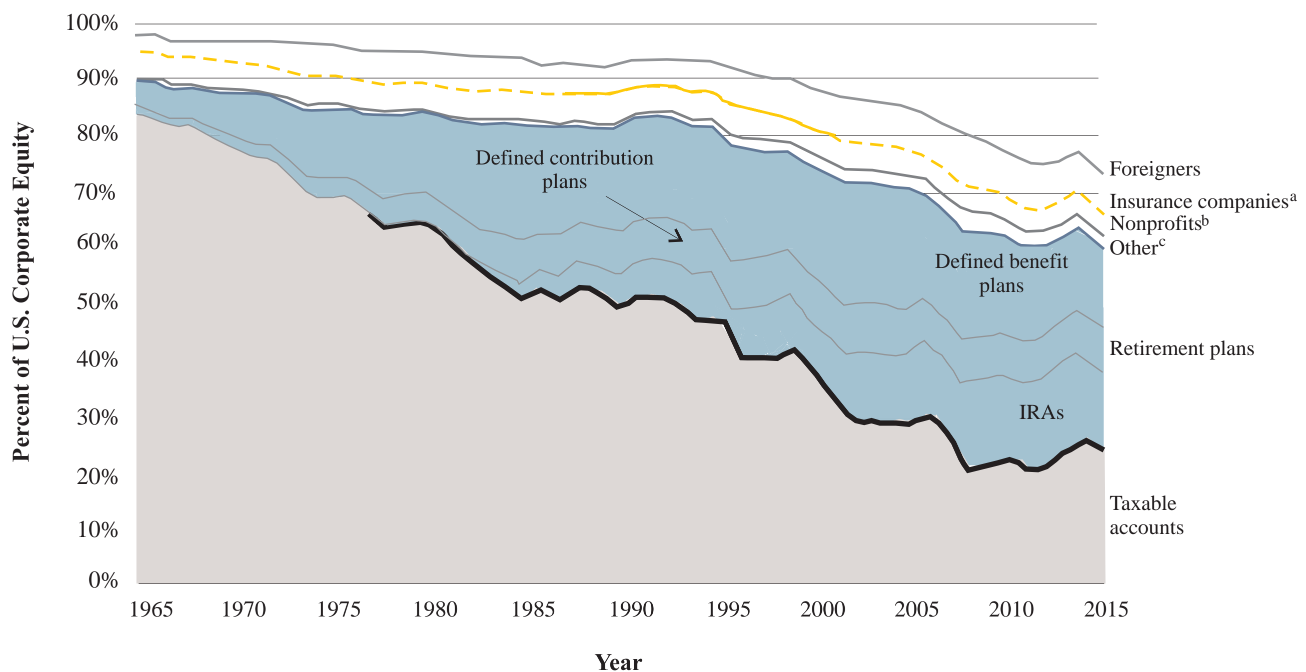
Figure 1. Ownership of U.S. Corporate Stock, 1965-2015 (Direct and Indirect Holdings)



Sources: Board of Governors of the Federal Reserve System, "Financial Accounts of the United States"; Investment Company Institute, 2016, "The U.S. Retirement Market, Fourth Quarter 2015"; Barclay Hedge; Preqin; Tax Policy Center calculations.

[a]Stock held in non-taxable segregated reserves to fund annuity contracts and whole life insurance.

[b]Dashed lines indicate authors' estimates.

[c]Primarily government holdings, but includes equities in 529 savings plans.

taxes exclusively from shareholders.[5] These corporate tax reforms are much more difficult if few shareholders pay tax.

Prior literature suggests that taxable stock ownership ranges from 44 percent to 68 percent, which we review in Section II of this report. Our estimates are 22 percent to 37 percent for the corresponding years, and we describe our estimates in Section III (and the appendices). Our estimates are only approximations, based on the best available data and reasonable assumptions. In Section IV, we analyze the sensitivity of our estimates by varying the assumptions. Finally, at the end of this report, we suggest areas for further research in light of our new estimates.

II. Previous Estimates

The Fed reported that "households" own most of the value of the outstanding stock issued by U.S. corporations.[6] Many view the household share of corporate equity holdings as a good proxy for the taxable share of ownership. However, the Fed included a substantial amount of equity in the households category that is not subject to income tax.

The Fed reported both the ownership of all stock issued by U.S. corporations and the holdings by U.S. investors of stock issued by foreign corporations.[7] It then disaggregated these figures into stock ownership by different categories of institutional

[5]*See, e.g.*, Michael J. Graetz and Alvin C. Warren Jr., "Unlocking Business Tax Reform," *Tax Notes*, Nov. 10, 2014, p. 707; Harry Grubert and Rosanne Altshuler, "Shifting the Burden of Taxation From the Corporate to the Personal Level and Getting the Corporate Tax Rate Down to 15 Percent" (2015); and Eric Toder and Alan D. Viard, "Major Surgery Needed: A Call for Structural Reform of the U.S. Corporate Income Tax," American Enterprise Institute (2014).

[6]Federal Reserve, "Financial Accounts of the United States: Flow of Funds, Balance Sheets, and Integrated Macroeconomic Accounts, Fourth Quarter 2015" (Mar. 10, 2016).

[7]The Fed counts only the U.S. residents' ownership of foreign stock, not the foreign residents' ownership of foreign stock. Foreign stock includes American depository receipts, which are trust interests that trade in the United States that represent beneficial ownership of shares in a foreign corporation.

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and foreign investors[8]: state and local governments, defined benefit and contribution plans, life insurance companies, foreigners, and others (including mutual funds, exchange-traded funds (ETFs), and closed-end funds (CEFs)).[9] The Fed allocated the remaining balance to households, including stock held in IRAs and by nonprofit institutions. In other words, the Fed treated households as "a plug for all assets not classified into other sectors."[10]

The Fed reported that in 2015, households directly owned 37.3 percent of corporate equity.[11] Households owned another 13 percent indirectly through mutual funds (and more through ETFs and CEFs).[12] In total, the Fed reported that households owned more than 50.3 percent of the value of outstanding U.S. stock.

The economics literature generally uses the Fed's figures for household ownership, including both direct and indirect holdings, as a measure of equities held in taxable accounts. James M. Poterba added stock owned directly by the household sector with stock beneficially held through mutual funds — and estimated that the taxable household share of corporate equity was 57.2 percent in 2003.[13] In so doing, Poterba counted stock owned by IRAs and nonprofits in his taxable sector.

Similarly, Alan J. Auerbach estimated that U.S. households (including IRAs) directly owned about 42 percent of the market value of U.S. corporations and 26 percent more through mutual funds in 2004.[14] In his paper, Auerbach flagged the difficulty of tracing corporate taxes through to individual shareholders using the Fed data.[15]

Goldman Sachs observed that the Fed's "broad category definitions can make it difficult to use Flow of Funds data to analyze trends in the domestic public equity market."[16] Instead, Goldman used company-specific ownership data from LionShares to estimate that retail investors (including IRAs) directly owned 23 percent of public U.S. single-stock equities in 2013 (and indirectly owned much more through mutual funds and pension funds).

In lieu of using Fed data, William G. Gale[17] and Joseph Rosenberg[18] used data from tax returns to estimate the taxable share of U.S. stock by individuals.[19] They measured the ratio of total qualified dividends reported on individual tax returns (Forms 1040) divided by total dividends.[20] Gale estimated that individuals received 46 percent of dividends paid by U.S. corporations in 2000, and Rosenberg estimated 44 percent in 2009.[21] Gale and Rosenberg included both domestic and foreign dividends in the qualified dividends received by U.S. individuals in their numerator but only dividends paid by U.S. corporations in their denominator.[22]

III. Our Estimate

The Fed's household sector is too broad for our purposes and thus overestimates the ownership of U.S. stock in taxable accounts. To more accurately measure taxable ownership, we adjusted the Fed's data in several important respects:

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[8]Chris William Sanchirico, "As American as Apple Inc.: International Tax and Ownership Nationality," 68(2) *Tax L. Rev.* 207 (2015) (discussing the challenge of distinguishing categories of shareholders, including problems with classifications in the data).

[9]Federal Reserve, *supra* note 6, at Table L.223, line 11. These holdings are generally not taxable, except that taxable individuals may own, indirectly, the stock held by insurance companies and mutual funds.

[10]*See* Amanda Sneider et al., "An Equity Investor's Guide to the Flow of Funds Accounts," Goldman Sachs Group Inc., Mar. 11, 2013.

[11]Federal Reserve, *supra* note 6, at Table L.223, line 11.

[12]*Id.* at Table B.101.e, line 14.

[13]Poterba, "Taxation and Corporate Payout Policy," 94(2) *Am. Econ. Rev.* 171 (2004). For 2003 we estimated that taxable accounts held 29.6 percent of U.S. corporate stock.

[14]*See* Auerbach, "Who Bears the Corporate Tax? A Review of What We Know," in Poterba, ed., *Tax Policy and the Economy*, vol. 20, 1-40, Table 1 (2006). By comparison, for 2004, we estimate that taxable accounts held 28.9 percent. Auerbach netted the U.S. resident holdings of foreign equity against foreign resident holdings of U.S. equity, and we do not.

[15]*See id.* at 4-8.

[16]*See* Sneider, *supra* note 10, at 8.

[17]Gale, "About Half of Dividend Payments Do Not Face Double Taxation," *Tax Notes*, Nov. 11, 2002, p. 839.

[18]Rosenberg, "Corporate Dividends Paid and Received, 2003-2009," *Tax Notes*, Sept. 17, 2012, p. 1475.

[19]*See also* Jane G. Gravelle and Donald J. Marples, "The Effect of Base-Broadening Measures on Labor Supply and Investment: Considerations for Tax Reform," Congressional Research Service, at 27 (Oct. 22, 2015) (estimating that 25 percent of U.S. dividends appear on U.S. personal returns by comparing dividends received by individuals (as reported by the IRS Statistics of Income division) and dividends reported in the National Income and Product Accounts). Gravelle and Marples offer little information on their methods.

[20]Gale used dividends reported in the National Income and Product Accounts, and Rosenberg used dividends reported on corporate tax returns (Form 1120).

[21]Rosenberg, *supra* note 18. We estimate 36.9 percent and 21.7 percent for 2000 and 2009, respectively.

[22]We can reduce Rosenberg's number to 34 percent by subtracting foreign dividends from his numerator, assuming foreign dividends/total dividends equals foreign stock/total stock (23.3 percent, the share of foreign equity in 2009). In practice, the dividend yield on foreign stock may be much higher than the yield on U.S. stock. If so, we would reduce the estimate further.

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1. We excluded foreign equity held by U.S. residents — and measured only U.S. stock.[23]

2. We measured only the stock of corporations that are separately taxable under subchapter C.[24] We excluded passthrough corporations such as mutual funds, S corporations, ETFs, CEFs, and real estate investment trusts, which generally are not separately taxable.[25]

3. We excluded stock held by nonprofits from the household sector.

4. We excluded stock held by IRAs and section 529 accounts (as well as defined benefit and defined contribution plans, which the Fed already does).

5. We added back stock that taxable individuals held beneficially through mutual funds, ETFs, and CEFs (that is, in the underlying portfolios of these passthrough corporations).[26]

The first two steps isolate the stock of corporations that are subject to U.S. tax and, potentially, a double layer of U.S. taxation. Step 3 removes extraneous amounts from the residual household sector. Step 4 excludes holdings in IRAs and section 529 accounts, which is consistent with the Fed's method. Finally, step 5 combines indirect ownership with direct ownership by taxable accounts.

After these adjustments, we reallocated stock ownership to several categories: taxable accounts, foreigners, insurance companies, nonprofits, defined benefit plans, defined contribution plans, IRAs, and other investors.[27] We followed the procedures detailed below (and in Appendix 1) to estimate ownership for 2015 as well as for previous years back to 1965. We calculated that the total value of outstanding U.S. corporate stock is $22.8 trillion, of which $5.5 trillion is held in taxable accounts, or 24.2 percent of the total.

A. Outstanding C Corporation Stock

The Financial Accounts data for 2015 show a total of $35.7 trillion of corporate equity, which excludes U.S. intercorporate holdings of public stock and foreign direct investments in U.S. companies.[28]

The Fed included (1) some foreign stock held by U.S. residents and (2) stock issued by U.S. passthrough corporations.[29] Because we wanted to measure only the outstanding stock of corporations that are taxable by the United States, we subtracted both.[30] As a result, we estimated that $22.8 trillion of stock issued by domestic C corporations was outstanding in 2015 (see Table 1).[31]

Table 1. C Corporation Equity Outstanding (2015, market value in billions)	
Total foreign and domestic corporate stock (including stock issued by C and S corporations, ETFs, CEFs, and REITs)	$35,687
• Foreign stock held by U.S. residents	($6,732)
• Stock issued by passthrough entities	
• S corporations	($2,838)
• Exchange-traded funds	($2,106)
• Closed-end funds	($260)
• REITs	($939)
All outstanding C corporation stock	**$22,812**

B. C Corporation Stock in Taxable Accounts

The Fed allocated corporate stock to households but not to taxable accounts. We estimated that taxable accounts held $5.5 trillion in 2015, 24.2

[23]Our estimate (24.2 percent in 2015) of taxable holdings is most appropriate to evaluate an integration plan with shareholder credits limited to U.S. taxes paid, as under the plan suggested by Graetz and Warren, *supra* note 5. If individual taxes on capital gains and dividends are increased as part of an integration plan, a more appropriate estimate (28.6 percent) would include U.S. holdings of foreign stock. Grubert and Altshuler, *supra* note 5.

[24]There are also S corporations and M corporations (regulated investment companies, REITs, ETFs, and CEFs), which are generally not separately taxable — and are named based on their location in the tax code.

[25]We simply look through to attribute the underlying stock held by these passthrough corporations to the beneficial owners of the passthrough corporations, which is how the Fed treats mutual funds. That is, the Fed already excludes mutual funds, which are also passthrough corporations, from its issuers of corporate equity.

[26]We do not add back stock for REITs, which generally hold only real estate and mortgages.

[27]We treat only accounts of investors that are subject to tax on their capital gains and dividends as "taxable accounts." We consider the other categories nontaxable. For example, insurance companies hold stock in segregated reserves to fund annuity contracts and whole life insurance of their beneficiaries, but the companies themselves are not subject to tax on the

(Footnote continued in next column.)

income from the segregated accounts. Rather, the beneficiaries themselves will generally be subject to tax to the extent payments exceed basis.

[28]Direct investments are controlling blocks of stock in a company, which means 10 percent or more ownership. For example, foreign multinational corporations often hold direct investments in stock of their U.S. affiliates.

[29]Passthrough corporations are corporations that are generally not subject to the U.S. corporate income tax, such as S corporations, mutual funds, ETFs, CEFs, and REITs.

[30]Federal Reserve, *supra* note 6, at Table L.223. At our request, the Fed recently published its estimate of the value of stock issued by S corporations from 1996 to 2015 (Table L.223, line 30), which we subtract. The Fed also estimates the value of stock issued by ETFs and CEFs (Table L.123) but not REITs, which we obtained back to 1971 from the National Association of Real Estate Investment Trusts, all of which we subtract.

[31]The Fed already subtracts stock issued by mutual funds. *See id.* at Table L.223, n.1.

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percent of the $22.8 trillion of outstanding C corporation stock (see Table 2).[32] We detail these adjustments in Appendix 1.[33]

Table 2. Total Taxable Holdings of C Corporation Stock (2015, market value in billions)	
Outstanding C corporation stock (from Table 1)	**$22,812**
Less:	
Stock held by pensions, mutual funds, insurance companies, and others	$11,487
Stock held by foreign residents	$5,543
Equals: C corporation stock held directly by U.S. residents	**$5,781**
Less:	
Stock held directly by U.S. nonprofits	$956
Equals: C corporation stock held directly by U.S. households	**$4,826**
Less:	
Stock held in IRAs	$1,479
Stock held in section 529 plans	$89
Equals: Taxable C corporation stock held directly in U.S. taxable accounts	**$3,274**
Plus:	
Taxable C corporation stock held indirectly by U.S. households	$2,268
Equals: Total holdings of taxable C corporation stock in U.S. taxable accounts	**$5,525**

The Fed's household category includes the U.S. stock holdings of U.S. partnerships. It excludes the U.S. stock holdings of foreign partnerships, which the Fed counts in the holdings of foreign residents. Thus, the classification of the U.S. stock of a partnership (such as a hedge fund or a private equity fund) turns on the domicile of the partnership, not the domicile of the beneficiaries.

We did not distribute the stock held through hedge funds and private equity (or the tax-exempt holdings through these funds), as we explain in Appendix 2. (In short, we believe we can reasonably net the share of the U.S. stock of foreign funds that is held beneficially in U.S. taxable accounts against the share of U.S. stock of U.S. funds held beneficially by nontaxable accounts.)

IV. Sensitivity Analysis

Although we varied our assumptions in several ways, we found only a few adjustments that are potentially significant.

A. Stock Issued by Passthrough Corporations

We subtracted the stock issued by passthrough corporations and distributed the stock held by these corporations to their beneficial owners. If we did not subtract the stock issued by S corporations, ETFs, CEFs, or REITs (but subtracted only the stock issued by mutual funds, as the Fed had done), all U.S. corporate equity would total $29 trillion in 2015, and taxable accounts would hold $9.6 trillion, or 33.3 percent. Thus, subtracting stock issued by passthrough corporations substantially reduced our estimate.

B. Beneficial Ownership

To distribute the equity held by passthrough corporations to their beneficial owners, we used the ownership proportions for mutual funds to estimate the ownership proportions of ETFs and CEFs. The Fed provided data only on ownership of mutual funds, and we could not find data on ETFs and CEFs elsewhere.[34] In 2015 the Fed reported "households" owned about 63 percent of mutual funds, so we assumed that households also owned 63 percent of ETFs and CEFs, and we distributed the equity holdings accordingly. If we instead assumed that households held less (50 percent) or more (70 percent) of passthrough corporations, we would decrease our estimate to 22 percent or increase it to 25.8 percent. Thus, our estimate of taxable ownership of corporate equity is somewhat sensitive to our assumptions about ownership of CEFs and ETFs.

C. Nonprofit Ownership

Our estimate of taxable ownership is sensitive to our calculation of nonprofit ownership, which was $1.4 trillion, or 4.9 percent of corporate equity. For example, if we shifted our estimate of nonprofit share from 4.9 percent in 2015 to 4.4 percent or 5.7 percent in 2015 (which is the range we observed for 1987-2001), we would increase or reduce our estimate of taxable share to 24.7 percent or 23.4 percent.[35]

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[32]By comparison, for 2013, the Fed's Survey of Consumer Finances determined that households held $8 trillion of both domestic and foreign equity outside retirement accounts. Federal Reserve, "2013 Survey of Consumer Finances" (Oct. 20, 2014). The Fed conducts the survey every three years, independent of its Financial Accounts estimates. If we estimate and subtract the foreign equity, the survey estimate is only $6.16 trillion. For 2013, we estimated $5.4 trillion in taxable accounts.

[33]We describe our methods, data sources, and assumptions in more detail in Appendix 1.

[34]Federal Reserve, *supra* note 6, at Table L.224. ETFs, CEFs, and mutual funds are very similar: They are diversified pools of stocks and bonds and are taxed identically under subchapter M of the code.

[35]Our 4.9 percent estimate seems about right because we estimate for 2012 that nonprofits owned about $1.06 trillion of U.S. stock, while the IRS estimated for 2012 that nonprofits owned $1.04 trillion of public securities — and the IRS estimate

(Footnote continued on next page.)

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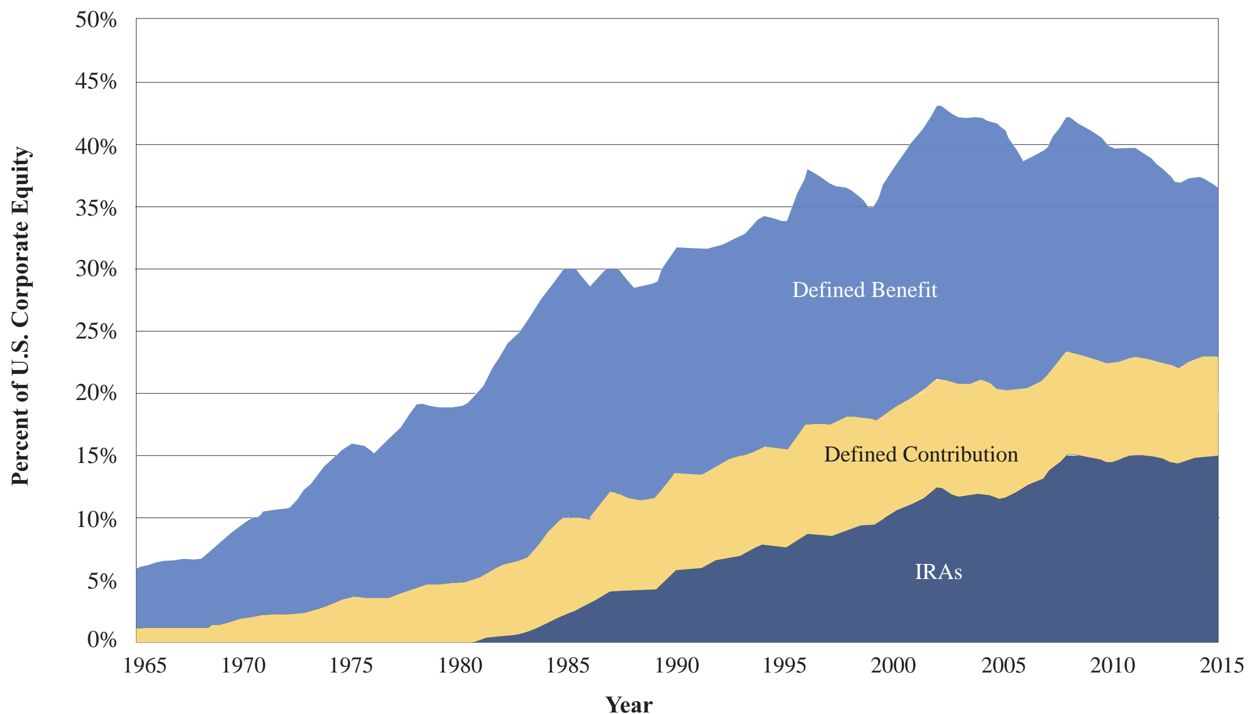

Source: Board of Governors of the Federal Reserve System, "Financial Accounts of the United States."

V. Areas for Further Research

A. Retirement Account and Plan Holdings

Retirement accounts and plans held about 37 percent of U.S. stock in 2015, worth roughly $8.4 trillion. Over the last 30 years, IRAs grew faster than other components, partly due to rollovers of assets from defined contribution plans.

Retirement accounts are effectively nontaxable, including both (i) Roth and traditional IRAs and (ii) defined-contribution and defined-benefit retirement plans. In general, investment returns in these retirement accounts are tax-free in two different manners: either (1) contributions to Roth IRAs and Roth 401(k) plans are nondeductible and earnings are nontaxable; or (2) contributions to traditional IRAs or 401(k) plans are deductible and earnings are taxable upon withdrawal. If account owners face the same tax rate when they contribute to or withdraw from their accounts, the two forms of retirement savings are economically equivalent; the benefit of a Roth plan's full tax exclusion for withdrawals equals the benefit of a deductible plan's tax deduction for contributions.

B. Foreign Holdings

Foreigners owned about 26 percent of U.S. stock in 2015, worth about $5.8 trillion. Foreign multinational corporations owned another $4.6 trillion of "direct" investments in U.S. companies (direct interests are controlling interests in U.S. companies, 10 percent or more). Like the Fed, we counted portfolio stock in corporate equity but not foreign direct investment (just as we do not count U.S. intercompany holdings).[36]

We treated foreigners as nontaxable as their income from stock generally is not subject to U.S. tax — or subject to just a little tax.[37] Their stock gains almost always are exempt from taxation. Their dividends are subject to a 30 percent U.S. withholding tax for portfolio investments, which is

included Treasury and corporate bonds and excluded other securities like private equity and hedge funds, which would offset.

[36]Individuals typically make portfolio investments. Corporations, such as foreign multinationals, typically make direct investments, which are controlling interests of a U.S. company. The Fed's exclusion of foreign direct holdings is consistent with its exclusion of intercorporate holdings of public securities.

[37]In limited instances, foreign shareholders are subject to tax on their gains under section 897 (the 1980 Foreign Investment in Real Property Tax Act).

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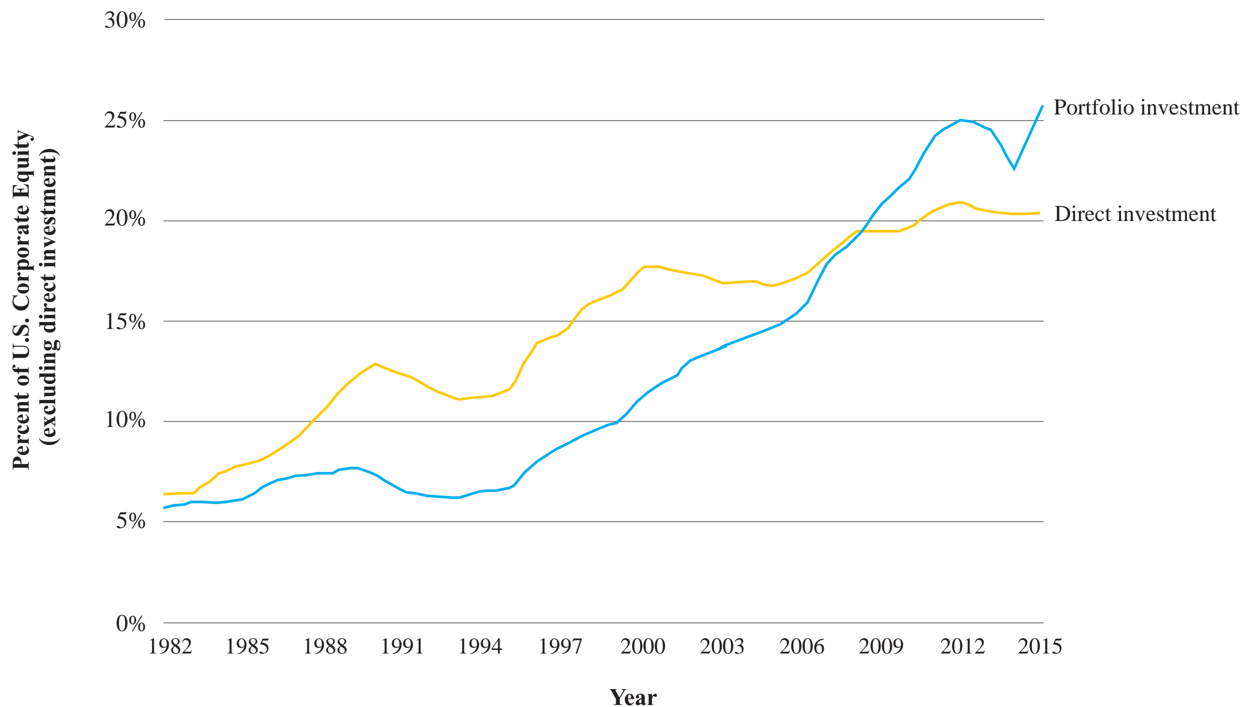

Source: Board of Governors of the Federal Reserve System, "Financial Accounts of the United States," Tables L.230 and L.223; authors' calculations.

typically reduced, by treaty, to 15 percent, or for direct investment, to 5 percent (or sometimes to zero). Further research is necessary to unravel the foreign ownership trend, especially the sizable increase in direct ownership (which might suggest more foreign multinational holdings of U.S. companies, perhaps resulting from inversions).[38]

C. Nonprofit Holders

From 1988 to 2000, the Fed used data from the IRS and surveys to separate holdings of corporate equities by nonprofits from holdings by households. We could not find better data on holdings by nonprofits, so we extended the 4.9 percent average from the earlier nonprofit Fed data to more recent estimate holdings. However, in recent years, nonprofits have shifted the mix of equities they own. Starting in 2006, the IRS separated security holdings of nonprofits into publicly traded securities (which include both stock and bonds) and other securities (which include holdings of private equity funds and hedge funds). Over the six-year period for which data are available, nonprofit holdings of other securities have nearly tripled. Further research might help unravel this trend.

D. Cost of Corporate Capital Across Countries

A key reason to pursue business tax reform is to lower U.S. corporate tax rates, in order to make U.S. corporate taxes more competitive with other countries. Many commentators gauge U.S. tax competitiveness by comparing just corporate income taxes to foreign corporate income taxes (whether statutory, effective, or marginal).[39] But, as noted earlier, the effective tax rate on corporate earnings depends on both the corporate and shareholder income taxes. Today, in the United States, relatively few shareholders pay the second level of tax on corporate earnings. Those few only pay at the reduced rate for qualified dividends and long-term capital gains.

To fully compare the U.S. tax burden on corporate earnings to foreign tax burdens, we might also compare the combined corporate and shareholder

[38]If we added foreign direct investment to our denominator, the taxable ownership of U.S. stock would fall from 24.2 percent to 19.9 percent. If we added U.S. intercompany holdings, our share would drop even further.

[39]Gravelle, "International Corporate Tax Rate Comparisons and Policy Implications," Congressional Research Service (Jan. 6, 2014) (comparing and describing corporate statutory, effective, and marginal tax rates, but not shareholder tax rates).

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Figure 4. Comparing Effective Tax Rates Across Countries, 2015

	Corporate Income Tax Rate	Personal Dividend Income Tax Rate	Capital Gains Tax Rate	Effective Corporate and Shareholder Tax Rate	Integrated Tax System
Canada	26.3%	39.3%	22.6%	?	Full credit imputation
France	34.4%	44%	34.4%	?	Partial dividend exemption
Germany	30.2%	26.4%	25%	?	Classical
Italy	27.5%	26%	26%	?	Classical
Japan	32.1%	20.3%	20.3%	?	Modified classical system
United Kingdom	20%	30.6%	28%	?	Partial credit imputation
United States	39%	30.3%	28.7%	?	Modified classical system
G-7 excluding U.S.*	29.1%	29.1%	25.5%	?	

*Weighted by 2015 GDP.
Note: Tax rates are combined national and subnational.
Sources: OECD Tax Database, Tables II.1 and II.4; OECD Quarterly National Accounts: Historical GDP — Expenditure Approach; Tax Foundation, ''Eliminating Double Taxation Through Corporate Integration.''

effective taxes. In some instances, this comparison may provide a better gauge of U.S. tax competitiveness. For example, some countries may tax corporate earnings more fully at the shareholder level, which could increase the cost of corporate capital in their countries (if their corporations depend substantially on local capital markets). More research is necessary to determine the relative U.S. and foreign tax burden on corporate earnings.

VI. Conclusion

The Fed's Financial Accounts data, as well as economic observers, report that households own most of the market value of outstanding corporate equity. While correct, that category is much different from taxable accounts. After adjusting the data in several important respects, we estimated that taxable accounts held only 24.2 percent of C corporation equity in taxable accounts in 2015. Our exercise revealed that the share of U.S. stocks held by taxable accounts declined sharply over the last 50 years, by more than two-thirds.

This sizable decrease affects many of the current tax policy debates, including how to structure a revenue-neutral corporate integration regime and, more generally, how we tax capital. We believe policymakers should carefully consider this decline.

VII. Appendix 1

To estimate the fraction of C corporation stock held in taxable accounts, we started with the measure of corporate equity reported by the Fed and subtracted the foreign and passthrough equity issues. We next subtracted stock holdings of nonprofits, IRAs, and section 529 accounts. Finally, we added the stock held in taxable accounts (indirectly) through mutual funds, CEFs, and ETFs. In total, for 2015, we estimated that taxable accounts held $5.5 trillion of the $25.8 trillion of C corporation stock, or 24.2 percent.

First, we subtracted the $6.7 trillion of foreign stock held by U.S. residents from the $35.7 trillion of total outstanding corporate stock. We assumed that U.S. investors held the same proportion of domestic and foreign stock and, thus, subtracted the $6.7 trillion proportionately from their holdings. We did not subtract any foreign stock from the $5.7 trillion

Step 1. Subtract Foreign Stock Held by U.S. Residents (2015, market value in billions of dollars)

	All Corporate Equity	-	Foreign Equity	=	U.S. Equities
All holders	$35,687		($6,732)		$28,955
Household and nonprofit	$13,311		($2,989)		$10,322
Insurance companies	$2,087		($469)		$1,618
Defined benefit plans	$3,295		($740)		$2,555
Defined contribution plans	$1,623		($364)		$1,258
Foreigners	$5,707		$0		$5,707
Other	$481		($108)		$373
Mutual funds	$7,327		($1,645)		$5,682
Closed-end funds	$100		($22)		$77
Exchange-traded funds	$1,756		($394)		$1,362

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Step 2. Subtract Passthrough Holdings From Investors (2015, market value in billions of dollars)								
	Take Out Passthroughs							
	U.S. Equities	-	S Corporation Equity	ETFs	CEFs	REITs	=	U.S. C Corporation Equity
All holders	$28,955		($2,838)	($2,106)	($206)	($939)		$22,812
Household and nonprofit	$10,322		($2,838)	($1,331)	($164)	($207)		$5,781
Insurance companies	$1,618			($43)	($5)	($131)		$1,439
Defined benefit plans	$2,555			($297)	($37)	($33)		$2,189
Defined contribution plans	$1,258			($275)	($34)	($33)		$917
Foreigners	$5,707			($95)	($12)	($56)		$5,543
Other	$373			($64)	($8)	($56)		$245
Mutual Funds	$5,682					($310)		$5,372
Closed-end funds	$77							$77
Exchange-traded funds	$1,362					($113)		$1,249

of foreign holders because the Fed does not count the foreign stock held by foreigners.[40]

Second, we subtracted the value of stock issued by S corporations, ETFs, CEFs, and REITs. Because only individuals and some nonprofits hold S corporation stock, we subtracted the $2.8 trillion of S corporation equity from only the household and nonprofit categories.[41]

The Financial Accounts data do not allocate ETF and CEF equity across owners. Instead, we assumed investors owned the ETFs and CEFs in the same proportions as the investors that own mutual funds, which the Fed reports. For 2015 households and nonprofits held 63 percent of mutual funds, so we assumed the households and nonprofits likewise held 63 percent of ETFs and CEFs, or $1.5 trillion.[42]

We estimated the investor ownership of REITs based on a 2015 Citibank report.[43] According to that report, mutual funds and ETFs are the predominant owners of REITs.[44] We subtracted $207 billion of outstanding REIT issues in 2015 from the household sector and another $732 billion from other investors, after redistributing the mutual fund and ETF holdings of REITs.[45]

Third, we subtracted nonprofit holdings from the Fed's household category. From 1988 to 2000, the Federal Reserve estimated corporate equities held by nonprofits based primarily on Forms 990 that nonprofits filed with the IRS.[46] During that period, the share of equities held by nonprofits as a share of all domestic and foreign C corporation equities ranged from 4.4 percent to 5.7 percent. From 2001 to 2015 and before 1988, we used the 4.9 percent average ratio to estimate domestic and foreign equity holdings of nonprofits, which totaled $1.5 trillion in 2015.

We added our estimate of $327 billion of foreign equities held by nonprofits to the $1.5 trillion to avoid removing those equities twice (once as foreign stock and again as nonprofit stock). We also adjusted nonprofit holdings by $49 billion to reflect that we previously subtracted issues of CEFs, ETFs, and REITs from the household and nonprofit sector.

We also added back to our estimate of nonprofit equity their holdings of S corporation equity through employee stock ownership plans, using data from EY and the Labor Department.[47] We estimated that the market value of ESOPs was double the amount of net assets and attributed this entire amount, $124 billion in 2015, to the nonprofit sector.[48]

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[40]*See* Federal Reserve, *supra* note 6, at Table L.223, n.5. Thus, foreign stock is 22.45 percent of the holdings of U.S. residents ($6,732/($35,687-$5,707)).

[41]As a general matter, nonprofits do not own S corporations because of a special tax on the income of S corporations for nonprofits — which does not apply to employee stock ownership plans.

[42]Federal Reserve, *supra* note 6, at Table L.224.

[43]*See* Citi Research, "REITs for Sale," at Figure 4 (Sept. 11, 2015) (available upon request). REITs own a pool of real estate assets, not stocks. Moreover, the profile of the investors that own REITs differs somewhat from the profile of investors in mutual funds, ETFs, and CEFs.

[44]The other cross-holdings are small. Legally, mutual funds, ETFs, and CEFs can hold only a small amount of shares of each other. *See* section 12(d)(1) of the Investment Company Act of 1940.

[45]Later, we distribute some of the mutual funds' and exchange-traded funds' holdings of REITs to the household sector.

[46]*See* Federal Reserve, *supra* note 6, at Table L.101.a, lines 13-14. Total securities from IRS Forms 990 included U.S. and foreign stocks and bonds.

[47]*See* EY, "Contribution of S ESOPs to Participants' Retirement Security" (Mar. 2015).

[48]The Fed follows this method to value closely held stock.

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Step 3. Subtract Stock Held by Nonprofits (2015, market value in billions of dollars)	
Total household and nonprofit holdings of C corporation equity	$5,781
- Nonprofit holdings of corporate equity (other than mutual funds)	($1,455)
+ Foreign stock held by nonprofits, already subtracted	$327
+ ETFs held by nonprofits, already subtracted	$18
+ CEFs held by nonprofits, already subtracted	$2
+ REITs held by nonprofits, already subtracted	$28
+ S Corp shares held by ESOPs, already subtracted	$124
Household direct holdings of C corporation equities	$4,826

Fourth, we subtracted the stock held in self-directed IRAs based on data from the Investment Company Institute, which lists IRA assets by type of institution: mutual funds, bank and thrift deposits, life insurance companies, and "other assets" (self-directed accounts).[49]

To estimate the amount of C corporation equity in other assets, we took a few extra steps:

1. We assumed that 75 percent of the other assets are stock held through self-directed accounts.[50]

2. We assumed that equity in self-directed accounts comprises C corporation equity, ETF equity, CEF equity, and REIT equity. We focused on C corporation equity (because we had previously removed the other issuances). We assumed self-directed accounts held C corporation equity in the same proportion as the equity universe.[51] In 2015 that was 87 percent.

3. We reduced our estimate for foreign equity ownership (assuming that all U.S. investors held the 22.45 percent of their equity in foreign equity). As a result, we removed $1.5 trillion of C corporation equity held in IRAs from the household sector.

We also subtracted equity holdings of section 529 accounts that are included in the residual household sector. The Fed separates assets held in section 529 college plans into assets held in college savings plans and assets held in prepaid tuition plans.[52] We assumed that half of the assets in college savings plans were C corporation equity and subtracted $89 billion from household holdings in 2015.

Step 4. Subtract Holdings by IRAs and Section 529 Accounts of C corporation Stock (2015, market value in billions of dollars)	
Household direct holdings of C corporation equities (from Step 3)	$4,826
• corporate equities in self-directed IRAs	($1,479)
• corporate equities held in 529 plans	($89)
Taxable direct C corporation holdings	$3,257

Finally, we added the stock that taxable accounts held beneficially through mutual funds, CEFs, and ETFs.

The Fed categorized mutual funds as a separate holder of corporate equity.[53] We added $1.6 trillion of the mutual funds' holdings of corporate stock to taxable accounts. We did not add the stock holdings of mutual funds that are attributable to nonprofits, IRAs, insurance companies, pension funds, and foreigners.

The Fed also separately listed ETFs and CEFs as owners of corporate equity.[54] We assumed that the household sector held 63 percent of ETF and CEF assets. Thus, we added $645 billion of CEF and ETF holdings to the household sector (but excluded the equity holdings of nonprofits, IRAs, insurance companies, pension funds, and foreigners).

Step 5. Add Indirect Holdings of C Corporation Equity (2015, market value in billions of dollars)	
Taxable C corporation holdings	$3,257
+ Mutual fund holding of equities (except those mutual funds held by nonprofits, IRAs, insurance companies, pension funds, and foreigners)	$1,600
+ Closed-end fund holding of equities (except those CEFs held by nonprofits, IRAs, insurance companies, pension funds, and foreigners)	$39
+ ETF holding of equities (except those ETFs held by nonprofits, IRAs, insurance companies, pension funds, and foreigners)	$630
Taxable account direct and indirect C corporation holdings	$5,525

Thus, we calculated that taxable accounts hold $5.5 trillion, or 24.2 percent of the $22.8 trillion in taxable accounts of C corporation stock.

[49]*See* Investment Company Institute, "Report: The U.S. Retirement Market, Fourth Quarter 2015," at Table 7 (Mar. 24, 2016).

[50]Brad M. Barber and Terrance Odean, "Are Individual Investors Tax Savvy? Evidence From Retail and Discount Brokerage Accounts," 88 *J. Pub. Econ.* 419 (2003) (finding that 74 percent of brokerage assets were stock).

[51](C corporation equity/(the sum of C corporation equity, REIT equity, ETF equity, and CEF equity)).

[52]Federal Reserve, *supra* note 6, at Table B.101.

[53]*Id.* at Table B.101.e.

[54]*Id.* at Table L.223, lines 18 and 19.

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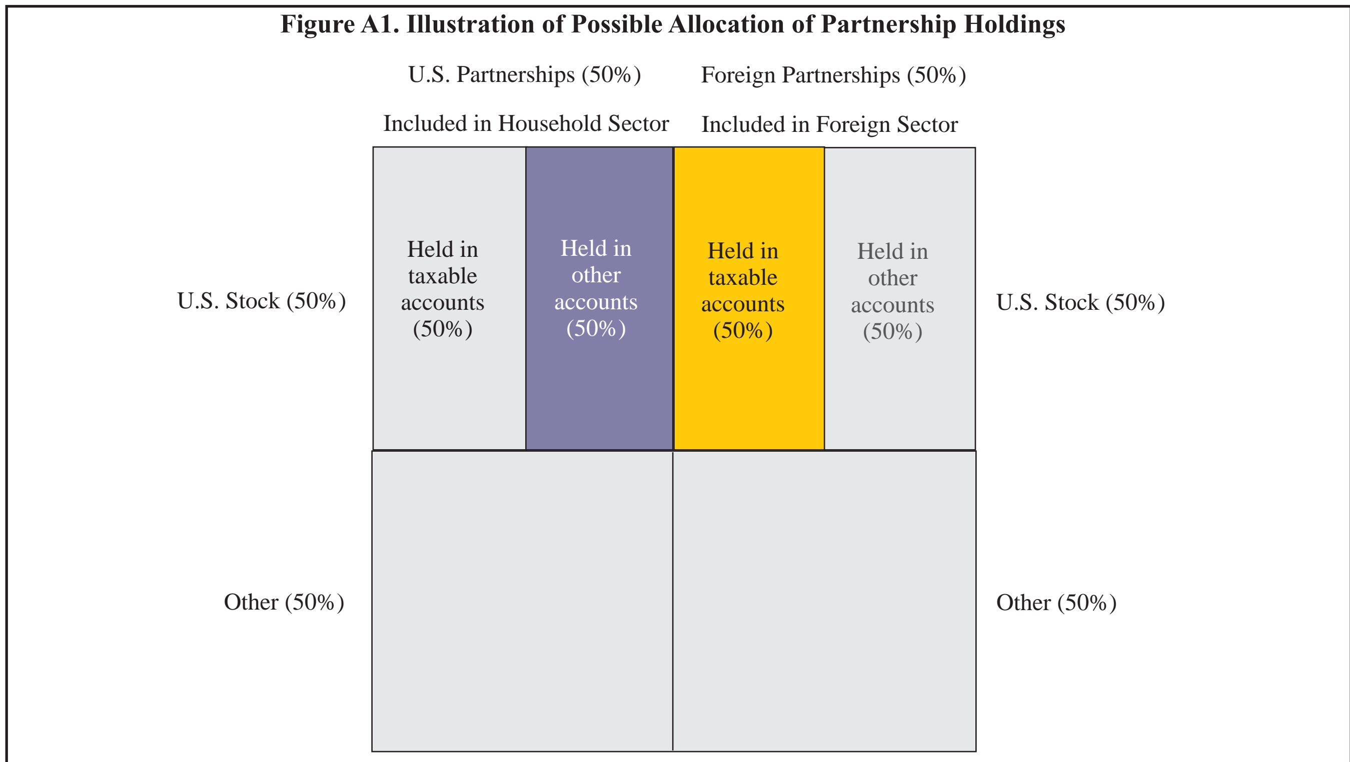

VIII. Appendix 2

In theory, we should (1) subtract from taxable accounts the share of U.S. stock of U.S. funds held beneficially by nontaxable accounts (the blue box in Figure A1) and (2) add to taxable accounts the share of the U.S. stock of foreign funds that is held beneficially by U.S. taxable accounts (the orange box in Figure 6). However, the actual holdings, owners, and residence of the funds are not publicly available, so we could not estimate the size of the boxes. Because we lacked detailed data, we did not adjust for the misallocation of the partnership holdings in our main estimates.

As illustrated in Figure A1, for our estimate, we could assume the assets, owners, and residence funds are split evenly.[55] As a result, the blue and orange boxes are the same size and cancel each other out. Thus, by adjusting in this manner, our estimate would remain at 24.2 percent.[56]

We could test the sensitivity of our estimate by varying the split of assets, owners, and residence of hedge funds and private equity funds. From industry sources, we estimated that the total assets managed by hedge funds and private equity funds were $5.8 trillion in 2015.[57] In Figure A2, we again split the assets and residence of the hedge funds and private equity funds evenly — but assumed only 25 percent U.S. taxable owners of the foreign funds. With this change, our taxable share fell to 22.7 percent in 2015.

However, U.S. and foreign assets under the management of hedge funds and private equity funds have increased greatly over the last few years — highlighting their growing importance for stock ownership (see Figure A3). Further research and data on their assets, partners, and residence would help provide a clearer picture of who owns U.S. corporate stock.[58]

(Figures appear on the following page.)

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[55]U.S. and foreign funds with 50 percent U.S. taxable partners are plausible, because both U.S. general partners and U.S. limited partners may be U.S. taxable investors. For example, a general partner often gets a profits interest to manage a fund (the "20" in "2+20"). As a result, a U.S. general partner typically earns capital gains and dividend income on its profits interest, which is taxed at reduced rates. That said, U.S. limited partners generally invest through U.S. funds, and nonprofits and foreigners generally invest through foreign funds.

[56]In theory, we still ought to slightly adjust the holdings of subcategories of tax-exempt owners (*e.g.*, nonprofits, foreigners, etc.) — which we lack the data to accomplish.

[57]Preqin, "2016 Global Private Equity & Venture Capital Report"; and BarclayHedge, "Hedge Fund Industry — Assets Under Management."

[58]Michael Cooper et al. recently tried to untangle the ownership of partnerships, with some difficulty. They explain that partnerships "constitute the largest, most opaque, and fastest growing type of pass-through." Cooper et al., "Business in the United States: Who Owns It and How Much Tax Do They Pay?" (Oct. 2015).

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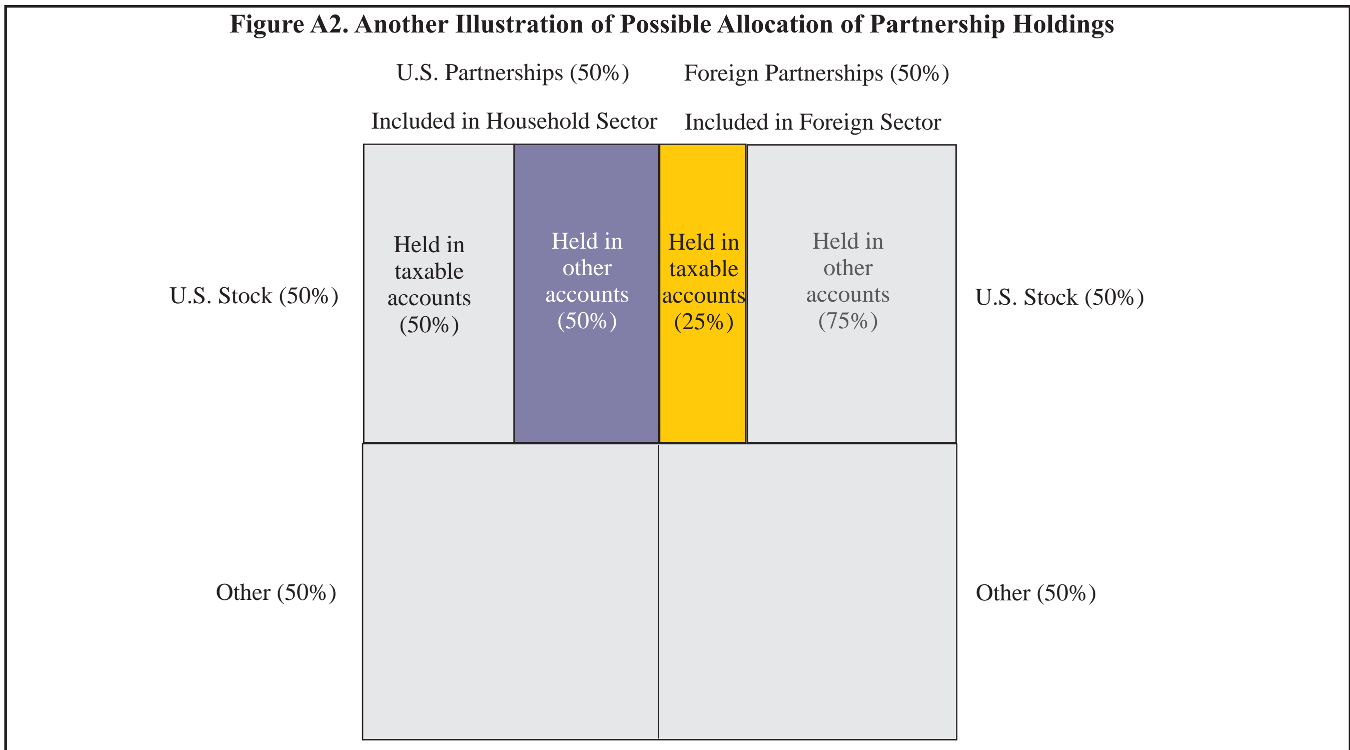
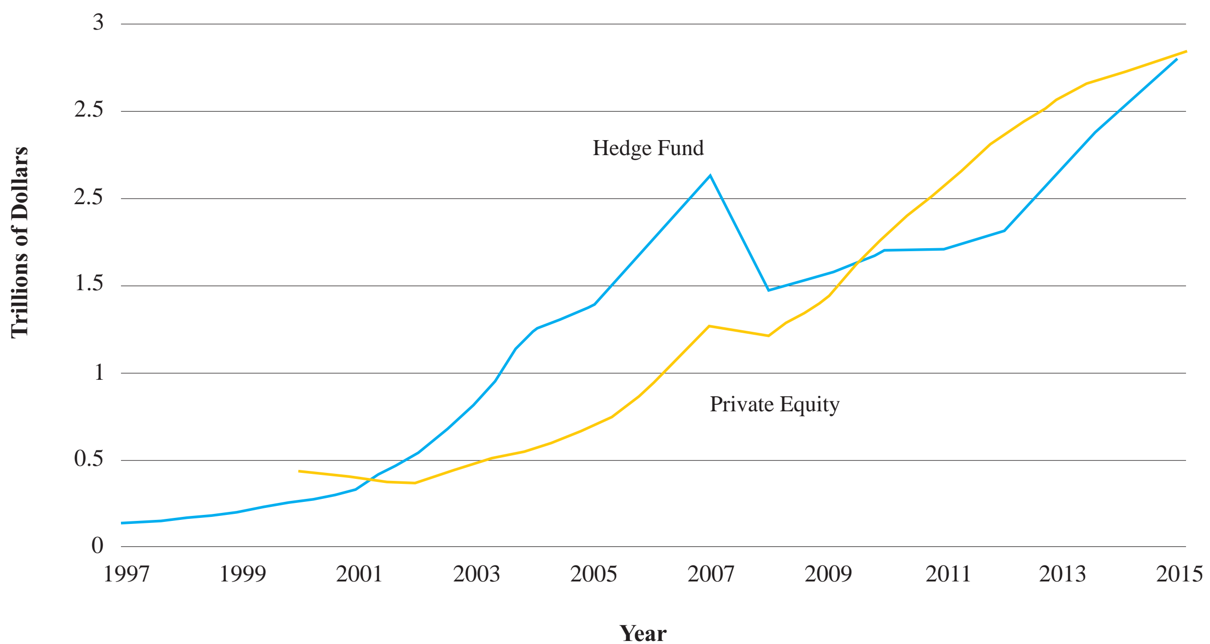


Figure A3. Hedge Fund and Private Equity Assets Under Management, 1997-2015



Sources: Preqin, "2016 Global Private Equity & Venture Capital Report," Fig. 3.1 and Barclay Hedge, "Hedge Fund Industry — Assets Under Management."

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