DOES THE TAX CODE FAVOR ROBOTS?

DANIEL HEMEL[*]

CONTENTS

I.   Introduction

In recent months, a number of scholars and commentators have articulated versions of the following argument:

> (1) U.S. tax law favors capital over labor;[1]
> (2) Robots are capital;[2]
> (3) Therefore, U.S. tax law favors robots over labor.[3]

Three implications tend to be drawn from this syllogism: (a) that U.S. tax law leads to inefficient investments in automation;[4] (b) that

---

[1] *See, e.g.*, Daren Acemoglu & Pascual Restrepo, *Automation and New Tasks: How Technology Displaces and Reinstates Labor*, 33 J. Econ. Persp. 3, 25 (2019) ("The US tax code aggressively subsidizes the use of equipment (for example, via various tax credits and accelerated amortization) and taxes the employment of labor (for example, via payroll taxes)."); Orly Mazur, *Taxing the Robots*, 46 Pepp. L. Rev,. 277, 281 (2019) ("[T]he tax law currently undertaxes capital income and overtaxes labor income."); Jay A. Soled & Kathleen DeLaney Thomas, *Automation and the Income Tax*, 10 Colum. J. Tax LawL. 1, 7 (2018) ("Investments in capital are generally taxed more favorably than labor income.").

[2] Ryan Abott & Brian Bogenschneider, *Should Robots Pay Taxes? Tax Policy in the Age of Automation*, 12 HARV. L. & POL'Y REV. 145, 151 (2018) ("As a matter of taxation, automated workers represent a type of capital investment, and capital income is currently taxed at much lower rates than labor income."); Mazur, *supra* note 1, at 299 ("A tax on robots is essentially a tax on the capital employed by the business that utilizes the robot."); Soled & Thomas, *supra* note 1, at 3 (characterizing "robotics" as a form of capital).

[3] *See* Abbott & Bogenschneider, *supra* note 2, at 150 ("The current system encourages automation by providing employers with preferential tax treatment for robot workers."); Mazur, supra note 1, at 317 ("Tax incentives to purchase capital assets are likely to result in an overinvestment in automation."); Robert Green, *How To Fix the Tax Code So It Doesn't Favor Robots Over Humans*, FORBES (May 30, 2017, 7:20 PM), https://www.forbes.com/sites/greatspeculations/2017/05/30/how-to-fix-tax-reform-so-it-doesnt-favor-robots-over-humans [https://perma.cc/PA7Y-VFUY].

[4] *See* Acemoglu & Restrepo, *supra* note 1, at 25-26 (suggesting that tax preferences for capital lead to "potentially excessive" automation, and adding that automation may be "induced by tax distortions"); Cynthia Estlund, *What Should We Do After Work? Automation and Employment Law*, 128 YALE L.J. 254, 303 n.191 (2018) ("[T]o the degree that law effectively taxes the employment of human labor . . . , it distorts firms' demand for labor versus capital in the form of labor-saving technology."(citing Abbott & Bogenschneider, *supra* note 2)); Mazur, *supra* note 1, at 281 ("By granting tax preferences to capital income, the tax system . . . encourages the non-optimal use of robots, which creates undesirable economic inefficiencies and deadweight losses."); Eduardo Porter, *Don't Fight the Robots. Tax Them*, N.Y. TIMES (Feb. 23, 2019), https://www.nytimes.com/2019/02/23/sunday-review/tax-artificial-intelligence.html ("[E]liminating the tax break for robots would . . . improve economic efficiency. By subsidizing capital investment, the government is encouraging businesses to use

automation—because it is capital-intensive and capital is tax-favored—will result in a reduction in tax revenues;[5] and (c) that policymakers should respond to the automation trend either by imposing explicit taxes on robots or by raising taxes on all capital.[6]

This short essay seeks to illustrate why the line of argument above is misguided. First, the claim that U.S. tax law is biased toward capital rests entirely on an unstated (and uncertain) normative premise: that the United States should tax income rather than consumption. If an income tax is the baseline, then U.S. tax law exhibits a pro-capital bias; if a consumption tax is the baseline, then U.S. tax law exhibits an anti-capital bias. Which baseline we choose depends on normative choices that claims of capital-favoritism tend to occlude. Second, robots do not only (or even primarily) represent "capital"; they also embed the labor of engineers and others. The labor of robot makers is often taxed at unfavorable rates relative to the labor of the workers whom automation threatens to displace. Third, the idea that U.S. tax law incentivizes firms to replace human workers with robots' rests on doubtful logic, and the claim that automation will erode the tax base finds little support either.

This essay is not an argument against capital income taxation or a

---

capital when they otherwise would not, to replace workers with machines.") [https://perma.cc/6VVC-VJA6].

[5] Abbott & Bogenschneider, *supra* note 2, at 150 ("Automation significantly reduces the government's tax revenue since most tax revenue comes from labor-related taxes. When firms replace employees with machines, the government loses income due to taxation. . . . [W]orker automation could result in hundreds of billions or even trillions of dollars in tax revenue lost per year at various levels of government."); Mazur, *supra* note 1, 290-295 (predicting "loss of tax revenue" due to automation); Soled & Thomas, *supra* note 1, at 32-35 (projecting decline in tax revenue due to automation); Porter, *supra* note 4 (stating that "the rise of robots shrinks government tax revenue"); *see also* Kathryn Kisska-Schulze & Karie Davis-Nozemack, *Humans vs. Robots: Rethinking Policy for a More Sustainable Future*, 79 MARYLAND L. REV. (forthcoming 2020) (manuscript at 51), https://ssrn.com/abstract=3373298 ("Increased worker displacement caused by automation substitution could result in society's inability to meet the benefit demands of Social Security, Medicare, and unemployment [insurance] . . . .").

[6] *See* Abbott & Bogenschneider, *supra* note 2, at 169-73 (suggesting five options for tax reform: disallow corporate income tax deductions for investments in automation; impose a federal "automation tax"; allow accelerated deductions for future wage expenses; extend the federal self-employment tax to corporations; and increase the corporate tax rate); Mazur, *supra* note 1, at 305-13 (suggesting reforms to expand the payroll tax base and increase taxes on capital income in order to "address[] the robot threat").

defense of the current Code, which does tax capital income but not all that much. I believe, though, that the case for capital income taxation will be stronger if it is based on firm foundations rather than on dubious claims of robot favoritism. The essay also is not a full treatment of the arguments for and against taxing capital. Its objective is to evaluate one such argument and to show why it is unpersuasive.

Part II of the essay examines the claim that the U.S. tax system favors capital over labor. Part III turns to the question of whether robots represent capital or embedded labor. Part IV considers the case for explicit taxation of robots or broader taxation of capital once illusions about the tax code's pro-robot bias are cleared away.

II.   Taxing Capital and Labor

a. Baseline Games

Claims about favoritism and bias in tax law depend critically on the choice of baseline. If the baseline is a tax on Haig-Simons income (i.e., consumption plus change in net worth), then a tax system that applies a lower effective rate to capital income than labor income will have a pro-capital bias. If the baseline is a tax on cash flow, then a tax system that applies a positive effective rate to capital income will have an anti-capital bias. Neither observation is especially helpful if our goal is to decide whether (and how much) to tax capital income.

This is not a novel point,[7] which is one reason why it is surprising to see the claim that U.S. tax law favors labor over capital persist in the scholarly literature. For those unfamiliar with the point, a series of quick examples will serve to illustrate.

Example 1: Imagine a two-period world and two taxpayers,

---

[7] Larry Zelenak made exactly this point in a different context more than two decades ago when criticizing the claim that the U.S. tax system favors whites over African-Americans. Lawrence Zelenak, *Taking Critical Tax Theory Seriously*, 76 N.C. L. REV. 1521, 1565 (1998) ("Given the different views of the ideal tax system, it is not enough simply to *assume* an income tax ideal and label as suspect any tax provision which departs from that ideal. Instead, the first steps in the analysis should be the choice of baseline and a defense of that choice.").

Bart and Lisa. Both earn a wage of $10. Bart consumes all of his income in the first period, while Lisa saves all of hers to consume in the second period. The rate of return on investment is 10%. A tax rate of 40% applies to all Haig-Simons income (consumption plus change in net worth).[8] Bart earns $10 in the first period, pays a tax of $4, and consumes $6 in the first period. Lisa earns $10 in the first period, pays a tax of $4, and saves $6. Her $6 of savings become "capital," which grows at a rate of 10%. In the second period, she earns capital income of $0.60 and pays $0.24 in tax on her capital income. That leaves Lisa with $6.36 to consume in the second period.

Example 2: Same as Example 1, except that the tax rate is now 40% on labor income and 20% on capital income. Assume no behavioral changes. Bart again earns $10 in the first period, pays a tax of $4, and consumes $6 in the first period. Lisa again earns $10 in the first period, pays a tax of $4, and saves $6. In the second period, she earns capital income of $0.60 and pays $0.12 in tax on her capital income. That leaves her with $6.48 to consume in the second period.

By setting a lower tax rate on capital income than labor income in Example 2, we have left Lisa, our "capitalist," better off than in Example 1. If we consider the Haig-Simons income tax in Example 1 to be the baseline, then we have in that sense "favored" Lisa in Example 2. It is, however, misleading to say that we are favoring capital over labor. Both Bart and Lisa are laborers *ab initio*. The difference is that Bart labors and consumes, while Lisa labors and then saves and consumes. Rather than favoring capital over labor, we are—in Example 2—favoring laborers *who are also capitalists* over laborers

---

[8] *See* Robert Murray Haig, *The Concept of Income-Economic and Legal Aspects*, *in* THE FEDERAL INCOME TAX 1, 7 (Robert Murray Haig ed., 1921); HENRY C. SIMONS, PERSONAL INCOME TAXATION: THE DEFINITION OF INCOME AS A PROBLEM OF FISCAL POLICY 50 (1938).

who are only that.

Now consider a third case—that of a consumption tax:

> **Example 3:** Same as Example 2, except that instead of a 40% tax on Haig-Simons income, the 40% tax applies only to income less savings, or consumption. Bart again earns $10 in the first period and saves nothing. His income less savings is $10; he pays a tax of $4; and he consumes $6. Lisa again earns $10 in the first period and saves $10; her income less savings in the first period is therefore $0. Her $10 of savings become "capital," which grows at a rate of 10%. In the second period, her income less savings is $11, and she pays $4.40 in tax. That leaves Lisa with $6.60 to consume in the second period.

If our baseline is a consumption tax (Example 3), then by setting a lower but still positive tax rate on capital income in Example 2, we have left Lisa, our "capitalist," worse off than in the baseline scenario. In that sense, we have disfavored laborers who are also capitalists relative to laborers who are only that. Indeed, if a consumption tax is our baseline, then the effective tax rate on capital income that neither "favors" nor "disfavors" capital income is zero. Consider, briefly, a fourth example:

> **Example 4:** Same as Example 3, except that instead of a 40% tax on income less savings, we impose a 40% tax on labor income and a 0% tax on capital income. Bart again earns $10 in the first period, saves nothing, pays a tax of $4, and consumes $6. Lisa again earns $10 in the first period and now pays a tax of $4, allowing her to save $6. Her $6 of savings (capital) grow at a 10% rate and generate no additional tax, allowing her to consume $6.60 in the second period.

Unsurprisingly to tax students and scholars, Lisa ends up in the same position in Example 3 (with an immediate deduction for savings) and

Example 4 (with an exemption for the yield on capital investment).[9]
This immediate deduction-yield exemption equivalence is the
intellectual basis for the traditional-Roth distinction in individual
retirement accounts (IRAs) and defined contribution plans (e.g.,
401(k)s). Example 3 is analogous to a traditional IRA or 401(k);
Example 4 is comparable to a Roth IRA or 401(k). A tax system that
allows an immediate deduction for all capital expenditures is akin to a
tax system with unlimited traditional IRA or 401(k) contributions; a
system that taxes all labor income upfront but allows capital
investments to grow tax-free is like a system with uncapped Roth
IRAs and 401(k)s.

Whether we should tax Haig-Simons income (Example 1) or
consumption (Example 3 or, almost equivalently, Example 4) is a
hotly contested question. Very long literatures in economics and law
address this question—the debate is too wide-ranging to summarize
succinctly (or even not-so-succinctly).[10] Little progress, though, is
made by stating that the U.S. tax system, which applies a reduced but
still positive tax rate to most forms of capital income (Example 2),
therefore favors capital over labor. That is (close to) true if a Haig-
Simons income tax is the baseline and untrue if a consumption tax is
the baseline. It is, in any event, only problematic if the former system
is the normative ideal, which is not obviously the case.[11]

---

[9] This result is subject to a caveat: When a taxpayer has an opportunity to earn supernormal
returns but cannot exploit that opportunity because of credit constraints, she will prefer a cash-
flow tax regime (Example 3) over a labor income tax regime (Example 4). For a discussion of
this point, see Joseph Bankman & Barbara H. Fried, *Winners and Losers in the Shift to a
Consumption Tax*, 86 GEO. L.J. 539, 544 (1998).

[10] *See* Joseph Bankman & David A. Weisbach, *The Superiority of an Ideal Consumption Tax
Over an Ideal Income Tax*, 58 STAN. L. REV. 1413, 1414 n.1 (2006) (noting that "[t]he
literature is immense," and collecting sources). The discussion of income and consumption
taxes in this section is heavily informed by Bankman and Weisbach's analysis. *See id.* at
1422-28.

[11] One might be tempted to think that the government can reduce the labor-leisure distortion
by taxing capital income and using the resulting revenue to cut the tax rate on labor income. A
lower labor income tax rate and a commensurately higher capital income tax rate would
reduce the labor-leisure distortion for those workers (like Bart) with a preference for present-
period consumption, but it would exacerbate the labor-leisure distortion for those workers
(like Lisa) with a preference for future-period consumption.

b. A Hybrid Income-Consumption Tax Regime[12]

Formally, the United States has an income tax at the federal level: a tax on "all income from whatever source derived."[13] Several features of the U.S. tax system, however, move the status quo away from a Haig-Simons income tax and somewhat closer (but not all the way) to a consumption tax.

First, the December 2017 tax law allows businesses to claim an immediate deduction for the cost of most property placed into service between late 2017 and the beginning of 2023.[14] After that, federal tax law generally allows taxpayers to deduct capital costs at an accelerated rate that is faster than the rate of economic depreciation.[15] Capital expensing does not apply to "acquired intangibles" (patents, copyrights, trademarks, etc.), which must be amortized over a 15-year period,[16] or to residential and nonresidential real property, which must be depreciated over 27.5-year and 39-year periods, respectively.[17] Outside of those exceptions, however, we have—at least temporarily—moved to what is essentially consumption tax treatment for capital investment at the business level. Note, moreover, that although investments in real property are not eligible for capital expensing, this is not a reason to feel sorry for the real estate industry. Real estate investments are eligible for a raft of other tax preferences that reduce the effective tax rate on income from real estate investments below zero in many cases.

Second, the United States in many instances allows immediate-deduction or yield-exemption treatment for capital income at the

---

[12] The hybridity of the U.S. tax system has long been recognized. *See, e.g.*, William D. Andrews & David F. Bradford, *Savings Incentives in a Hybrid Income Tax*, in UNEASY COMPROMISE: PROBLEMS OF A HYBRID INCOME-CONSUMPTION TAX 269 (Henry I. Aaron et al. eds., 1988); Edward J. McCaffery, *Tax Policy Under a Hybrid Income-Consumption Tax*, 70 TEX. L. REV. 1145 (1991).

[13] I.R.C. § 61(a) (2019).

[14] I.R.C. § 168(k)(6)(A)(i).

[15] I.R.C. § 168(e)(1), (k)(6)(A)(ii)-(v).

[16] I.R.C. § 197.

[17] I.R.C. § 168(c).

individual level. This is most clear in the case of traditional and Roth IRAs and 401(k) plans. It is also true for other tax-preferred investment vehicles, such as health savings accounts (which function like traditional IRAs for taxpayers who withdraw funds for non-medical expenses after age 65), section 529 college savings accounts (which function like Roth IRAs for taxpayers who withdraw funds to pay for education expenses), and whole life insurance policies (which also function like Roth IRAs for taxpayers who maintain their policies until death).[18] And it is true for long-term investments in non-dividend-paying stocks such as Amazon, Alphabet, Berkshire Hathaway, and Facebook, because those stocks generate no income tax liability year-to-year and taxpayers can claim stepped-up basis at death, thus avoiding tax on lifetime gains. It is, moreover, more or less true for investments in owner-occupied housing, which have Roth IRA-like features: the year-to-year yield on an owner-occupied home is the untaxed benefit of not having to pay rent to live somewhere else, and gains upon sale will generally be eligible for the exclusion of up to $500,000 from capital gains tax.[19]

Third, federal taxes that fund the Social Security Administration's Old Age, Survivors, and Disability Insurance (OASDI) program apply only to wages and self-employment income, and not to (most[20]) capital income. The taxable-earnings maximum for OASDI taxation in 2019 is $132,900. Below that limit, the tax functions like an 11.68% labor income tax.[21] In that range, the OASDI tax "favors" capital over labor only in the sense that a consumption tax "favors" capital over labor, which is to say, only if we posit that a Haig-Simons tax is the

---

[18] *See, e.g.*, McCaffery, *supra* note 12, at 1152-55; Edward A. Zelinsky, *The Defined Contribution Paradigm*, 114 YALE L.J. 451, 513-20 (2004).

[19] *See* I.R.C. § 121.

[20] Self-employment income may represent return on capital in some cases, though with modest foresight taxpayers can structure their own businesses to avoid OASDI tax on capital yield.

[21] The tax is 6.2% on the employee and 6.2% on the employer. The employee rate is tax inclusive and the employer rate is tax exclusive. Thus, if the employee's nominal wage is $10, the employer will pay $10.62 and the government will receive $1.24. Expressed in tax-inclusive terms (which is the way that income taxes are typically expressed), the rate is $1.24/$10.62 ≈ 11.68%. Adding in Medicare taxes, the rate is $15.3/$10.765 ≈ 14.21%. Note, though that Medicare taxes apply to all labor income without a taxable earnings maximum and to net investment income for taxpayers with adjusted gross income above $200,000 ($250,000 for a married couple filing jointly).

appropriate baseline. (Whether we should consider OASDI taxes to be taxes at all—or mandatory contributions to a government-run pension plan—is itself a subject of debate: up to a point, additional taxable earnings yield higher benefit levels, making them somewhat more investment-like and less tax-like.[22])

In other contexts, the United States does indeed tax capital—sometimes at quite high rates. Interest income—i.e., return on debt capital—is taxed at a top statutory rate of 37%,[23] plus 3.8% in net investment income taxes,[24] for a federal total of 40.8%. State taxes can add up to 13.3%,[25] for a total of 54.1%. Qualified dividends and long-term capital gains—i.e., returns on equity capital—are taxed at a top statutory rate of 20%[26] (or 23.8% with the net investment income tax, and up to 37.1% when accounting for state taxes). And the estate tax—40% on estates over $11.4 million[27]—is akin to a capital tax levied once per lifetime.

To be sure, much of U.S. corporate debt is held by foreigners who are exempt from U.S. withholding tax on portfolio interest[28] or by tax-favored or tax-exempt investors here in the United States;[29] most of the return on corporate equity escapes shareholder-level taxation;[30] and a tiny fraction of 1% of Americans who die each year will trigger

---

[22] *See, e.g.*, Louis Jacobson, *Medicare and Social Security: What You Paid Compared to What You Get*, POLITIFACT (Feb. 1, 2013, 10:28 AM), https://www.politifact.com/truth-o-meter/article/2013/feb/01/medicare-and-social-security-what-you-paid-what-yo [https://perma.cc/G3UU-LGQH].
[23] I.R.C. § 1(j)(2).
[24] I.R.C. § 1411.
[25] *Taxes in California*, TAX FOUNDATION, https://taxfoundation.org/state/california (last visited Nov. 25, 2019).
[26] I.R.C. 1(h)(D).
[27] I.R.C. § 2001(c); Rev. Proc. 2018-57, at 23.
[28] *See* I.R.C. § 871(h) (portfolio interest exemption); Alexandra Scaggs, *U.S. Corporate Bonds See Resurgence in Foreign Buyers*, BARRON'S (June 10, 2019), https://www.barrons.com/articles/u-s-corporate-bonds-see-resurgence-in-foreign-buyers-51560180655 (noting that foreign investors hold 27% of U.S. corporate debt).
[29] On the ownership of U.S. corporate debt, see *Major Holders of the U.S. Corporate Bond Market*, GLOBAL MACRO MONITOR (June 12, 2018), https://global-macro-monitor.com/2018/06/12/major-holders-of-the-u-s-corporate-bond-market.
[30] *See* Steven M. Rosenthal & Lydia S. Austin, *The Dwindling Taxable Share of U.S. Corporate Stock*, 151 TAX NOTES 923, 930 (May 16, 2016) (estimating that taxable accounts held less than a quarter of C corporation equity in 2015),

estate tax liabilities.[31] Still, U.S. individual income taxpayers reported roughly $100 billion in taxable interest income, $250 billion in taxable dividends, and more than $630 billion in net capital gains in tax year 2016 (the most recent year for which such data is available).[32] The United States does, in other words, tax capital income— not always, but certainly sometimes. We do not have a Haig-Simons income tax, but we do not have a pure consumption tax either. We favor capital relative to a Haig-Simons baseline and we disfavor capital relative to a consumption tax baseline. Favoritism claims are baseline games.

c.　Substituting Capital for Labor?

Some critics of the U.S. tax system's alleged "robot-favoritism" make a less tautological argument than that the U.S. tax system "favors" capital over labor. They claim—in the words of Ryan Abbott and Brian Bogenschneider—that in some cases a robot "costs more than a human worker before taxes, and only becomes cheaper on an after-tax basis."[33] The argument is explicit about its baseline: a world without taxes. Abbott and Bogenschneider use the following example to illustrate:

> [A]ssume a robot has a total capital cost of $100,000 and seven years of useful life, while an employee has a total wage cost of $100,000 over seven years. If accelerated depreciation for capital is available, the firm may be able to claim a large portion of the $100,000 depreciation as a tax deduction in year one rather than pro-rata over seven years. … By contrast, wage

---

[31] *See* Howard Gleckman, *Only 1,700 Estates Would Owe Estate Tax in 2018 Under the TCJA*, TAX POLICY CTR.: TAX VOX (Dec. 6, 2017), https://www.taxpolicycenter.org/taxvox/only-1700-estates-would-owe-estate-tax-2018-under-tcja (estimating that fewer than 0.1% of all deaths in the United States will trigger estate tax liabilities under the December 2017 tax law).
[32] IRS, STATISTICS OF INCOME, INDIVIDUAL COMPLETE REPORT (PUBLICATION 1304), Table 1.4 (2018), https://www.irs.gov/pub/irs-soi/16in14ar.xls.
[33] Abbott & Bogenschneider, *supra* note 2, at 163. Eduardo Porter makes a similar claim, stating that "'accelerated depreciation' for capital investments . . . allows [firms] to deduct the cost of their robots faster than they could deduct the wage of the payroll of the workers they replace." Porter, *supra* note 4; *see also* Green, *supra* note 3 ("Companies will expense the cost of purchasing a robot in year one, but only write off job costs as incurred during the duration of employment. Front-loading tax breaks for robots are a huge tax advantage, and it will sway companies in that direction.")

taxes must be deducted as paid (i.e., 1/7th in each year). In this case, a present value benefit will accrue from claiming accelerated tax deductions for automated workers relative to the pro-rata tax deductions for employee wages, even where the $100,000 capital outlay is paid up-front.[34]

The claim is clear about its assumptions, but problematic in its reasoning. To unpack it, let's assume that the human worker receives $100,000 in nominal dollars *pro rata* over seven years; thus, her wage is $14,285.71 per year. The present value of those wage payments, at the outset, is less than $100,000 if the interest rate is positive. (If the interest rate is zero, then there is no tax benefit to accelerated depreciation anyway.) Let's assume, for arithmetic convenience, an interest rate of 10 percent. What rate we choose won't matter as long as we remain consistent. With a 10 percent interest rate, the present value of the stream of wage payments is $69,548.82. For our comparison to be apples-to-apples, then, we need to imagine a robot with an upfront cost of $69,548.82.

The most favorable form of accelerated depreciation is immediate deduction (i.e., expensing). This is consistent with consumption taxation, which—as illustrated above—imposes no effective tax on capital income. Let's imagine that the firm, under a cash-flow consumption tax, has the choice between (a) buying a robot for $69,548.82 and (b) hiring a human worker for seven years at $14,285.71 per year. Does a consumption tax create an incentive to choose the former rather than the latter?

In a word: No. To see why, imagine that the firm hires the human worker and deposits $69,548.82 in a capital account that grows at the assumed interest rate of 10 percent. Each year, the firm earns interest at a 10 percent rate and withdraws $14,258.71 to pay the human worker's wage. Because a consumption tax system is cash flow-based, the initial contribution to the capital account is deductible. Subsequent withdrawals are included in income but then offset by a deduction for wages paid. The firm goes on this way for seven years. The resulting

---

[34] Abbott & Bogenschneider, *supra* note 2, at 164-65.

cash flows are as follows:

Table 1. Hiring a Human Worker Under a Consumption Tax

(A) Year	(B) Initial Capital Investment	(C) Interest (10%)	(D) Wage	(E) End of Year (B+C+D)
1	$69,548.82	$6,954.88	($14,285.71)	$62,217.99
2	$62,217.99	$6,221.80	($14,285.71)	$54,154.08
3	$54,154.08	$5,415.41	($14,285.71)	$45,283.78
4	$45,283.78	$4,528.38	($14,285.71)	$35,526.45
5	$35,526.45	$3,552.64	($14,285.71)	$24,793.38
6	$24,793.38	$2,479.34	($14,285.71)	$12,987.01
7	$12,987.01	$1,298.70	($14,285.71)	$0.00

Note: The firm begins with $69,548.82 and invests at a 10% interest rate. At the end of each year, the firm pays a wage of $14,285.71. The tax system is cash flow-based, so withdrawals and wages offset.

There is no mathematical magic here. As long as the firm can deduct capital expenditures at the outset and can deduct wage expenses along the way, it is indifferent between (a) buying a robot for $69,548.82 and (b) setting aside $69,548.82 in a capital account to pay wages to a human worker of $14,285.71 per year for seven years. There is no tax benefit for hiring an "automated worker" over a human one.[35]

For those who prefer intuition to arithmetic, the key point is as follows: If a firm in a cash-flow consumption tax system starts with a sum of money and has to choose between a robot and a human worker to perform the same task, it will choose whichever one—the robot or the human worker—is cheapest in pre-tax net present value terms. Taxes do not distort the decision; the firm makes the same choice under a cash-flow consumption tax that it would in a tax-free world. If the firm chooses the robot, it deducts the cost of the robot at the outset

---

[35] The tax system would encourage the firm to choose the robot over the worker only if investments in robots were uniquely tax-advantaged as compared to other capital investments. Abbott and Bogenschneider point to no reason why this would be the case. They argue that the preference for robots over human workers arises out of the general preference for capital over labor. *See* Abbott & Bogenschneider, *supra* note 2, at 164-68.

and then pays tax on robot-generated profits as they flow in. If the firm chooses the human worker, it likewise can deduct the net present value of the human worker's wages and then pay tax on the human worker-generated profits as they arrive. To achieve the latter result, the firm can invest and immediately deduct a sum equal to the net present value of the human worker's wages (capital investments being immediately deductible) and then withdraw from the investment when wages are due. The tax on withdrawals and the deduction for wages offset. All that is left in both cases is the initial deduction (equal to the cost of the robot or the net present value of the worker's wages) and the tax on robot- or human worker-generated profits.[36]

To recap: We imagined a firm starting out with a sum of money ($69,548.82, to be precise) and choosing between two options. First, it could buy a robot for $69,548.82, which would last for seven years. Second, it could hire a worker and pay her $100,000 over seven years, which (at our assumed 10% interest rate) reduces to a net present value of $69,548.82. Abbott and Bogenschneider assume that the first option is tax-favored relative to the second in a regime with capital expensing because the firm can deduct the full cost of the robot in the first year but deducts wages only as they are paid. This turns out to be wrong, though. If capital investments can be deducted immediately, then the firm can write off the full $69,548.82 in year one either way. Either it will invest in the robot or it will use the $69,548.82 to make another

---

[36] One factor omitted from the analysis above, though sometimes cited as a reason why the tax code favors robots, is the fact that employers must pay OASDI taxes with respect to human workers but not robots. *See, e.g.*, Abbott & Bogenschneider, *supra* note 2, at 163-64; Tom Davenport, *Advancing the Debate on Taxing Robots*, FORBES.COM (June 13, 2019), https://www.forbes.com/sites/tomdavenport/2019/06/13/advancing-the-debate-on-taxing-robots/#5dddf45b25a4 (stating that "[i]f robots and humans cost the same amount, tax policies make robots cheaper to employ," and noting that robots "pay no payroll tax"); Porter, *supra* note 4 ("For every worker replaced by a robot, the employer saves on payroll taxes."). However, the "standard view" among economists is that "the economic burden of the payroll tax in the United States" is "borne entirely by employees." Don Fullerton & Gilbert E. Metcalf, *Tax Incidence*, 4 HANDBOOK OF PUBLIC ECONOMICS 1787, 1789 (A.J. Auerbach & M. Feldstein eds., 2002). The claim that payroll taxes encourage employers to replace workers with robots implies that employers bear a share of the payroll tax. That is not an impossibility, *see, e.g.*, Paul Bingley & Gauthier Lanot, *The Incidence of Income Tax on Wages and Labour Supply*, 83 J. PUB. ECON. 173 (2002), but—at the very least—commentators who argue that the payroll tax pushes employers toward automation bear the justificatory burden of explaining why the standard view of payroll tax incidence is wrong.

capital investment from which it will withdraw to pay wages in subsequent years.[37] The firm will have an incentive to choose the robot over the worker only if the robot is—in net present value terms— cheaper than the worker.

III.   Robots as Capital and Labor

There is still another reason to doubt the neat syllogism set forth at the outset. The claim that robots represent "capital"—more often asserted than explained—turns out to be less obvious than it might appear initially. The cost of a robot is also—and is perhaps principally—the cost of the engineers and other highly skilled workers who design and produce the robot. In this respect, automation does not represent the displacement of labor by capital, but the displacement of some workers by others.

To illustrate: Imagine a bar—let's call it Moe's Tavern—that swaps its human bartenders for robots. We might say that Moe's has substituted capital for human labor, but that characterization would mislead as much as it informs. The metals and plastic that constitute the robot bartenders are unlikely to be the major cost drivers here. The bulk of the robots' value derives from the underlying intellectual property—IP that was developed, somewhere, by human engineers and other knowledge workers. Moe's Tavern is, in effect, firing its human bartenders and replacing them with another fleet of human bartenders (who may be hundreds or thousands of miles away in an office

---

[37] If the firm doesn't have $69,548.82 on hand but needs to borrow, then the outcome is the same. A cash-flow consumption tax includes loan proceeds in the base and allows a deduction for payments of interest and principal. STAFF OF THE JOINT COMM. ON TAXATION, JCX-14-16, BACKGROUND ON CASH-FLOW AND CONSUMPTION-BASED APPROACHES TO TAXATION 38 (Mar. 18, 2016). If the firm borrows $69,548.82 to buy the robot, then it includes that amount as loan proceeds and deducts that amount as a capital investment. Assume a seven-year amortization schedule and a 10% interest rate. The firm then repays (and deducts) $14,285.71 each year for seven years. It claims the exact same deduction each year if it pays a human worker $14,285.71 each year for seven years (for a nominal total—rounded—of $100,000). If loan proceeds are not included in the base and interest payments are not deducted, the outcome is equivalent: The firm that buys the robot can claim a deduction of $69,548.82 at the outset, which is the same in net present value terms as deducting $14,285.71 in wages paid to the human worker each year for seven years. If interest payments are deductible to the debtor and taxable to the creditor, then we can ignore the tax treatment of interest payments, and the conclusion of the previous sentence applies here as well.

building in Silicon Valley or along Massachusetts's Route 128 corridor).

This shift in labor is potentially disconcerting for a number of reasons. It may mean that a small number of highly educated and highly skilled engineers—concentrated largely on the coasts—capture a larger share of labor income, exacerbating socioeconomic and geographic inequalities. And while automation may create new jobs and entirely new industries, it almost certainly will lead to job losses for some workers in some regions and demographic groups, who may not be able to retrain easily if at all.

But it is more difficult to see either why the U.S. tax system is the cause of this shift or why a reduction in tax revenue would be a consequence. As for causes: Even if the vestiges of capital taxation were excised from the code and we were left with a pure consumption tax, there would be no incentive for Moe's Tavern to replace its human bartenders with robots *unless* the human bartenders were less productive or cost more in pre-tax terms. As for consequences: The reality is that greater wage inequality will likely lead to more federal revenue, not less. That is because marginal tax rates on labor income are generally progressive, and so when income shifts from low-marginal-rate taxpayers to high-marginal-rate taxpayers, revenue generally rises.

Even if we treat OASDI taxes as taxes rather than pension contributions, marginal tax rates on labor income are generally upward sloping over income. The marginal tax rate on labor income for a childless taxpayer starts out at around 6.66% (i.e., a 14.21% tax rate for Social Security and Medicare, and a negative 7.65% tax rate under the earned income tax credit) and tops out at 40.22%. For a taxpayer with two children, the marginal rate starts out around -25.79% (i.e., 14.21% for Social Security and Medicare, and a negative 40% tax rate under the earned income tax credit) and plateaus at 40.22% on the far right side. There are, to be sure, a few points along the income spectrum where marginal tax rates on labor income for taxpayers with children potentially exceed 40.22% because of the combination of the EITC phaseout, Social Security and Medicare taxes, and the 10% or

12% statutory rate. Aggregate data confirms, however, that overall, taxpayers with higher incomes generally pay higher marginal tax rates.[38]

An important exception to the general trend of rising marginal tax rates on labor income applies to entrepreneurial labor. The legal categories of "ordinary income" and "capital gain" imperfectly approximate the economic concepts of labor and capital income. The bulk of the economic income accruing to Amazon founder and CEO Jeff Bezos, for example, is most plausibly characterized as labor income: it is the result of his effort and skill (with some luck thrown in) rather than a reward for delaying consumption. However, most of his income will be taxed—if ever—at the preferential rates that apply to long-term capital gains. That is because Amazon issued shares of stock to Bezos when the stock was virtually worthless; those shares are now worth more than $100 billion; and the shares are capital assets in the hands of Bezos that he has held for more than one year.[39] Amazon itself is subject to a 21% income tax at the corporate level—a tax that it impressively avoids.[40] But Bezos should be able to avoid any additional individual-level tax himself by delaying the sale of stock until his death, at which point his heirs' basis in the stock will be "stepped up," allowing them to sell the shares tax-free. To the extent that Bezos needs liquidity to fund consumption during his lifetime, he can simply borrow against his Amazon holdings—which will not trigger a tax liability—and repay the loan at death. When your net worth exceeds $100 billion, finding a financial institution that will loan you money cannot be that hard.[41]

---

[38] *See* MOLLY P. SHERLOCK & DONALD J. MARPLES, CONG. RES. SERV., R45145, OVERVIEW OF THE FEDERAL TAX SYSTEM IN 2018 7 (2019),
https://crsreports.congress.gov/product/pdf/R/R45145.
[39] *See* I.R.C. § 1221 (2019) (definition of capital asset); I.R.C. § 1222 (2019) (long-term capital gain treatment for capital assets held more than one year).
[40] *See* Christopher Ingraham, *Amazon Paid No Federal Taxes on $11.2 Billion in Profits Last Year*, WASH. POST (Feb. 16, 2019, 8:00 AM), https://www.washingtonpost.com/us-policy/2019/02/16/amazon-paid-no-federal-taxes-billion-profits-last-year
[https://perma.cc/QTY5-ZDL7].
[41] Edward McCaffery evocatively refers to this as the "buy/borrow/die" strategy. Edward J. McCaffery, *Taxing Wealth Seriously*, 70 TAX L. REV. 305, 317-21 (2017). Though in Bezos's case, it is perhaps better described as "found/borrow/die"

Perhaps, then, what commentators who predict automation-induced revenue losses are envisioning is that automation will result in the replacement of middle- and high-income employees—who may face effective tax rates that exceed the 21% corporate rate—with entrepreneurial labor, whose income is taxed at corporate level but may escape taxation at the individual level. But automation and entrepreneurship are not synonyms. As Amy Webb has documented, AI research is highly concentrated in nine companies—the so-called "G-MAFIA" (Google, Microsoft, Amazon, Facebook, IBM, and Apple) and the Chinese firms Baidu, Alibaba, and Tencent.[42] The founders of those companies are taxed favorably on what is essentially labor income, but the employees of those companies are not. The "remote" human bartenders who replace the humans behind the counter at Moe's Tavern are as likely to be earning salaries that are reported on W-2 forms and taxed at ordinary rates as they are to be Mark Zuckerberg-types who never take more than a nominal salary and whose economic income largely escapes taxation.

Automation may affect tax revenue from labor income in still two other ways. First, automated workers may come to perform tasks that we now do for ourselves (e.g., cooking and laundry). When robots replace humans in household production tasks, revenue may increase because equipment purchases from well-established corporations are captured in the tax base while household production is not. Second, automated workers may come to perform tasks such as waitering and bartending that today are largely compensated in the form of tips. Because tip income is especially prone to evasion,[43] the replacement of tip-earning jobs with income-generating robots may have positive revenue effects.

One caveat to the discussion above is that automation—by inducing a shift in income from lower-earning to higher-earning workers—may cause the composition of federal tax revenues to shift away from

---

[42] AMY WEBB, THE BIG NINE: HOW THE TECH TITANS AND THEIR THINKING MACHINES COULD WARP HUMANITY 3 (2019).
[43] *See, e.g.*, John E. Anderson & Orn B. Bodvarsson, *Tax Evasion on Gratuities*, 33 PUB. FIN. REV. 466, 466-67 (2005) (compiling estimates of evasion by tip earners).

Social Security and Medicare taxes and toward individual income taxes. Even if this occurs, though, it is hard to see it as much more than an intragovernmental accounting issue: Congress could simply transfer dollars from the general fund to the Social Security and Medicare trust funds. That might trigger political pushback—but it is not an existential crisis for the tax system overall.

IV.   Taxing Capital Without Illusion

The discussion above calls into question claims of pro-robot favoritism and predictions of automation-induced revenue losses. But what of the conclusion that policymakers either should impose an explicit tax on automation or should raise taxes on capital more broadly? This final part considers whether either policy proposal—an automation tax or a shift toward taxing capital more heavily—can be justified on alternative grounds.

a. An Automation Tax

Perhaps the best argument for an explicit automation tax goes something like the following: Automation has caused and no doubt will continue to cause the displacement of some human workers. It may generate jobs on net, but those jobs will not necessarily go to the same workers who have been displaced. The lessons of the Industrial Revolution are instructive. The Luddites—English radicals of the early nineteenth century who protested the mechanization of the textile industry—look somewhat myopic in retrospect: Surely we would not want to return to the era when fabrics were made by handloom. On the other hand, the early nineteenth century was a terrible time to be an English weaver, and many of the skilled artisans dislocated by the power loom did not share in the resulting productivity gains.[44] This is not a reason to reject technological advances, but it may be a reason—or so the argument goes—to try to slow the pace of progress.

---

[44] *See* Clive Thompson, *When Robots Take All of Our Jobs, Remember the Luddites*, SMITHSONIAN MAG. (Jan. 2017), https://www.smithsonianmag.com/innovation/when-robots-take-jobs-remember-luddites-180961423.

The problems with this argument are several. First, the argument rests on the assumption that, absent government intervention, the pace of technological change will be too fast. That is a judgment that policymakers are ill equipped to make. The advent of Netflix and other video streaming services led to the loss of tens of thousands of jobs in the video rental industry,[45] but few of us wish that the days of 48-hour Blockbuster loans had lasted longer. Second, the challenges of designing a sensible automation tax are daunting.[46] Abbott and Bogenschneider suggest an additional federal tax on employers that lay off workers "to the extent that the Treasury Department determined the layoffs were due to automation."[47] Unfortunately, layoffs rarely announce themselves as "automation-induced." Even if the source of each layoff could be ascertained, the potential unintended consequences of Abbott and Bogenschneider's proposal should raise alarm. If Moe's Tavern replaces one of its bartenders with a robotic martini maker while brand-new Bart's Taproom employs a fleet of robots and so never needs to hire—or lay off—anyone, is the logical policy response to tax Moe's and not Bart's? The tax would seem as likely to accelerate the decline of incumbent, human-reliant establishments as it would be to slow the pace of automation-induced job losses.

This is not to suggest that we should be indifferent to the plight of workers displaced by automation. A just society should provide its citizens with at least a basic safety net—an obligation that applies regardless of whether those citizens have lost their jobs due to automation or are out of work for other reasons. Elsewhere, Miranda Perry Fleischer and I have argued that this safety net should take the form of a universal basic income, paid periodically in cash to all citizens and lawful permanent residents with no other conditions for

---

[45] *See* Samuel Stebbins & Evan Comen, *America's 24 Dying Industries Include Sound Studios, Textiles, Newspapers*, USA TODAY (Dec. 28, 2017, 3:13 PM), https://www.usatoday.com/story/money/economy/2017/12/28/americas-25-dying-industries-include-sound-studios-textiles-newspapers/982514001 [https://perma.cc/8UYE-L5YA].

[46] Readers are directed to Orly Mazur's comprehensive and thoughtful critique of a robot tax. *See* Mazur, *supra* note 1, at 298-303. Mazur agrees with robot tax proponents that the current code encourages automation but parts ways on policy, arguing instead for (among other steps) the more robust taxation of capital income. *Id.* at 313-22.

[47] Abbott & Bogenschneider, *supra* note 2, at 170.

receipt or restrictions on use.[48] I will not rehearse the argument here, except to emphasize that none of it depends upon automation *per se*. It is, for example, hard to see why a worker who has lost a job in the formal wear and costume rental industry—an industry that has declined for reasons having little to do with automation—is any less deserving of social support than a laid-off port or harbor worker whose job loss is more directly attributable to automation and technological change.[49]

b. Taxing Capital

A potentially more compelling proposal than an automation tax is a broader increase in the taxation of capital. Others have analyzed the case for capital taxation more comprehensively than the space here allows.[50] Rather than recapitulating those arguments, this final section offers several observations regarding promising avenues and dead ends for capital taxation proponents.

First, the case for capital taxation must be based on something more than a general concern about inequality. A general concern about inequality (which this author certainly shares) does not tell us *which* inequalities the tax system ought to target. In Examples 1 through 4 above, Bart and Lisa have equal income-generating capacities, but Lisa saves more and therefore has more capital income than Bart. They thus are equal in one respect but not in another. Perhaps Lisa ought to pay more in taxes than Bart, but a concern with inequality on its own does not tell us why.

Some proponents of capital taxation point to the fact that Lisa, by holding her wealth for longer, exerts "economic power" over other

---

[48] Miranda Perry Fleischer & Daniel Hemel, *The Architecture of a Basic Income*, 87 U. Chi. L. Rev. (forthcoming 2020), https://ssrn.com/abstract=3346467.

[49] *See* Stebbins & Comen, *supra* note 45 (explaining that 46.9% decline in employment in the formal wear and costume rental industry in the 2007-2016 period is attributable to, among other factors, the decline in marriage rates, while the 58% decline in employment in port and harbor operations in the same period is more directly linked to automation).

[50] *See, e.g.*, Louis Kaplow, The Theory of Taxation and Public Finance 221-48 (2011); Bankman & Weisbach, *supra* note 10; Emmanuel Saez & Stefanie Stantcheva, *A Simpler Theory of Optimal Capital Taxation*, 162 J. Pub. Econ. 120 (2018).

members of society that Bart does not.[51] As Ari Glogower eloquently puts the point: "If a taxpayer holds wealth for a greater number of periods, this wealth generates social and political harms for a greater number of periods as well."[52] The claim strikes me as plausibly but not obviously correct. Imagine two individuals, Splurge and Scrooge, who earn similarly vast amounts through their highly compensated labor. Splurge spends her billions of dollars over her own lifetime on private jets, lavish events, and self-aggrandizing political campaigns. Scrooge is a spendthrift who divides his fortune among his children and grandchildren. Is it so clear that Scrooge generates greater social and political harms than Splurge? Both should be taxed at high rates, either on their labor income or their consumption (and as illustrated in Examples 3 and 4, taxes on labor income and consumption are equivalent under certain conditions). What is less pellucid is why Scrooge should pay an additional sum simply because he saves and therefore earns capital income. Note, moreover, that a higher tax on capital incentivizes Scrooge to behave more like Splurge. If consumption inequality is our concern, then capital taxation is potentially counterproductive.

Second, a robust case for capital taxation must explain both the deficiencies of relying exclusively onlabor income taxation and the deficiencies of relying exclusively on a cash-flow (income minus savings) taxation.[53] The case against labor income taxation is relatively straightforward. A labor income tax is vulnerable to income shifting across bases.[54] Under a labor income tax, for example, entrepreneurs will have an incentive to take small salaries from their startups and portray their increase in wealth as capital gains on founders' stock.[55] A labor income tax also fails to capture gains generated by skillful

---

[51] *See, e.g.*, Ari Glogower, *Taxing Inequality*, 93 N.Y.U. L. REV. 1421, 1441-42, 1445-49 (2018).
[52] *Id.* at 1456.
[53] The landmark article making the case for a cash-flow consumption tax is William D. Andrews, *A Consumption-Type or Cash Flow Personal Income Tax*, 87 HARV. L. REV. 1113 (1974).
[54] Saez & Stantcheva*, supra* note 50, at 126.
[55] *See* Victor Fleischer, *Taxing Founders' Stock*, 59 UCLA L. Rev. 60, 70-74 (2011).

investing.[56] And a tax only on labor income cannot correct for past undertaxation of labor income: if an individual has earned wages in the past that were taxed at lower than the optimal rate, a tax on future wages clearly cannot correct for the past error.

None of these strikes against a labor income tax apply to a cash-flow consumption tax (i.e., a tax on personal income minus savings). Under a cash-flow consumption tax, the characterization of income as wages or as capital gains matters not at all: individuals are taxed on income minus savings, so the only way to avoid tax (other than to hide income) is to overstate savings. The burden would be on the taxpayer to substantiate savings (e.g., to disclose investment accounts and produce receipts). Under a cash-flow consumption tax, moreover, gains generated by skillful investing are fully included in the tax base so long as these gains are ultimately consumed.[57] Finally, a cash-flow consumption tax can correct for past errors in the taxation of labor income. If, for example, we decide as a society that Michael Jordan ought to have paid tax at a higher rate on his wages when they were earned, we can address that under a cash-flow consumption tax by taxing him on his wages when they are consumed. A cash-flow consumption tax is, in this sense, the functional near-equivalent of traveling back in time and taxing already-earned wages at the appropriate rate.

None of this is to suggest that the case for capital taxation is dead on arrival. Other arguments potentially support the taxation of capital income even as against the alternative of a cash-flow consumption tax. One is that capital income taxation serves to redistribute from people with rich and generous parents to people whose parents lack the same resources or taste for bequests.[58] Being born to rich and generous parents is, in this view, a source of luck (and ability to pay) much the same as being born with high skills. An annual tax on capital income is

---

[56] On heterogeneous returns as an argument for capital income taxation, see Saez & Stantcheva, *supra* note 50, at 127.

[57] *See* Bankman & Fried, *supra* note 9, at 544.

[58] Thomas Piketty & Emmanuel Saez, *A Theory of Optimal Capital Taxation* 2 (Nat'l Bureau of Econ. Research, Working Paper No. 17989, 2012), http://www.nber.org/papers/w17989.

not the only way to accomplish this objective—a tax on wealth transfers (i.e., gifts and bequests) would too—but annual taxes on capital income may carry administrative and political advantages over taxes levied at death.[59] Another argument for taxing capital is that capital may be a labor substitute and leisure complement. Taxing capital income (or, alternatively, wealth) thus may be consistent with the general prescription to tax labor substitutes and leisure complements.[60]

Even if one ultimately concludes that the case for capital taxation is unpersuasive when cash-flow consumption taxation is on the table, however, this conclusion does not mean that one should favor lower capital income tax rates when cash-flow consumption taxation is off the table. Concerns about income shifting, supernormal returns, and correction of past errors all are compelling reasons to oppose cuts to taxes on capital gains (and other forms of capital income) within the present framework. If the choice is between a higher or lower capital gains tax rate (holding the rest of the tax code constant), then a proponent of cash-flow consumption taxation can—without any inconsistency—support a higher capital gains tax rate while also believing that the optimal tax system would be a cash-flow consumption tax that obviates the need to distinguish between ordinary income and capital gains. Put differently, the theoretical case for cash-flow consumption taxation does not compel one to ignore political realities that may restrict the menu of live policy options.

The discussion here of capital taxation is concededly cursory, but it hopefully goes to shed light on some of the complexities of the subject and the costs of robot-based arguments. Those who care deeply about redistribution should also care deeply about redistributing effectively,

---

[59] The claim that society should tax bequests from rich and generous parents (either at the time of transfer or subsequently through a capital income tax) is not without its critics. The optimal tax literature yields conflicting results as to whether bequests should be taxed (because they reflect a source of inequality across individuals) or subsidized (because they reflect a positive externality from donor to donee). *See* Helmuth Cramer & Pierre Pestieau, *Wealth Transfer Taxation: A Survey of the Theoretical Literature*, *in* 2 HANDBOOK OF THE ECONOMICS OF GIVING, ALTRUISM AND RECIPROCITY 1107 (Serge-Christophe Kolm & Jean Mercier Ythier eds., 2006).

[60] For further discussion, see KAPLOW, *supra* 50, at 225-26.

because the more effectively we can redistribute, the more redistribution we can accomplish. A central element in the design of a redistributive tax regime is the choice between a tax that includes capital income in the base and a cash-flow consumption tax. The argument that we should tax capital to correct the current code's pro-robot bias turns out to be a distraction from an important debate. Clearing away misperceptions about the effects of taxation on automation should allow us to focus our attention on the difficult tradeoffs that capital taxation entails.