
ARTICLE

THE HIDDEN COSTS OF CLIFF EFFECTS IN THE INTERNAL REVENUE CODE

MANOJ VISWANATHAN[†]

Cliff effects in the Internal Revenue Code trigger a sudden increase of federal tax liability when some attribute of a taxpayer—most commonly income—exceeds a particular threshold value. As a result, two taxpayers in nearly identical economic situations can face considerably different tax liabilities depending on which side of the triggering criterion they fall. The magnitude of the equity and efficiency costs associated with cliff effects is significant: cliff effects are attached to tax provisions amounting to hundreds of billions of dollars, the majority of which are targeted at low- and moderate-income taxpayers.

Cliff effects have received little attention in legal academia. Prior scholarship has primarily discussed the relevant tax provisions in isolation, focusing on financial consequences on a single taxpayer or limiting analysis to taxpayers in one geographic area. This Article addresses the void in legal scholarship by first recognizing potential rationales for cliff effects and identifying situations where their definitional clarity might compensate for any equity and efficiency losses. Next, the individual and aggregate costs of cliff effects are quantified and plausible statutory alternatives are identified.

This Article argues that a cliff effect based on income is necessarily problematic on both equity and efficiency grounds because it improperly penalizes taxpayers and disincentivizes the economic empowerment the associated tax provision is intended to promote. A methodology is then provided by which these costs can be compared to the

[†] Associate Professor Designate, UC Hastings College of the Law. I am grateful to Muneer Ahmad, Anne Alstott, Osikhena Awudu, Alina Ball, Kevin Barry, Lily Batchelder, Nicole Bredariol, Josephine Chen, Fiona Doherty, Jason Eiseman, Heather Field, Kate Gibson, Angie Gius, Beth Hillman, Marcy Karin, Deborah Kearns, Issa Kohler-Hausmann, Anika Singh Lemar, Bethany Li, Daniel Markovits, John T. Marshall, Chuck Muckenfuss, Jennifer Mueller, Eduardo Peñalver, J.L. Pottenger, Daniel Shaviro, Jacob Singer, Neil Stevenson, Holden Taaffe, Kim Taylor-Thompson, Tony Thompson, Michael Wishnie, Steve Wizner and the editors of the *University of Pennsylvania Law Review*. Special thanks go to Elena Zarabozo, who provided outstanding research assistance.

potential savings provided by the bright-line rule of the cliff effect. This empirical analysis is performed on the two cliff effects of the health premium subsidy of the Affordable Care Act and finds that the cliff effects will, if unchecked, represent a misallocation of over \$8.5 billion by 2025.

This Article presents several options for replacing problematic cliff effects, including those in the health care subsidy. The most novel of these strategies awards a credit based on the severity of the cliff effect and ensures that no taxpayer is made worse off post-tax by virtue of earning more pre-tax income. The Article concludes by extending the analysis to cliff effects associated with state and local tax regimes and direct transfer programs.

INTRODUCTION	933
I. CLIFF EFFECTS AS LEGISLATIVE TOOLS.....	934
A. <i>Examples of Cliff Effects in the Internal Revenue Code</i>	936
B. <i>Justifications for Cliff Effects in the Internal Revenue Code</i>	939
1. <i>Cliff Effects Created by Bright-Line Rules</i>	939
2. <i>Cliff Effects Based on Income Used as a Proxy</i> <i>for Other Metrics</i>	941
3. <i>Cliff Effects as Cost Savings Measures</i>	943
4. <i>Cliff Effects Used in Politicking</i>	944
C. <i>Cliff Effects in State and Local Tax Regimes and</i> <i>Direct Transfer Programs</i>	944
II. ASSESSING THE BURDEN OF CLIFF EFFECTS.....	946
A. <i>The Relationship Between Marginal Tax Rates and Cliff Effects</i>	947
B. <i>Cliff Effects and Financial Planning</i>	949
C. <i>The Uniqueness of Income-Based Cliff Effects</i>	954
D. <i>Equity Concerns of Income-Based Cliff Effects</i>	955
E. <i>Efficiency Concerns of Income-Based Cliff Effects</i>	958
F. <i>Quantifying the Aggregate Cost of Income-Based Cliff Effects</i>	959
III. ASSESSING THE COSTS OF THE CLIFF EFFECTS ASSOCIATED WITH THE AFFORDABLE CARE ACT	961
IV. PROPOSALS FOR CHANGE	968
A. <i>Identify Problematic Cliff Effects</i>	968
1. <i>Determine the Goals of the Tax Provision to Which the</i> <i>Cliff Effect Is Attached</i>	969
2. <i>Assess the Costs of the Cliff Effect</i>	970
B. <i>Replace Problematic Cliff Effects with Alternate Provisions</i>	972
C. <i>Ensure Taxpayers Are Not Worse Off Post-Tax for</i> <i>Any Increase in Pre-Tax Income</i>	975
V. CLIFF EFFECTS IN CONJUNCTION WITH STATE AND LOCAL TAX REGIMES AND DIRECT TRANSFER PROGRAMS	976
CONCLUSION.....	980

INTRODUCTION

The Internal Revenue Code contains many credits, deductions, exclusions, and other benefits that apply when a taxpayer satisfies a certain numerical criterion, but that immediately vanish once this triggering criterion is no longer met. As a result, two taxpayers in nearly identical economic situations can face considerably different federal tax liabilities depending on which side of the triggering criterion they happen to fall. The “cliff effects” attached to these tax provisions can drastically affect taxpayer behavior and undermine what these provisions are intended to accomplish. The magnitude of this issue is significant: cliff effects, in one form or another, are attached to various federal tax expenditures totaling hundreds of billions of dollars.¹

Cliff effects in the Internal Revenue Code have received little discussion in legal academia. Prior scholarship has mentioned cliff effects only in passing or focused solely on the financial consequences of specific tax provisions on individual taxpayers.² Scant effort has been expended on quantifying the

1 See *infra* note 14 and accompanying text. Unless stated otherwise, all section references in this Article are to the Internal Revenue Code of 1986, as amended. Tax Reform Act of 1986, Pub. L. No. 99-514, 100 Stat. 2085 (1986) (codified as amended at I.R.C. (2012)).

2 See, e.g., Lily L. Batchelder et al., *Efficiency and Tax Incentives: The Case for Refundable Tax Credits*, 59 STAN. L. REV. 23 (2006) (analyzing tax incentives generally and mentioning the existence of cliff effects and other “discontinuities” within various tax incentive structures); Seth J. Chandler, *The Architecture of Contemporary Healthcare Reform and Effective Marginal Tax Rates*, 29 MISS. C. L. REV. 335 (2010) (looking at the high marginal tax rates and the cliff effect of earning 400% of the federal poverty level associated with the Affordable Care Act and their potential effect on a family’s decisionmaking); Simon Friedman, *Partnership Securities*, 1 FLA. TAX REV. 521 (1993) (mentioning the possible consequences of a partner’s receipt of a capital interest, an option, and a profits interest for either cash or services, and the cliff effects in the tax treatment of a partnership); Stephen D. Holt & Jennifer L. Romich, *Marginal Tax Rates Facing Low- and Moderate-Income Workers Who Participate in Means-Tested Transfer Programs*, 60 NAT’L TAX J. 253 (2007) (modeling the marginal tax rates of families in Wisconsin by combining tax and public assistance schedules and citing instances in which a cliff effect exists); Robert A. Jacobs, *Tax Treatment of Corporate Net Operating Losses and Other Tax Attribute Carryovers*, 5 VA. TAX REV. 701 (1986) (discussing the Senate Finance Committee Staff “Green Book’s” criticism of the cliff effect in the law governing the taxation of net operating losses); Ira B. Shepard & Martin J. McMahon, Jr., *Recent Developments in Federal Income Taxation: The Year 2001*, 5 FLA. TAX REV. 627 (2002) (discussing the cliff effects associated with the 2001 changes to § 25B of the Internal Revenue Code regarding the tax treatment of individual retirement accounts and to § 222 regarding the college tuition deduction); Paul D. Trampe, *The Effects of Combined Marginal Tax Rates on the Working Poor: Evidence from the Current Population Survey and the Survey of Income and Program Participation*, POVERTY & PUB. POL’Y no. 4, art. 7, 2011, at 1 (examining the effect of losing benefits as a result of additional income on hours worked and finding a disincentive to work due to various phaseouts, cliff effects, and taxes); Lawrence Zelenak, *Choosing Between Tax and Nontax Delivery Mechanisms for Health Insurance Subsidies*, 65 TAX L. REV. 723 (2012) (discussing the tradeoffs between tax and nontax provisions in the ACA and mentioning the existence of the 400% federal poverty level cliff effect).

aggregate cost imposed by cliff effects in the Internal Revenue Code on the public and on identifying plausible statutory alternatives. This Article addresses this void by examining the extent to which cliff effects in the Internal Revenue Code create problematic results for taxpayers and frustrate the intended goals of the tax provisions to which they are attached. The consequences of cliff effects at the state and local level, in both tax legislation and direct transfer programs, are also explored. The extent to which cliff effects are problematic is identified and quantified on both individual and aggregate microeconomic levels. Through this analysis, this Article proposes alternatives to the use of cliff effects in the Internal Revenue Code that still limit the reach of the relevant subsidies but do so in a more equitable and efficient manner.

This Article proceeds as follows: Part I provides background information on cliff effects and discusses their use in the Internal Revenue Code. Part II assesses the burdens of cliff effects on equity and efficiency grounds, and provides a methodology by which the aggregate cost of cliff effects can be calculated. Part III applies the cost methodology to the particular cliff effects contained in the Patient Protection and Affordable Care Act (the “Affordable Care Act”).³ Part IV proposes alternatives to cliff effects that reduce both inefficiencies and equity burdens and lessen their impact on low- to moderate-income taxpayers. Part V extends the analysis to include direct transfer programs administered by state and local governments.

I. CLIFF EFFECTS AS LEGISLATIVE TOOLS

Cliff effects in the Internal Revenue Code represent a subset of the line drawing that occurs with respect to all governmental regulation. In order to measure, assess, proscribe, or tax behavior, that behavior must first be identified. This identification occurs by categorizing behavior into either regulated or unregulated conduct, which in turn occurs by line drawing at both state and federal levels. For example, a motorist in Connecticut is permitted to travel at sixty-five miles per hour on specified highways but sixty-six miles per hour is forbidden.⁴ Federal law permits a mercury level in drinking water of two parts per billion, but any greater level is prohibited.⁵ Whereas line drawing in other regulatory contexts may result in a ticket or

³ See generally Patient Protection and Affordable Care Act, Pub. L. No. 111-148, §§ 1401–1402, 124 Stat. 119, 213–24 (2010) (codified at I.R.C. § 36 (2012), *id.* § 280C, and 42 U.S.C. § 18071 (2012)); Health Care and Education Reconciliation Act of 2010, Pub. L. No. 111-152, § 1001, 124 Stat. 1029, 1030–32 (2010) (codified at I.R.C. § 36B (2012)) [collectively, hereinafter Affordable Care Act].

⁴ CONN. GEN. STAT. §§ 14-218a(b), 14-219(a) (2015).

⁵ *Basic Information About Mercury (Inorganic) in Drinking Water*, U.S. ENVTL. PROTECTION AGENCY, <http://water.epa.gov/drink/contaminants/basicinformation/mercury.cfm> [<https://perma.cc/AL92-JX23>] (last updated Jan. 6, 2016).

revocation of some preferred status, line drawing in the Internal Revenue Code causes nearly identical taxpayers close to the threshold, on either side of the line, to incur varying amounts of tax liability. When the difference in tax liability is significant, the result is known as a cliff effect.⁶

The term “cliff effect” is not a technical term and, as such, has no common definition. Qualitatively, a cliff effect exists when a differential change to some characteristic of an individual has significant economic consequences to that individual. In practice, the reference metric to which the cliff effect is attached is often, but not always,⁷ an income or asset level.⁸ For example, the cliff effects associated with the health premium credits of the Affordable Care Act reference “modified adjusted gross income”⁹ and the cliff effects associated with the Earned Income Tax Credit reference “investment income.”¹⁰ The consequence associated with a cliff effect is generally the sudden loss of some economic benefit.¹¹ A cliff effect in the Internal Revenue Code occurs when a change in some characteristic of a taxpayer (or a third-party) results in a substantial increase in that taxpayer’s tax liability. A subset of cliff effects in the Internal Revenue Code are those based on the taxpayer’s income, where an additional amount of some category of a taxpayer’s income results in an increase in tax liability greater than the increase in income.¹² These cliff effects, which

⁶ See *infra* notes 9–13 and accompanying text.

⁷ Examples of metrics other than income include the standards for tax-free reorganizations. For example, for a reverse triangular merger to qualify as a reorganization under § 368(a)(1)(A), target shareholders must exchange stock constituting at least 80% of the voting stock of the parent. I.R.C. §§ 368(a)(2)(E), 368(c) (2012). Additionally, the credit for “qualified retirement savings contributions” precludes full-time students from eligibility for the credit. I.R.C. § 25B(c)(2) (2012). This credit contains a cliff effect with respect to number of credit hours taken by students. INTERNAL REVENUE SERV., PUB. 571: TAX-SHELTERED ANNUITY PLANS (403(B) PLANS) 19 (Jan. 5, 2015), <https://www.irs.gov/pub/irs-pdf/p571.pdf> [<https://perma.cc/62JC-BSR4>] (“You are a full-time student if you are enrolled for the number of hours or courses the school considers to be full-time.”). This credit also has two cliff effects with respect to adjusted gross income. See *infra* note 14.

⁸ The reference income varies depending on the specific provision but could, for example, include gross income, adjusted gross income, modified adjusted gross income, net investment income, or some other form of income defined for that specific provision, such as provisional income and social security benefits. See *infra* notes 22–27 and accompanying text. Because its applicability depends on a taxpayer’s income level, a provision to which an income-based cliff effect is attached can be called a means-tested program.

⁹ See I.R.C. § 36B(d)(2) (defining “household income” for purposes of the Affordable Care Act’s refundable credits as being primarily determined by “modified adjusted gross income”). Modified adjusted gross income is equal to adjusted gross income plus (1) any amount excluded from gross income under I.R.C. § 911 (i.e., the foreign earned income and foreign housing costs exclusions for U.S. citizens and residents living abroad), (2) any amount of tax-exempt interest received or accrued by the taxpayer during the tax year, and (3) the amount of the taxpayer’s social security benefits excluded from gross income. *Id.* § 36B(d)(2)(B); Treas. Reg. § 1.36B-1(e)(2) (2015).

¹⁰ See *infra* notes 22–27 and accompanying text.

¹¹ See, e.g., *infra* note 14 and accompanying text.

¹² It is not an overlooked irony that the cliff effects discussed in greatest detail in this Article are defined by a line drawing at a marginal tax rate of 100%.

leave some taxpayers economically worse off post-tax by earning income beyond the cliff effect threshold, are the central focus of this Article. Inherent in this definition of an income-based cliff effect is the existence of, for at least some portion of the additional income, a marginal tax rate greater than 100%.¹³

A. Examples of Cliff Effects in the Internal Revenue Code

There are numerous examples of cliff effects in the Internal Revenue Code.¹⁴ A recent example is found in the Patient Protection and Affordable

¹³ Marginal tax rates are discussed in more detail in Section II.A, *infra*. A marginal tax rate in excess of 100% can occur from either an income-based cliff effect rendering a single tax provision suddenly inapplicable, or from two or more distinct tax provisions acting in concert such that the combined increase in tax liability results in a marginal tax rate greater than 100%.

¹⁴ The § 25B Retirement Savings Contributions Credit (“Saver’s Credit”) provides a credit to taxpayers contributing to qualifying retirement accounts. I.R.C. § 25B (2012). The credit is equal to the amount saved (up to \$2000 for a single filer or \$4000 if married filing jointly) multiplied by either 50%, 20%, 10%, or 0%, depending on the taxpayer’s adjusted gross income. *Id.* § 25B(b). For a single filer the adjusted gross income ranges are: 50% for \$0 to \$18,250, 20% for \$18,251 to \$19,750, 10% for \$19,751 to \$30,500, and 0% for greater than \$30,500. *Id.*

Section 222 allows a deduction for qualified tuition and related expenses paid by a taxpayer, the amount of which depends entirely on the taxpayer’s adjusted gross income. *See infra* notes 28–34 and accompanying text.

Publicly traded partnerships are normally treated as corporations subject to corporate taxes, but an exception is made where “90% or more of the gross income of such partnership for the taxable year consists of qualifying income” (including certain types of interest, dividends, real property rents, and gain from the sale of real property). I.R.C. § 7704(c)–(d). If the 90% income test is met, the partnership receives the more preferable pass-through treatment. *Id.* The partnership also receives an extension of time for the payment of estate tax where more than 35% of the adjusted gross estate consists of interest in a closely held business, which reduces an individual’s immediate tax liability and allows payment to be deferred for up to either five or ten years. *Id.* § 6166(a).

A corporation may claim a deduction for dividends received from a foreign corporation if at least 10% of the stock of the foreign corporation is owned by the taxpayer *and* if the foreign corporation’s earnings include “U.S. earnings,” defined in part as “any dividend received . . . from a domestic corporation at least 80% of the stock of which . . . is owned . . . by the qualified 10-percent owned corporation.” *Id.* § 245(a)(1), (5).

Two cliff effects exist in the deductions taxpayers can claim for dependents. *See* § 152(d) (defining whom a taxpayer may classify as a “qualifying relative”); INTERNAL REVENUE SERV., PUB. 501: EXEMPTIONS, STANDARD DEDUCTION, AND FILING INFORMATION 1 (Dec. 20, 2014), <https://www.irs.gov/pub/irs-pdf/p501.pdf> [<https://perma.cc/QP6P-P62S>] [hereinafter I.R.S. 501] (prohibiting deduction for a “qualifying relative” dependent if relative has greater than \$3950 of income in 2014). Additionally, the taxpayer claiming a deduction for a qualifying relative must have provided more than 50% of the individual’s total support for the year. I.R.C. § 152(d).

The Work Opportunity Tax Credit contains cliff effects for credits available to employers hiring members of certain targeted groups. *Id.* § 51. The business credit for employers is equal to 40% of the first \$6000 (or \$12,000, \$14,000, or \$24,000 in cases of certain qualified veterans) of qualified first-year wages paid to an employee who is a member of a targeted group and who works at least 400 hours during the tax year, but only 25% of these wages for those who worked between 120 and 400 hours, and 0% for employees who worked less than 120 hours. *Id.*

Section 45P provides a tax credit to employers hiring employees who are active duty members of the uniformed services, but only for small businesses, with “small business” defined, in part, via

Care Act, which provides subsidies in the form of tax credits for certain health insurance plans purchased by individuals and families with incomes between 100% and 400% of the federal poverty level.¹⁵ For a taxpayer with household income between 300% and 400% of the federal poverty level, the amount of the subsidy is equal to the excess of the cost of premiums for the benchmark health care plan above 9.5% of the taxpayer's household income.¹⁶ An individual with a household income of \$45,960 (exactly 400% of the federal poverty level) paying \$7000 in insurance premiums will thus receive a credit of \$2634.¹⁷ An individual earning one dollar more will, however, by virtue of earning more than 400% of the federal poverty level, receive no credit. This additional dollar of income, therefore, results in an increased tax liability of \$2634. The marginal tax rate of this one additional dollar is, therefore, 263,400%.¹⁸

The Earned Income Tax Credit is a refundable credit for low- to moderate-income taxpayers who earn their income by working.¹⁹ The credit, with an estimated cost of over \$70 billion for 2015,²⁰ is calculated as a percentage of earned income up to a maximum income level (depending on

a cliff effect. *Id.* § 45P(b)(3)(A)(i) (limiting this credit to small businesses with “an average of less than 50 employees on business days”).

A cliff effect also exists with respect to the tax treatment of businesses based on the average number of employees because a small business is defined as one that employs, on average, fewer than fifty persons throughout the year. *Id.* § 44(a). Section 44(a), which provides a credit to small businesses for expenditures providing access to disabled employees, contains a cliff effect with respect to the number of employees (thirty employees maximum) and hours per week the employee must work to qualify (thirty). *Id.* § 44(b).

Finally, students may receive the “Hope Scholarship Credit” only if they are enrolled at least half of the year, creating a cliff effect with respect to credit hours. *Id.* § 25A(b)(2)(B).

¹⁵ Taxpayers are eligible for the credit if they buy their health insurance on an exchange and are not eligible for other qualifying insurance. *See generally id.* § 36B. The federal poverty level in the forty-eight contiguous states for 2013 (the year to be used for purposes of the § 36B credit) for a family of one, two, three, and four people is \$11,490, \$15,510, \$19,530, and \$23,550, respectively. Annual Update of the HHS Poverty Guidelines, 78 Fed. Reg. 5182, 5183 (Jan. 24, 2013).

¹⁶ I.R.C. § 36B(b)(3)(A)(i). “Household income” is generally equal to the aggregate modified adjusted gross income of all individuals comprising the familial unit for which the credit is calculated. *Id.* § 36B(d)(2)(A). The benchmark plan is the “second lowest cost silver plan” available to the taxpayer. § 36B(b)(2)(B)(i). *See infra* note 157 and accompanying text.

¹⁷ \$7000 minus 9.5% of \$45,960 equals \$2634.

¹⁸ The marginal tax rate equals the increase in tax liability divided by additional income times 100%. Here, $\$2634 \div \$1 \times 100\% = 263,400\%$. *See infra* Section II.A.

¹⁹ I.R.C. § 32; *see also* Dorothy A. Brown, *Race and Class Matters in Tax Policy*, 107 COLUM. L. REV. 790, 799 (2007) (“Low-income taxpayers are eligible for the earned income tax credit (EITC). The EITC is only available for ‘earned income’ such as wages. The EITC rewards work.” (footnotes omitted)).

²⁰ JOINT COMM. ON TAXATION, ESTIMATES OF FEDERAL TAX EXPENDITURES FOR FISCAL YEARS 2014–2018, at 32 (Aug. 5, 2014). The Joint Committee’s estimates are not equivalent to government revenues foregone in the absence of the tax deductions because tax expenditure estimates do not take into account behavioral responses or changes in the timing of tax payments. *See id.* at 16 (“[T]ax expenditure calculations do not incorporate the effects of the behavioral changes that are anticipated to occur in response to the repeal of a tax expenditure provision.”).

family size) and is phased out as income increases.²¹ Taxpayers with more than a certain amount of investment income are not eligible for the Earned Income Tax Credit.²² For 2016, the maximum amount of investment income an Earned Income Tax Credit recipient may have is \$3400.²³ Earning between \$0 and \$3400 of investment income does not reduce the amount of the Earned Income Tax Credit beyond the phaseout rate applied to all income.²⁴ Assuming all other eligibility requirements are satisfied,²⁵ in 2016 a married taxpayer with two qualifying children with an adjusted gross income of \$19,000, including \$3400 of investment income and \$15,600 of earned income, will receive a federal Earned Income Tax Credit of \$5572.²⁶ But if this taxpayer earns one extra dollar of dividend, interest, or rental income, for example, she is precluded from receiving any Earned Income Tax Credit.²⁷

Cliff effects are not limited to credits. Section 222 provides an above-the-line deduction for “qualified tuition and related expenses”²⁸ that was estimated to cost approximately \$700 million in 2013.²⁹ For taxpayers whose adjusted gross income is less than \$65,000, the maximum deduction allowed

21 A phaseout, unlike a cliff effect, occurs when the increase in some metric decreases the subsidy in question by an amount resulting in a marginal tax rate of 100% or less. *See, e.g.*, I.R.C. § 43(b) (phasing out the enhanced oil recovery credit); *id.* § 469(i)(3) (phasing out rental real estate exemption); *id.* § 848(b)(2) (phasing out the amortization allowance of specified policy acquisition expenses). The Earned Income Tax Credit is phased out as ordinary income increases. *See id.* § 32(b)(1)(A) (identifying applicable Earned Income Tax Credit and phaseout percentages based on the number of children the taxpayer has). The Earned Income Tax Credit phaseout rate is 7.65%, 15.98%, or 21.06% respectively. *Id.*

22 *Id.* § 32(i). The maximum amount of investment income permitted is indexed for inflation. *Id.* § 32(j).

23 Rev. Proc. 2015-53, 2015-44 I.R.B. 615.

24 In 2016, the Earned Income Tax Credit phaseout rate for a married filer with two children begins at \$23,740. *Id.*

25 Other Earned Income Tax Credit eligibility criteria include, for example, a residency and age restriction for taxpayers without qualifying children. *See* I.R.C. § 32(c)(1)(A)(ii) (requiring taxpayers without qualifying children to have had a “principal place of abode” in the United States for at least six months of the taxable year and to be between twenty-five and sixty-five years old to be eligible for the Earned Income Tax Credit).

26 *See* Rev. Proc. 2015-53, 2015-44 I.R.B. 615 (noting that the maximum credit amount for a taxpayer with two qualifying children is \$5572).

27 This last dollar of investment income has a marginal tax rate of 557,200%. *See infra* Section II.A. Marginal tax rate equals the increase in tax liability divided by additional income times 100%. Here, $\$5572 \div \$1 \times 100\% = 557,200\%$. The cliff effect of the Earned Income Tax Credit with regards to investment income is to be contrasted to the phaseout of the Earned Income Tax Credit for increases in *earned* income. *See* I.R.C. §§ 32(a)(2)(B), (b)(1)(A).

28 *Id.* § 222(a). This provision has expired and been renewed three times; it was most recently renewed on December 19, 2014 to cover the 2014 tax year. *See* Tax Increase Prevention Amendments, Pub. L. No. 113-295, § 107(a), 128 Stat. 4013 (2014).

29 JOINT COMM. ON TAXATION, ESTIMATES OF FEDERAL TAX EXPENDITURES FOR FISCAL YEARS 2012–2017, at 37 (Feb. 1, 2013).

is \$4000.³⁰ For taxpayers with an adjusted gross income between \$65,000 and \$80,000 the maximum amount of the deduction is \$2000.³¹ For adjusted gross incomes exceeding \$80,000, even by \$1, the deduction for qualified tuition and related expenses is denied completely.³² This provision has two cliff effects: one when adjusted gross income exceeds \$65,000 and another when adjusted gross income exceeds \$80,000. The financial impact of losing a deduction depends on the taxpayer's marginal tax rate.³³ For example, if the taxpayer is in the 25% bracket, a \$2000 deduction is worth \$500.³⁴

B. Justifications for Cliff Effects in the Internal Revenue Code

Regulation requires drawing lines to determine to whom or what the regulation applies. This line drawing does not, however, mandate stark differences in treatment between those sitting closely to either side of the line. Cliff effects in the Internal Revenue Code as currently written nevertheless cause significant economic consequences to taxpayers in only slightly different economic positions. What, then, explains the prevalence of cliff effects in the Internal Revenue Code?

1. Cliff Effects Created by Bright-Line Rules

The definitional clarity provided by bright-line rules in the Internal Revenue Code can create cliff effects. Tax provisions must somehow identify the subset of taxpayers who will be covered by the provision. A tax provision with a bright-line rule establishing eligibility divides taxpayers, by definition, into classifications that determine each class' treatment under that provision. However, although a bright-line rule is simple to state and easy to follow,³⁵ its simplicity is offset by the potential inequity faced by those nearest to its division where some taxpayers are subject to the tax provision and some are not.³⁶

Consider a tax-free reorganization under I.R.C. § 368(a)(1)(B), which states that the acquisition of the stock of a target corporation in exchange solely for voting stock of the acquiring corporation is a tax-free

³⁰ I.R.C. § 222(b)(2)(B)(i). This adjusted gross income limit, as well as the ones following, are doubled for joint filers.

³¹ *Id.* § 222(b)(2)(B)(ii).

³² *Id.* § 222(b)(2)(B)(iii).

³³ A tax credit reduces tax liability dollar for dollar and is worth the same for every taxpayer; the value of a deduction of a fixed amount of dollars depends on each taxpayer's marginal tax rate.

³⁴ This calculation assumes the same marginal tax rate for the income range over which the deduction occurs. The marginal tax rate on the dollar disqualifying the taxpayer from taking the deduction would therefore be 50,000%. See *infra* Section II.A.

³⁵ See *infra* note 75 and accompanying text.

³⁶ When a cliff effect is based on some form of income, the cliff effect is a means-tested program. If the cliff effect is based on some other metric, a different categorization is made.

reorganization, provided that the acquiring corporation has “control” of the target corporation immediately after the transaction.³⁷ For purposes of the tax-free reorganization, “control” means 80% of the voting power and 80% of all other stock.³⁸ A cliff effect thus exists with respect to the voting power and the stock ownership post-acquisition, because if only 79% of the voting power is held by the acquiring corporation, then the acquisition becomes a taxable event. This cliff effect exists because of the definitional certainty needed for the term “control.” “Control” is a necessary condition for this form of tax-free reorganization;³⁹ as such, the term must be clearly defined.

Another example of a cliff effect used as a bright-line rule for purposes of categorization is found in the definition of a nonchild relative qualifying as a dependent.⁴⁰ To be a “qualifying relative” entitled to an additional deduction, the qualifying relative must have earnings less than \$3950.⁴¹ If the relative earns less than \$3950 and meets the other requirements, the taxpayer gets the full deduction; if the relative earns \$1 more than \$3950, the relative is ineligible to be claimed as a dependent.⁴² This cliff effect exists because of the need to define, with certainty, who is and is not classified as a dependent. The use of a cliff effect with respect to the income of a qualifying relative establishes a bright-line rule which provides definitional clarity because classification as a dependent is binary and does not exist as a continuous function: a nonchild relative either is or is not a qualifying relative. Because the Internal Revenue Code does not provide a partial deduction for partially qualifying dependents, the bright-line rule creates a cliff effect with respect to the income of the nonchild relative.

Using cliff effects to provide definitional clarity says nothing about the propriety of the definition itself, however. Consider a tax credit providing a \$100 credit to all taxpayers shorter than six feet tall. Such a provision might be normatively flawed,⁴³ but the associated cliff effect with respect to height provides clarity about who will receive the credit. Provided that the tax-preferred group or status is worth defining precisely, the cliff effect attached to the term can be effective. In other words, from a policy standpoint, providing definitional certainty is more valuable than the cliff effect that is created.

However, it is important to recognize that cliff effects are not a necessary result of these classifications. Indeed, not all bright-line rules in the Internal

37 I.R.C. § 368(a)(1)(B).

38 *Id.* § 368(c).

39 *Id.* §§ 354(a)(1); 368(c).

40 *Id.* § 152(d). A “qualifying relative” must also meet certain relationship and support tests. *Id.* §§ 152(d)(1), (2); I.R.S. 501, *supra* note 14, at 12 tbl.5.

41 This amount is for the 2013 tax year. See I.R.S. 501, *supra* note 14, at 12 tbl.5.

42 I.R.C. § 152(d)(1)(B); I.R.S. 501, *supra* note 14, at 12 tbl.5.

43 *But see* N. Gregory Mankiw & Matthew Weinzierl, *The Optimal Taxation of Height: A Case Study of Utilitarian Income Redistribution*, AM. ECON. J., Feb. 2010, at 155 (positing that tall people, by virtue of their greater lifetime earnings, should pay more in taxes).

Revenue Code create cliff effects. Consider the income tax brackets of the individual income tax. For single filers, there are seven rates that apply over the range of an individual's income.⁴⁴ The tax rates within each bracket are devoid of ambiguity. Transitioning from one tax bracket to the next by earning more income results in a greater marginal tax rate, but not one greater than 100% since only this additional income is taxed at the higher rate. As a result, there is no cliff effect with regard to the bright-line rules associated with income tax brackets.

This can be contrasted with bright-line rules conferring binary eligibility or ineligibility for a tax benefit based on income.⁴⁵ Assuming the tax benefit in question is greater than the increase in income triggering the ineligibility for the benefit, this bright-line rule necessarily creates a cliff effect. Nevertheless, proponents of bright-line rules implicitly accept cliff effects as an acceptable consequence of providing definitional clarity.⁴⁶

2. Cliff Effects Based on Income Used as a Proxy for Other Metrics

Sometimes a cliff effect attached to a taxpayer's income is not intended to divide taxpayers into categories by income but rather to categorize taxpayers by some other criterion to which the reference income is correlated. In other words, the reference income is a proxy for some other metric which is more difficult to measure.

The cliff effect associated with the Earned Income Tax Credit, for example, limits a taxpayer's investment income.⁴⁷ From a purely economic perspective, there is no difference between income earned from wages and income earned from investment. Even though the Earned Income Tax Credit incentivizes working by increasing the value of hours worked, this does not imply a cap on investment income is necessary. If the cliff effect associated with the Earned Income Tax Credit is intended to only divide taxpayers into

⁴⁴ For 2015, the taxable income brackets and rates for single filers are: \$0 to \$9225 (10%); \$9225 to \$37,450 (15%); \$37,450 to \$90,750 (25%); \$90,750 to \$189,300 (28%); \$189,300 to \$411,500 (33%); \$411,500 to \$413,200 (35%); and greater than \$413,200 (39.6%). INTERNAL REVENUE SERV., 1040 INSTRUCTIONS 2015, at 102 (2016), <https://www.irs.gov/pub/irs-pdf/i1040gi.pdf> [<https://perma.cc/6QD4-FB7B>].

⁴⁵ See *supra* note 14 and accompanying text.

⁴⁶ See, e.g., Hon. Daniel T. Gillespie, *Bright-Line Rules: Development of the Law of Search and Seizure During Traffic Stops*, 31 LOY. U. CHI. L.J. 1, 3 (1999) ("The development of bright-line rules in search and seizure cases helps law enforcement officials as well as trial and appellate courts. Police officials can more easily instruct officers in broad, clear-cut terms as to the legal procedures for conducting searches and seizures. Trial judges can more easily apply bright-line rules in deciding cases. Appellate courts can expect fewer appeals seeking clarification of search and seizure law."); Richard J. Kovach, *Bright Lines, Facts and Circumstances Tests, and Complexity in Federal Taxation*, 46 SYRACUSE L. REV. 1287, 1288 n.1 (1996) ("Rules like section 162(e) . . . serve as 'bright lines' to various degrees in that once the taxpayer meets their stated and often numerically precise definitional elements, the result follows without controversy.").

⁴⁷ See *supra* notes 19–27 and accompanying text.

low-income, benefit-receiving taxpayers and higher-income, nonbenefit-receiving taxpayers, it does so ineffectively. A taxpayer with \$19,000 of earned income and \$5000 of investment income is not eligible for the Earned Income Tax Credit, despite being in a worse pre-tax economic position than a taxpayer eligible for the Earned Income Tax Credit with \$25,000 of earned income.⁴⁸ The taxpayer earning \$19,000 of earned income and \$5000 of investment income is also in a worse post-tax economic position than a taxpayer with just \$19,000 of earned income. Post-tax, the taxpayer with only \$19,000 of earned income receives an Earned Income Tax Credit of \$5572, whereas the taxpayer with \$19,000 of earned income and \$5000 of investment income receives no Earned Income Tax Credit.⁴⁹

The cliff effect associated with the Earned Income Tax Credit is not, however, intended to measure income but to serve as a proxy for a taxpayer's level of assets: in 1995, Leslie Samuels, then-Assistant Secretary of Tax Policy for the Department of Treasury, testified to the House Ways and Means Committee that the cap on investment income comes from a belief that "it is inappropriate to provide the Earned Income Tax Credit to taxpayers with assets which can generate \$1000 of investment income."⁵⁰ A taxpayer earning investment income is assumed to have assets that far exceed the value of the income generated from those assets. Because the Earned Income Tax Credit exists both to incentivize working *and* as an antipoverty measure,⁵¹ Congress wanted to limit receipt of the Earned Income Tax Credit to taxpayers without substantial assets. Because the Internal Revenue Service does not collect information on taxpayers' assets, applying a strict asset test is perceived as administratively difficult.⁵² As a result, Congress used the investment income test to approximate a taxpayer's level of assets. Thus, Congress accepted a cliff

⁴⁸ These numbers assume the taxpayer has at least one qualifying child. Analogous income amounts exist for taxpayers with no qualifying children.

⁴⁹ Rev. Proc. 2015-53, 2015-44 I.R.B. 615.

⁵⁰ *Earned Income Tax Credit Before the Subcomms. On Oversight & Human Res. of the H. Comm. on Ways & Means*, 104th Cong. 37 (1995) (testimony of Assistant Secretary Leslie B. Samuels). The limit on investment income for the Earned Income Tax Credit was put into effect in 1995. Act of Apr. 11, 1995, Pub. L. No. 104-7, § 4(a), 109 Stat. 93, 95 (codified as amended at I.R.C. § 32(i) (2012)).

⁵¹ The first incarnation of the Earned Income Tax Credit was as a welfare reform proposal that would have helped working poor, two-parent families with children by means of a federal minimum cash guarantee that would have replaced the federal-state welfare program of Aid to Families with Dependent Children. CHRISTINE SCOTT & MARGOT L. CRANDALL-HOLLICK, CONG. RESEARCH SERV., RL31768, THE EARNED INCOME TAX CREDIT (EITC): AN OVERVIEW 21 (2014); *see also id.* at 17 ("The EITC is one of the federal government's largest anti-poverty programs reflecting a trend toward reducing poverty through the tax code." (footnote omitted)).

⁵² *See* CONG. BUDGET OFFICE, OPTIONS FOR REDUCING THE DEFICIT: 2014 TO 2023, at 139 (2013) ("[A]sset tests would be very difficult for the Internal Revenue Service . . . to administer because the agency does not collect information on the amount of assets held by individuals.").

effect based on income in an effort to give a tax benefit to taxpayers who gained income by working instead of from investment.

3. Cliff Effects as Cost Savings Measures

A cliff effect in the Internal Revenue Code based on income creates a maximum income above which a certain tax benefit is eliminated. In doing so, the cliff effect establishes an income eligibility for the benefit: taxpayers earning less than the cliff effect threshold receive the benefit, while taxpayers earning more than the threshold do not. The immediate elimination of the benefit at the cliff effect threshold reduces the cost of the tax provision since, in the absence of the cliff effect, more taxpayers would receive the benefit. The same cost savings could be achieved with a phaseout—a gradual reduction in the benefit starting at some income level prior to the cliff effect threshold—but this would result in a benefit loss to taxpayers earning less than the cliff effect threshold.⁵³

The cost reduction of a cliff effect is more easily determined than a cost reduction from a gradual phaseout. Computationally, the cost of a benefit ending immediately at a specific income is easier to calculate than a benefit that varies as a function of income level. Unlike the Joint Committee on Taxation's tax expenditure estimates, revenue estimates published by the Joint Committee explicitly take into account behavioral effects.⁵⁴ As a result, the revenue estimate of a tax provision utilizing a phaseout is more computationally complex.

Accurate revenue estimates are increasingly important when Congress is bound by the rules of pay-as-you-go (PAYGO) budgeting, as it has been since 2010.⁵⁵ With respect to tax legislation, the PAYGO rules dictate that any provision reducing revenue must be offset by a corresponding legislative change increasing revenue or decreasing spending.⁵⁶ If a given tax benefit's only obstacle to passage is its nonconformance with PAYGO rules, a simple way to reduce the provision's cost is to preclude its applicability above a certain income threshold. Cliff effects thus make the economic implications of a tax provision easier to calculate, which makes compliance with PAYGO easier for Congress to achieve.

⁵³ See *infra* Section IV.B.

⁵⁴ JOINT COMM. ON TAXATION, OVERVIEW OF REVENUE ESTIMATING PROCEDURES AND METHODOLOGIES USED BY THE STAFF OF THE JOINT COMMITTEE ON TAXATION 3 (Feb. 2, 2005) (“[F]or more than a quarter of a century, Joint Committee staff revenue estimates have taken into account taxpayers’ likely behavioral responses to proposed changes in tax law.”); see also *supra* note 20.

⁵⁵ Statutory Pay-As-You-Go Act of 2010, Pub. L. No. 111-139, 124 Stat. 8 (2010) (to be codified at 2 U.S.C. §§ 931–939).

⁵⁶ See Kevin M. Stack & Michael P. Vandenberg, *The One% Problem*, 111 COLUM. L. REV. 1385, 1436 (2011) (“The basic idea of PAYGO budgeting is straightforward: It requires that additional spending (or reductions in revenue) that exceed a target budget be ‘paid for’ either by offsetting decreases in spending or increases in revenue.”).

4. Cliff Effects Used in Politicking

Attaching a tax benefit to a cliff effect creates a clearly defined demographic that profits from the benefit, which may be politically advantageous for either a proponent or opponent of a particular tax provision. For example, the deduction for qualified tuition and related expenses found in § 222 was touted as a provision that would benefit parents struggling to send their kids to college.⁵⁷ In his remarks supporting this provision, Senator Chuck Grassley described the deduction for qualified tuition and related expenses as “a beneficial tax incentive for the middle class.”⁵⁸ The fact that the provision is entirely eliminated for taxpayers earning \$1 more than \$80,000 demonstrates that the intended beneficiaries of § 222 were really moderate-income taxpayers.⁵⁹ Similarly, while defending the Affordable Care Act during a 2012 debate against Mitt Romney, President Obama reiterated that the legislation was an integral part of “making sure that middle-class families are secure.”⁶⁰

This political salability can be lost when the benefit extends to taxpayers in certain groups not necessarily considered as deserving beneficiaries, or when the beneficiaries themselves are hard to define. It is simpler to convey that a tax provision is solely for, say, small business owners, if the tax benefit in question is immediately eliminated for businesses employing greater than some set number of employees. For example, the Small Business Health Care Tax Credit subsidizes premiums for small businesses but only if the small business has twenty-five or fewer employees.⁶¹ If these provisions instead utilized a phase out, some portion of the benefit would extend to businesses with greater than twenty-five employees, making the demographic incidence of the benefit more difficult to succinctly state. By using a cliff effect, then, the proponents of a tax provision make advocating for its passage simpler by allowing them to clearly state who will benefit from it (and who will not).

C. Cliff Effects in State and Local Tax Regimes and Direct Transfer Programs

Cliff effects are not limited to the Internal Revenue Code. Many federal direct spending programs, such as Temporary Assistance for Needy Families

⁵⁷ See 150 CONG. REC. S541 (daily ed. Feb. 3, 2004) (statement of Sen. Grassley) (“For parents struggling to send their children to college, the tuition tax deduction has been very important.”).

⁵⁸ *Id.*

⁵⁹ See *supra* notes 28–32 and accompanying text.

⁶⁰ *Transcript of the First Presidential Debate*, N.Y. TIMES (Oct. 3, 2012), <http://www.nytimes.com/2012/10/03/us/politics/transcript-of-the-first-presidential-debate-in-denver.html?r=0> [<https://perma.cc/H8LC-WDQL>].

⁶¹ I.R.C. § 45R(d)(1)(A) (2012).

(TANF),⁶² Section 8 of the Housing Act of 1937 (Section 8),⁶³ and Supplemental Nutrition Assistance Program (SNAP),⁶⁴ incorporate means- or asset-based tests to assess eligibility. Although these programs are federally funded, states are given wide latitude in determining eligibility criteria.⁶⁵ Not only does the eligibility criteria vary based on the applicant's familial composition, but amounts received under one program can affect benefits received under another.⁶⁶ The result is a complicated patchwork of income levels at which significant benefits are reduced or eliminated completely, often unbeknownst to the taxpayer until the benefit is lost.⁶⁷

Cliff effects with respect to the sudden loss of a nontax benefit—as opposed to cliff effects associated with a sudden increase in tax liability—do not technically involve marginal tax rates because they do not involve the increase or decrease of a tax liability. TANF, Section 8, and SNAP, for example, are not tax benefits. To be sure, the sudden ineligibility for these programs poses an economic burden to the recipient, but not a burden connected to a tax liability. Analyzing cliff effects related to state and local tax regimes and direct transfer programs, as well as federal tax liabilities, requires looking at how changes in income affect a taxpayer's entire economic position. This means taking into account the federally funded direct transfer programs discussed above,⁶⁸ as well as state and local tax laws and state-provided benefits such as child care and insurance. Because nontax benefits can comprise an important part of a taxpayer's economic well-being, assessing only the change in a taxpayer's federal tax liability paints an incomplete picture of the taxpayer's financial

62 TANF was created by the Personal Responsibility and Work Opportunity Reconciliation Act of 1996. Pub. L. No. 104-193, 110 Stat. 2105 (1996). TANF is best known for helping states pay for cash welfare for needy families with children, but it also funds a wide variety of additional activities. See generally GENE FALK, CONG. RESEARCH SERV., RL32748, THE TEMPORARY ASSISTANCE FOR NEEDY FAMILIES (TANF) BLOCK GRANT: A PRIMER ON TANF FINANCING AND FEDERAL REQUIREMENTS (Apr. 2, 2013).

63 42 U.S.C. § 1437f (2012); see also Zachary Bray, *The New Progressive Property and the Low-Income Housing Conflict*, 2012 BYU L. REV. 1109, 1129 (“[Section 8 is a] broad program of federal tenant-based assistance for low-income households to obtain rental housing in the private housing market.”).

64 7 U.S.C. §§ 2011–2036c (2012); see also *Supplemental Nutrition Assistance Program (SNAP)*, U.S. DEP'T AGRIC., FOOD AND NUTRITION SERV. (Aug. 21, 2015), <http://www.fns.usda.gov/snap> [<https://perma.cc/7NFR-56BK>] (“SNAP offers nutrition assistance to millions of eligible, low-income individuals and families and provides economic benefits to communities.”).

65 See FALK, *supra* note 62, at 14 (noting that states may determine income eligibility standards, amount paid to families, and other conditions and criteria for eligibility under TANF).

66 See *infra* notes 203–15 and accompanying text.

67 See IND. INST. FOR WORKING FAMILIES, THE CLIFF EFFECT: ONE STEP FORWARD, TWO STEPS BACK 9 (Oct. 2012), <http://www.incap.org/documents/iwvf/2012/Cliff%20Effect.pdf> [<https://perma.cc/M9UC-68JE>] (describing cliff effects and how they prevent families from achieving economic self-sufficiency); Mary A. Prenovost & Deborah C. Youngblood, *Traps, Pitfalls, and Unexpected Cliffs on the Path Out of Poverty*, POVERTY & PUB. POL'Y, no. 2, 2010, at 53, 64–65 (providing anecdotal data on the unforeseen loss of benefits due to wage increases for women in Boston).

68 See *supra* notes 62–64 and accompanying text.

health. For this analysis an “effective” marginal tax rate⁶⁹ must be employed which takes into account both tax and nontax effects due to changes in income. Expanding the analysis of cliff effects to include transfer programs outside of the Internal Revenue Code is explored more fully in Part VI.

II. ASSESSING THE BURDEN OF CLIFF EFFECTS

Tax legislation is often evaluated with reference to equity, efficiency, and simplicity.⁷⁰ The principle of equity appeals to the notion that tax provisions should be applied fairly—similarly situated taxpayers should not be subjected to widely varying tax treatment.⁷¹ Efficiency dictates that tax provisions should accomplish their stated goals with minimum costs to taxpayers and alter taxpayer behavior that is unrelated to the goals of the provision as little as possible.⁷² Simplicity refers to the desire that tax provisions be easily understood and obeyed.⁷³

These principles overlap to a certain extent.⁷⁴ For example, an unnecessarily complex tax provision is inefficient because additional resources are required for compliance; as a result, simplicity is often viewed as a feature of any tax system that is both equitable and efficient.⁷⁵ An inequitable tax provision could incentivize taxpayers to change their behavior to lessen the severity of the inequity. In this regard, violations of equity can be considered inefficient to the extent they induce behavioral changes in taxpayers in ways unrelated to the aims of the provision involved.⁷⁶

⁶⁹ The term “effective marginal tax rate,” as introduced here, covers both tax and nontax effects and could be characterized as an improper term. The terseness of the term, in this author’s view, adequately compensates for the loss of literality.

⁷⁰ See MICHAEL J. GRAETZ & DEBORAH H. SCHENK, *FEDERAL INCOME TAXATION PRINCIPLES AND POLICIES* 27 (7th ed. 2013) (noting that there is widespread agreement that equity, efficiency, and simplicity are the criteria to be used when evaluating taxes).

⁷¹ *Id.*

⁷² *Id.* at 28.

⁷³ *Id.* at 27.

⁷⁴ See Batchelder et al., *supra* note 2, at 42 n.79 (“It is worth noting that these principles overlap to some degree. For instance, redistribution can be efficient if individuals gain utility from it even if they do not financially gain from it. Effectively, redistribution then creates positive externalities.”).

⁷⁵ GRAETZ & SCHENK, *supra* note 70, at 29. Simplicity can be divided into three categories: (1) compliance complexity (doing what the law requires), (2) transactional complexity (arranging one’s affairs for optimal tax treatment), and (3) rule complexity (understanding what the law is). *Id.* at 30; see also DAVID BRADFORD, *UNTANGLING THE INCOME TAX* 266-67 (1986).

⁷⁶ See Bradley T. Borden, *Quantitative Model for Measuring Line-Drawing Inequity*, 98 IOWA L. REV. 971, 983 (2013) (“[T]he generally accepted tension between equity and efficiency [is that] as one decreases, the other appears to increase.”).

A. *The Relationship Between Marginal Tax Rates and Cliff Effects*

A taxpayer's marginal tax rate is the rate at which that taxpayer's last dollar of income is taxed.⁷⁷ A taxpayer's marginal tax rate, in contrast to a taxpayer's average tax rate, is an effective indicator of how the Internal Revenue Code affects a taxpayer's decisions.⁷⁸ Consider a taxpayer with two children who values her current leisure time at \$12 per hour. In the absence of taxes, she would take employment as long as her wage was greater than \$12 per hour. If the taxpayer has a marginal tax rate of 40%, however, her wage must be at least \$20 per hour to properly incentivize working.⁷⁹ Therefore, the taxpayer's average tax rate is less relevant than her marginal tax rate for assessing the benefit of her potential employment.

A taxpayer's marginal tax rate can be negative if an additional dollar earned reduces the taxpayer's tax liability. For example, during the phase-in of the Earned Income Tax Credit, each additional dollar of income yields this taxpayer an additional forty cents of credit. Thus, a single taxpayer with two qualifying children with a taxable income of \$10,000 is in the 15% tax bracket but has a marginal tax rate of negative 25% for an additional dollar of earned income.⁸⁰

Marginal tax rates are commonly associated with federal income tax brackets.⁸¹ But the increase or decrease of federal income tax liability is affected by more than just income tax brackets. Tax expenditures—any tax provision that provides for a special credit, deduction, exclusion from income, or preferential rate, thus costing the government money in lost tax income and altering an individual's tax liability—are intentional deviations from the baseline federal income tax that affect tax liability.⁸² Cliff effects attached to tax expenditures

⁷⁷ GRAETZ & SCHENK, *supra* note 70, at 24.

⁷⁸ A taxpayer's average rate of taxation is equal to her total tax liability divided by her total income. *Id.*

⁷⁹ For a wage of \$20 per hour, the taxpayer's after-tax pay equals 60% of \$20 per hour, or \$12 per hour. This analysis omits other costs associated with working, such as transportation, child care, etc. As a result, the true rate at which a worker's wages are reduced from gross pay to net pay is typically higher than the marginal tax rate.

⁸⁰ See Kelly Phillips Erb, *IRS Announces 2015 Tax Brackets, Standard Deduction Amounts and More*, FORBES (Oct. 30, 2014, 12:34 PM), <http://www.forbes.com/sites/kellyphillipserb/2014/10/30/irs-announces-2015-tax-brackets-standard-deduction-amounts-and-more/> [<https://perma.cc/PQB7-GR47>] (summarizing tax brackets, deduction, exemption, and credit amounts for 2015). The forty cents of credit that the taxpayer receives is offset by the 15% income tax on the additional dollar, such that the taxpayer gains a total of \$1.25 (\$1 of income plus \$0.25 in credit).

⁸¹ The tax rates of income brackets are the rates at which the income within those brackets is taxed, i.e., marginal tax rates. For 2015, the highest income tax bracket is 39.6%. *Id.*

⁸² See Congressional Budget and Impoundment Control Act of 1974, Pub. L. No. 93-344, § 3(a)(3), 88 Stat. 297, 299 (1974) (defining "tax expenditures" as "revenue losses attributable to provisions of the Federal tax laws which allow a special exclusion, exemption, or deduction from gross income or which provide a special credit, a preferential rate of tax, or a deferral of tax liability"); see also JOINT COMM. ON TAXATION, *supra* note 20, at 2 (using the Congressional Budget and Impoundment Control Act of 1974 to define tax expenditures).

drastically affect a taxpayer's marginal tax rate profile: as illustrated earlier, a taxpayer with two children earning \$3401 of investment income in 2016 loses \$5572 of Earned Income Tax Credit from her last dollar of investment income despite being in a 15% income tax bracket.⁸³ This last dollar of investment income therefore has a marginal tax rate of 557,200%.⁸⁴

However, describing cliff effects using solely marginal tax rates can paint an incomplete picture of the effect. Marginal tax rates are often calculated over income bands larger than \$1.⁸⁵ This practice masks the severity of the cliff effect.⁸⁶ For example, if the cliff effect associated with the premium reimbursement subsidy of the Affordable Care Act were calculated over an income band of \$100, the severity of the cliff would be reduced by two orders of magnitude.⁸⁷

Although a cliff effect has implications for income earned beyond the effect's threshold, a marginal tax rate greater than 100% exists only at the cliff effect threshold. Returning to the Earned Income Tax Credit example,⁸⁸ the taxpayer's next dollar of investment income after passing the cliff effect would increase her tax liability by only fifteen cents.⁸⁹ After the taxpayer experiences the cliff effect, her marginal tax rate returns to 15%—the tax rate of her income tax bracket. Yet the force of the cliff effect lingers over a much larger range of income. Assuming the taxpayer's additional income remains in the 15% bracket, she would need to earn approximately \$6555 more before she returned to the economic position she was in prior to the cliff effect.⁹⁰ For a taxpayer with yearly wages of \$19,000, or \$9.50 per hour, this is equivalent to an extra 690 hours of work.

Thus, while the *existence* of a cliff effect is evidenced by a marginal tax rate greater than 100%, the *severity* of the cliff effect depends on how additional income above the cliff effect threshold is treated. The more favorably the

⁸³ See *supra* notes 25–27 and accompanying text.

⁸⁴ Marginal tax rate equals the increase in tax liability divided by additional income times 100%. Here, $\$5572 \div \$1 \times 100\% = 557,200\%$.

⁸⁵ See, e.g., CONG. BUDGET OFFICE, EFFECTIVE MARGINAL TAX RATES FOR LOW- AND MODERATE-INCOME WORKERS 4 (Nov. 2012) (using \$100 bands of income to calculate marginal tax rates).

⁸⁶ “Marginal” tax rates calculated using bands of income greater than \$1, though perhaps computationally expedient, mask the consequences of a cliff effect. This is because the cliff effect is triggered by just one additional dollar within the income band. As a result, the marginal tax rate for the dollar triggering the cliff effect is much higher.

⁸⁷ Marginal tax rate equals the increase in tax liability divided by additional income times 100%. Here, $\$2634 \div \$100 \times 100\% = 2634\%$. See also *supra* note 18 (finding that the marginal tax rate in a similar situation, using an income band of \$1, is 263,400%).

⁸⁸ See *supra* notes 25–27 and accompanying text.

⁸⁹ See Erb, *supra* note 80.

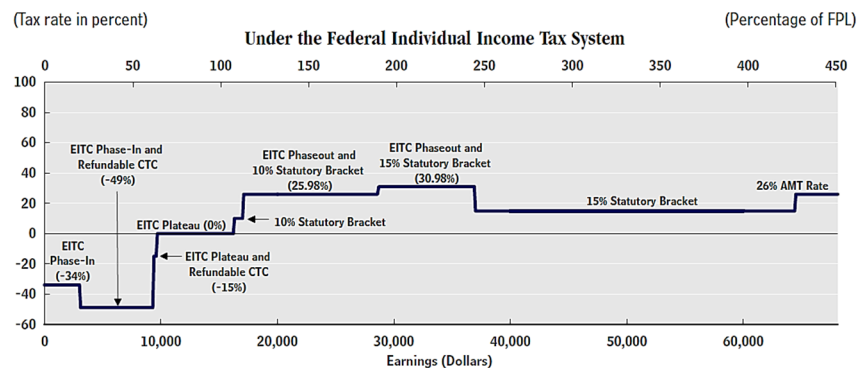
⁹⁰ $\$6555$ minus $(\$6555 \times 15\%) = \5572 . For simplicity, this calculation assumes a total marginal tax rate of 15%, ignoring other costs to earning, such as the employee share of the Federal Insurance Contributions Act (FICA), which is 6.2%. *Social Security & Medicare Tax Rates*, U.S. SOC. SEC. ADMIN., <https://www.ssa.gov/oact/progdata/taxRates.html> [<https://perma.cc/LS7G-S8BR>] (last visited Jan. 23, 2016); see also I.R.C. § 3101(a) (2012) (imposing a 6.2% tax on all wages).

taxpayer's subsequent income is taxed, the less the taxpayer must earn before returning to the economic position she was in prior to the cliff effect. Returning to the Earned Income Tax Credit example,⁹¹ if the taxpayer's investment income were somehow excluded from income (such as the interest from tax-exempt bonds⁹²), she would need to receive only \$5572 in additional income (rather than \$6555) to recoup the money lost as a result of the cliff effect. The magnitude of the impact a cliff effect has on an individual taxpayer, then, must be analyzed not just using the marginal tax rate for the first dollar earned beyond the cliff effect but also by examining how much additional income the taxpayer would need to earn to offset the additional tax liability imposed on the taxpayer as a result of the cliff effect. As demonstrated in the example above, the financial impact of cliff effects on taxpayers may be extremely burdensome.

B. Cliff Effects and Financial Planning

Highly variable marginal tax rates make optimal financial planning difficult. The marginal tax rates imposed on a single taxpayer with one child as a function of earned income are shown in Figure 1. The graph shown in Figure 1 is based on the Internal Revenue Code from 2012 and depicts a taxpayer affected by only three federal tax provisions: basic income tax rates, the Earned Income Tax Credit, and the child tax credit.

Figure 1: Marginal Income Tax Rates for a Single Parent with One Child⁹³



Because the Earned Income Tax Credit is a refundable credit, the first dollars earned by the household puts them in a marginal tax rate bracket of

⁹¹ See *supra* notes 25–27 and accompanying text.

⁹² See I.R.C. § 103 (excluding interest earned on state and local bonds from taxable income).

⁹³ CONG. BUDGET OFFICE, *supra* note 85, at 6 fig.2. Figure 1 assumes that the taxpayer is single with one dependent child. For simplicity, the household's income is derived entirely from

negative 34%. As the household continues to earn, the combination of the phaseout of the Earned Income Tax Credit, the phasein and phaseout of the child tax credit, and the start of the 10% tax bracket create eight distinct marginal tax rates (negative 34%, negative 49%, negative 15%, 0%, 10%, 25.98%, 30.98%, 15%, and 26%) before the household has earned \$75,000. As the household's income surpasses the income limits for the various benefits, the household's marginal tax rate becomes aligned with the standard federal tax bracket of 15%. Minor details regarding phasein and phaseout points for the various tax provisions have changed since 2012, but the conclusion drawn from Figure 1 remains the same: the taxpayer depicted in Figure 1 has a complicated patchwork of varying marginal tax rates over her range of income, which makes it difficult for the taxpayer to plan her finances prospectively when even an additional \$1 of income can have a major effect on her tax liability.

Table 1: Required Wage to Properly Incentivize Working⁹⁴

Marginal Tax Rate	Starting Income	Final Income	Required Wage per Hour
-34%	\$0	\$3000	\$8.96
-49	3000	9000	8.05
-15	9000	10,000	10.54
0	10,000	17,000	12.00
10	17,000	18,000	13.33
25.98	18,000	29,000	16.21
30.98	29,000	37,000	17.64
15	37,000	65,000	14.12
26	65,000	Above	16.22

The net economic benefit to the taxpayer from each additional dollar earned varies widely over the taxpayer's income range. This variation in the taxpayer's marginal tax rate profile makes optimal financial planning difficult because the after-tax value of her labor is constantly changing.⁹⁵ If, as in the previous example,

wages and the taxpayer has itemized deductions worth 18% of income and claims the greater of those deductions or the standard deduction (40% of the itemized deductions are assumed to be state and local taxes, and the rest are charitable contributions and mortgage interest). *Id.*

⁹⁴ See CONG. BUDGET OFFICE, *supra* note 85, at 6 fig.2 (providing marginal tax rates for the relevant income ranges). Because we are interested in the taxpayer's net economic position, we consider wages on a post-tax basis. The hourly wage required to incentivize working is equal to \$12 divided by (1 minus marginal tax rate). For a negative 34% marginal tax rate, for example, the required hourly wage is \$12 divided by (1 minus (negative 34%)) = \$8.96. See *supra* note 79 and accompanying text.

⁹⁵ This analysis is particularly relevant to married taxpayers with children deciding if one parent should enter the workforce. See Edward J. McCaffery, *Taxation and the Family: A Fresh Look*

the household values its leisure at \$12 per hour, the required hourly wage to properly incentivize working varies as the marginal tax rate varies, and is shown in Table 1.

Notwithstanding that the household's valuation of leisure likely varies over the household's income range, Table 1 shows that a household's incentives over a fairly narrow range of income can fluctuate widely. This is especially problematic for earners with unpredictable work schedules and salaries that are not guaranteed.⁹⁶ It is more difficult for low- to moderate-income earners to predict their annual incomes than it is for salaried employees with regular paychecks.⁹⁷ However, because most federal tax provisions, including those conferring benefits, are calculated on an annual basis, low- to moderate-income earners are more prone to engage in behavior that is not in their economic interests.

Figure 2: After-Tax Economic Position of Taxpayer Versus Adjusted Gross Income (Combining Several Federal Tax Provisions)

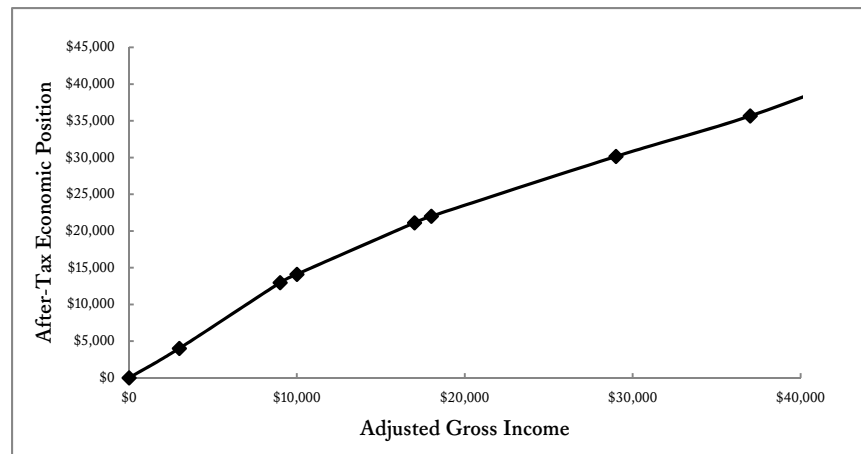


Figure 1 and the results shown in Table 1 did not show a taxpayer subjected to a cliff effect: each discontinuity in the taxpayer's marginal tax rate involved a jump of less than 100%. Although the return obtained from earning additional income changes as the taxpayer in Figure 1 earns more income, the highest marginal tax rate endured by the taxpayer is 31%. As a result, the

at *Behavioral Gender Biases in the Code*, 40 UCLA L. REV. 983, 1025-28 (1993) (discussing the marginal tax rate of a second parent returning to the workforce).

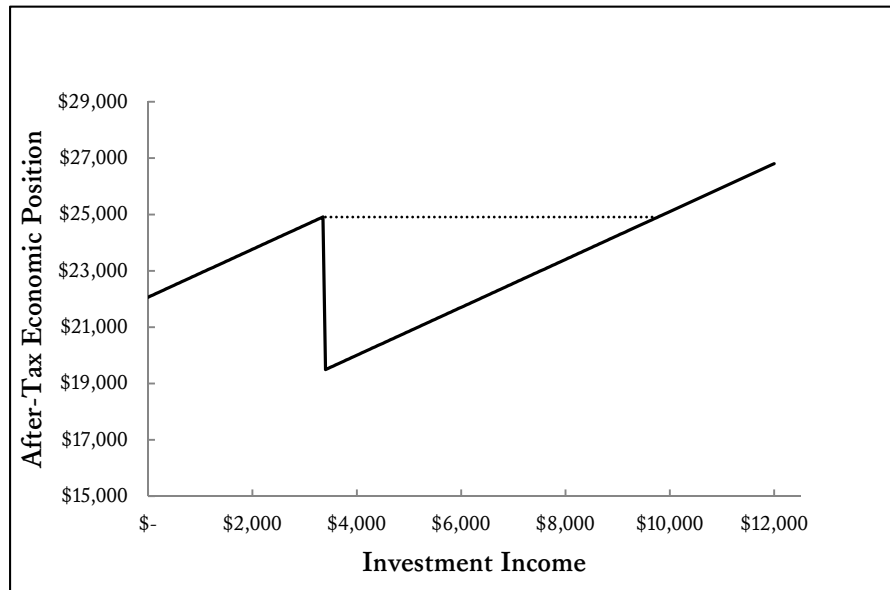
⁹⁶ See, e.g., Jodi Kantor, *Starbucks to Revise Policies to End Irregular Schedules for Its 130,000 Baristas*, N.Y. TIMES, Aug. 15, 2014, at A11 (discussing Starbucks's announced changes to scheduling policies based on employee complaints of unstable schedules and uncertain paycheck amounts).

⁹⁷ See Lily L. Batchelder, *Taxing the Poor: Income Averaging Reconsidered*, 40 HARV. J. ON LEGIS. 395, 413 (2003) ("[I]ncomes of disadvantaged families fluctuate far more than incomes of more advantaged families . . .").

taxpayer's after-tax economic position increases for every dollar earned. Figure 2 shows the post-tax economic position of the taxpayer whose marginal tax rate profile is illustrated in Figure 1 and Table 1.

However, for a taxpayer subjected to a cliff effect, an additional dollar of income could put the taxpayer in a worse post-tax economic position. As such, cliff effects exacerbate the difficulty of efficient financial planning caused by highly variable marginal tax rates by imposing marginal tax rates in excess of 100%. Consider a married taxpayer with two children receiving the Earned Income Tax Credit.⁹⁸ If her earned income is sufficient to earn the maximum Earned Income Tax Credit of \$5572, her taxable income (other than investment income) is held constant at \$19,000, and her investment income varies, then the Earned Income Tax Credit cliff effect creates a range of income past the \$3400 cliff effect threshold over which the taxpayer is worse off. Figure 3 shows the after-tax economic position of such a taxpayer.

Figure 3: After-Tax Economic Position of Taxpayer Versus Investment Income (Earned Income Tax Credit)⁹⁹



When the taxpayer in Figure 3 earns no investment income, her taxable income of \$19,000 results in an Earned Income Tax Credit of \$5572 and a

⁹⁸ See *supra* notes 25–27 and accompanying text.

⁹⁹ See *supra* notes 22–27 and accompanying text.

federal income tax liability of approximately \$1900, resulting in a post-tax economic position of approximately \$22,600.¹⁰⁰ When investment income is \$3401, however, the Earned Income Tax Credit amount drops to zero and taxable income is \$22,401. The taxpayer's post-tax economic position then is approximately \$20,000. The range of income marked by the dotted line—approximately \$6500—is the amount of additional income (in the form of earned income, investment income, or other sources) the taxpayer must earn to be in the same economic position she was in prior to the imposition of the cliff effect.¹⁰¹ As this example shows, the difficulty in tax planning caused by a patchwork of various marginal tax rates is exacerbated by cliff effects.¹⁰² The more a taxpayer's marginal tax rate profile involves large swings, the more burdensome financial planning becomes since the consequences of improper planning become increasingly severe—\$1 of additional income could actually reduce post-tax earnings. For example, if the taxpayer is not acutely aware of payments potentially out of her direct control, such as dividend or interest payments, the result can be the loss of a \$5572 Earned Income Tax Credit benefit. Because low- to moderate-income earners receive benefits from many of the tax provisions to which cliff effects are attached,¹⁰³ the marginal tax rate profile for these earners is especially complicated.

Empirical studies have confirmed that low- to moderate-income taxpayers are not as responsive to high marginal tax rates as their higher-earning counterparts.¹⁰⁴ This lack of responsiveness can be explained by how complicated these taxpayers' marginal tax rate profiles are.¹⁰⁵ Although this

¹⁰⁰ In 2016, for a married taxpayer, a taxable income of \$19,000 results in a tax liability equal to \$1855 plus 15% of the taxable income in excess of \$18,550. Rev. Proc. 2015-53, 2015-44 I.R.B. 615.

¹⁰¹ The income beyond the cliff effect (\$3400 of investment income) is treated the same, as long as it is not exempt from federal income tax, no matter what type of income it is, since the cliff effect has triggered the loss of the Earned Income Tax Credit.

¹⁰² See generally CONG. BUDGET OFFICE, *EFFECTIVE MARGINAL TAX RATES ON LABOR INCOME* (Nov. 2005) (detailing the various marginal tax rates applied to labor income that are imposed through multiple tax brackets, credits and deductions, and various taxpayer classifications).

¹⁰³ See *supra* Section I.A.

¹⁰⁴ See, e.g. Jon Gruber & Emmanuel Saez, *The Elasticity of Taxable Income: Evidence and Implications*, 84 J. PUB. ECON. 1, 3 (2002) (finding that the elasticity of taxable income for those with incomes above \$100,000 is less than one-third the elasticity for other income groups); Jennifer L. Romich et al., *When Working Harder Does Not Pay: Low-Income Working Families, Tax Liabilities, and Benefit Reductions*, 88 FAMILIES IN SOC'Y 418, 424 n.2 (2007) (citing both the complexity of marginal tax rates and the inability to reduce work hours as factors contributing to the inability to respond to high combined tax rates); Emmanuel Saez, *Do Taxpayers Bunch at Kink Points*, 2 AM. ECON. J., Aug. 2010, at 180, 181 (finding that "EITC recipients with only wage earnings display no evidence of bunching and thus the implied elasticity for wage earners is zero").

¹⁰⁵ See Jeffrey B. Liebman & Richard J. Zeckhauser, *Schmeduling 9* (Oct. 2004) (unpublished manuscript), <http://www.hks.harvard.edu/jeffreyliebman/schmeduling.pdf> [<https://perma.cc/HK8P-7R4R>] ("Even economists have a hard time computing effective marginal tax rates for welfare recipients.").

does not create inefficiencies in the classic economic sense,¹⁰⁶ the inability of low-income taxpayers to optimally respond to tax regimes with widely varying marginal tax rates imposes an unfair burden on these individuals.¹⁰⁷ As expressed by Learned Hand, any taxpayer “may so arrange his affairs that his taxes shall be as low as possible; he is not bound to choose that pattern which will best pay the Treasury.”¹⁰⁸ However, the Internal Revenue Code’s system of widely varying marginal tax rates makes an optimal financial arrangement for low-income taxpayers essentially impossible. Cliff effects in the Internal Revenue Code exacerbate this problem.

C. *The Uniqueness of Income-Based Cliff Effects*

Cliff effects in the Internal Revenue Code based on metrics other than income can be reconciled with notions of equity and efficiency. Cliff effects are sometimes associated with metrics such as the number of employees hired, hours worked by employees, value of qualifying distributions, percentage of corporate ownership, and income of a qualifying relative.¹⁰⁹ The cliff effects not triggered by a taxpayer’s income are generally the result of a definitional need. For example, Congress has deemed it socially beneficial to subsidize the cost of education for students who have incurred certain educational expenses.¹¹⁰ This “Hope Scholarship Credit” is limited to students enrolled at least half-time for a portion of the year.¹¹¹ An otherwise qualifying student could thus be precluded from receiving the tax credit by reducing her course load by one credit. Replacing this cliff effect with, say, some type of phaseout,¹¹² would increase the provision’s complexity and undermine the definitional clarity of the term “student.” Still, the efficiency gains of the bright-line rule must be compared with the equity and efficiency costs of the benefit’s sudden elimination. The merits of how Congress has defined “student” here are debatable, but the inclusion of a cliff effect to effectuate that definition is not necessarily flawed: if Congress is attempting to incentivize certain behavior, such as paying for higher education, the

¹⁰⁶ See JONATHAN GRUBER, PUBLIC FINANCE AND PUBLIC POLICY 50-52 (3d ed. 2011) (explaining that social efficiency is maximized where supply equals demand and that deadweight loss occurs when trades are not being made where the benefits of the trade would be greater than the costs); see also *infra* notes 124–26 and accompanying text.

¹⁰⁷ See CONG. BUDGET OFFICE, *supra* note 85, at 2 (“If taxpayers misperceive their marginal tax rate . . . changes in their actual marginal tax rate may not have much effect on their decisions about how much to work.”)

¹⁰⁸ *Helvering v. Gregory*, 69 F.2d 809, 810 (2d Cir. 1934).

¹⁰⁹ See *supra* note 14 and accompanying text.

¹¹⁰ I.R.C. § 25A(b) (2012).

¹¹¹ *Id.* § 25A(b)(2)(B).

¹¹² See *supra* note 21 and accompanying text.

increased complexity associated with eliminating the cliff effect would make the benefits of this behavioral change difficult to calculate.

Unlike many nonincome-based cliff effects, cliff effects in the Internal Revenue Code based on a taxpayer's income necessarily violate the principles of equity and efficiency. These tax provisions implicitly define taxpayers as members of either a lower-income and benefit-receiving group, or a higher-income and nonbenefit-receiving group. In theory, this demarcation exists to accurately advance the goals of the tax provision by limiting the benefit recipients to a defined group based on income. But this categorization of taxpayers by pre-tax income directly conflicts with the rationale behind the tax provision, resulting in a flawed implementation of the provision. Separating taxpayers into low-income and benefit-receiving versus high-income and nonbenefit-receiving groups pre-tax should result in the low-income and benefit-receiving group being better off. But if a member of the group receiving benefits is in a better economic position than a member of the group not receiving benefits, the tax provision has undermined the objectives of properly classifying taxpayers. As a result of the cliff effect's operation and the imposition of a marginal tax rate greater than 100%, taxpayers barely exceeding the income limit of the cliff effect will be in a worse economic situation than taxpayers falling just short of the cliff effect threshold. The use of cliff effects to classify taxpayers as eligible or ineligible by reason of income, therefore, is ineffective for some number of taxpayers just beyond the cliff effect.¹¹³ Cliff effects based on income are, therefore, always problematic to some degree on equity and efficiency grounds.

D. Equity Concerns of Income-Based Cliff Effects

Horizontal equity demands that tax provisions not treat similarly situated taxpayers differently.¹¹⁴ Because, tautologically, two *identically* situated

¹¹³ A similar result occurs if the income-based cliff effect is intended as a proxy for some other hard-to-measure attribute, such as the taxpayer's asset level. *See supra* notes 50–52 and accompanying text. In this case, the cliff effect puts some taxpayers in the higher-asset and nonbenefit-receiving group in a worse post-tax situation than some taxpayers in the lower-asset and benefit-receiving group. This assumes that the hard-to-measure attribute for which the income is a proxy does not increase so dramatically relative to the cliff-triggering income that it compensates for the increase in tax liability. The validity of this assumption is illustrated by the limit on investment income required for Earned Income Tax Credit eligibility. Assuming a minimal return on assets of 1%, an additional dollar of investment income implies an additional \$100 in assets, still nowhere near the \$572 of earned income credit lost.

¹¹⁴ *See* Louis Kaplow, *Horizontal Equity: Measures in Search of a Principle*, 42 NAT'L TAX J. 139, 140 (1989) (“[M]ost commonly, [horizontal equity] is said to require the equal treatment of equals.”).

taxpayers cannot be treated differently,¹¹⁵ a tax provision's compliance with horizontal equity requires defining what it means for taxpayers to be "similarly situated." This is done by reference to some metric by which taxpayers can be compared. Most commonly, this metric is income. Consider two taxpayers who earn identical income but from different sources. Horizontal equity requires that the taxpayers have identical income tax liabilities, assuming no governmental interest exists in promoting one income source over another.¹¹⁶ Vertical equity requires that, given two otherwise identical taxpayers, a taxpayer with more income should not pay less in taxes.¹¹⁷

For cliff effects where the reference metric is something other than income, the line drawn might properly divide taxpayers into proper benefit-receiving and nonbenefit-receiving groups. For example, a transportation subsidy for taxpayers younger than sixteen years old might be appropriate if these taxpayers are not permitted to obtain driving licenses before their sixteenth birthday. A sixteen-year-old taxpayer would experience a cliff effect on her sixteenth birthday but also become eligible for a driving license.

Cliff effects based on income, however, necessarily violate tenets of both horizontal and vertical equity: two nearly identically situated taxpayers can, by virtue of slight differences in income, have significantly different tax liabilities. To satisfy horizontal equity, the differences between taxpayers subjected to the cliff effect and those not subjected to the cliff effect must render these taxpayers significantly dissimilar. Although cliff effects are used to means-test tax provisions conferring benefits, there is no meaningful distinction between taxpayers just next to either side of the income threshold of the cliff effect.

Income-based cliff effects also contravene vertical equity. The proposition that a higher-earning taxpayer should pay no less in taxes than an otherwise identical but lower-earning taxpayer implies that a higher-earning taxpayer should not, by virtue of the Internal Revenue Code, be left in a worse economic position post-tax than the lower-earning taxpayer. If a taxpayer's income qualifies

¹¹⁵ See generally David Elkins, *Horizontal Equity as a Principle of Tax Theory*, 24 YALE L. & POL'Y REV. 43 (2006) (explaining that the principle of horizontal equity demands similar tax burdens for similarly situated individuals).

¹¹⁶ Different income sources are often intentionally taxed differently. For example, long-term capital gains are taxed at a preferential rate. See I.R.C. § 1 (2012) (providing lower tax rates for long-term capital gains than for ordinary income); see also Calvin H. Johnson, *Taxing the Consumption of Capital Gains*, 28 VA. TAX REV. 477, 498, 515 (2009) (explaining that the reduced tax rates on capital gains are primarily based on the assumption that the proceeds from the reduced tax liability will be reinvested and arguing that these lower rates should only be available for capital gains that remain invested, as opposed to capital gains that are consumed). Some income sources, such as interest from state and local bonds, are entirely exempt from tax. I.R.C. § 103; see also *supra* note 92 and accompanying text.

¹¹⁷ See Robert J. Peroni, *A Policy Critique of the Section 469 Passive Loss Rules*, 62 S. CAL. L. REV. 1, 64-65 (1988) ("Vertical equity . . . requires that there be an appropriate differential in tax burden between the different levels of economic income."). This norm is silent on exactly how much more the taxpayer with a higher income should pay.

her for a tax benefit, her net economic position improves to some minimum standard. If an otherwise identical taxpayer with more income pre-tax is ineligible for the benefit by virtue of her additional income and is in a worse economic position post-tax than the lower-earning taxpayer, this minimum standard is not satisfied and, on a post-tax basis, vertical equity is violated. As demonstrated above, at the income threshold at which the cliff effect is triggered, taxpayers suffering a cliff effect are in a worse economic position relative to a lower-earning taxpayer whose income is just short of the cliff effect threshold. Although a given taxpayer subjected to the cliff effect might earn enough to compensate for the economic harm imposed by the cliff, there exists a range over which taxpayers are worse off for having earned the additional income. The costs, explicit and implicit, required to earn the additional income only exacerbate the consequences of income-based cliff effects.¹¹⁸

For every violation of equity, whether horizontal or vertical, a theoretical minimum dollar amount exists that can be transferred to the suffering taxpayer to cure the equity violation. This “equity cost” represents the cost of modifying a tax provision that is structurally unsound on equity grounds to a provision that is not. The term “equity cost,” as used in this Article, is an aggregate microeconomic metric that represents the net economic loss suffered by all taxpayers who are in a worse economic situation post-tax than they would have been had they not exceeded the cliff effect threshold. If the cliff effect creating the equity cost is an income-based cliff effect attached to a means-tested tax provision, the equity cost represents a flaw in the implementation of the tax provision. If the tax provision is intended to benefit a group of taxpayers who are means-tested on a pre-tax basis by increasing their economic position, the tax provision should not make these beneficiaries better off than a group of taxpayers ineligible for the benefit by virtue of earning more. Either the subsidy provided by the tax provision is being awarded to taxpayers who do not need it, or the subsidy is not being provided to those taxpayers who do.

In addition to benefitting some taxpayers with limited means, a tax provision with an equity cost is penalizing some taxpayers for earning more. Not every taxpayer with an income beyond the cliff effect threshold suffers an equity loss; at some level of income greater than the cliff effect threshold the economic loss of the equity cost of the cliff effect is outweighed by the additional income. This equity cost is borne by those taxpayers who, in retrospect, would have been better off economically had they earned less income. Thus, cliff effects may violate both horizontal and vertical equity by causing taxpayers who are nearly identical in economic status to have dramatically different tax burdens.

¹¹⁸ See *supra* note 79 and accompanying text (describing the explicit and often overlooked costs associated with employment). Implicit costs to working include the preference, if any, a taxpayer has for leisure over additional labor.

E. *Efficiency Concerns of Income-Based Cliff Effects*

Measuring the efficiency of a given tax provision first requires determining the objective (or objectives) of the tax provision. An efficient tax provision will accomplish these objectives at a low cost. The primary objective of the tax on income, for example, is raising revenue.¹¹⁹ One measure of the cost of a tax provision is the extent to which the tax provision interferes with behavior that would have occurred in the absence of the provision.¹²⁰ For example, if a taxpayer would work for no less than \$12 per hour and is in a 40% marginal tax bracket, her pre-tax wage must equal twenty dollars per hour.¹²¹ Pre-tax, a wage of twelve dollars per hour is sufficient to incentivize the taxpayer to work. Post-tax, a wage between twelve dollars and twenty dollars per hour will not be sufficient, representing the cost of the 40% marginal tax rate. Over this range of offered wages, the tax system has changed the taxpayer's behavior and created inefficiencies by preventing behavior that both employee and employer find economically advantageous pre-tax.¹²²

For tax provisions that are not intended to change behavior, the classic measure of efficiency (or lack thereof) is the "deadweight loss," or "excess burden" of the provision.¹²³ The efficiency of these tax provisions is generally measured by examining the loss of surplus to both a consumer and producer when comparing pre- and post-tax behavior.¹²⁴ This lost surplus rises with the square of the marginal tax rate.¹²⁵ Cliff effects based on income, by definition, impose a marginal tax rate of greater than 100%. The deadweight loss associated with a tax provision with a cliff effect is greater than a tax provision that is phased out at some rate less than 100%.¹²⁶ Put differently, any tax

¹¹⁹ The first incarnation of the American income tax was borne from the need to finance the Civil War. GRAETZ & SCHENK, *supra* note 70, at 5. In 2012 income taxes accounted for approximately 57% of all federal receipts. *Id.* at 15 fig.1.3.

¹²⁰ See George R. Zodrow, *Economic Analyses of Capital Gains Taxation: Realizations, Revenues, Efficiency and Equity*, 48 TAX L. REV. 419, 464 (1993) ("[T]he efficiency costs of taxation increase with the degree of responsiveness of individual behavior to changes in taxes . . .").

¹²¹ See *supra* note 79 and accompanying text.

¹²² See Lily L. Batchelder et al., *supra* note 2, at 42 ("If markets were perfect, efficiency would imply interfering as little as possible in market outcomes. Because markets are imperfect, efficiency also entails eliminating market failures by minimizing transaction costs and correcting for externalities, market power, and information asymmetries.")

¹²³ David A. Weisbach, *Line Drawing, Doctrine, and Efficiency in the Tax Law*, 84 CORNELL L. REV. 1627, 1650 (1999).

¹²⁴ See *id.* at 1650-51 (explaining that an efficient tax is one with a low deadweight loss, which is measured by the loss of value to consumers).

¹²⁵ *Id.* at 1656.

¹²⁶ See Christopher J. Conover, *Congress Should Account for the Excess Burden of Taxation*, POL'Y ANALYSIS, Oct. 13, 2010, at 4 ("[E]fficiency losses are much lower when a small tax increase is added across a wide tax base than if government raises the identical amount of tax revenue by increasing tax rates . . .")

provision not intended to change behavior that utilizes a cliff effect based on income to eliminate the benefit can be made more efficient by using a phaseout (at a rate less than 100%) instead of the cliff effect.

Other tax expenditures are not solely intended to change behavior; rather, they are meant to also confer a benefit on some group of taxpayers in order to accomplish some socially valuable set of goals. For example, the Earned Income Tax Credit, in addition to incentivizing working, is also intended to bring people out of poverty.¹²⁷ The child tax credit is also intended to help low-income households (with children) out of poverty but is not intended to incentivize households to have more children.¹²⁸ However, regardless of the particular objective of the tax provision in question, efficiency is improved when the objective is achieved with a lower cost.

Many tax expenditures, however, are intended to change behavior. For these provisions, if the behavior that the tax provision seeks to incentivize would occur in the absence of the subsidy provided by the tax provision, then the tax provision is inefficient—the federal government is essentially paying for something it is already getting for free.¹²⁹

F. *Quantifying the Aggregate Cost of Income-Based Cliff Effects*

Several scholars have addressed issues confronted by low- and moderate-income taxpayers subjected to varying marginal tax rates, including those associated with cliff effects based on a taxpayer's income. These scholars typically focus on a small subset of taxpayers, such as those residing within a state or other clearly defined region for which there exists an available data set.¹³⁰ Other studies use a single-family composition (i.e., a single parent with two children) and assess the consequences to the family as income

¹²⁷ See *supra* note 51 and accompanying text.

¹²⁸ 149 CONG. REC. 86, H5328 (daily ed. June 12, 2003) (statement of Rep. Moore) (“[H]elping hard-working families make ends meet and raise their kids is the goal of the child tax credit.”).

¹²⁹ For instance, the low-income housing tax credit, which subsidizes the construction of low-income housing, is often criticized on this ground. See, e.g., EDWARD L. GLAESER & JOSEPH GYOURKO, *RETHINKING FEDERAL HOUSING POLICY: HOW TO MAKE HOUSING PLENTIFUL AND AFFORDABLE* 113 (2008) (citing studies finding “that a significant amount of LIHTC unit production is occurring in markets that would have built much of this housing in the absence of the subsidy program”).

¹³⁰ See, e.g., Holt & Romich, *supra* note 2 (documenting the extent and distribution of statutory and actual marginal tax rates for households in Wisconsin); Laurence J. Kotlikoff & David Rapson, *Does It Pay, at the Margin, to Work and Save? Measuring Effective Marginal Taxes on Americans' Labor Supply and Saving* (concluding that the relationship between marginal tax rates and incentives to work and save is affected by numerous factors that make the relationship difficult to calculate and understand), in 21 *TAX POLICY AND THE ECONOMY* 83, 84-86 (James M. Poterba ed., 2007); Elaine Maag et al., *How Marginal Tax Rates Affect Families at Various Levels of Poverty*, 65 *NAT'L TAX J.* 759, 764 (2012) (showing the variance among effective marginal tax rates across the United States and the potential effects these rates have on an individual's incentive to work).

increases.¹³¹ These analyses are most important when the effects of direct transfer programs outside of the Internal Revenue Code are considered in conjunction with federal expenditures.¹³² The result of these efforts has been to calculate “effective” marginal tax rate profiles for narrow selections of taxpayers.¹³³ For effective marginal tax rates that rise to the level of a cliff effect, the result is straightforward: taxpayers are incentivized to either earn enough income to overcome the loss created by the cliff effect or reduce their income to not be subjected to the cliff effect.¹³⁴ This change in behavior, to the extent it occurs, represents an inefficiency generated by the imposition of the cliff effect: otherwise desirable behavior—i.e., an individual performing socially desirable work—is no longer being performed.

However, low- to moderate-income taxpayers, as discussed previously, are not as responsive to high marginal tax rates as higher-earning taxpayers.¹³⁵ To the extent that taxpayers do not or cannot reduce their income when confronted with an income-based cliff effect, the burden of the cliff effect becomes an equity violation rather than the inefficiency of a deadweight loss. Rather than imposing a deadweight loss on the universe, the cliff effect punishes a taxpayer by putting her in a worse economic situation by virtue of earning more.

The marginal tax rate at the dollar triggering the cliff effect can be used to quantify the microeconomic cost of the cliff effect. This calculation is done relative to a taxpayer just prior to the cliff effect threshold and therefore not subject to the cliff effect. An exact accounting of the microeconomic effects of a cliff effect requires knowing the affected taxpayer’s elasticity in response to the cliff effect. In the absence of this level of detail, we can estimate the microeconomic equity cost by using the marginal tax rate imposed on the taxpayer for the dollar triggering the cliff effect.

These microeconomic assessments of cliff effects do not, however, convey the magnitude of the cost of the cliff effect in the aggregate. For cliff effects in the Internal Revenue Code, this aggregate microeconomic cost is an empirical exercise that can only be calculated by estimating the number of taxpayers affected by the cliff effect in question and the extent to which each taxpayer is affected by the cliff effect. These variables are often affected by secondary variables such as family composition, income level, and geographic

¹³¹ See, e.g., Maag et al., *supra* note 130, at 770-71 tbl.1 (showing the effective marginal tax rate of single parent with two children earning various amounts of income in various states).

¹³² See *infra* notes 203-19 and accompanying text.

¹³³ See *supra* notes 130-31 and accompanying text.

¹³⁴ Many scholars have discussed taxpayers’ incentives to reduce work even in the absence of a cliff effect. See, e.g., LINDA GIANNARELLI & EUGENE STEUERLE, THE URBAN INST., THE TWICE-POVERTY TRAP: TAX RATES FACED BY AFDC RECIPIENTS 1 (Apr. 1995) (finding that the poverty trap—little or no reward for work—extends to twice the poverty level).

¹³⁵ See *supra* note 104 and accompanying text.

location. Estimating this cost is necessary to assess whether any advantages from the cliff effect with respect to definitional clarity and simplicity outweigh any costs imposed on the taxpaying public from the behavioral changes induced and equity violations created. This aggregate microeconomic cost, heretofore omitted from the literature, is calculated for the cliff effects present in the health premium credit provisions of the Affordable Care Act in Part III.

III. ASSESSING THE COSTS OF THE CLIFF EFFECTS ASSOCIATED WITH THE AFFORDABLE CARE ACT

The Affordable Care Act provides subsidies—in the form of tax credits—for the premiums paid for certain health insurance plans purchased by individuals and families with incomes between 100% and 400% of the federal poverty level.¹³⁶ These subsidies, called health premium credits, are intended to alleviate the financial burden of purchasing health insurance for low- to moderate-income earners.¹³⁷ The Congressional Budget Office has estimated that the health insurance premium credits of the Affordable Care Act will result in foregone tax revenue of approximately \$33 billion in 2015, increasing rapidly in future years to approximately \$912 billion total between 2014 and 2024.¹³⁸

These premium credits are refundable and are based on federal poverty level as shown in Table 2. A taxpayer's family composition affects her federal poverty level, which consequently affects the credit amount to which she is entitled. For example, a single-member household has a federal poverty level of \$11,490, while a four-member household has a federal poverty level of \$23,550.¹³⁹

¹³⁶ I.R.C. § 36B (2012); *see also supra* note 15 and accompanying text. The Affordable Care Act also established cost-sharing subsidies that limit the out-of-pocket costs (such as deductibles and co-pays) for low-income individuals and families. Patient Protection and Affordable Care Act, Pub. L. No. 111-148, § 1402(c), 124 Stat. 119, 221 (codified at 42 U.S.C. § 18071 (2012)). These cost-sharing subsidies, though improving taxpayers' net economic positions, do not (unlike the premium assistance credits) reduce taxpayers' income tax liabilities.

¹³⁷ *See* Nicole Huberfield et al., *Plunging into Endless Difficulties: Medicaid and Coercion in National Federation of Independent Business v. Sebelius*, 93 B.U. L. REV. 1, 12 (2012) ("The policy compromise was based on the idea that extremely low-income Americans should be provided public health insurance while slightly less impoverished individuals should be given federal tax credits to support private purchasing in the exchanges.").

¹³⁸ CONG. BUDGET OFFICE, THE BUDGET AND ECONOMIC OUTLOOK: 2014 TO 2024, at 109 tbl.B-3 (Feb. 2014).

¹³⁹ *See supra* note 15 and accompanying text. These numbers apply only to taxpayers within the contiguous United States and the District of Columbia; the levels differ for taxpayers in Alaska and Hawaii.

Table 2: Refundable Credit for Coverage Under a Qualified Health Plan¹⁴⁰

Modified Household Income (as Percentage of Federal Poverty Level)	Initial Premium Percentage	Final Premium Percentage
100% to 133%	2.0%	2.0%
133 to 150	3.0	4.0
150 to 200	4.0	6.3
200 to 250	6.3	8.05
250 to 300	8.05	9.5
300 to 400	9.5	9.5

Taxpayers with modified adjusted gross incomes greater than 133% but less than 150% of federal poverty level must contribute three% of their total modified adjusted income (including income less than 133% of federal poverty level) towards their health insurance premiums. Transitioning from less than to more than 133% of the federal poverty level thus triggers a 1% loss in the credit to which the taxpayer is otherwise entitled.¹⁴¹ A second cliff effect also

¹⁴⁰ I.R.C. § 36B(b)(3)(A)(i). The “premium percentage” is the percentage of the taxpayer’s modified adjusted gross income that is subtracted from the cost of the benchmark health plan to determine the maximum amount of the health premium credit. *See infra* note 157 and accompanying text. For household income ranges where the initial and final percentages differ, the applicable percentage is determined by interpolating between the initial and final credit percentages for the household income in question. For example, a household income equal to 275% of federal poverty level corresponds to an applicable percentage of 8.755% (halfway between 8.05% and 9.5%). I.R.C. § 36B(b)(3)(A). “Household income” is defined as the sum of (1) the modified adjusted gross income of the taxpayer, plus

(2) the aggregate modified adjusted gross incomes of all other individuals who (a) were taken into account in determining the taxpayer’s family size and (b) were required to file a return of tax for the taxable year. *Id.* § 36B(d)(2)(A). “Modified adjusted gross income” is defined as adjusted gross income plus any amount excluded from income by virtue of section 911, any tax-exempt interest, and the portion of social security benefits not included in gross income under section 86. *Id.* § 36B(d)(2)(B).

¹⁴¹ For states that have opted into the expanded Medicaid coverage allowed for by the Affordable Care Act, eligibility for Medicaid is available for individuals earning less than 138% of the federal poverty level. Patient Protection and Affordable Care Act §§ 2001(a)(1), § 2002(a); *see also Medicaid Expansion & What It Means for You*, HEALTHCARE.GOV, <https://www.healthcare.gov/medicaid-chip/medicaid-expansion-and-you> [<https://perma.cc/6SK2-LXGC>] (last visited Jan 23, 2016) (“In states that have expanded Medicaid coverage: You can qualify based on your income alone. If your household income is below 133% of the federal poverty level, you qualify. (Because of

exists when a taxpayer earns more than 400% of the federal poverty level. Just prior to this point the taxpayer must contribute 9.5% of her income towards the cost of premiums; for incomes greater than 400% of federal poverty level, the subsidy vanishes.

Using the Internal Revenue Service's Statistics of Income, a distribution of the number of taxpayers in a given range of modified adjusted gross incomes can be determined. Assuming that taxpayers obtaining qualified health plans follow the same distribution, the number of taxpayers within a given range of modified adjusted gross income can be estimated.¹⁴² The cliff effect triggered at 133% of federal poverty level is not a fixed number for all taxpayers since federal poverty level is dependent on the number of members in a family unit. A hybrid federal poverty level based on the United States' average household size of 2.58 can be used to estimate the number of enrolled taxpayers within a given adjusted income range.¹⁴³ From this we can calculate the number of enrolled taxpayers who are in a worse position post-tax due to the cliff effect, and the cost of equalizing these taxpayers with taxpayers not subject to the cliff effect.¹⁴⁴ This cost of equalization represents the equity cost of the cliff effect, or the total dollar amount by which the taxpayers just exceeding the cliff effect threshold are worse off than taxpayers just at—but not exceeding—the threshold.

A taxpayer must earn approximately 1.5% of the federal poverty level beyond the cliff-triggering income (133% of the federal poverty level) to

the way this is calculated, it turns out to be 138% of the federal poverty level. A few states use a different income limit.)"). As of January 2016, thirty-one states and the District of Columbia have adopted expanded coverage. *Status of State Action on the Medicaid Expansion Decision*, KAISER FAM. FOUND., <http://kff.org/health-reform/state-indicator/state-activity-around-expanding-medicaid-under-the-affordable-care-act> [<https://perma.cc/A46S-RCA8>] (last visited Jan. 23, 2016).

¹⁴² See *All Returns: Sources of Income, Adjustments, and Tax Items, by Size of Adjusted Gross Income, Tax Year 2012*, INTERNAL REVENUE SERV., <https://www.irs.gov/pub/irs-soi/12in14ar.xls> [<https://perma.cc/X4RM-GLPQ>] (last visited Jan. 23, 2016) (listing sources of income, adjustments, and tax items by size of adjusted gross income for all returns). Within each given income range a linear distribution of returns was assumed. This distribution was assumed equivalent to the distribution (by adjusted gross income) of enrollees in qualified health plans. For purposes of this calculation, modified adjusted gross income was assumed to be equal to adjusted gross income and modified household income.

¹⁴³ U.S. CENSUS BUREAU, HOUSEHOLD AND FAMILIES: 2010, at 1 (Apr. 2012). For a family of two and a family of three the federal poverty level is \$15,510 and \$19,530, respectively, in the contiguous United States and District of Columbia. Annual Update of the HHS Poverty Guidelines, 78 Fed. Reg. 5182, 5183 (Jan. 24, 2013). The hybrid poverty level for the average U.S. household, based on the 2.58 average household size, is equal to the weighted average, or \$17,842. One-hundred-thirty-three percent of this hybrid poverty level is equal to \$23,729.

¹⁴⁴ At 133% of federal poverty level a taxpayer must contribute 2% of her modified adjusted gross income toward the health insurance premium; between 133% and 150% of federal poverty level a taxpayer must contribute between 3 and 4%. See *supra* Table 2. The modified adjusted gross income, in terms of federal poverty level, at which the credit loss is compensated by additional income is found by solving for x in the following equation: $(0.98)(1.33 * FPL) = (x)(FPL) - ((x-1.33)/0.17 + 0.03)(x)(FPL)$. Solving for x , x is equal to 1.345. This calculation omits any additional credits for which the taxpayer might be eligible due to their increased income, i.e., the Earned Income Tax Credit.

counteract the 1% drop in premium credits.¹⁴⁵ This translates to approximately \$356 that a taxpayer must earn, on average, to undo the effect of the cliff effect.¹⁴⁶ For taxpayers in this income range this is equal to, on average, approximately thirty additional hours of work.¹⁴⁷ Over this income range there are approximately 35,000 people who are worse off post-tax relative to taxpayers they were better off than pre-tax.¹⁴⁸ For 2014, these 35,000 taxpayers were, in the aggregate, approximately \$4 million worse off than they would have been had they earned less.¹⁴⁹ This figure represents the minimum amount needed to be transferred to taxpayers just beyond the cliff effect threshold to ensure an economic position equal to taxpayers just before the cliff effect threshold.¹⁵⁰ The Congressional Budget Office expects enrollment in marketplace health plans to increase dramatically in the next ten years.¹⁵¹ If the distribution of enrolled taxpayers by income stays constant as more taxpayers enroll in qualifying health plans, the aggregate equity cost from 2014 to 2024 will equal \$286 million.¹⁵²

The preceding equity cost calculation for the cliff effect imposed at the 133% federal poverty threshold assumes that every affected taxpayer receives the premium health credits for modified adjusted gross incomes between 100 and 133% of the federal poverty level. However, this underestimates the cliff

¹⁴⁵ This is greater than the 1% lost due to the cliff because the amount of the subsidy decreases as income increases. See *supra* Table 2.

¹⁴⁶ One-and-a-half percent of the hybrid federal poverty level is equal to $(1.5\%)(\$23,729) = \356 .

¹⁴⁷ At 133% of the hybrid federal poverty level of \$23,729, hourly wage is equal to approximately \$11.90/hour. This conservatively assumes that the income is earned by a sole earner. The actual hourly wage is less, since the calculated hourly wage is for a household size of 2.58.

¹⁴⁸ There are approximately 65 million taxpayers between 100% and 400% of the hybrid federal poverty level (an income range that captures nearly all of the enrollees for the tax credit). INTERNAL REVENUE SERV., *supra* note 142. Approximately 1.1% of this group, or about 700,000 taxpayers, earns between 133% and 134.5% of the hybrid federal poverty level. 8 million enrollees correspond to roughly 3.2 million enrolled taxpayers, assuming an average family size of 2.5 members. 1.1% of these 3.2 million enrolled taxpayers equals approximately 35,000.

¹⁴⁹ Post-cliff effect, 35,000 taxpayers lost, on average, \$238 per year, because the cliff reduces the credit amount by 1% of adjusted gross income. Using a hybrid federal poverty level, the cliff-triggering income is \$23,729. Since the affected group is worst off at exactly the cliff effect threshold, and at parity with pre-cliff taxpayers at 134.5% of federal poverty level, we can approximate the lost credit assuming linearity. The affected group is then, in total, worse off by (35,000 taxpayers) times (\$238 per taxpayer) divided by 2, or approximately \$4 million.

¹⁵⁰ The equity cost also approximates the additional amount of income required to be earned to place the taxpayers in the same economic position as the taxpayers just before the imposition of the cliff effect. This assumes that this subsequent income is earned tax-free.

¹⁵¹ CONG. BUDGET OFFICE, *supra* note 138, at 109 tbl.B-3.

¹⁵² *Id.* The estimated total cost of the premium credits from 2014 to 2024 is \$912 billion. ($\$912 \text{ billion} \div \$13 \text{ billion} \times \4 million) = \$286 million. The reported current enrollment of 8 million enrollees (approximately 3.2 million taxpayers) and average credit per taxpayer (\$3168 per year) for a total 2014 credit outlay of \$10 billion is roughly equal to the Congressional Budget Office's 2014 cost estimate of \$13 billion.

effect since roughly half of all states have opted into expanded Medicaid coverage, which provides insurance, at a minimum, to taxpayers with modified gross incomes of 138% of the federal poverty level.¹⁵³ Because the expanded Medicaid coverage will insure taxpayers earning less than 138% of the federal poverty level, approximately half of taxpayers affected by this cliff effect will in fact face a cliff effect of not 1% but 3% of modified adjusted income. This increases the total equity cost of this cliff effect to \$8 million for 2014, with an aggregate cost until 2024 of \$572 million.¹⁵⁴ As more states opt into expanded Medicaid coverage, the equity cost of this cliff effect will continue to grow.

The equity cost of the cliff effect occurring at 133% of federal poverty level is independent of the actual cost of the health insurance plan selected and the total amount of credit awarded. For taxpayers on either side of this cliff effect, the credit amount depends on a taxpayer's income relative to the federal poverty level and the cost of a benchmark plan, not the specific plan selected.¹⁵⁵ In contrast, to properly estimate the equity cost of the cliff effect occurring at 400% of the federal poverty level, which eliminates the credit entirely, the total value of the credit must be calculated. The value of the credit depends on the cost of the available health plans, which is in turn a function of the size of the taxpayer's family, ages of the taxpayer's family members, and the taxpayer's residence.¹⁵⁶ The credit is calculated as the difference between the exclusion amount and the benchmark plan.¹⁵⁷

A complete distribution of benchmark plan premiums across geographic locations for varying compositions of a taxpayer's family would permit calculation of the premium credit that is lost at 400% of the federal poverty level. For some jurisdictions and family compositions, there is no cliff effect. For a twenty-seven-year-old in St. Louis earning \$25,000, for example, the cost of the benchmark plan is \$216 per month.¹⁵⁸ At 400% of the federal poverty level, the taxpayer's exclusion amount is \$364, meaning the premium credit is

¹⁵³ See *supra* note 141 and accompanying text.

¹⁵⁴ CONG. BUDGET OFFICE, *supra* note 138, at 109 tbl.B-3. If half of all taxpayers affected by the cliff effect suffer a cliff effect that is three times worse, the total cost is doubled.

¹⁵⁵ I.R.C. § 36B(b) (2012). See *infra* note 157 and accompanying text.

¹⁵⁶ DEP'T OF HEALTH AND HUMAN SERVS., ASPE ISSUE BRIEF: HEALTH INSURANCE MARKETPLACE PREMIUMS FOR 2014, at 7-8 tbl.1 (Sep. 25, 2013) (providing premium amounts based on a taxpayer's age, family size, and residence). "Family," as used here, refers to the members of the taxpayer's tax-filing unit.

¹⁵⁷ The benchmark plan is the second-lowest cost silver plan offered by the relevant state or federal marketplace. I.R.C. § 36B(b)(2)(B). Plans with the silver classification are required to pay an actuarial value of 70% to the aggregate group of silver plan members. *Health Plan Categories*, HEALTHCARE.GOV, <https://www.healthcare.gov/glossary/health-plan-categories> [https://perma.cc/8R7M-KS4Z] (last visited Jan. 23, 2016). The exclusion amount is the applicable percentage times modified adjusted gross income. *Id.* § 36B(b)(3)(A)(i).

¹⁵⁸ DEP'T OF HEALTH AND HUMAN SERVS., *supra* note 156, at 12 tbl.3.

eliminated for this taxpayer prior to the imposition of the cliff effect.¹⁵⁹ For a family of four in Indianapolis with an income of \$50,000, however, the cost of the benchmark plan is \$1011 per month.¹⁶⁰ For this family, the cliff effect at 400% of federal poverty level results in the loss of a \$3180 yearly subsidy.¹⁶¹

The aggregate equity cost of this cliff effect cannot be calculated using a weighted average of national benchmark premium costs because not all taxpayers are subjected to a cliff effect. If the costs of these plans were averaged and considered in aggregate, the cliff effect for taxpayers with different family compositions or locations would be masked. Precisely calculating the equity cost requires data on each taxpayer's family composition, size of family, and residence. In the absence of this precise data set, we can approximate the number of taxpayers subjected to the cliff using a combination of Internal Revenue Service and census data, and the fact that, by law, the price of the benchmark silver plan is not permitted to vary by more than a factor of three to one over all age ranges.¹⁶²

A taxpayer with a family of four at 400% of federal poverty level faces a premium credit loss worth approximately \$1377 on average.¹⁶³ The average taxpayer subjected to this cliff effect must work an additional twenty-nine

159 The applicable federal poverty level for an individual is \$11,490. *See supra* note 15 and accompanying text. Nine-and-a-half percent of four times \$11,490 divided by 12 equals \$364 per month.

160 DEP'T OF HEALTH AND HUMAN SERVS., *supra* note 156, at 12 tbl.3.

161 The applicable federal poverty level for an individual is \$23,550. *See supra* note 15 and accompanying text. Nine-and-a-half percent of four times \$23,550 divided by 12 equals \$746 per month. The credit for this taxpayer is worth \$265 (\$1011 minus \$746) monthly.

162 *See* BERNADETTE FERNANDEZ, CONG. RESEARCH SERV., R41137, HEALTH INSURANCE PREMIUM CREDITS IN THE PATIENT PROTECTION AND AFFORDABLE CARE ACT (ACA) 11 (Mar. 12, 2014) (“[F]or any given . . . plan in a geographic area, premiums may vary for adults between 21 and 64+ years of age by a 3:1 ration.”). For the thirty-six non-State Based Marketplaces, data on the cost of the benchmark silver plan for a twenty-seven year-old was collected by the federal government. DEP'T OF HEALTH AND HUMAN SERVS., *supra* note 156, at 7-12. Estimates of the cost for other age ranges (twenty-eight to thirty-four, thirty-five to forty-four, forty-five to fifty-four, and fifty-five to sixty-five) were linearly interpolated using a maximum plan cost of three times the twenty-seven year-old cost. The cliff effect, where applicable, was calculated for all age ranges for all available states. The aggregate average cliff effect was determined using a weighted average based on each state's population. Each enrollee was assumed to be an individual taxpayer, which results in a conservative estimate of equity cost since the federal poverty level per person is greater for an individual than for families. Annual Update of the HHS Poverty Guidelines, 78 Fed. Reg. 5182, 5183 (Jan. 24, 2013).

163 The number of enrollees subjected to the cliff effect is estimated using IRS data on returns for taxpayers filing as one person. *All Returns: Number of Returns, by Age, Marital Status, and Size of Adjusted Gross Income, Tax Year 2012*, INTERNAL REVENUE SERV., <https://www.irs.gov/pub/irs-soi/12in16ag.xls> [<https://perma.cc/Q8YC-AHEU>] (last visited Jan. 23, 2016). The number of enrollees in the range between 400% of federal poverty level to 400% of federal poverty level plus \$1377 was estimated using the percentage of taxpayers filing as one person within the same income range (2.2%). The total number of enrollees is 8,019,763. DEP'T OF HEALTH & HUMAN SERVS., ASPE ISSUE BRIEF: HEALTH INSURANCE MARKETPLACE: SUMMARY ENROLLMENT REPORT FOR THE INITIAL ANNUAL OPEN ENROLLMENT PERIOD 5 tbl.2 (May 1, 2014). The aggregate microeconomic cliff effect is then equal to $(\$1377) * (2.2%) * (8,019,763) / 2 = \$121,475,350$.

hours to compensate for the economic loss imposed by the cliff effect.¹⁶⁴ This estimate of additional hours worked conservatively assumes the taxpayer's additional labor is not subjected to federal or state income taxes.

Not all age groups are equally subjected to the cliff effect. The benchmark silver plan tends to cost less than the applicable exclusion amount for enrollees younger than thirty-four years old but more than the exclusion amount for enrollees between the ages of thirty-five and sixty-four. The latter group comprises roughly 65% of all current enrollees, meaning that the more expensive health plans are selected more frequently than the lower-cost plans available to younger enrollees.¹⁶⁵ Taxpayers between fifty-five and sixty-five years of age, on average, face a cliff effect worth approximately \$3315 (or 144 hours of labor) when their income eclipses 400% of the federal poverty level.¹⁶⁶

Approximately 176,000 taxpayers are ineligible for the health premium credit due to the cliff effect occurring at 400% of the federal poverty level.¹⁶⁷ The income that puts them more than 400% from the federal poverty level—thus precluding these taxpayers from receiving the subsidy—does not make them whole relative to the value of the tax credit lost. The aggregate equity cost of this cliff effect is approximately \$121 million, or nearly 1% of the estimated cost of the entire subsidy.¹⁶⁸ From 2014 to 2024, this represents a total equity cost of approximately \$8.5 billion.¹⁶⁹ Although low- to moderate-

¹⁶⁴ Assuming 2000 hours worked in a year and an income of 400% of federal poverty level—\$94,200—results in an hourly wage of \$47.10, then \$1377 divided by \$47.10 per hour equals 29.2 hours.

¹⁶⁵ *Id.* at 18 app. tbl.A1.

¹⁶⁶ The average cliff effect for taxpayers between (1) zero and twenty-seven years old, (2) twenty-seven and thirty-four, (3) thirty-five and forty-four, (4) forty-five and fifty-four, and (5) fifty-five and sixty-four is zero, \$12, \$603, \$1930, and \$3315, respectively.

¹⁶⁷ See *supra* note 163. The number of affected taxpayers is equal to 2.2% times 8,019,763, or 176,435.

¹⁶⁸ See *supra* notes 152 and 163 and accompanying text.

¹⁶⁹ The premium credit is estimated to cost approximately \$912 billion from 2014 until 2024. Thus, \$121 million divided by \$13 billion multiplied by \$912 billion equals approximately \$8.5 billion. See *supra* note 152 and accompanying text. The calculation of aggregate microeconomic equity costs for the two cliff effects associated with the Affordable Care Act assumed that the distribution of taxpayers by income does not change as a result of the imposition of the cliff effect. The Affordable Care Act provides subsidies to taxpayers earning 400% or less of the federal poverty level. See *supra* note 15 and accompanying text. These taxpayers are not well-situated to reduce their income to avoid the penalty of the cliff effect. See Katie Thomas et al., *New Health Law Frustrates Many in Middle Class*, N.Y. TIMES, Dec. 21, 2013, at A1 (highlighting, inter alia, the plight of some middle class individuals whose income fluctuation puts them on different sides of the cliff from year to year); see also *supra* notes 96–97 and accompanying text. Low- to moderate-income earners must allocate a larger share of their income to necessities and have a smaller percentage of their earnings as disposable income. Low- to moderate-income earners also have work schedules that are less discretionary. See *supra* note 96 and accompanying text. As a result, these taxpayers do not exhibit strong behavioral responses to adverse tax consequences. See *supra* note 104 and accompanying text. If low- to moderate-income taxpayers were able to, contrary to empirical results, modify their behavior in response to the economic consequences imposed by the cliff effect, the calculated equity cost would indeed be lower. But with this reduction of equity cost would also come a deadweight loss created by the changed behavior. In other words, if taxpayers

income taxpayers are in a better economic position overall because of the premium credit, the significant equity cost represents a flaw in the credit's implementation. The premium credit is intended to enable low- to moderate-income taxpayers to affordably procure health insurance for themselves and their families.¹⁷⁰ But the premium credit, at two levels of income eligibility, makes certain taxpayers worse off post-tax than these taxpayers would have been had they earned less income pre-tax. Such a result undermines the normative justifications for the premium credit's existence.

IV. PROPOSALS FOR CHANGE

The preceding Part illustrates the hidden costs of the income-based cliff effects in the Affordable Care Act. Cliff effects can cause inequitable results for certain taxpayers and can also significantly undermine how effectively the tax provision in question accomplishes its objectives. Even a small cliff effect impacting a small number of taxpayers is unfair, while a large cliff effect affecting a large number of taxpayers is both unfair and can measurably undermine the goals of the provision.

While the costs associated with a cliff effect can be removed by repealing the underlying provision to which the cliff effect is attached, doing so misses the point and is akin to throwing out the baby with the bathwater. Assuming the tax provision to which the cliff effect is attached serves a valuable social goal, when should this cliff effect be removed, and with what should it be replaced?

This Part establishes a methodology through which problematic cliff effects, both income-based and not, can be identified and replaced. This process requires first determining the goals of the tax provisions to which the cliff effect is attached and assessing if the costs of the cliff effect are worth the gains in simplicity. Problematic cliff effects can then be replaced with phaseouts either at or prior to the cliff effect threshold. Another potential solution involves ensuring that taxpayers are not made worse off post-tax for earning more pre-tax, eliminating the possibility that a taxpayer will suffer from a cliff effect.

A. *Identify Problematic Cliff Effects*

To assess the validity of a cliff effect, the goals of the tax provision to which the cliff effect is attached must be determined. The benefits provided by the cliff effect—most often in establishing bright-line rules or serving as proxies for other, hard-to-measure metrics¹⁷¹—should be compared to

responded to the cliff effect by earning less income, the costs calculated as an equity cost would instead become classic deadweight loss inefficiencies.

¹⁷⁰ See *supra* note 137 and accompanying text.

¹⁷¹ See *supra* Section I.B.

alternative scenarios in which the cliff effect is replaced by a benefit-limiting substitute that does not impose a marginal tax rate greater than 100%. Of critical importance is determining the extent to which the cliff effect advances the stated goal of the tax provision and at what cost.

1. Determine the Goals of the Tax Provision to Which the Cliff Effect Is Attached

In order to determine whether a cliff effect is effectively implementing the tax provision to which it is attached, the goal of the tax provision must be accurately determined. This may not be clear from the text of the statute. For example, the Earned Income Tax Credit contains a cliff effect with respect to investment income only because investment income is assumed to correlate with asset level,¹⁷² and it is thus not readily apparent from the text of the statute why the cliff effect exists. Indeed, for many statutes the intent of Congress must be divined from the legislative history or other secondary sources.

For other provisions, the legislative intent is clear and might contain stronger justifications for relying on a bright-line rule that creates a cliff effect. For example, § 45P provides a wage credit for “small business employer[s]” who hire active duty members of the uniformed services,¹⁷³ revealing the congressional intent to incentivize small businesses to hire military reservists.¹⁷⁴ As such, the credit is limited to businesses with less than fifty employees.¹⁷⁵ This creates a cliff effect: the credit is available in full to employers with fifty employees but not to employers with fifty-one. The statute could instead use a sliding scale wherein the credit amount is adjusted depending on the number of employees. Such a modification could potentially prevent previously qualifying small businesses from taking advantage of the credit due to the increased complexity. Additionally, the statute contains other cliff effects not based on income, such as a requirement that the eligible employee be employed for a certain ninety-one day period.¹⁷⁶ Converting multiple cliff effects into a sliding scale or phaseout would significantly increase complexity and frustrate the intent of the statute. The simplicity of the cliff effect could, depending on the statute, more effectively promote the statute’s goals.

¹⁷² See *supra* note 20–27 and accompanying text.

¹⁷³ I.R.C. § 45P(a) (2012).

¹⁷⁴ See S. REP. NO. 112-208, at 36 (2012) (“The Committee believes that it is still appropriate to encourage small employers to make differential wage payments to employees during any period that the employee is called to duty for a period of more than 30 days in the uniform services.”).

¹⁷⁵ I.R.C. § 45P(b)(3)(A)(i).

¹⁷⁶ See *id.* § 45P(b)(2) (“The term ‘qualified employee’ means a person who has been an employee of the taxpayer for the 91-day period immediately preceding the period for which any differential wage payment is made.”).

For tax provisions where the intent is clear, an associated cliff effect is most effective when the provision both intends to change the behavior of the taxpayer and this behavior is elastic with respect to the metric to which the cliff effect is attached. Consider, for example, a sales tax exemption that applies to all drinks with a sugar concentration less than one gram per ounce. If the intent of the provision is to induce taxpayers to consume drinks with lower sugar contents, the cliff effect with respect to sugar content could be effective because the provision intends to change taxpayer behavior and taxpayer behavior may be extremely responsive to this additional cost.

This example of a cliff effect where taxpayers are extremely responsive to the additional cost imposed by the cliff effect can be contrasted with cliff effects that use income as the reference metric. Income-based cliff effects constitute a majority of the cliff effects in the Internal Revenue Code.¹⁷⁷ These provisions use a taxpayer's income as the reference metric by which eligibility for a tax benefit is conferred. To the extent that the goal of these tax provisions is to confer a benefit on some identified group of lower-income taxpayers and raise them to some minimum standard, the cliff effect cannot be appropriate: behavior is not likely to be affected in the manner intended by the provision because taxpayers may be incentivized to bypass additional income instead of losing a tax benefit available only to those defined as low-income taxpayers. If, however, the income-based cliff effect is intended to change behavior and, in fact, does change behavior, the cliff effect could be effective. Although a cliff effect based on income creates a subset of taxpayers who are worse off because of it, the social gains from producing the desired behavioral changes could outweigh the aggregate equity costs the cliff effect imposes if the group bearing the equity cost is small. However, the inability of low- to moderate-income taxpayers to regulate their income implies that the majority of income-based cliffs, even if intended to change behavior, will result in a significant number of taxpayers bearing an equity cost.¹⁷⁸

Determining the goals of a tax provision to which a cliff effect is attached is not always a simple task. In addition, income-based cliff effects typically affect low- to moderate-income taxpayers who cannot easily change their behavior in response to the economic burden imposed by the cliff effect. As such, the costs imposed by income-based cliff effects make their use difficult to justify.

2. Assess the Costs of the Cliff Effect

After the goals of the tax provision have been identified, the costs of the cliff effect must be quantified. Implicit in this cost determination is that the

¹⁷⁷ See *supra* note 14 and accompanying text.

¹⁷⁸ See *supra* notes 96–97 and accompanying text.

tax provision under analysis is, prior to the cliff effect threshold, of positive social utility; the recipients of the benefit in question are ostensibly receiving the credit, deduction, or exclusion in question because the baseline system of taxation is not properly accounting for some positive social benefit flowing from the behavior incentivized by the benefit. When the tax provision involves a cliff effect based on income, the provision becomes an incentive for taxpayers to engage in certain behavior *provided* they satisfy an income restriction. The Earned Income Tax Credit, for example, incentivizes earning income by working (to a point).¹⁷⁹ Similarly, the Affordable Care Act incentivizes low- to moderate-income taxpayers to purchase health insurance.¹⁸⁰ Implicit in each tax provision is the assumption that certain behavior (for the Earned Income Tax Credit, working; for the Affordable Care Act, having health insurance) of low- to moderate-income taxpayers results in positive social utility. What should be determined, then, is the extent to which the costs of the cliff effect undermine these objectives.

Both the individual and aggregate microeconomic cost calculations, as described in Part III, are important considerations. A cliff effect with a large individual microeconomic cost but a small aggregate microeconomic cost is indicative of a cliff effect that has a significant financial impact only on a small number of taxpayers. On the other hand, a cliff effect with a small microeconomic cost but a large aggregate microeconomic cost is indicative of a cliff effect that affects all taxpayers only to a small degree. These costs should then be weighed against the gains obtained from the clarity provided by the cliff effect.¹⁸¹

If the clarity of the cliff effect encourages taxpayers to engage in desired behavior, the number of taxpayers bearing the equity cost will be small relative to those modifying their behavior in order to not cross the cliff effect threshold. If the tax provision generates positive social utility for those taxpayers qualifying for it, this change in behavior could result in a net positive social gain provided that the social benefit generated by the change is greater than any deadweight loss created by the changed behavior.

There is no formula to precisely determine whether a cliff effect is “worth” the costs it imposes; each cliff effect must be assessed on a case-by-case basis. The cliff effects of the Affordable Care Act are illustrative. The cliff effect occurring at 133% of federal poverty level has a microeconomic cost of approximately \$356 per affected taxpayer and an aggregate cost of

¹⁷⁹ See *supra* notes 22–27 and accompanying text.

¹⁸⁰ See *supra* notes 136–37 and accompanying text.

¹⁸¹ Many of the simplifying assumptions made in this Article to calculate the aggregate microeconomic costs of cliff effects are obviated given the complete data that the Internal Revenue Service has at its disposal. Using data from actual returns would permit the Treasury to determine more precisely the current and future costs associated with cliff effects.

approximately \$4 million.¹⁸² Although the aggregate cost is small relative to the total cost of the health premium credit subsidy—\$33 billion in 2015¹⁸³—the cost per taxpayer is significant. This is especially meaningful given that the taxpayers affected by this cliff effect are only slightly above the federal poverty level, with this dollar amount equal to at least thirty hours of additional labor.¹⁸⁴ For the cliff effect occurring at 400% of federal poverty level, the individual microeconomic and aggregate microeconomic costs of \$1377 and \$121 million, respectively, indicate a significant expense that will only increase in future years.¹⁸⁵ The simplicity gains obtained from the cliff effects associated with the Affordable Care Act are not immediately obvious and, as such, their modification should be strongly considered.

The costs imposed by utilizing a cliff effect should be determined prior to making the cliff effect permanent law. To the extent these costs undermine the ostensible social utility of the tax provision in question, the use of the cliff effect should be questioned.

B. *Replace Problematic Cliff Effects with Alternate Provisions*

Any cliff effect based on income imposing costs greater than any social utility it creates can be eliminated by phasing out the benefit over a span of income starting either before or at the cliff effect threshold rather than eliminating the benefit entirely. However, using a phaseout results in either a greater total cost of the benefit or a reduction in benefits to some recipients. If a subsidy's phaseout begins at the same point at which the cliff effect occurs, there will be additional recipients of the subsidy, increasing the total cost of the subsidy. If a phaseout replaces a cliff effect and remains revenue-neutral, the phaseout must occur prior to the income threshold at which the cliff effect occurred. Although taxpayers will not be subjected to a cliff effect, some taxpayers will be worse off than they were with the cliff effect in place. Solely in dollar terms, replacing a cliff and its attendant effect with a phaseout can never be a Pareto improvement.¹⁸⁶

If the tax expenditure in question properly incentivizes behavior that is socially beneficial, all taxpayers prior to the cliff effect are engaging in behavior

¹⁸² See *supra* notes 145–50 and accompanying text.

¹⁸³ See *supra* note 138 and accompanying text.

¹⁸⁴ See *supra* note 147 and accompanying text.

¹⁸⁵ See *supra* notes 163–69 and accompanying text. In aggregate, the equity cost of the cliff effect happening at 400% of the federal poverty level from 2014 to 2024 is \$8.5 billion. CONG. BUDGET OFFICE, *supra* note 138, at 109 tbl.B-3.

¹⁸⁶ A Pareto improvement is one in which at least one participant is better off and no participants are worse off. See Howard F. Chang, *A Liberal Theory of Social Welfare: Fairness, Utility, and the Pareto Principle*, 110 YALE L.J. 173, 175 (2000) (“[T]he Pareto principle[] holds that if each individual prefers one state of affairs over another, then social welfare must be higher in the first state than in the other state.”).

generating positive social utility. For these cliff effects, a phaseout at the cliff effect threshold—but not before—is appropriate. If taxpayers prior to the cliff effect threshold are better off than some taxpayers subjected to the cliff effect, the taxpayers subjected to the cliff effect, post-tax, should be made no worse off than the taxpayers prior to the cliff effect. This requires a phaseout rate that reduces the subsidy by no greater than \$1 for every additional dollar of income. By constraining the marginal tax rate during the phaseout to be no greater than 100%, taxpayers will be no worse off for earning additional income.

Some taxpayers receiving a tax benefit may not generate positive social utility by engaging in the subsidized behavior. Income-based cliff effects typically subsidize behavior for low- to moderate-income taxpayers. The implication is that the amount of positive social utility generated from the tax provision decreases as income increases. For these tax provisions, some portion of the subsidy is misallocated and the associated cliff effect can be replaced with a phaseout starting prior to the current cliff effect threshold.¹⁸⁷ If, for example, the distributional rationales of the health care premium credits for low-income taxpayers were not valid for higher-earning taxpayers still qualifying for the credit, the credit would be improperly allocated to these higher-earning taxpayers. Depending on both the point at which the phaseout begins and the phaseout rate, replacing an income-based cliff effect with a phaseout prior to the cliff effect threshold could result in no loss of social utility and be revenue neutral (or even result in cost savings).

Phaseouts are already commonly used in the Internal Revenue Code. For example, § 179 provides for accelerated expensing of up to \$25,000 of property purchased for use in a business.¹⁸⁸ If more than \$200,000 of such property is placed into service, however, the § 179 deduction is reduced dollar-for-dollar, or at a 100% rate.¹⁸⁹ For tax provisions based on income, phaseout rates are similarly typically at rates less than 100%. The phaseout rates for the Earned Income Tax Credit, for example, vary from 7.65 to 21.06%.¹⁹⁰

¹⁸⁷ Constraints limiting the revenue effects of any modifications could also cause a phaseout from a point prior to the cliff effect threshold.

¹⁸⁸ Consolidated Appropriations Act, 2016, Pub. L. No. 114-113, § 124(a)(1) (2015) (amending I.R.C. § 179(b)(1)); *see also* GARY GUENTHER, CONG. RESEARCH SERV., RL31852, THE SECTION 179 AND BONUS DEPRECIATION EXPENSING ALLOWANCES: CURRENT LAW AND ISSUES FOR THE 114TH CONGRESS 3 tbl.1 (Aug. 6, 2015) (displaying maximum expensing allowance and limitations for § 179 expenses from 1987 through 2015).

¹⁸⁹ I.R.C. § 179(b)(2). The limitation begins at \$200,000 in 2015. GUENTHER, *supra* note 188, at 3 tbl.1.

¹⁹⁰ *See* I.R.C. § 32(b)(1)(A) (phasing out the Earned Income Tax Credit at 7.65, 15.98, and 21.06% if the taxpayer has zero, one, or two qualifying children, respectively); *see also id.* § 25A(d)(2) (reducing Lifetime Learning Credit by no greater than twenty cents for each additional dollar of income); *id.* § 221(b)(2)(B) (reducing student loan deduction by no greater than 16.7 cents for each additional dollar of income).

A phaseout rate of less than 100% is appropriate for tax provisions based on income because there are costs of working that reduce a worker's nominal wage, adjusting an individual's incentives to work.¹⁹¹ These costs include explicit expenses such as transportation expenses, child care costs, and other implicit costs like foregone leisure and educational opportunities.¹⁹² A phaseout percentage of exactly 100% would still likely have an associated equity cost. A low- to moderate-income taxpayer who is unable to modify the amount of income earned would suffer a true marginal tax rate, once costs of working are included, of greater than 100%. Additionally, to the extent taxpayers do modify their behaviors in response to the increased marginal tax rate conferred by the phaseout percentage, the lower the phaseout percentage, the more efficient the phaseout becomes. For phaseout rates with marginal tax rates lower than 100%, a lower rate over a larger range of income is more efficient than a higher rate over a smaller range of income.¹⁹³ If the phaseout occurs at the same threshold income, phasing out the benefit over a larger range of income creates a more expensive but more efficient provision.¹⁹⁴

The health premium credit in the Affordable Care Act already incorporates phaseouts by excluding an increasing percentage of modified adjusted gross income from the applicable credit.¹⁹⁵ As a result, the cliff effect in the Affordable Care Act occurring at 133% of federal poverty level could be remedied by simply changing the initial premium percentage (shown in Table 1) for the income range beginning at 133% from 3.0% to 2.0%.¹⁹⁶ The additional revenue required to implement this change represents a miniscule fraction of the overall cost of the subsidy and ensures no sudden loss in credit for approximately 35,000 taxpayers.¹⁹⁷

Cliff effects based on income imposing costs greater than the social utility they create can be replaced with phaseouts imposing marginal tax rates of less than 100%. Where the phaseout should begin and end depends on the social

¹⁹¹ See *supra* note 79 and accompanying text.

¹⁹² See Maag et al., *supra* note 130, at 771 (discussing how child care costs and transportation costs hinder incentives to perform additional work).

¹⁹³ For marginal tax rates less than 100%, the deadweight loss is proportional to the square of the marginal tax rate. See *supra* notes 123–26 and accompanying text.

¹⁹⁴ A phaseout utilizing a lower rate over a longer span of income need not be more expensive relative to higher-rate, shorter-income-span phaseout if the former begins at a threshold income earlier than the latter.

¹⁹⁵ See *supra* notes 155–57 and accompanying text.

¹⁹⁶ The Affordable Care Act's peculiar path to enactment prevented certain modifications to be made to the original version of the bill. See John Cannan, *A Legislative History of the Affordable Care Act: How Legislative Procedure Shapes Legislative History*, 105 LAW LIBR. J. 131, 159–69 (2013) (describing the Affordable Care Act's passage via the reconciliation process).

¹⁹⁷ The cost to eliminate this cliff effect is approximately \$4 million out of a total cost of approximately \$10 billion. See *supra* notes 148–49 and accompanying text.

utility of the tax provision in question at the cliff effect threshold, and on whether or not the modification should be revenue neutral.

C. *Ensure Taxpayers Are Not Worse Off Post-Tax
for Any Increase in Pre-Tax Income*

Of course, any solution to mitigate the harsh consequences of cliff effects must not harm taxpayers any more than the cliff effect it is replacing. Cliff effects based on income result in some group of taxpayers being in a worse economic position simply by virtue of earning more income. Taxpayers can be protected from suffering this equity cost by the Internal Revenue Code awarding each affected taxpayer a credit to bring her post-tax economic position to the maximum level it would have been had she earned less income. For example, consider a taxpayer who loses a \$1000 tax benefit once her income reaches \$20,000. If this taxpayer's income is \$20,400 and the income beyond \$20,000 is taxed at 25%, she is economically worse off by \$700 by earning the extra \$400 beyond the \$20,000 cliff effect.¹⁹⁸ A \$700 credit would compensate the taxpayer for the burden of the cliff effect. Even if the taxpayer has deductions allocated to the extra earnings that are factored into the credit award, the severity of the cliff effect would be greatly diminished.¹⁹⁹

Another way to ensure taxpayers are not economically worse off post-tax from earning additional income is to ensure that taxpayers will not endure marginal tax rates greater than some fixed percentage. Even if every cliff effect were converted into a phaseout, taxpayers may still experience high marginal tax rates for income earned beyond the eliminated cliff effect. As previously discussed, a taxpayer's marginal tax rate profile is not static.²⁰⁰ Depending on factors such as family composition and eligibility for other tax benefits, the phaseout range for one tax expenditure could overlap with the phaseout range of another. This can result in a marginal tax rate greater than 100% even though the phaseout percentages of each individual tax provision are less than 100%. A solution to this issue is to limit the maximum marginal tax rate that a taxpayer must face. The phaseout rates for various provisions would, in effect, not be constant but would vary according to an individual's particular marginal tax rate profile. If, for example, this maximum marginal tax rate were 40%, a taxpayer would be assured that any additional income earned would increase her net economic position by at least 60% of the additional income earned.

¹⁹⁸ \$400 in extra income minus \$100 in tax owed on this \$400 minus the \$1000 tax benefit equals negative \$700.

¹⁹⁹ In this example, if the taxpayer's extra \$400 is allocated to an expense for which a deduction was taken, her credit would be reduced by \$100 to \$600.

²⁰⁰ See *supra* note 81–87 and accompanying text.

The computational burden associated with both approaches to eliminating equity cost is not prohibitive. Although this approach has a degree of computational complexity that most low- to moderate-income taxpayers do not typically encounter, nearly 90% of tax returns are now prepared using computers.²⁰¹ Even in the absence of dynamic phaseout rates, most low- to moderate-income taxpayers' effective marginal tax rate profiles are incredibly complicated to understand.²⁰² Implementing a maximum marginal tax rate and dynamic phaseout rates necessarily complicate the marginal tax profile for a taxpayer, but for a worthwhile gain. It would be difficult for a taxpayer to know precisely how any given dollar of income would be treated; however, the opacity of a taxpayer's marginal tax rate profile could easily be worth the added security of guaranteeing that the taxpayer will not suffer a significant financial loss due to an incremental increase in income.

V. CLIFF EFFECTS IN CONJUNCTION WITH STATE AND LOCAL TAX REGIMES AND DIRECT TRANSFER PROGRAMS

The preceding discussion does not discuss tax laws and direct transfer programs effected outside of the Internal Revenue Code. Cliff effects occur frequently in both tax provisions at the state and local level,²⁰³ and in locally

²⁰¹ See Lawrence Zelenak, *Complex Tax Legislation in the TurboTax Era*, 1 COLUM. J. TAX L. 91, 95 (2010) (noting that 89% of individuals' tax returns were prepared on computers in 2006).

²⁰² See Kotlikoff & Rapson, *supra* note 130, at 86 ("[I]t's essentially impossible for anyone to understand her incentive to work, save, or contribute to retirement accounts absent highly advanced computer technology and software.").

²⁰³ For example, the New York State sales tax on clothing and footwear exempts items sold for less than \$110 per item; a \$109 pair of shoes is not subject to sales tax, while a \$110 pair of shoes would be subject to a sales tax on the full amount. N.Y. STATE DEP'T OF TAXATION AND FIN., PUB. 718-C: SALES AND USE TAX RATES ON CLOTHING AND FOOTWEAR 1 (Aug. 2015).

The New York State Estate Tax only applies to estates exceeding the Basic Exclusion Amount (BEA). N.Y. STATE DEP'T OF TAXATION AND FIN., TECHNICAL MEMORANDUM TSB-M-14(6)M: NEW YORK STATE ESTATE TAX REFORMED 3 (Aug. 25, 2014). Below this amount, estates are not subject to any estate tax; between 100% and 105% of the BEA, estates are subject to the estate tax but entitled to a credit; above 105% BEA, the estate is subject to the full estate tax. *Id.* For estates subject to the estate tax, the tax applies to the entire value of the estate, not just the portion above the BEA. *Id.* at 2.

Several of Connecticut's tax credits include nonincome-related cliff effects. First, the Financial Institutions Tax Credit allows a financial institution to take 50% of its corporation business tax as a credit if it has 2000 or more employees, but only 40% if it has 1999 employees. CONN. GEN. STAT. § 12-217u(c) (2015). Next, the Qualified Small Business Job Creation Tax Credit defines small businesses entitled to the credit as those employing less than fifty employees, creating a cliff with reference to the number of employees. *Id.* § 12-217nn(3). Third, the Connecticut Earned Income Tax Credit tracks its federal counterpart, resulting in the same cliff effect regarding investment income. *Id.* § 12-704e(e). New York's Earned Income Credit also follows the same guidelines as the federal version, but the credit amount is 30% of the federal EIC amount. N.Y. TAX LAW § 606(d) (McKinney 2015). Finally, the Hiring Incentive Tax Credit for hiring recipients of Temporary Assistance for Needy Families only

run direct transfer programs.²⁰⁴ Although these benefits do not generally affect an individual's federal income tax liability, they affect a claimant's net economic

applied to those employees who work at least thirty hours a week—at twenty-nine hours, the employer was entitled to no credit. CONN. GEN. STAT. §12-217y (repealed 2013).

New York has a household credit against city personal income tax paid that contains a cliff effect. The credit is \$15 for a single individual with household income at or below \$10,000, \$10 for an individual with household income between \$10,000 and \$12,500, and \$0 if income is above \$12,500. N.Y. TAX LAW § 1310(d)(2)(A). This creates a cliff effect at \$10,000 and \$12,500 of income.

New York also has a refundable state school tax reduction credit. Taxpayers with income of more than \$250,000 in 2010 (adjusted for inflation each year after 2010) are not entitled to any credit. *Id.* § 1310(e)(2).

New York's Empire State child credit, eligibility for which is based in part on the federal child tax credit, is only available to taxpayers whose adjusted gross income is \$110,000 or less, for joint returns. *See id.* § 606(c-1)(1) (limiting eligibility for New York's child credit to those eligible for the federal child tax credit); *see also* I.R.C. § 24(b)(2) (2012) (limiting eligibility for the federal child tax credit for joint filers to incomes under \$110,000).

The New York Family tax relief credit of \$350 is sent by the State's Tax Department to taxpayers who, among other qualifications, had adjusted gross income between \$40,000 and \$300,000. N.Y. TAX LAW § 606(vv)(2).

New York's property tax freeze credit, which reimburses qualifying homeowners for increases in local property taxes, is only available to households with a total income of \$500,000 or less. N.Y. TAX LAW § 606(bbb)(2); N.Y. REAL PROP. TAX LAW § 425(b-1) (McKinney 2015).

²⁰⁴ Most states determine TANF eligibility using a percentage of the federal poverty level or some other income standard, which results in a cliff effect; if one more dollar is earned above this limit, all TANF benefits are lost. ERIKA HUBER ET AL., OFFICE OF PLANNING, RESEARCH, AND EVALUATION, U.S. DEP'T OF HEALTH AND HUMAN SERVS., OPRE REPORT 2015-81, WELFARE RULES DATABASE: STATE TANF POLICIES AS OF JULY 2014, at 33-34, 82-83 tbl.I.E.1 (Aug. 2015).

The federal Supplemental Nutrition Assistance Program ("SNAP"), which is administered jointly by the federal and state governments, generally limits eligibility to those at or below 130% of the federal poverty level. 7 C.F.R. § 273.9(a)(1) (2015). When a household's income goes \$1 above the income limit, that household loses all of its SNAP benefits.

States are given some flexibility to set income standards for the Women, Infants, and Children (WIC) program. The guidelines prescribed by the state, however, may not exceed the guidelines for reduced-price school meals and cannot be less than 100% of the federal poverty level. *Id.* § 246.7(d)(1). For example, in Connecticut, WIC is limited to households at or below 185% of federal poverty level. CONN. AGENCIES REGS. § 19a-59c-2(b) (2015).

Connecticut Child Care Assistance is limited to families whose income is below 50% of the "state median income" level. *Id.* § 17b-749-05(a)91.

Connecticut homebuyer and housing assistance programs are rife with cliff effects. Eligibility for many of these programs is tied to regional income guidelines promulgated by the Connecticut Housing Finance Authority ("CHFA"). These programs include: the 203(k) and 203(k) Streamline Rehabilitation Mortgage Loan Program, the HFA Preferred Loan Program, the Homebuyer Mortgage Program; the Mobile Manufactured Home Loan Program, the Police Homeownership Program, the Teachers Mortgage Assistance Program, and the Veterans Homeownership Pilot Program. *See Home*, CONN. HOUSING FIN. AUTHORITY, <http://www.chfa.org/default.aspx> [<https://perma.cc/6VA2-QFNE>] (last visited Jan. 23, 2016) (providing information about various programs administered by the CHFA). To qualify for each of these programs, a purchaser's household income must fall below the income level specified for his or her geographic location. *See* CONN. HOUSING FIN. AUTHORITY, INCOME LIMITS (Aug. 24, 2015), <http://www.chfa.org/content/CHFA%20Documents/Income%20and%20Sales%20Price%20Limits%20rev.%208-14-2015.pdf> [<https://perma.cc/797A-PY55>] (specifying the income limits, based on family size and geographic location, needed to qualify for certain CHFA mortgage assistance programs).

position. The income and asset rules governing eligibility for these programs are often means-tested, creating cliff effects similar to those discussed above.²⁰⁵ An individual's *effective* marginal tax rate is the amount by which \$1 of income increases not just federal tax liability, but the individual's net economic position taking direct transfer programs into account.²⁰⁶ A cliff effect occurs when a differential change in some characteristic of an individual taxpayer (or some third party) results in an effective marginal tax rate of greater than 100%.

Many of these programs, such as TANF,²⁰⁷ Section 8,²⁰⁸ SNAP,²⁰⁹ and certain child care subsidies²¹⁰ are implemented at the state and local level but are funded primarily by the federal government. Provided that state guidelines satisfy certain minimum federal requirements, states have great discretion in deciding how to implement programs in their respective jurisdictions. For example, Alabama has no asset limit for TANF applicants, but in Georgia \$1000 in a savings account renders an applicant ineligible.²¹¹ As a result, effective marginal tax rates vary greatly based on state of

The San Francisco Down Payment Assistance Loan Program, which provides down payment and closing cost assistance, is only available to households in which income does not exceed 120% of the area median for the San Francisco Metropolitan Statistical Area. *Downpayment Assistance Loan Project (DALP)*, MAYOR'S OFFICE HOUSING & COMMUNITY DEV., <http://www.sf-moh.org/index.aspx?page=737> [<https://perma.cc/KM5A-7635>] (last visited Jan. 23, 2016). In addition, the household's combined liquid assets cannot exceed \$200,000 before or \$60,000 after purchase of the home. *Id.*

²⁰⁵ See *supra* Section II.D.

²⁰⁶ The term "effective marginal tax" rate is somewhat of a misnomer. See *supra* note 69 and accompanying text.

²⁰⁷ See HUBER AT AL., *supra* note 204, at 1 ("While TANF is a federally funded program, the specific policies governing eligibility status and benefit levels are determined at the state level, within the overall structure established by the federal legislation.").

²⁰⁸ See *Housing Choice Vouchers Fact Sheet*, U.S. DEP'T HOUSING & URB. DEV., http://portal.hud.gov/hudportal/HUD?src=/topics/housing_choice_voucher_program_section_8 [<https://perma.cc/DRP3-QK3A>] (last visited Jan. 23, 2016) (explaining that Section 8 is funded by the federal government and is administered by local public housing authorities).

²⁰⁹ See Regina T. Cucurullo, *The Special Supplemental Nutrition Program for Women, Infants and Children (WIC) and the Supplemental Nutrition Assistance Program (SNAP): Comparing Policies and Suggesting Changes*, 8 J. FOOD L. & POL'Y 257, 261-62 (2012) ("SNAP is implemented and carried out by both [the Food and Nutrition Service] and state agencies The federal government funds the cost of program benefits, and both state and federal governments provide funding for administrative costs." (footnote omitted)).

²¹⁰ See, e.g., David M. Blau, *Child Care Subsidy Programs*, in MEANS-TESTED TRANSFER PROGRAMS IN THE UNITED STATES 443, 445-51 (Robert A. Moffit ed., 2003) (explaining the structures of several child care subsidies, which are often arranged as federal block grants that are administered by states and localities).

²¹¹ See HUBER ET AL., *supra* note 204, at 74-75 tbl.I.C.1 (describing each state's asset limits for TANF eligibility, finding a range of \$1000 to \$10,000 for those states that have limits, and indicating that seven states have no asset limit).

residence.²¹² These state-administered benefits comprise a significant portion of the after-tax financial position of the typical low-income taxpayer.²¹³

The methodology described in Part IV to identify and remedy problematic cliff effects in the Internal Revenue Code can similarly be used at the state and local level. Instead of limiting the analysis to federal tax provisions, the statutes of interest should include state and local tax regimes and direct transfer programs. The general approach of identifying problematic cliff effects by balancing the goals of the relevant benefit provisions against the economic costs and simplicity gains of the associated cliff effects, and remedying the provisions as needed, is still effective. However, implementing this process at multiple levels of government involves certain challenges not present when working at just the federal level.

First, the level of interaction between federal, state, and local provisions is typically much higher than for federal tax expenditures considered in isolation. For example, in some states, such as Massachusetts, income from public assistance programs is treated as countable income for purposes of determining SNAP eligibility.²¹⁴ Other states include recipients of Social Security Insurance (SSI) in the TANF assistance unit; some of these states then include the SSI recipient's income or assets when determining the TANF unit's income or assets.²¹⁵ These interactive effects between provisions make the computational tasks much more difficult than a federal tax provision reviewed in isolation.

Second, any taxpayer subject to state and local cliff effects based on income is more likely to also be affected by cliff effects based on income in the Internal Revenue Code. At the federal, state, and local levels, cliff effects based on income typically affect low- to moderate-income taxpayers. If a taxpayer is subjected to an income-based cliff at one level, it is more likely they are also a taxpayer subjected to an income-based cliff effect at the other level. Phaseouts can replace cliff effects in all jurisdictions but this does not guarantee that a taxpayer will not suffer effective marginal tax rates greater than 100%.²¹⁶ Ensuring that taxpayers are not made worse off post-tax by earning additional pre-tax income requires a high level of coordination between the Internal Revenue Service and each state government. Such coordination, though

²¹² Maag et al., *supra* note 130, at 769.

²¹³ See *id.* at 765 fig.1 (showing that for a single parent with two children in Colorado earning between \$10,000 and \$20,000 in income, state benefits received are approximately equal to household income).

²¹⁴ 106 MASS. CODE REGS. § 363-220(B)(1) (2015).

²¹⁵ See HUBER ET AL., *supra* note 204, at 27 (finding that six states consider the income of SSI recipients when determining the amount of TANF funds an "assistance unit" can receive).

²¹⁶ See *supra* Section IV.C.

onerous, is not impossible; states currently coordinate certain elements of their state income tax in conjunction with federal income tax filing.²¹⁷

Third, although states are permitted to amend their eligibility criteria, much state funding for direct transfer programs comes from the federal government, which often does not provide sufficient funds to accommodate the phaseouts proposed in this Article. For example, TANF is funded by a block grant to the states that has not been increased since the mid-1990s.²¹⁸ To the extent that the most efficient modification of an existing cliff effect involves an extended phaseout income range or any other revenue increasing change, funding restrictions such as those in TANF could impede achieving the optimal adjustments.

Fourth, unlike the provisions of the Internal Revenue Code that result in an explicit increase or decrease of federal tax liability, state direct transfer programs do not always have an ascertainable dollar value. For example, SNAP funds must be used to purchase food for home consumption and cannot be used to purchase hot foods, food consumable within the store at which purchased, vitamins, or medicines.²¹⁹ Vouchers provided for child care might not be equivalent to the cash a taxpayer would spend on child care on the open market. The valuation issues surrounding direct transfer programs could make the quantification of their associated cliff effects more challenging and, as a result, more difficult to correct.

Nevertheless, while computing the impact on cliff effects may be complicated when they occur due to the interaction of federal, state, and/or local programs, such computations are generally possible. Moreover, converting cliff effects into phaseouts can be desirable even if the precise impact of the cliff effect cannot be calculated because under a phaseout, a taxpayer will never encounter a marginal tax rate over 100%.

CONCLUSION

This Article has endeavored to critically assess the frequent use of cliff effects in the Internal Revenue Code and their consequences on low- to moderate-income taxpayers. When triggered by a taxpayer's income, these

²¹⁷ The Internal Revenue Code permits deduction of state and local taxes. I.R.C. § 164 (2012). Many states also use federal adjusted gross income as an eligibility criterion for certain state benefits, such as the state Earned Income Tax Credit. *See, e.g.*, MASS. GEN. LAWS ch. 62, § 6(h) (2015).

²¹⁸ *See FALK, supra* note 62, at 3 (explaining that the TANF grant is a result of a 1996 legislation that does not allow the grant to be adjusted for inflation or for influxes in the number of cash-assistance caseloads).

²¹⁹ 7 U.S.C. § 2012(k) (2012); *see also Supplemental Nutritional Assistance Program (SNAP): Eligible Food Items*, U.S. DEP'T AGRIC., <http://www.fns.usda.gov/snap/eligible-food-items> [<https://perma.cc/PU4K-B6TT>] (last updated July 18, 2014) (providing agency guidance on the types of items that can be purchased with SNAP funds).

provisions necessarily leave some taxpayers in a worse economic position than if they had earned less. These costs can be surprisingly high, as evidenced by an analysis of the cliff effects associated with the health premium subsidy of the Affordable Care Act. When the costs associated with cliff effects outweigh the gains obtained from the simplicity of bright-line rules, tax provisions should be rewritten to eliminate the cliff effect. Of special note is a guarantee that no taxpayer is made worse off post-tax simply by virtue of earning more pre-tax income. Such a restriction would guarantee low- to moderate-income earners a minimum return on any additional wages and is especially relevant for earners who are unable to control their income levels to optimize their tax liability.

The analysis in this Article focuses on cliff effects in the Internal Revenue Code but has implications on cliff effects found in state and local direct transfer programs, as well. Similar to cliff effects in the Internal Revenue Code, the simplicity gains obtained from cliff effects associated with state and local tax regimes and direct transfer programs should be compared to the burdens imposed on taxpayers whose benefits are suddenly terminated.

Cliff effects, even if designed to precisely define terms requiring clarity and promoting some desired behavior, should be used cautiously. Their use often undermines the intent of the statutes to which they are attached. The proposals of this Article to assess, measure, and remedy existing and proposed cliff effects are a step towards improving the equity and efficiency of benefits provided in the Internal Revenue Code, state and local tax regimes, and direct transfer programs.

* * * * *