WHAT IS A PROGRESSIVE TAX CHANGE?: UNMASKING HIDDEN VALUES IN DISTRIBUTIONAL DEBATES

DAVID KAMIN*

There is widespread confusion both in policy circles and in the academic literature about how to measure the progressivity of a tax change. The confusion is particularly vexing because policymakers and analysts often rely on progressivity as a guidepost in constructing and analyzing policy, but do little to justify the particular progressivity measures that they employ. Progressivity measures—which can differ considerably from one another—tend to be picked haphazardly or chosen based on arguments that have rhetorical flair but lack normative substance. Thus, policy is being constructed and evaluated based on distributional measures that may not be meaningful and, in fact, may be misleading. This Note proposes a framework for analyzing measures of progressivity. In particular, if the measures are to gauge accurately changes in tax fairness, progressivity measures must be rooted in whatever theory of distributive justice motivates our concern for distribution. This Note applies this approach and draws connections between particular measures of progressivity and individual theories of distributive justice.

INTRODUCTION

> President Bush's tax cuts have made the tax code more progressive.
> —White House fact sheet, July 11, 2006[1]

> [The] Bush tax cuts reduced the progressivity of the Federal income tax and the Federal tax system in general.
> —Report from the Democratic Staff of the House Ways and Means Committee, April 12, 2005[2]

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* Copyright © 2008 by David Kamin. J.D. Candidate, 2009, New York University School of Law; B.A., 2002, Swarthmore College. I am deeply indebted to Professor Lily Batchelder for supervising this Note and to Professors Rachel Barkow, Barry Friedman, Deborah Schenk, and Daniel Shaviro for their insightful commentary. Many thanks to the Furman Academic Scholars and Fellows for reading and critiquing this Note in its various incarnations. I am also grateful for the work of the staff of the *New York University Law Review*, especially my editors of inestimable talent, John Infranca, Katherine Dirks, and Andrew Purcell. Finally, thanks to my former colleagues at the Center on Budget and Policy Priorities, without whose guidance I would never have come upon this topic.

[1] Press Release, The White House, Setting the Record Straight: The President's Policies Are Increasing Tax Revenues and Growing Our Economy (July 11, 2006), *available at* http://www.whitehouse.gov/news/releases/2006/07/20060711-8.html.

[2] DEMOCRATIC STAFF OF H. COMM. ON WAYS & MEANS, CONSEQUENCES OF REPUBLICAN TAX POLICY 2 (2005), *available at* http://www.majorityleader.gov/docuploads/WAYSANDMEANSTAXREPORT.pdf.

These two quotes are characteristic of a fierce debate about tax equity that has persisted in Washington since the enactment of the first Bush tax cuts in 2001.[3] Tax cuts have been the centerpiece of the Bush Administration's domestic economic policy,[4] and over the last seven years, number crunchers have "followed the money," producing a myriad of distributional analyses showing the effects of the tax law changes by income category.[5] Nonetheless, controversy continues to swirl around whether the Bush tax cuts are in fact progressive, shifting the tax system in favor of lower-income Americans, or instead regressive, shifting the system in favor of higher-income Americans. Policymakers and Washington analysts, often looking at numbers that are fully consistent with one another, have arrived at opposite conclusions, with opinions tending to fall along party lines. Thus, despite extensive economic analysis, there remains stark disagreement regarding a fundamental question: Are the Bush tax cuts distributionally "progressive," "regressive," or "neutral"?

This controversy is indicative of a more general confusion, both in Washington and in the academic literature, about how to measure the progressivity of a tax change. The confusion is particularly vexing because policymakers and analysts often rely on progressivity as a guidepost when constructing and analyzing policy,[6] but do little to explain or justify the particular progressivity measures they employ. Progressivity measures—which can differ considerably from one another—tend to be haphazardly chosen based on arguments that have rhetorical flair but lack normative substance.[7] Thus, important

[3] The first major tax cuts under President Bush were enacted in the Economic Growth and Tax Relief Reconciliation Act of 2001, Pub. L. No. 107-16, 115 Stat. 38 (codified in scattered sections of I.R.C.). Since then, a number of other major tax reductions have been passed. From fiscal years 2001–2007, these tax cuts are estimated to have reduced revenues by $1.0 trillion. AVIVA ARON-DINE, CTR. ON BUDGET & POLICY PRIORITIES, EXTENDING THE PRESIDENT'S TAX CUTS AND AMT RELIEF WOULD COST $3.5 TRILLION THROUGH 2017, at 2 (2007), http://www.cbpp.org/1-31-07tax.pdf.

[4] *See, e.g.*, William G. Gale & Peter R. Orszag, *An Economic Assessment of Tax Policy in the Bush Administration, 2001–2004*, 45 B.C. L. REV. 1157, 1157 (2004) ("Tax policy has played a central role in the George W. Bush administration . . . ."); Mike Allen & Jonathan Weisman, *Tax Cuts Become a Juicier Target*, WASH. POST, Aug. 11, 2004, at A4 (describing tax cuts as "the centerpiece of Bush's domestic program").

[5] *E.g.*, STAFF OF J. COMM. ON TAXATION, 107TH CONG., DISTRIBUTIONAL EFFECTS OF THE CONFERENCE AGREEMENT FOR H.R. 1836 (Comm. Print 2001) (providing distributional estimates of first major Bush tax cuts); Press Release, U.S. Dep't of the Treasury, Distribution Table for the Jobs and Growth Tax Relief Reconciliation Act of 2003 (May 22, 2003), *available at* http://www.ustreas.gov/press/releases/js409.htm (giving distributional estimate of 2003 tax cut).

[6] *See infra* Part I.B.

[7] *See infra* Part I.C.

policies are being developed and evaluated based on distributional measures that may not be meaningful and may, in fact, be misleading.

This disagreement about how to measure the progressivity of a *tax change* arises despite the fact that there is widespread consensus as to what constitutes a progressive *tax system*. A progressive tax system is defined as one in which the average tax rate—the proportion of income paid in taxes—increases with income, while a regressive tax system is defined as one in which the opposite is the case.[8] Given this apparent concord as to what represents a progressive tax system, defining a progressive tax change would seem to be a short step away, but it is not. Except in cases of fundamental reform, tax changes would not transform the tax system from a progressive system into a regressive one; instead, such changes would simply make the system either somewhat more progressive (a progressive change) or somewhat less progressive (a regressive change). But, despite there being consensus on how to differentiate a progressive system from a regressive system, there is no agreement on how best to evaluate such changes in the degree of progressivity.[9]

The academic literature is replete with arguments regarding which measure is best for assessing the progressivity of tax changes, but this debate has largely devolved into empty, rhetorical assertions.[10] The literature fails to explain why any particular progressivity measure is necessarily a better gauge of a tax change's effect on equity.[11]

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[8] *See, e.g.*, HARVEY S. ROSEN & TED GAYER, PUBLIC FINANCE 307 (8th ed. 2008) ("A natural way to define these words is in terms of the average tax rate . . . ."); JOSEPH E. STIGLITZ, ECONOMICS OF THE PUBLIC SECTOR 510 (3d ed. 2000) (defining whether tax system is progressive or regressive in terms of whether average tax rate rises or falls with income); R. A. Musgrave & Tun Thin, *Income Tax Progression, 1929–48*, 56 J. POL. ECON. 498, 498 (1948) ("It is generally agreed that a rate structure is progressive where the average rate of tax (i.e., tax liability as a percentage of income) rises when moving up the income scale; proportional where the average rate remains constant; and regressive where the average rate falls with the rising income.").

[9] *See* ROSEN & GAYER, *supra* note 8, at 308 (explaining that "[m]any reasonable alternatives have been proposed" for "[m]easuring *how* progressive a tax system is"); Musgrave & Thin, *supra* note 8, at 498 ("Difficulties only arise because these basic definitions [of progressive and regressive tax systems] are compatible with numerous alternative measures of the *degree* of progression and regression . . . .").

[10] *See infra* Part I.C.

[11] This Note makes frequent references to tax "equity" or "fairness." For the purposes of this Note, these terms are used to refer to what distributive justice "demands in the tax treatment of people at different levels of income." LIAM MURPHY & THOMAS NAGEL, THE MYTH OF OWNERSHIP: TAXES AND JUSTICE 13 (2002). But, as employed in this Note, these terms are not meant to capture *all* of what justice demands. The requirements of justice extend beyond what can be measured in a distributional table, which merely depicts how people at different income levels are treated by a given policy.

This Note takes an alternative approach. It argues that if progressivity measures are to gauge accurately how a tax change affects the fairness of the tax system, they must be rooted in the theory of distributive justice that motivates our concern for how the tax system distributes resources. This means that a measure should indicate that a tax change is progressive if the tax change, according to the relevant theory of distributive justice, has meaningfully shifted the tax system in favor of low-income Americans. Where there is a regressive change, the opposite should be true. A neutral tax change should distribute its benefits or burdens equally across all income levels and, thus, leave the fairness of the tax system unchanged.

This approach does not assume that a progressive change would necessarily be fairer than a regressive one. According to certain theories of distributive justice, the current tax system may unduly favor low-income Americans, in which case a regressive tax change would actually improve fairness. But, even in this context, the progressivity of a tax change has clear normative implications; namely, a regressive change would improve the fairness of the tax system. Thus, progressivity measures can be useful tools, irrespective of whether one favors a more progressive or less progressive system, but, to serve as accurate indicators of the fairness of a tax change, the measures must be consistent with one's motivating theory of distributive justice.

This Note concludes by operationalizing this form of analysis. It evaluates a number of progressivity measures from the perspective of four dominant theories of distributive justice: equality of resources, the difference principle, equality of sacrifice, and utilitarianism. The Note links particular progressivity measures to the theories of distributive justice with which they are consistent and finds that only one measure—percent change in after-tax income—could be meaningful in relation to all four theories of distributive justice. Furthermore, the Note concludes that one major theory of justice—the theory of utilitarianism—raises serious questions about the usefulness of evaluating the progressivity of a tax change by any measure.

The analysis in this Note largely focuses on the distributional effects of changes in government taxation, as opposed to changes in government spending.[12] This reflects the tenor of policy debates in

[12] In the federal budget, spending, also known as "outlays," is formalistically defined as "payments that liquidate [government] obligations (other than the repayment of debt)." OFFICE OF MGMT. & BUDGET, EXECUTIVE OFFICE OF THE PRESIDENT, ANALYTICAL PERSPECTIVES: BUDGET OF THE UNITED STATES GOVERNMENT, FISCAL YEAR 2008, at 401 (2007), *available at* http://www.whitehouse.gov/omb/budget/fy2008/pdf/spec.pdf. Taxes, also known as "receipts," are defined as "collections that result from the Government's exercise of its sovereign power to tax." *Id.* at 397. As discussed, *infra* note 13 and accom-

Washington. Distributional tables are regularly produced for changes in tax legislation but not for provisions that change government spending programs. As a number of scholars have pointed out, this differential treatment is nonsensical; there is no justification for treating tax and outlay changes inconsistently, as the boundary between the two is an artificial one.[13] Thus, to the extent that tax changes are enacted in connection with changes to outlays, distributional analysis is fundamentally flawed unless it accounts for the distributional effects of both. In discussing the distributional effects of tax changes, this Note assumes that the tax legislation is enacted separately from any legislative changes to outlays, as was the case with the Bush tax cuts. However, this Note's analysis would remain relevant in a situation where tax changes are enacted in connection with spending changes, a situation in which the two should be considered together in the same distributional table.[14]

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panying text, these categories are mere formalisms that do not necessarily reflect economically significant distinctions.

[13] *See, e.g.*, Daniel N. Shaviro, *Rethinking Tax Expenditures and Fiscal Language*, 57 TAX L. REV. 187, 191 (2004) ("The distinction between taxes and spending . . . depends on pure form."). In the same vein, but more broadly, economist Arthur Pigou has observed that the distributional consequences of all government policy should be considered together and that it makes little sense to focus solely on the effects of taxes. He writes:

> [P]eople's economic well-being depends on the whole system of law, including the laws of property, contract and bequest, and not merely upon the law about taxes. To hold that the law about taxes ought to affect different people's satisfactions equally, while allowing that the rest of the legal system may properly affect them very unequally, seems not a little arbitrary.

A.C. PIGOU, A STUDY IN PUBLIC FINANCE 44 (3d ed. 1947).

[14] Many distributional tables do take into account the current distribution of certain government spending programs, especially cash-transfer programs, when calculating people's pre-tax incomes. For instance, these tables often include Social Security benefits and payments from the Temporary Assistance for Needy Families program in estimates of pre-tax income. *See, e.g.*, JULIE-ANN CRONIN, OFFICE OF TAX ANALYSIS, U.S. TREASURY DISTRIBUTIONAL ANALYSIS METHODOLOGY 7–8 (1999), *available at* http://www.ustreas.gov/offices/tax-policy/library/ota85.pdf (describing income measure employed in Treasury distributional estimates at time, which included value of cash transfers and food stamps); JEFFREY ROHALY ET AL., THE URBAN-BROOKINGS TAX POLICY CENTER MICROSIMULATION MODEL: DOCUMENTATION AND METHODOLOGY FOR VERSION 0304, at 58–59 (2005), *available at* http://www.taxpolicycenter.org/UploadedPDF/411136_documentation.pdf (detailing how Tax Policy Center distributional estimates include cash-transfer benefits in pre-tax income).

Still, these tables continue to formalistically distinguish between spending and taxes. The benefits of cash-transfer programs are included in pre-tax income, whereas taxes are subtracted to arrive at after-tax income. So, tax burdens are estimated as if there were some real difference between spending (a pre-tax benefit) and taxes (a burden subtracted from pre-tax income). This distinction becomes especially problematic in the context of theories of distributive justice that focus on how much people sacrifice in taxes. For further discussion of the implications of distinguishing between spending and taxes, see *infra* note 79.

This Note further limits itself by not addressing an important complication in assessing the progressivity of a tax change—the issue of how best to evaluate changes that have "mixed" distributional effects. A tax change with mixed distributional effects has both progressive and regressive features. Specifically, this is a tax change that does not always benefit someone with a lower income more than someone with a higher income (a purely progressive tax change), or someone with a higher income more than someone with a lower income (a purely regressive tax change). For instance, a "mixed" tax change might most benefit those in the middle of the income distribution; this will benefit the middle more than those at the top (a progressive feature) and more than those at the bottom (a regressive feature). How to assess the overall progressivity of such a mixed change is difficult to resolve.[15] This Note concerns itself with a more basic issue—what metric to use in judging whether a tax change is purely progressive or regressive or, alternatively, whether it has mixed effects.

The Note proceeds as follows. Employing the Bush tax cuts as a case study, Part I introduces five prominent measures of progressivity and illustrates how these measures are used by both policymakers and academics as if they convey important information about the equity of tax changes. Part I then explains how the academic debate on progressivity measures has stalled as the literature has failure to explore the measures' normative underpinnings. To push this debate forward, this Part suggests evaluating the progressivity measures in terms of theories of distributive justice. Part II further details the relationship between the progressivity measures, explaining when and how these measures of progressivity arrive at different results. The Part also explains why looking at the distribution of tax changes over the long term—which some may suggest as a way to resolve the differences among the measures—does not address the important and

[15] Using a comprehensive progressivity index is one popular approach to overcome this problem of mixed effects. A progressivity index summarizes the distributional effects of a tax change in a single number. In doing so, an index combines the progressive and regressive effects of a tax change in an attempt to resolve whether, overall, a tax change is progressive or regressive. Scholars have proposed various progressivity indices. *See, e.g.*, Nanak C. Kakwani, *Measurement of Tax Progressivity: An International Comparison*, 87 ECON. J. 71, 72–74 (1977) (proposing index based on percent of total taxes paid by each income class); Musgrave & Thin, *supra* note 8, at 510–11 (proposing index based on tax change's effects on income inequality); Daniel B. Suits, *Measurement of Tax Progressivity*, 67 AM. ECON. REV. 747, 747–50 (1977) (proposing index that, like Kakwani's, is based on concentration of tax burdens).

To build such indices, however, the question addressed in this Note must be answered first. In order to develop a figure that summarizes the distributional effects of a tax change, it is necessary to first determine what should be summarized, which is the issue addressed by this Note.

meaningful disparities between these measures in the short term. Finally, Part III operationalizes this Note's suggested approach for evaluating progressivity measures and draws connections between particular progressivity measures and the theories of distributive justice with which they are consistent.

I
WHY PROGRESSIVITY MEASURES MATTER

A. The Measures and the Bush Tax Cuts

A handful of progressivity measures serve as the fodder for Washington tax debates and are used widely throughout the tax literature. This Section employs the Bush tax cuts as a case study to illustrate how clashes between these measures can take center stage in debates about tax fairness.

When major tax legislation makes its way through Congress, distributional tables, often including the measures seen in Table 1, circulate throughout the Capitol. These estimates, which are made by simulating tax changes using taxpayer records and other data sources,[16] are produced by a limited number of governmental agencies and independent organizations.[17] The distributional estimates from

[16] For a description of the type of methodology used to produce such estimates, see CRONIN, *supra* note 14, which details the Treasury's methodology as of the late 1990s, and ROHALY ET AL., *supra* note 14, which describes the Urban Institute–Brookings Institution Tax Policy Center's model.

[17] Three federal government agencies produce distributional estimates, although, since 2001, these government analyses have been few and far between. During the 1990s, Congress's Joint Committee on Taxation (JCT) and the Treasury Department's Office of Tax Analysis (OTA) regularly released distributional estimates of tax changes. This ended in 2001. Since then, JCT has only released distributional estimates pertaining to the 2008 economic stimulus package, *see* The Joint Committee on Taxation, Publications Listed by Year, http://www.house.gov/jct/pubs_byyear.html (last visited Feb. 24, 2008), and OTA's publicly released analyses have been highly circumscribed. *See generally* Martin A. Sullivan, *The Decline and Fall of Distribution Analysis*, 99 TAX NOTES 1869 (2003) (detailing fall-off in production of distributional tables from JCT and OTA). The Congressional Budget Office (CBO) has also done very limited analysis of the distributional effects of tax changes. For instance, CBO has released one analysis comparing the distribution of taxes under the Bush tax cuts to that under prior law. CONG. BUDGET OFFICE, EFFECTIVE FEDERAL TAX RATES UNDER CURRENT LAW, 2001 TO 2014, at 4, 13 tbl.4, 14 tbl.5 (2004), *available at* http://www.cbo.gov/ftpdocs/57xx/doc5746/08-13-EffectiveFedTaxRates.pdf.

Two independent organizations, the Urban Institute–Brookings Institution Tax Policy Center (TPC) and Citizens for Tax Justice, have picked up the slack as JCT and OTA have cut back their releases. Sullivan, *supra*, at 1870. TPC is particularly productive and makes available distributional estimates for many prospective tax policies. *See* Urban Institute–Brookings Institution Tax Policy Center, The Numbers, http://www.taxpolicycenter.org/numbers/index.cfm (last visited Oct. 29, 2007) (listing tax changes for which distributional estimates are available).

these sources are then widely employed in congressional debates, policy analyses, and news reports.[18]

Table 1 is representative of how distributional estimates are presented in Washington. The table, which uses data from the Urban Institute–Brookings Institution Tax Policy Center (TPC), shows the distribution in 2007 of the tax changes enacted since 2001. The table includes five distributional measures. (The labels employed in Table 1—Measure A, Measure B, etc.—are referenced throughout this Note.) These measures are not comprehensive. Nonetheless, these particular measures—or ones closely related to them—dominate the debate in Washington about tax fairness[19] and the discourse among many academics. The table nicely illustrates how the recent tax cuts can appear to have very different distributional effects depending on the measures employed.

1. Measures Relative to Previous Tax Burdens

When the effects of the Bush tax cuts are compared by income class to previous tax burdens, these tax cuts appear to favor low- and middle-income Americans. To arrive at percent change in taxes paid (Measure A), the tax cut is divided by the size of the previous tax liability. By this gauge, the second and middle quintiles of the income distribution received the largest tax cuts in 2007, whereas the top two quintiles received tax cuts that were slightly smaller than that for all tax units combined.

A very closely related measure of distribution is the change in the share of total federal taxes paid (Measure B). As the name would indicate, this takes the difference between the share of taxes paid before and after the tax cuts. It is closely related to percent change in taxes paid (Measure A), since any income cohort that sees its taxes

[18] For an example of how the release of new distributional estimates of the Bush tax cuts were quickly integrated into the debate on Capitol Hill, picked up by the press, and cited on the campaign trail, see *infra* notes 24–26 and accompanying text. For an important, even if dated, description and critique of Washington's heavy reliance on distributional tables, see Michael J. Graetz, *Paint-By-Numbers Tax Lawmaking*, 95 COLUM. L. REV. 609 (1995).

[19] For an example of how the Bush Administration presents distributional estimates, see Press Release, U.S. Dep't of the Treasury, *supra* note 5. This press release emphasizes percent change in taxes paid (Measure A in Table 1) and change in share of taxes paid (Measure B in Table 1). For an example of how those opposing the recent tax cuts have presented distributional figures, see J. ECON. COMM. DEMOCRATS, NEW CBO ANALYSIS CONFIRMS THAT THE BUSH TAX CUTS ARE SKEWED TOWARD THE RICH (2004), *available at* http://jec.senate.gov/Documents/Reports/CBO taxcuts13aug2004.pdf. This report begins by presenting ratios between the tax changes in dollars (Measure E in Table 1) of various income classes and also comparing percent change in after-tax income (Measure D in Table 1). *Id.* at 1–2.

TABLE 1
DISTRIBUTION OF TAX CHANGES ENACTED 2001–2006*
(2007 TAX YEAR)

	Measures Relative to Previous Tax Burden		Measures Relative to Income		Measure in Dollars
	Measure A	**Measure B**	**Measure C**	**Measure D**	**Measure E**
Cash Income Percentile	Percent Change in Taxes Paid	Percentage Point Change in Share of Federal Taxes Paid	Percentage Point Change in Average Tax Rate	Percent Change in After-Tax Income	Average Tax Cut (By Tax Unit)
Lowest Quintile	–7.4%	0.0%	–0.3%	0.3%	–$22
Second Quintile	–19.4%	–0.2%	–1.8%	1.9%	–$359
Middle Quintile	–12.2%	–0.2%	–2.0%	2.4%	–$744
Fourth Quintile	–9.1%	0.2%	–1.9%	2.4%	–$1,209
Top Quintile	–10.1%	0.2%	–2.8%	3.9%	–$5,727
Top 10 Percent	–10.0%	0.2%	–3.0%	4.2%	–$8,967
Top 5 Percent	–9.9%	0.2%	–3.1%	4.5%	–$14,061
Top 1 Percent	–10.4%	0.0%	–3.5%	5.3%	–$45,098
All	–10.3%	0.0%	–2.4%	3.2%	–$1,613

* This distribution, with two exceptions, measures the difference between current law and pre-2001 law. Both exceptions relate to the Alternative Minimum Tax (AMT). First, the distribution assumes that pre-2001 law includes an "AMT fix." This hypothetical fix is assumed to have indexed the AMT exemption, as of 2000, to inflation. Second, the distribution, which was completed in January 2007, assumes that AMT relief, which had been scheduled to expire at the end of 2006, is extended through 2007 by continuing the 2006 AMT exemption levels, adjusted for inflation. In December 2007, Congress, as had been expected, passed a one-year extension of AMT relief to cover 2007. Tax Increase Prevention Act of 2007, Pub. L. No. 110-166 (2007). This legislation sets the 2007 AMT exemption at levels that are close to those assumed in this distributional table.

Source: Urban Institute–Brookings Institution Tax Policy Center, Table T07-0078, http://www.taxpolicycenter.org/numbers/displayatab.cfm?DocID=1481.

paid fall by more than that for all tax units (10.3%) will necessarily see its share of total taxes paid fall. The opposite is true for those income classes whose taxes paid fall by less than this amount. Note that the Bush tax cuts cause the share of taxes paid to drop for the second and middle quintiles but to increase for the top two quintiles.

Not surprisingly, the Administration has emphasized these figures when releasing distributional estimates and has relied on them in claiming that its tax cut policy is progressive. For instance, in evaluating the effects of the Administration's tax policy, the 2005 *Economic Report of the President* noted that in 2004, the "bottom 40 percent of the population received the largest percentage reductions in total federal taxes" and the "share of taxes of the top 20 percent increased as a result of the tax cuts enacted since 2001." From this, the report concluded that "the tax relief passed during the President's first term

increased the overall progressivity of the Federal tax system."[20] The Administration's position has been echoed by many others in the debate over the Bush tax cuts.[21]

2. *Measures Relative to Income*

Yet seen from another perspective, the Bush tax cuts appear to greatly favor high-income Americans. When the tax cuts are put in terms of the beneficiaries' incomes, well-off Americans are seen to receive the largest tax breaks, while low-income Americans receive the smallest. Percent change in after-tax income (Measure D) divides the tax change in dollars by after-tax income prior to the tax cuts. According to TPC figures, the top one percent of the income distribution saw its after-tax income increase by 5.3% in 2007 due to the tax cuts. By comparison, the middle quintile's after-tax income went up by 2.4%, and the bottom quintile's increased by only 0.3%.

The same general result is evident when the tax cuts are evaluated relative to pre-tax income (Measure C). The average tax rate (also known as the effective tax rate) is equal to total taxes paid divided by total pre-tax income, and Measure C takes the difference between the average tax rate before and after the tax cuts.[22] As shown in Table 1, high-income Americans have seen a greater percentage point drop in their average tax rates than low-income Americans.

Just as the Administration has emphasized measures that cast the tax cuts as progressive, those opposing the tax cuts often rely on these measures, which cast the tax changes as regressive. For example, the Democratic staff of the House Ways and Means Committee concludes that "[b]ecause average tax rates declined more, and after-tax incomes

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[20] ECONOMIC REPORT OF THE PRESIDENT 78–79 (2005).

[21] *See, e.g.*, BRIAN M. RIEDL, HERITAGE FOUND., BACKGROUNDER NO. 2001, TEN MYTHS ABOUT THE BUSH TAX CUTS 1, 11–12 (2007), *available at* http://www.heritage.org/Research/Taxes/upload/bg_2001.pdf (arguing that Bush tax cuts are "making the income tax code more progressive" and, as evidence, pointing to change in share of taxes paid by different income classes); Steven E. Landsburg, *Bush's Tax Cuts Are Unfair . . . to the Rich*, SLATE, Oct. 21, 2004, http://slate.com/id/2108201 (claiming that Bush tax cuts are too progressive, since, in percent terms, they have cut tax liability of lower-income Americans more than tax liability of higher-income Americans).

[22] The average tax rate must be distinguished from the marginal tax rate, with which it is often confused. The average tax rate is the percent of income that a person pays in taxes or, in other words, a person's tax liabilities divided by a person's pre-tax income. By contrast, the marginal tax rate is the percent of income that must be paid in taxes on each *additional* dollar of income. The difference between the two concepts can be illustrated with a simple hypothetical. Assume that the first five dollars of a person's income is exempt from taxes but, after that, all additional income is taxed at a thirty percent rate. If a person earns six dollars of income, he would pay $0.30 in taxes. The person's average tax rate would be five percent, while his marginal tax rate would be thirty percent.

rose more—and in percentage, not just absolute terms—for higher-income households[, t]he progressivity of the income tax system and of taxes overall has *declined*."[23]

3. Measure in Dollars

Finally, Table 1 shows the tax change in dollars alone (Measure E). By this measure, as well, the tax cuts appear to greatly favor high-income Americans. According to TPC, the top one percent of income earners saw its taxes reduced by an average of $45,098 in 2007. This is about sixty times larger than the average tax cut of approximately $744 received by the middle quintile.

While assessing progressivity in terms of dollars has received little support within the academy, the dollar numbers are frequently employed in policy debates. For instance, in a 2004 policy brief interpreting newly released distributional data on the Bush tax cuts, the Democratic staff of the Joint Economic Committee led off with the claim that the average dollar tax cut for the top one percent of income earners was, at the time, more than seventy times larger than for the middle quintile.[24] These dollar numbers were then featured prominently in news stories[25] and referenced on the 2004 campaign trail.[26]

This Section has employed the Bush tax cuts as a case study illustrating how various measures of tax progressivity can show tax changes in very different lights. Furthermore, the disputes about the Bush tax cuts exemplify how differences between progressivity measures can take center stage in tax policy debates.

The following two Sections delve more deeply into how the concept of progressivity is employed in evaluating and constructing tax policy. The next Section discusses how progressivity measures are used as if they have real normative meaning—as if progressive, regres-

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[23] DEMOCRATIC STAFF OF H. COMM. ON WAYS & MEANS, *supra* note 2, at 3; *see also* AVIVA ARON-DINE, CTR. ON BUDGET & POLICY PRIORITIES, HAVE THE 2001 AND 2003 TAX CUTS MADE THE TAX CODE MORE PROGRESSIVE? 1 (2007), http://www.cbpp.org/3-19-07tax.pdf (arguing that "the tax cuts have made the tax code more *regressive*," as high-income Americans have seen their after-tax incomes rise by more in percent terms than low-income Americans).

[24] JOINT ECON. COMM. DEMOCRATS, *supra* note 19, at 1.

[25] *See, e.g.*, Edmund L. Andrews, *Report Finds Tax Cuts Heavily Favor the Wealthy*, N.Y. TIMES, Aug. 13, 2004, at A16 (noting average tax cuts, in dollars, received by top one percent and middle quintile); Jackie Calmes, *Budget Office Says Biggest Tax Cuts Go to Richest 1%*, WALL ST. J., Aug. 13, 2004, at A6 (leading story with report that average tax cuts in dollars for those in top one percent were more than seventy times size of average tax cuts for those in middle quintile).

[26] *See* Press Release, Kerry-Edwards 2004, New Congressional Budget Office Report Confirms That George Bush Is Shifting the Tax Burden to the Middle Class, Says Kerry Campaign (Aug. 13, 2004) (citing these distributional figures).

sive, and neutral tax changes have fundamentally different effects on the equity of the tax system. Section C details how the academic literature on progressivity has taken a largely unproductive approach in evaluating which measure is best for assessing a tax change's effect on equity.

B. Progressivity as a Guidepost

The debate surrounding progressivity is much more than a political parlor game. Both academics and policymakers use the terms "progressive," "regressive," and "neutral" as guideposts in shaping policy and in assessing how a tax change has shifted the "vertical equity" of the tax system. Vertical equity refers to what justice "demands in the tax treatment of people at different levels of income."[27] A progressive change is conceived of as shifting the equity of the tax system by most benefiting those at the bottom.[28] A regressive change is thought to do the opposite, pushing the system more in favor of those at the top. And a neutral tax change will leave vertical equity constant—with the tax change distributed equally across all income levels.

These terms need not be used in this normative fashion. Progressivity could be a technical concept that is not connected to equity but, instead, captures some mathematical fact about the change in after-tax income, tax burden, or some other metric. If this were the case, choosing between the five measures presented in Part I.A would not be necessary or important. One measure could be designated progressivity type A; another could be progressivity type B; and so on. No further specification would be necessary. But this is not how the terms are generally employed—either in the policy world or in academia. Instead, they are used as if a progressive tax change has a fundamentally different effect on vertical equity than a regressive change.

In the policy world, the debate surrounding the Bush tax cuts is but one example of policymakers employing progressivity as if it has normative weight.[29] Other examples abound. In tax reform initiatives, policymakers have explicitly targeted distributional neutrality in

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[27] MURPHY & NAGEL, *supra* note 11, at 13.

[28] A progressive tax change "shifts equity" by either making the tax system more or less fair depending on one's theory of distributive justice. If one believes that the tax system already unduly favors lower-income Americans, then a progressive change will shift equity for the worse. On the other hand, if one believes that the tax system unduly favors higher-income Americans, then a progressive change would shift equity for the better.

[29] *See supra* Part I.A.

structuring tax proposals.[30] Their intent is to focus the policy change on enhancing efficiency—while leaving vertical equity constant so as to avoid a paralyzing debate on tax equity.[31] Treating progressivity in this way, as if it should carry normative weight in policymaking, is by no means a new phenomenon. Economists Richard Musgrave and Tun Thin describe a 1947 debate between the congressional leadership and the Truman Administration about how to undertake a distributionally neutral tax cut, with the two sides battling over which measure of progressivity was the right one.[32] In sum, policymakers consistently employ progressivity measures as if they tell us something important about the equity of tax changes.

The academic literature also uses the concept of progressivity as if it can serve as a guide to equity. This can be seen in the context of the Bush tax cuts,[33] but also in many others as well—whether it be in evaluating how the 1986 tax reform affected vertical equity[34] or which income classes were favored by tax policy in the 1920s.[35] Furthermore, the academic literature has been riven by a discussion of which measure of progressivity is superior.[36] This literature would not be focused on these measures or engaged in this debate if the measures were merely considered to be of technical interest.

The widespread reliance on progressivity as a gauge of the equity effects of a tax change does not mean that more progressivity is necessarily being equated with greater fairness. Conservatives may consider the fairest outcome to be a regressive tax change that favors high-income Americans. Liberals, on the other hand, may view a progressive tax change as the fair result. Still, both sides use the language

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30 *See* Charles E. McLure, Jr., *Economics and Tax Reform: 1986 and Now*, 113 TAX NOTES 362, 362, 364 (2006) (describing how famed 1986 tax reform, as proposed by Reagan Administration, was distributionally neutral and noting that recent Bush Administration tax reform panel followed same tack).

31 *See id.* at 362 (characterizing proposal of distributionally neutral tax reform as attempt to avoid "class warfare").

32 Musgrave & Thin, *supra* note 8, at 512.

33 *See, e.g.*, Gale & Orszag, *supra* note 4, at 1186–92 (detailing distribution of Bush tax cuts and concluding that they are best described as regressive); Lawrence Zelenak, *Framing the Distributional Effects of the Bush Tax Cuts*, 105 TAX NOTES 83, 84–89 (2004) (reviewing different frameworks for assessing progressivity in context of Bush tax cuts and concluding that distributional analysis should center on after-tax incomes).

34 *See* Jane G. Gravelle, *Equity Effects of the Tax Reform Act of 1986*, 6 J. ECON. PERSP. 27, 28–36 (1992) (detailing Tax Reform Act's effect on vertical equity and concluding that, while many analyses had found Act to be progressive, opposite was likely).

35 *See* Ann L. Alstott & Ben Novick, *War, Taxes, and Income Redistribution in the Twenties: The 1924 Veterans' Bonus and the Defeat of the Mellon Plan*, 59 TAX L. REV. 373, 374, 386–87 (2006) (noting that, contrary to prior histories, which described 1920s as period of tax cuts favoring wealthy, tax system grew more progressive in these years).

36 *See infra* Part I.C.

of progressivity as if it is directly related to equity—as if there is a meaningful difference between progressive and regressive tax changes. For both viewpoints, whether a tax change is progressive or regressive has clear normative implications, even if these implications are exactly opposite to one another.

As the next Section explains, despite the terms "progressive," "regressive," and "neutral" being endowed with such meaning, the debate as to which measure is best has largely been an empty one. Much of the literature simply falls back on bald assertions as to which progressivity measure is most appropriate. By failing to justify these measures in terms of the theories of distributive justice they support, policymakers and academics risk misleading others, or being misled themselves, as to the equity effects of a tax change.

C. Rhetorical Power Without Normative Substance

Despite the many pages devoted to the subject, the academic literature remains divided as to which measure of progressivity is preferable. Furthermore, this literature on progressivity measures has generally avoided engaging the theories of distributive justice—the theories that articulate how resources should be distributed—that motivate the concern for distributional outcomes. This has left the discussion unmoored. The arguments in the literature may have some rhetorical power, but they do not answer the key questions—specifically, which theory of distributive justice is normatively best and which measure is consistent with this theory.

On all sides, the arguments tend to be conclusory. For instance, prominent tax commentator Martin Sullivan claims that "[s]tatistically, a tax cut will be distributionally neutral when all income classes have their total tax burdens reduced by an equal percentage."[37] But Sullivan does not explain why this definition—which favors Measure A of progressivity—is superior to its many alternatives.[38]

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[37] Martin A. Sullivan, *How To Read Tax Distribution Tables*, 90 TAX NOTES 1747, 1751 (2001).

[38] Sullivan is by no means alone in such analysis, concluding, with little explanation, that progressivity should be measured in terms of the change in tax burden. For instance, economist Nanak Kakwani proposes an index that measures progressivity by comparing the percent of total taxes paid by different income classes to their shares of pre-tax income. Kakwani, *supra* note 15, at 72–73. In terms of the five measures presented here, this index is most closely related to percent change in taxes paid (Measure A) and change in share of total taxes paid (Measure B). In making this proposal, Kakwani rejects assessing progressivity based on the system's effect on income distribution "because progressivity (or regressivity) is supposed to measure the deviation of a tax system from proportionality." *Id.* at 74. Like Sullivan's analysis, the justification for this assertion is lacking. Kakwani does not

On the other side of this progressivity debate, many have written that the progressivity of a tax change is best measured in terms of the effect on after-tax income, but here, too, the explanations have been unsatisfying. In a 1999 paper released by the Treasury Department detailing the Department's methodology at the time for producing distributional tables, Julie-Ann Cronin writes that "[t]he only tax burden measure with some theoretical basis is the percentage change in after-tax income. It alone provides some indication of a family's change in welfare."[39] But, Cronin does not detail why "a family's change in welfare" is necessarily the metric by which to measure tax fairness. Why should "change in welfare" be taken into account while "percent change in tax burden" is not? Cronin's statement is made as if the issue is decidedly obvious, but, as the widespread disagreement in the discipline indicates, the issue is anything but clear.

Others have offered a *reductio ad absurdum* to explain why percent change in tax burden (Measure A) and the change in share of total taxes paid (Measure B) cannot be meaningful measures, and why

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elucidate why his version of progressivity possesses independent normative force, and hence Kakwani never makes clear why the Kakwani index, with its focus on deviation from proportionality, is superior to progressivity measures that directly gauge a tax change's redistributive effect.

Another example of similarly conclusory analysis can be found in economist Daniel Suits's proposal of a progressivity index that, like Kakwani's, is based on the concentration of tax burdens (and is thus closely related to Measures A and B as defined in this Note). *See* Suits, *supra* note 15, at 747–50. While Suits offers some technical reasons for why his proposed index is attractive, he does not explain why the index measures anything that is normatively meaningful—why concentration of burdens, as opposed to the tax system's effect on, say, income inequality, should define progressivity.

To be fair, these writers could be suggesting that progressivity is simply a technical measure that is indirectly related to issues—such as redistribution—that matter for the system's fairness. However, this is not how this term is generally used. Progressivity is widely discussed as if the concept has important normative implications; if these writers are suggesting differently, further explanation would be needed.

[39] CRONIN, *supra* note 14, at 34. There are many other examples of such conclusory statements made in support of measuring progressivity in terms of change in after-tax income. For instance, the economist Jane Gravelle endorses using percent change in after-tax income to measure progressivity and argues against looking to percent change in taxes paid (Measure A) on the following basis: "If tax liabilities are extremely small at lower-income levels, even a large percentage change [in taxes paid] could mean very little in terms of increased income." Gravelle, *supra* note 34, at 28. Like Cronin, Gravelle presupposes that what matters are changes in income or welfare and does not explain why changes in tax burden are not equally (or more) meaningful. Others go somewhat further by incorporating a theory of tax fairness into their argument for why change in after-tax income is the most appropriate measure. For instance, analyst Aviva Aron-Dine defines progressivity in terms of a tax change's effects on income inequality, implicitly identifying egalitarianism as the relevant theory of fairness. ARON-DINE, *supra* note 23, at 1. This hints at how progressivity measures should be evaluated—namely, in terms of one's concept of distributive justice.

others should be favored.[40] The hypothetical goes as follows: A massive tax cut eliminates all federal taxes, except for $1 paid by the highest-income American. In terms of percent change in tax burden (Measure A) and total share of taxes paid (Measure B), the tax change is highly progressive. Whereas all households except the highest-income household have seen their taxes paid cut by one hundred percent, the highest-income taxpayer has seen his taxes cut by less than this. And, furthermore, the highest income household now pays one hundred percent of federal tax liability. On the other hand, the highest-income household will have benefited far more than many of those further down the income distribution in terms of change in the average tax rate (Measure C), percent change in after-tax income (Measure D), and dollars (Measure E). A progressive tax system will have been largely eliminated through this tax change. From this, tax scholar Lawrence Zelenak concludes that "'highly progressive' does not seem to be a fair description of that hypothetical cut"[41] and that the other measures are more appropriate indicators of progressivity than Measures A and B.[42]

The hypothetical, however, while very nicely illustrating how the measures of progressivity differ, does not prove any measures to be better than others. Zelenak's conclusion that "'highly progressive' does not seem to be a fair description" of the tax change relies on his strong intuition that "the important distributional question regarding tax cuts is how they affect the welfare of taxpayers at various points in the income distribution."[43] But this claim is not self-supporting. Others, for instance, have argued that what matters in addressing tax fairness is how much people pay into the system—not their level of welfare.[44] Those taking this position would draw from the hypothetical a conclusion opposite that of Zelenak. In other words, Zelenak does not take the important additional step of explaining why welfare should matter most. Perhaps Zelenak is motivated by a belief that government should seek to equalize people's welfares and should not be concerned with what a person "sacrifices" to pay for government.

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[40] *See, e.g.*, JOEL FRIEDMAN ET AL., CTR. ON BUDGET & POLICY PRIORITIES, ARE TAXES EXCEPTIONALLY CONCENTRATED AT THE TOP?: TREASURY DEPARTMENT RELEASE CREATES MISLEADING IMPRESSION ABOUT TAXES THAT HIGH-INCOME TAXPAYERS PAY 4 (2004), http://www.cbpp.org/4-15-04tax.pdf (offering *reductio ad absurdum* to explain why percent change in tax burden and change in share of total taxes paid are not meaningful measures); Zelenak, *supra* note 33, at 85 (same).

[41] Zelenak, *supra* note 33, at 85.

[42] *Id.* at 85–86.

[43] *Id.*

[44] For a description of a theory of vertical equity that focuses on how much people sacrifice in paying taxes, see *infra* Part III.C.

If so, this argument should be made; in itself, the *reductio ad absurdum*, while better elucidating how the measures diverge, is not enough.

In sum, the existing literature on progressivity has tended to devolve into empty rhetoric as to which progressivity measure is right. It has largely avoided any discussion of how these measures relate to the theories of distributive justice that motivate the concern for equity. This represents a major omission that has stunted the progressivity debate.[45]

A theory of distributive justice articulates how resources are to be justly distributed and provides "a standard for evaluating differences in the tax treatment of different people."[46] In other words, a theory of distributive justice establishes a coherent rationale for evaluating a tax change's distribution. In the absence of a motivating theory of distributive justice, the concern for distribution would be groundless, as there would be no framework within which to evaluate the fairness of distributional decisions.

Given that a theory of distributive justice must motivate any serious concern for tax equity, one should evaluate progressivity measures based on their consistency with the theory of distributive justice in which one believes.[47] In the absence of such alignment, progressivity measures would be misleading gauges of changes in tax equity. For instance, a progressivity measure could indicate that a tax change is "neutral"—having distributed the tax change equally across all income classes—when, according to one's motivating theory of distributive justice, that tax change has in fact shifted the system in favor of either high- or low-income Americans.

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[45] The 1948 article by Richard Musgrave and Tun Thin offers a brief analysis of the normative support for different progressivity indices. *See* Musgrave & Thin, *supra* note 8, at 511–14. The contemporary literature has generally failed to expand on such analysis, and the Musgrave and Thin article, while a step in the right direction, is not on its own satisfactory. The article concludes by endorsing a measure of progressivity that is closely related to percent change in after-tax income (Measure D) since "the equalizing effects of a tax [on the income distribution] . . . is the essence of any progression policy." *Id*. at 514. The article does not go on to specify why equalizing income necessarily should be the goal of progressivity—as opposed to equalizing sacrifice or making the worst off better off. Perhaps Musgrave and Thin adhere to some form of resource egalitarianism, *see infra* Part III.A (explaining theory of resource egalitarianism), but they do not say so—and, as is, their conclusory statement seems insufficiently explained.

[46] MURPHY & NAGEL, *supra* note 11, at 12.

[47] This claim is akin to what Amartya Sen says in evaluating indices of economic inequality. Just as for progressivity, there are a number of conflicting approaches to measuring inequality. This leads Sen to conclude: "[O]ur interest in its measurement must relate to our normative concern with it, and in judging the relative merits of different objective measures of inequality, it would indeed be relevant to introduce normative considerations." AMARTYA SEN, ON ECONOMIC INEQUALITY 3 (enlarged ed. 1997).

Exactly how this Note's proposed approach would work is detailed in Part III. That Part discusses four dominant theories of distributive justice—equality of resources, the difference principle, equality of sacrifice, and utilitarianism—and applies them to the progressivity measures discussed here. But, before reaching this analysis, Part II further explains how the various measures of progressivity relate to one another, and specifically when and how they diverge.

II
WHEN MEASURES DIVERGE

This Part details the relationships between the five progressivity measures that this Note has introduced. It describes the circumstances under which these measures agree and the circumstances under which they point in different directions. In addition, this Part explains that, when the measures differ, the divergence is predictable—with certain measures showing tax changes to be more progressive than do other measures. These ideas are underdeveloped in the modern literature. While it is widely recognized that these measures of progressivity can differ, this literature has not fully articulated the relationship among them.[48]

A. Where Measures Agree: Differentiating Who Has Won from Who Has Lost

In a context where one income class wins and another loses due to a tax change, the five distributional measures coalesce around a single definition of progressivity. Here, a progressive change is one in which the higher-income class is made worse off, while the lower-income class is made better off. A regressive change is the opposite. A neutral tax change is one in which no income class gains or loses.

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[48] This is not to say that the academic literature has failed to recognize that progressivity measures differ in predictable ways and under predictable circumstances. Economist Donald Kiefer has undertaken an extensive analysis of progressivity indices, explaining both when and how these indices differ. But Kiefer's analysis is focused on measuring the progressivity of tax systems—and not tax changes, the concern of this Note. Furthermore, Kiefer's article does not discuss the progressivity measures used widely in Washington tax debates. *See generally* Donald W. Kiefer, *Distributional Tax Progressivity Indexes*, 37 NAT'L TAX J. 497 (1984).

Musgrave and Thin's article from 1948 perhaps comes closest to the analysis completed here. Specifically, Musgrave and Thin recognize that different progressivity measures will show tax changes to be more progressive than do other measures, and they briefly discuss the relationships among certain measures. *See* Musgrave & Thin, *supra* note 8, at 511–12. This Note expands on this analysis and specifically applies it to the progressivity measures widely discussed in policy circles today.

Such agreement among measures tends to occur in the context of revenue-neutral tax changes—changes in which no tax revenue is lost or gained overall.[49] The key point is that a revenue-neutral tax change presents a zero-sum revenue game. If one income class sees its tax liabilities reduced, another income class must pay more in order to hold revenue constant. Thus, in the context of revenue-neutral tax changes, there tend to be winners and losers.[50] Evaluating whether a revenue-neutral tax change is progressive, regressive, or neutral then turns on which income classes have won and which have lost, and all five measures would be in agreement on this point.

TABLE 2
WINNERS AND LOSERS: DISTRIBUTION OF A REVENUE NEUTRAL TAX CHANGE

	Hypothetical Income and Tax Liability			**Measures of Progressivity**				
				Measure A	**Measure B**	**Measure C**	**Measure D**	**Measure E**
	Pre-Tax Income	Tax Liability Before Tax Change	Tax Liability After Tax Change	Percent Change in Taxes Paid	Percentage Point Change in Share of Taxes Paid	Percentage Point Change in Average Tax Rate	Percent Change in After-Tax Income	Tax Change in Dollars
Low	$50	$10	$9	–10.0%	–2.5%	–2.0%	2.5%	–$1
High	$100	$30	$31	3.3%	2.5%	1.0%	–1.4%	$1

Table 2 illustrates this using a simple hypothetical tax change. Assume that there are two taxpayers in society, "High" and "Low," with High earning $100 and Low earning $50. Prior to the tax change, Low pays $10 in taxes and High pays $30 in taxes. The tax change involves raising taxes by $1 on High and cutting taxes by $1 on Low. For all measures but change in after-tax income (Measure D), a positive number indicates that the income class has experienced a tax increase, while a negative number indicates that the income class has benefited from a tax cut. For percent change in after-tax income (Measure D), the signs have the opposite meaning. Notice that, by all of the measures, High is shown to have lost from this tax change, while Low has gained; all five measures indicate that this tax change is progressive.

[49] This is similar to the point made by two scholars who have hypothesized what the distribution of the Bush tax cuts would be if these tax cuts had been immediately paid for, instead of being deficit financed. Gale & Orszag, *supra* note 4, at 1186–92. These scholars have noted that if the tax cuts had been paid for—i.e., if they had been revenue neutral—"the apparent contradictions [in distributional measures] are removed, and all of the measures show that the tax cuts are regressive." *Id.* at 1189.

[50] Revenue-neutral tax changes may, in theory, produce only winners or losers (and not both) if the tax change affects the level of efficiency. *See infra* note 51.

B. Where the Measures Disagree: Measuring Who Has Won or Lost More

When it comes to evaluating who has won or lost more from a tax change, as opposed to simply differentiating winners from losers, the five measures can point in opposite directions. This circumstance often arises in the context of non-revenue-neutral tax changes, such as the Bush tax cuts. Here there may not be both "winners" *and* "losers"; instead, there may be only winners (if there is a net tax cut) *or* losers (if there is a net tax increase). In this context, the measures tend to differ.[51]

TABLE 3
WHO HAS WON OR LOST MORE: DISTRIBUTION OF A NON-REVENUE NEUTRAL TAX CHANGE

	Hypothetical Income and Tax Liability			**Measures of Progressivity**				
				Measure A	**Measure B**	**Measure C**	**Measure D**	**Measure E**
	Pre-Tax Income	Tax Liability Before Tax Change	Tax Liability After Tax Change	Percent Change in Taxes Paid	Percentage Point Change in Share of Taxes Paid	Percentage Point Change in Average Tax Rate	Percent Change in After-Tax Income	Tax Change in Dollars
Low	$50	$10	$9	–10.0%	–0.7%	–2.0%	2.5%	–$1
High	$100	$30	$28	–6.7%	0.7%	–2.0%	2.9%	–$2

Table 3 crystallizes this point, again using a simple hypothetical. As before, there are two taxpayers, "High" and "Low," with incomes of $100 and $50 and tax liabilities of $30 and $10 respectively. High, instead of facing a tax increase as in the prior hypothetical, benefits

[51] A non-revenue-neutral tax change is not the only circumstance in which these differences arise. The measures can point in different directions whenever they are used to evaluate who, among winners, has won more or who, among losers, has lost more, as opposed to differentiating winners from losers.

In the context of a revenue-neutral tax change, this can occur when the tax change either increases or decreases total resources available in the economy via its effect on the economy's efficiency. Because they distort behavior, taxes generate burdens in excess of the revenue collected. Some taxes are more distortionary than others, and so a tax change can, without affecting the level of government revenues, either increase or decrease people's tax burdens. This means that a revenue-neutral tax change could, in theory, leave everyone better off or everyone worse off by either decreasing or increasing such distortions. In such circumstances, the progressivity measures could point in different directions, despite the fact that the tax change is revenue neutral.

Even when a tax change has no effect on the overall levels of either revenue or efficiency, progressivity measures may not always agree. The measures will concur on which income classes have won and which have lost, but they may not agree on who has lost the most among the losers and who has won the most among the winners. For instance, if the top income class faces a tax increase and the additional revenues are used to cut the taxes of all other income classes, all measures will agree that the top income class has lost while the others have won. But the measures may disagree as to which of the "winning" income classes has benefited the most.

from a tax cut of $2, while Low receives a tax cut of $1. In other words, the tax change is not revenue-neutral; instead, tax revenue has been reduced by $3. Under these circumstances, the measures do not agree as to whether the tax change is progressive, regressive, or neutral. On the one hand, Low has seen her tax liability cut by a greater percent than High (Measure A) and, as a result, Low's share of total taxes paid has dropped, while High's share has increased (Measure B). Both these measures indicate that the tax change is progressive. On the other hand, High's after-tax income has seen a somewhat greater percent increase than Low's after-tax income (Measure D), and High has also received a larger tax cut in dollars (Measure E). Seen through these measures, the tax cut is regressive. Finally, in terms of percentage point change in average tax rate, the tax cut is perfectly neutral, with both taxpayers having their average tax rates fall by two percentage points (Measure C).

C. Relating the Measures to Each Other

When the progressivity measures do diverge, they do so in a predictable fashion.[52] Some of the measures require more of a tax cut to benefit low-income Americans for that tax cut to be described as neutral rather than regressive, while others require less. The same goes for a tax increase, as some of the measures require that high-income Americans pay larger shares of a tax increase for that tax change to be considered neutral while others require that they pay less. For instance, when it comes to tax cuts, tax change in dollars (Measure E) will, of the five measures, always require the largest share of the tax cut go to low-income individuals for the tax cut to be considered neutral and not regressive. And, percent change in after-tax income (Measure D) will, of the five measures, require a larger share to go to low-income individuals than all but Measure E for a tax cut to be considered neutral.

Table 4 depicts these relationships. The table orders the measures based on what percentage of a tax cut must go to low-income Americans for that tax cut to be considered neutral and not regressive. The relationships between these measures, as depicted in Table 4, are proven in the mathematical appendix to this Note.

Table 5 further illustrates the point via a hypothetical. As in the prior hypotheticals, there are two taxpayers, "High" and "Low," with incomes of $100 and $50 and tax liabilities of $30 and $10, respec-

[52] *See* Musgrave & Thin, *supra* note 8, at 512 (describing how those with high incomes would systematically prefer certain measures over others and those with low incomes would prefer opposite).

TABLE 4
DIVERGING MEASURES OF A TAX CUT*

Share of Tax Cut Allocated to Low-Income To Be Considered Neutral	
Least ↓ Most	1. *Measure A*: Percent Change in Taxes Paid (Tie)
	1. *Measure B*: Percentage Point Change in Share of Total Taxes Paid (Tie)
	2. *Measure C*: Percentage Point Change in Average Tax Rate
	3. *Measure D*: Percent Change in After-Tax Income
	4. *Measure E*: Tax Change in Dollars

* Ordering assumes that tax change is being made in a progressive system in which average tax rates rise with income. See the mathematical appendix for a proof of the relationships among these measures.

tively. Table 5 shows how a tax cut totaling $10 must be distributed for that tax cut to be considered neutral according to each measure.

This does not mean that tax change in dollars (Measure E) is necessarily the most "favorable" measure for low-income classes. While, of the five measures, tax change in dollars (Measure E) requires that low-income households receive the largest tax cuts for a given tax change to be considered neutral, it also, symmetrically, will allow low-income households to face the steepest tax increases while still indicating that the tax increase is neutral and not regressive. To the extent that a measure favors an income class in the context of a tax cut, it symmetrically disfavors that income class in the context of a tax increase.[53]

So, how to choose? The literature is split as to which measure is best—and arguments for a given measure have largely lacked normative substance.[54] Furthermore, even if a measure might favor a given income class in the context of a tax cut, it will disfavor that income class in the context of a tax increase—so a measure cannot be consistently chosen based simply on a class preference. This Note has pro-

[53] *See id.* (concluding that, when it comes to measures of progressivity, "what is the rich man's order of preference for rate increase is the poor man's order of preference for rate reduction, and vice versa").

[54] *See supra* Part I.C.

TABLE 5
HOW A $10 TAX CUT MUST BE DISTRIBUTED TO BE CONSIDERED NEUTRAL ACCORDING TO THE PROGRESSIVITY MEASURES*

		High	Low
Measure A: Percent Change in Taxes Paid	Tax Change in Dollars	–$7.50	–$2.50
	Percent Change in Taxes Paid	–25%	–25%
Measure B: Percentage Point Change in Share of Taxes Paid	Tax Change in Dollars	–$7.50	–$2.50
	Percentage Point Change in Share of Taxes Paid	0%	0%
Measure C: Percentage Point Change in Average Tax Rate	Tax Change in Dollars	–$6.67	–$3.33
	Percentage Point Change in Average Tax Rate	–6.7%	–6.7%
Measure D: Percent Change in After-Tax Income	Tax Change in Dollars	–$6.36	–$3.64
	Percent Change in After-Tax Income	9.1%	9.1%
Measure E: Tax Change in Dollars	Tax Change in Dollars	–$5.00	–$5.00

* This table uses the following hypothetical: There are two taxpayers, High and Low. High has a pre-tax income of $100 and, prior to the tax cut, has a tax liability of $30. Low has a pre-tax income of $50 and, prior to the tax cut, has a tax liability of $10.

See the mathematical appendix for proof of the relationships between these measures.

posed that the answer to this question lies in one's choice of a particular theory of distributive justice.[55]

Before applying this approach to distributional measures, this Note explores another possibility—that choosing between the measures is not important since the differences between the measures may be resolved in the long run. Specifically, all tax changes must eventually be financed, and this means that, in the long run, the distribution of a non-revenue-neutral tax change will, in fact, be akin to a tax change that is immediately revenue neutral. The following Section explains why, despite this, the analysis of distribution in the short run is important and meaningful, and why the discrepancies between the measures cannot be resolved by simply pointing to long-term considerations.

D. Looking Over the Long Term: Does Financing Resolve the Differences Between the Measures?

The federal government faces a budget constraint. The government cannot borrow unsustainably; just like any other borrower, the

[55] *See supra* notes 45–47 and accompanying text.

government is constrained by its ability to finance its debt, and its books must balance over the long term.[56]

This has important implications for the permanence of a non-revenue-neutral tax change; any such tax change will be budget neutral over the long term. Tax cuts will be paid for via eventual spending reductions or tax increases; similarly, tax increases will, in the future, finance either lower taxes or greater spending.[57] Thus, if a tax cut creates only winners today by reducing tax revenues, then it must generate losers tomorrow through some combination of increased taxes and reduced spending. This truth comes from the "iron laws of arithmetic and fiscal solvency."[58] In this way, over the long term, all tax changes are budget-neutral.[59] As analysts have noted with regard to the Bush tax cuts, "Someone, somewhere, at some time will have to pay for them."[60]

Once financing is taken into account in distributional calculations, the progressivity measures tend to point in the same direction, just as they do in the context of a tax change that is immediately revenue-neutral. For instance, in the context of the Bush tax cuts, analysts have run distributional numbers after hypothesizing possible mechanisms for financing the tax cuts. These analysts conclude that "[w]hen plausible methods of financing are included, the apparent contradictions [in distributional measures] are removed, and all of the measures show that the tax cuts are regressive."[61]

From this, some may conclude that it is unnecessary to choose among the various measures of progressivity, since differences between the measures tend to be resolved once long-term financing is taken into account. The problem of determining whether a tax change is progressive or regressive would simply be framed as a question of how the tax changes would eventually be financed.

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[56] To meet this constraint, the net present value of the government's future stream of revenues must equal the net present value of future government consumption plus the current value of government debt. If the government were to violate this "budget constraint," the government would essentially have defaulted on its debt, taxing resources away from lenders in order to meet its needs. Alan J. Auerbach et al., *Generational Accounting: A Meaningful Way To Evaluate Fiscal Policy*, J. ECON. PERSP., Winter 1994, at 73, 75 (describing government's intertemporal budget constraint).

[57] *See id.* at 76 (noting "zero sum nature of fiscal policy" and detailing how reduction in tax payments from one generation necessitates increase in tax payments from another generation).

[58] William G. Gale et al., *Distribution of the 2001 and 2003 Tax Cuts and Their Financing*, 103 TAX NOTES 1539, 1539 (2004).

[59] Put in more technical terms, the present value of any tax change's effect on the budget approaches zero over the infinite horizon once financing is taken into account.

[60] Gale et al., *supra* note 58, at 1539.

[61] Gale & Orszag, *supra* note 4, at 1189.

But, this approach would unnecessarily require that any analysis of tax fairness also evaluate highly uncertain long-term financing. Hypothesizing as to the likely long-term financing of a tax change is by no means an easy task. The nature and timing of such financing is often unclear. In fact, tax changes need not be financed within the current generation; the "iron laws of arithmetic and fiscal solvency" require only that tax changes be paid for over the infinite horizon. As such, determining the likely distribution of financing often requires much difficult and potentially inaccurate guesswork.

Moreover, this guesswork is not necessary to meaningfully evaluate the immediate effects of a tax change on vertical equity. Specifically, one can analyze whether a tax change fairly distributes resources in the short term—a period that may, in fact, not be short at all. Irrespective of how the tax change is eventually financed, one can ask whether the tax change has, absent financing, favored lower- or higher-income classes and then assess how this has shifted the fairness of the tax system. For instance, if one is concerned with equality of resources, one will ask whether the tax change has immediately reduced or increased income inequality. And, while there is uncertainty as to how the tax change might affect income inequality over the long run, the short-run effect is readily apparent, with clear normative implications. From this perspective, an immediate increase in income inequality would be a bad outcome, and an immediate reduction in income inequality would be a good one.[62]

This is not to deny the importance of looking at the long-term effects of tax changes. Evaluating the short-run distribution of a tax change is, by its very nature, only a partial analysis. For instance, even if a tax change improves fairness in the short run, it may have negative long-term consequences that outweigh this benefit. Still, the short-run implications may be all that are readily knowable, especially where the timing and distribution of this financing are highly uncertain. Hence, evaluating these effects represents an important and meaningful first step in gauging the fairness of a tax change.

In sum, looking to the long term does not offer a cure-all for resolving the differences between progressivity measures. Projecting

[62] This type of short-term analysis is by no means limited to resource egalitarianism. Take, for instance, utilitarianism. The utilitarian principle requires that society be organized so as to maximize social welfare as calculated by summing the utility of all members of society. Using this principle as well, it is possible to engage in meaningful analysis of the short-term distribution of a tax change. Even if it is unknown who will eventually pay for a tax change, one can ask whether, in the short term, resources have been deployed in such a way as to maximize utility at this time. For a further discussion of utilitarianism, see *infra* Part III.D.

how a non-revenue-neutral tax cut will eventually be paid for is difficult and ignores the immediate effects on tax fairness that are knowable and, in themselves, have normative implications.[63] Looking to the short term, however, requires choosing among inconsistent progressivity measures that may differ in the context of a non-revenue-neutral tax change. This Note has suggested that this choice should be based on the theory of distributive justice in which one believes.

The next Part brings to bear this Note's suggested approach for evaluating progressivity measures. The Part introduces four dominant theories of distributive justice and draws connections between particular measures and the individual theories of distributive justice.

III
MEASURES OF PROGRESSIVITY AND THEORIES OF DISTRIBUTIVE JUSTICE

The question of how resources should be fairly or optimally distributed and, in turn, how government should allocate the tax burden among the citizenry, has elicited a vast literature.[64] This Note chooses four dominant theories of distributive justice and applies them to the progressivity measures introduced in Part I. These four theories are: (1) equality of resources, under which a fair tax system would reduce income disparity; (2) the "difference principle," under which a fair tax system would seek to minimize income inequality but would give priority to maximizing the welfare of the least well-off in society; (3) equal sacrifice, under which a fair tax system would impose the same sacrifice, in terms of utility, upon each taxpayer; and (4) utilitarianism, under which the optimal tax system would maximize the summed value of everyone's utility.

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[63] It should also be emphasized that progressivity measures can differ even where financing *is* taken into account. This further undermines financing as a means of resolving differences among progressivity measures.

The two factors that can cause the progressivity measures to differ where there is a revenue-neutral tax change, *see supra* note 51, apply equally to tax changes where future financing is considered. Namely, even once financed, tax changes could in theory have positive or negative long-term efficiency effects that result in everyone winning or everyone losing from the tax change. Evaluating the distribution of a tax change with such efficiency effects could still involve judging who has won or lost more—the circumstance under which the measures differ. Moreover, even if efficiency is held constant over the long term, the measures may still differ when financing is considered. While the measures will concur on which income classes have won and which have lost, they may not agree on who has lost the most among the losers and who has won the most among the winners.

[64] For an incisive overview of this literature, see MURPHY & NAGEL, *supra* note 11, at 12–75.

Additional theories of distributive justice exist. Furthermore, each of these four theories is presented here in a simplified form—avoiding the nuanced discussions that have shaped each of these philosophies. Still, in presenting the essence of these four theories, this Note highlights the most compelling ideas from a wide swath of the philosophical territory. The analysis describes which measures work best in each of these frameworks and concludes that only one of the five measures—percent change in after-tax income—is potentially meaningful according to all of these theories of justice.

A. Equality of Resources

Those who concern themselves with equality of resources believe that there is something unfair or harmful about the maldistribution of economic resources.[65] Two of the measures introduced here—namely, percent change in after-tax income (Measure D) and tax change in dollars (Measure E)—are superior to the others when it comes to judging a tax change's effect on resource inequality.

If resource inequality—and, more specifically, annual income inequality[66]—are the scale upon which tax fairness is judged, then a pro-

[65] Ronald Dworkin presents a famous case for reducing "resource inequality" (but not "welfare inequality"). *See generally* Ronald Dworkin, *What Is Equality? Part 1: Equality of Welfare*, 10 PHIL. & PUB. AFF. 185 (1981) [hereinafter Dworkin, *Equality Part 1*] (arguing against pursuit of equality of welfare); Ronald Dworkin, *What Is Equality? Part 2: Equality of Resources*, 10 PHIL. & PUB. AFF. 283 (1981) [hereinafter Dworkin, *Equality Part 2*] (presenting case for equality of resources). In calling for a reduction in "resource inequality," Dworkin emphasizes the apparent unfairness of "brute luck"—luck that is not a function of one's "deliberate gambles" but is instead imposed on the individual. Dworkin, *Equality Part 2*, *supra*, at 293. Dworkin also rejects redistributing resources based on one's welfare level, raising, among other objections, the specter of redistributing resources from those with simple desires to those who have cultivated expensive tastes. Dworkin, *Equality Part 1*, *supra*, at 228–40.

More generally, in public debate, egalitarian concerns are frequently presented in terms of resource inequality—specifically, income inequality. *See, e.g.*, Michael Abramowitz & Lori Montgomery, *Bush Addresses Income Inequality; Economic Speech Touches on Executive Pay as Senators Move To Rein It In*, WASH. POST, Feb. 1, 2007, at A4 (describing speech in which President Bush recognized that there is rising income inequality and presented his Administration's education initiatives as way to address problem); Paul Krugman, Op-Ed, *Gilded Once More*, N.Y. TIMES, Apr. 27, 2007, at A27 (decrying rising income inequality).

[66] A concern for resource inequality does not necessarily translate directly into a concern for annual income inequality. Among the intervening questions are: Should one's available resources be measured over a year (as in traditional distributional tables), a lifetime, or some other period? Should we be concerned only with inequality that results from factors over which one has no control or, alternatively, with inequality that results from any source, including one's own decisions (which is the approach of most distributional analysis)?

For simplicity's sake, this analysis assumes, with respect to the first question, that resource egalitarianism seeks to reduce income inequality as measured on an annual basis,

gressive tax change will be one that shifts the tax system more in favor of those with lower incomes by closing the gap between the highest earners and those below them. On the other hand, a regressive tax change will lead to greater disparity, by giving larger tax breaks to those with high incomes, and a neutral tax change will keep income disparity constant.

Still, to determine whether any of the five measures of progressivity is consistent with this theory of fairness, further specification is needed. In particular, one must define what exactly is meant by harmful "income disparity." Income disparity could be conceived of as a function of the relative differences between each income group or, alternatively, as a function of the absolute differences. A simple hypothetical illustrates these two concepts. Again, there is a two-person economy, featuring "High" and "Low." High earns $10, while Low makes $5. Thus, in terms of the relative disparity, High makes double what Low earns, while the absolute dollar difference between the two is $5. Assume that the income of both individuals doubles—so that High makes $20 while Low makes $10. In relative terms, disparity is unchanged; High's income is still double Low's. Also, as a result of the relative difference standing unchanged, the share of income earned by both remains constant, with High, as before, earning two-thirds and Low earning one-third of the economy's total income. But in absolute dollar terms, disparity has increased substantially: The difference between the two individuals has doubled from $5 to $10. It is not obvious which of these two metrics of disparity should be considered more meaningful.[67]

If inequality is conceived of in relative terms, then one measure of the five stands out as better than the others. This is percent change in after-tax income, Measure D. Percent change in after-tax income

and assumes, with respect to the second question, that resource egalitarianism is concerned with inequality that results from any source. An alternative answer to the first question would affect how distributional tables should be presented (i.e., on a lifetime, as opposed to an annual, basis), while an alternative answer to the second question would raise questions about the usefulness of distributional analysis absent an ability to disentangle inequality that results from people's own decisions as opposed to inequality generated by factors over which people have no control.

[67] DEBRAJ RAY, DEVELOPMENT ECONOMICS 176–77 (1998). Ray defines the "relative income principle" as one of four criteria by which to judge income inequality indices. The relative income principle states that in measuring inequality, "*relative* incomes should matter and the absolute levels of these incomes should not." *Id.* at 176. Ray admits that this principle is not obviously correct, as absolute levels of income may also be meaningful in the context of inequality. *Id.* at 176 n.6.

This does not mean the issue is impossible to resolve. It would require a deeper probing of why resource inequality is harmful—asking whether the harm comes about from absolute differences, from relative differences, or perhaps from some combination of the two.

defines the extent to which relative income differences shift due to a tax change. If percent change in after-tax income is uniform across income groups, then the relative differences between income groups—and the shares of total income earned—will not have changed. On the other hand, if higher-income groups see their after-tax incomes rise more, in percent terms, than lower-income groups due to a tax change, then relative disparity will have increased and higher-income groups will receive a greater share of total income. In sum, percent change in after-tax income is consistent with the normative framework of equality of resources, where disparity is measured in relative terms.

On the other hand, if disparity is conceived of in absolute terms, then tax change in dollar terms, Measure E, is what matters most. If a tax change increases all incomes by the same number of dollars, absolute differences will remain constant, even if relative differences do not. And if the dollar amounts of the tax change differ across income classes, then the absolute difference between them will shift.

The remaining three progressivity measures are irrelevant when it comes to gauging the change in income disparity. These other measures do not gauge how a tax change affects after-tax income, which is what matters for income inequality. Instead, these measures assess change in "tax burden," whether in terms of percent change, change in share of total burden, or as a percent of pre-tax income. And, change in "tax burden" is not normatively meaningful within a framework focused on reducing resource disparity.

In short, if one believes that the vertical equity of the tax system should be measured in terms of the system's effect on resource inequality and, more specifically, annual income inequality, this has strong implications for how the progressivity of a tax change will be defined. A concern for income inequality does not completely resolve which measure is best; one has to choose which form of inequality—relative or absolute—matters most. Nonetheless, only two of the five measures, percent change in after-tax income (Measure D) and tax cut dollars (Measure E), are viable within this framework.

B. Difference Principle

The "difference principle" is another frequently cited conception of tax fairness that, like the theory of equality of resources, focuses on how society's resources are distributed. According to this notion of fairness, as developed by John Rawls, "differences in wealth and standard of living between different social groups are justified only to the extent that the system that generates those inequalities also does at

least as well for the interests of the worst-off group as any alternative system."[68] Inequality is considered unfair because of the arbitrariness of unequal outcomes.[69] But this inequality can potentially be justified in fairness terms if those at the bottom are made better off because of it. By this principle, percent change in after-tax income (Measure D) and tax change in dollars (Measure E) are again the most meaningful measures, but unlike in the resource equality framework, the normative implications of these measures are not necessarily as clear.[70]

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[68] MURPHY & NAGEL, *supra* note 11, at 54. *See generally* JOHN RAWLS, A THEORY OF JUSTICE 52–93 (rev. ed. 1999) (defining and justifying difference principle). In describing the difference principle, Rawls explains that "the higher expectations of those better situated are just if and only if they work as part of a scheme which improves the expectations of the least advantaged members of society." *Id.* at 65.

[69] *See* RAWLS, *supra* note 68, at 87–88 (noting "arbitrariness found in nature" and urging that "there is no necessity for men to resign themselves to these contingencies"); *see also* MURPHY & NAGEL, *supra* note 11, at 54–55 (discussing role of arbitrariness in Rawls's difference principle).

[70] Some, especially economists, have accorded a different meaning to Rawls's "difference principle." In particular, they have interpreted Rawls as supporting a "maximin criterion," according to which society's welfare is equated with the well-being of those who are the least well-off. *See, e.g.*, ROSEN & GAYER, *supra* note 8, at 266 (defining maximin criterion and describing Rawls as having asserted that maximin has "a special claim to ethical validity"); STIGLITZ, *supra* note 8, at 102 ("Rawls argues that the welfare of society only depends on the welfare of the worst-off individual . . . ."). According to this criterion, not only is priority given to those at the bottom, but their well-being is, in fact, all that matters. Unlike the definition of the difference principle employed here, the maximin criterion would imply that inequality is unimportant. Transferring a dollar from a person in the middle of the income distribution to a person at the top of the income distribution would have no effect on social welfare; instead, the only distributional changes that would affect social welfare are those that either increase or decrease the well-being of the worst-off person. *Cf.* Derek Parfit, *Equality and Priority*, 10 RATIO 202, 212–17 (1997) (exploring differences between theories of equality and theories that give priority to welfare of those who are less well-off than others).

This alternative interpretation of Rawls's difference principle is unsurprising in light of Rawls's own language. At points, Rawls appears to explicitly endorse the maximin criterion. *See* RAWLS, *supra* note 68, at 130–39 (proving why maximin criterion is "useful rule"). *See generally* John Rawls, *Some Reasons for the Maximin Criterion*, 64 AM. ECON. REV. (PAPERS & PROC.) 141 (1974) (summarizing "some of the reasons for taking the maximin criterion seriously").

Nonetheless, Rawls is clearly concerned with inequality and so it is a mistake to equate the Rawlsian difference principle with the maximin criterion (at least, as generally defined). For instance, in an article devoted to establishing the reasonableness of the maximin criterion, Rawls still concludes that social institutions should be arranged so that "inequalities are no greater than necessary to produce corresponding advantages for the less fortunate." Rawls, *supra*, at 145; *see also* RAWLS, *supra* note 68, at 65 (expressing similar sentiment). In sum, the difference principle values reductions in inequality, even if priority must be given to the welfare of the least fortunate.

Still, given that the maximin criterion is widely employed in academic circles as a theory of distributive justice (and even if it cannot be equated with the "difference principle"), it is of interest to ask which measures of progressivity are consistent with this notion of distributive justice. The answer is that none are and that the progressivity of a tax change, irrespective of how it is measured, has no moral significance according to the

Given the difference principle's aversion to inequality, a number of the same conclusions made in the context of resource equality apply here. First, those progressivity measures that gauge change in tax burden, as opposed to change in after-tax income, lack meaning in this context. This rules out Measures A, B, and C as potential indicators of progressivity according to the difference principle. Second, how one defines inequality affects which of the two remaining measures is thought to best align with this principle. If inequality is measured in relative terms, then percent change in after-tax income (Measure D) is superior, but if measured in absolute terms, then dollar change in tax liability (Measure E) is most appropriate.

Still, neither of these measures provides a complete guide to the progressivity or regressivity of tax changes according to the difference principle. While both may be good measures of changes in income inequality, the difference principle also values (and indeed gives priority to) increasing the welfare of those at the bottom. In many circumstances, these two goals go hand-in-hand. By taxing away resources from those at the top and giving these resources to those at the bottom, inequality is decreased, and the poorest are made better off. But a tension between these aims can arise because taxation generates inefficiency.[71] At some point, increasing the tax rate on those with higher incomes will actually reduce the resources available for transfer to the least well-off.[72] It would seem inconsistent with the

maximin criterion. As discussed in the Section on utilitarianism, *infra* Part III.D, the *sine qua non* of the progressivity framework is establishing which income classes have done better (or worse) than others due to a tax change. But the maximin criterion is unconcerned with how the least well-off fare *relative* to other income groups. Instead, the criterion establishes a simple maximization rule: Maximize the welfare of the least well-off. In following this maximization rule, it is of no interest whether the least well-off have done *better* than others. *Cf.* Parfit, *supra*, at 213–14 (describing how those who give priority to welfare of those less fortunate "do *not* believe in equality" and contrasting this viewpoint with egalitarianism).

A simple example can illustrate. If cutting tax rates on a high-income group generates additional economic resources because of an improvement in efficiency, and if some of these additional resources are then distributed to those at the bottom, this is necessarily a welfare-enhancing tax change according to the maximin rule; this is true irrespective of whether the tax change is progressive or regressive—i.e., whether those with high incomes or those with very low incomes have done better. In sum, anyone who adopts the maximin rule should be unconcerned with the progressivity of a tax change and should, instead, be focused on simply maximizing the welfare of the least well-off.

Note that utilitarianism has a very similar relationship with the concept of progressivity. *See infra* Part III.D.

71 Since taxes distort behavior, tax systems bring about costs in excess of the amounts paid into the system—often referred to as "deadweight loss" or "excess burden." *See* ROSEN & GAYER, *supra* note 8, at 331 (defining excess burden).

72 The idea that increasing tax rates can, at some point, actually reduce tax revenue was made popular by economist Arthur Laffer. The relationship between tax rates and reve-

difference principle to call such a counterproductive move "progressive." Inequality may be reduced, but those at the bottom of the income spectrum would also be receiving fewer resources, which is in tension with the difference principle's priorities. At the same time, it would be strange to label such a move as "regressive." Even if an increase in tax rates on higher-income Americans does not benefit those at the bottom, it certainly does not shift the equity of the tax system in favor of those at the top. Perhaps what can best be said is that, where tax rates are this high, the concept of progressivity loses its primacy under the difference principle. The fairness of the tax system would no longer depend on how income classes are doing relative to one another—which is the framework for progressivity—but would depend, instead, on the system's efficiency.

Put differently, whether a tax change should be called progressive or regressive depends on more than income inequality, as measured by either Measures D or E. It also depends on the efficiency effects of the tax change. The question is whether tax rates are sufficiently low such that reducing income inequality is consistent with increasing the welfare of those at the bottom. Answering this question requires economic analysis that goes beyond a distributional table.

While this may seem to engender substantial uncertainty as to whether a given tax change is progressive according to the difference principle, the uncertainty should not be overstated. In general, increasing tax rates in the United States can both reduce inequality and generate resources to be redistributed to those at the bottom.[73] While tension between these two goals is a theoretical possibility, it is often not practically important. Gauging changes in income inequality, using percent change in after-tax income or change in dollars, will usually capture the progressivity of a tax change under the difference principle.

C. Equal Sacrifice

Unlike the prior two theories of distributive justice, the equal sacrifice doctrine does not concern itself with the fair distribution of resources but, instead, the fair distribution of tax burdens. As philosophers Liam Murphy and Thomas Nagel observe, this principle can be

nues collected has hence been denoted the "Laffer curve." *See* STIGLITZ, *supra* note 8, at 699–700 (defining Laffer curve).

[73] As Harvey Rosen and Ted Gayer have observed, econometric evidence suggests that labor supply, especially among prime-age males, is not all that sensitive to tax rates. Given that current tax rates are well below confiscatory levels, "[g]eneral tax rate reductions are unlikely to be self-financing." ROSEN & GAYER, *supra* note 8, at 424.

derived from "a libertarian theory of justice."[74] In the libertarian view, "government should not be in the business of altering the distribution of welfare."[75] Instead, taxes are conceived of as an unfortunate, if necessary, confiscation of property to pay for basic government services.[76] "The problem," as Walter Blum and Harry Kalven note, "then becomes one of confiscating in an equitable manner."[77] The equal sacrifice principle posits that fair taxation will require equal sacrifice from all, leaving the distribution of welfare generated by the market unchanged.[78] As this Section explains, three of the measures of progressivity discussed here, Measures A, B, and D, are plausible measures of progressivity under this theory of fairness.[79]

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[74] MURPHY & NAGEL, *supra* note 11, at 26.

[75] *Id.* at 27.

[76] *See id.* at 26–27 ("Paying for minimal [government] services that benefit everyone is then naturally understood as a matter of sharing out the cost of a common burden.").

[77] Walter J. Blum & Harry Kalven, Jr., *The Uneasy Case for Progressive Taxation*, 19 U. CHI. L. REV. 417, 455 (1952).

[78] MURPHY & NAGEL, *supra* note 11, at 27 ("[W]hat could be fairer, if we assume that the distribution of welfare produced by the market is just, than that everyone contribute the same amount in real (as opposed to monetary) terms?").

The equal sacrifice principle originates from the work of John Stuart Mill. Mill, in an oft-quoted passage, articulates the principle as follows: "As a government ought to make no distinction of persons or classes in the strength of their claims on it, whatever sacrifices it requires from them should be made to bear as nearly as possible with the same pressure upon all . . . ." JOHN STUART MILL, THE PRINCIPLES OF POLITICAL ECONOMY 927 (Batoche Books 2001) (1848). Mill, a few sentences later, denotes this principle as "equality of sacrifice." *Id.*

Mill's theory has engendered a vast literature, including contemporary articles that apply the principle of equal sacrifice. *See, e.g.*, Tapan Mitra & Efe A. Ok, *Personal Income Taxation and the Principle of Equal Sacrifice Revisited*, 37 INT'L ECON. REV. 925, 927 (1996) (finding that, under certain assumptions, application of equal sacrifice doctrine would produce progressive tax system); H. Peyton Young, *Progressive Taxation and Equal Sacrifice*, 80 AM. ECON. REV. 253, 253 (1990) (asking "whether equal sacrifice is discernible in the way that legislators actually do distribute the tax burden").

[79] The principle of equal sacrifice has been criticized for falsely distinguishing between government spending and taxes. *See, e.g.*, MURPHY & NAGEL, *supra* note 11, at 25–26 ("What matters is not whether taxes—considered in themselves—are justly imposed, but rather whether the totality of government's treatment of its subjects, its expenditures along with its taxes, is just."). As discussed earlier, *see supra* note 13 and accompanying text, there is no meaningful difference between taxes and spending. Money could be distributed from the government either in the form of a tax cut or a cash grant on the spending side; the distinction between the two is "pure form." Shaviro, *supra* note 13, at 191.

Nonetheless, the equal sacrifice principle leans heavily on the distinction. It treats spending as a black box when it comes to distribution—so that the collection of taxes is akin to a "common disaster" imposed on all with the money collected being "thrown into the sea." Blum & Kalven, *supra* note 77, at 517. The equal sacrifice principle simply requires that the burdens of this "common disaster" be shared equally in terms of welfare.

But spending is not a black box. There are cash grant programs, such as Social Security and Temporary Assistance for Needy Families (commonly known as "welfare"), the distribution of which is relatively easy to ascertain. There are also numerous programs,

First, it is important to emphasize what "sacrifice" means. Under the equal sacrifice principle, sacrifice is measured not in dollar terms but in "real" welfare terms.[80] The two may not be equivalent. In particular, it seems reasonable to assume that a person's expected marginal utility of income declines as her income rises. A dollar will be expected to have more value to a person with one thousand dollars than a person with one million dollars.[81]

Before delving into the distributional measures, it is also helpful to define what neutral, progressive, and regressive tax changes should look like in terms of the equal sacrifice principle. The fairness of a tax system under this principle is defined by the equality of sacrifice. Thus, a neutral tax change would simply hold the system's level of "sacrifice equality" constant. If prior to the tax change, a lower-

such as Medicaid and Food Stamps, that provide in-kind benefits to narrow and identifiable segments of the population. In short, the incidence of certain spending programs, just like taxes, can be traced.

Does this mean that the equal sacrifice principle is necessarily incoherent? No, but it does mean that the principle must be revised if it is to withstand the criticism that it unnecessarily distinguishes between taxes and spending. In revised form, the equal sacrifice principle could call for equal sacrifice to pay for those government services, such as national defense, for which it is more difficult to ascertain a distribution since people cannot be excluded from receiving the benefits of these services.

This would require a change in how distributional tables are presented. As discussed earlier, *see supra* note 14, although many distributional tables do take into account certain spending programs, especially cash-transfer programs, in calculating pre-tax income, the tables still formalistically distinguish between spending and taxes. The benefits of cash-transfer programs are included in pre-tax income, whereas taxes are subtracted to arrive at after-tax income. So, tax burdens are estimated as if there is some real difference between spending (a pre-tax benefit) and taxes (a burden subtracted from pre-tax income). In revised form, these tables would eliminate this distinction and sum together the burden of taxes and the benefits of spending programs for which distribution could be ascertained. This would produce a "net sacrifice" figure, and the goal would then be to ensure that people sacrifice equally for the remainder of government services that arguably benefit everyone.

The analysis in this Section is relevant irrespective of how the equal sacrifice principle is framed—whether as equal sacrifice to pay for all government spending or equal sacrifice to pay for only those government services that benefit all. What must change is how the distributional tables are calculated. Under the traditional equal sacrifice framework, the table would, as is done currently, show a "gross sacrifice" figure, which includes only the burden imposed by "taxes." By contrast, under a revised (and more coherent) equal sacrifice theory, the table would display a "net sacrifice" figure, netting the burden of tax payments with the benefits of government programs for which the distribution can be estimated.

[80] *See* MILL, *supra* note 78, at 927 ("[Equality of sacrifice] means apportioning the contribution of each person towards the expenses of government, so that he shall feel neither more nor less inconvenience from his share of the payment than every other person experiences from his.").

[81] Blum & Kalven, *supra* note 77, at 456; *see also infra* note 89 and accompanying text (noting that recent empirical work has suggested that marginal utility of income may be inversely proportional to amount of money one has).

income group had sacrificed more than a higher-income group, this will continue to be the case after a neutral tax change, since a neutral tax change is not meant to adjust the distributional effects of the tax system. A progressive change, by contrast, would reduce the sacrifice of lower-income groups relative to higher-income groups, and a regressive change would do the opposite.

Note that directly gauging change in sacrifice requires measuring units of utility ("utils").[82] Of course, measures in utils do not appear on distributional tables, and so, in part, evaluating the five measures of progressivity discussed here comes down to which measures may serve as good proxies for the change in utility.

This definition of progressivity also brings up the same issue that arises in the context of resource inequality. Specifically, equality of sacrifice—just like equality of resources—can be measured in terms of absolute differences or relative differences, and the two concepts can produce quite different results.[83] If two taxpayers previously sacrificed four utils and two utils (respectively) to taxes, and a tax cut slashed the amount sacrificed by each in half, would fairness have remained constant? In relative terms, the answer would be "yes," since one taxpayer would continue sacrificing double the number of utils to taxes. Yet in absolute terms, the answer would be "no," since the absolute difference in the amount they sacrifice would have fallen by two utils and one util, respectively. Moreover, neither measure of equality is obviously correct, although a deeper probing of why inequality of sacrifice is harmful may help resolve this important measurement issue.

If equality of sacrifice is concerned with relative differences, percent change in tax burden (Measure A) and change in share of total taxes paid (Measure B), while not "perfect fits," may serve as reasonable measures of the progressivity of a tax change. The two directly reflect how relative tax burdens, in terms of dollars paid, adjust in the

[82] Utility is meant to be a comprehensive measure of a person's well-being, Louis Kaplow & Steven Shavell, *Fairness Versus Welfare*, 114 HARV. L. REV. 961, 979–80 (2001), and, thus, utils are units of well-being. As employed in the theory of equal sacrifice (as well as in the theory of utilitarianism, discussed *infra* Part III.D), utils are considered to be both cardinal—meaning that it is possible to quantify how much better off someone is in one state of the world than in another state of the world—and comparable across individuals, so that one util to Person A is the same as one util to Person B. Whether utility is, in fact, cardinal and comparable is a matter of substantial controversy in the economics and philosophy literature. *See* SEN, *supra* note 47, at 12–13 (noting trend in economics to eschew cardinal and comparable utility). But, as Amartya Sen observes, "distributional judgements would seem to demand" some notion of cardinality and comparability of utility. *Id.* at 13.

[83] For a discussion of the difference between absolute and relative differences, see *supra* note 67 and accompanying text.

wake of a tax change. For instance, if all income groups see their taxes cut by the same percent, then the relative amount of money paid in taxes will remain constant,[84] and the same is true if each class's share of taxes paid does not change.[85] Although these measures reflect change in the tax burden as measured in dollars, they may also serve as rough proxies for percent change in welfare. It is not unreasonable—especially where tax burdens are not all that large—to assume that for any given percent change in taxes paid, the utility sacrificed would change by nearly the same percent.[86] If this assumption holds, then Measures A and B will signal how tax burdens have changed in terms of welfare—and not just in terms of dollars. In this way, Measures A and B will reflect the progressivity of a tax change in terms of the equal sacrifice principle, if inequality of sacrifice is thought of in relative terms.

If inequality of sacrifice is considered in absolute terms, either percent change in after-tax income (Measure D) or tax change in dollars (Measure E) could potentially serve as progressivity measures—although percent change in after-tax income turns out to be the far more plausible of the two. To serve as a gauge of absolute sacrifice, a

[84] To put this in terms of an example, if one taxpayer faces a tax liability of $100 and another faces a tax liability of $50 and both their tax liabilities are cut by twenty percent, yielding liabilities of $80 and $40, respectively, the relative difference will remain the same—namely, the high taxpayer will continue to pay double that of the low taxpayer.

[85] For a discussion of the close relationship between percent change in tax burden and change in share of taxes paid, see *supra* Part I.A.1.

[86] For any given percent change in taxes paid in dollars, the percent change in welfare terms will always be somewhat larger, assuming that the marginal utility of money declines with income. This is because the amount of welfare sacrificed per dollar of taxes paid rises as a person's tax burden grows.

Imagine that a person has a tax liability of one dollar and is facing a tax increase of one dollar. Assume that the original one dollar tax burden reduces this person's welfare by four utils. Increasing his tax burden by another dollar should be expected to reduce his welfare by more than this, as his income has already been reduced by the dollar tax, thus increasing the marginal utility of money. The one dollar tax increase might require an additional sacrifice of, say, six utils. While the tax burden, in dollar terms, would rise by one hundred percent, the tax burden, in welfare terms, would rise by 150%.

This effect should be small, however, if the tax burden is not all that large relative to income. Under these conditions, there may be relatively little difference between the utility sacrificed from the first dollar paid in taxes and that sacrificed from the last dollar paid. If this is the case, then for any percent change in taxes paid in dollars, the amount of welfare sacrificed will change by nearly the same percent.

It must be emphasized, though, that this assumption will not always hold. Especially where a person's tax burden is large compared to his income, the utility sacrifice from the first dollar paid in taxes is likely to be considerably smaller than the utility sacrifice from the last dollar paid. In this situation, percent change in taxes paid in dollars will not track percent change in taxes paid in welfare. So, where tax burdens are large relative to income, Measures A and B will serve as poor measures of the progressivity of a tax change within the framework of equal sacrifice.

measure must reflect the changes in absolute utility across income classes. For instance, if a tax cut results in the average sacrifice falling by the same number of utils across all income classes, the progressivity measure must show all income classes benefiting equally from the tax change.

Tax change in dollars, Measure E, will only work as a progressivity measure within this framework to the extent that dollars can serve as a proxy for units of welfare. This requires that marginal utility of money remain constant as income rises. This seems unlikely. A dollar to the rich man is not the same as a dollar to the poor man, and so tax change in dollars will fail to reflect how a tax change actually affects people's absolute welfare.

Percent change in after-tax income, Measure D, is a far more plausible measure of progressivity where inequality of sacrifice is measured in absolute terms. This would serve as an accurate proxy of absolute change in welfare if the marginal utility of money declines at a very specific rate. In particular, for this measure to work, the marginal utility of money must be inversely proportional to the amount of money one has[87]—meaning that a given percent increase in after-tax income would yield the same increase of utils irrespective of one's after-tax income level.[88] According to recent empirical work, this is a plausible description of the relationship between one's income level

[87] In mathematical terms, for Measure D to serve as an accurate measure of the relationship between one's level of income and the marginal utility of money, the relationship between the marginal utility of money and one's income level must describe a "rectangular hyperbola." Blum & Kalven, *supra* note 77, at 458–59. The equation for this hyperbola could be defined as follows:

$$\frac{dU}{dI} = \frac{C}{I}, \text{ where}$$

I = one's after-tax level of income,

U = the utility derived from a given level of income,

$\frac{dU}{dI}$ = marginal utility of money (the derviative of U with respect to I), and

C = a constant.

[88] Taking an integral of the equation defined above, *supra* note 87, it can be proven that, for any given percent change in after-tax income, utility would change by the same number of utils irrespective of one's after-tax income level. In addition to the variables defined *supra* note 87, let I_o = after-tax income level before the tax change, and p = percent change in after-tax income due to the tax change. Accordingly:

$$\frac{dU}{dI} = \frac{C}{I}$$

$$dU = \frac{C}{I}(dI)$$

and the utility derived from money.[89] If the description is accurate, then percent change in after-tax income will reflect the progressivity of a tax change in terms of absolute sacrifice. If a tax cut increases everyone's after-tax income by the same percent, then all will see their tax sacrifices cut by the same number of utils—a neutral tax change. On the other hand, if low-income taxpayers see their after-tax incomes increase by a greater percent than others, then their tax sacrifice will fall by a greater number of utils than others—a progressive change. In a regressive change, the opposite will occur.

Finally, change in average tax rate, Measure C, is fundamentally inconsistent with the concept of equal sacrifice, since the measure cannot plausibly serve as a proxy for the change in welfare sacrificed. It might be thought that the measure should stand as a good proxy for change in welfare in absolute terms—that every person would place the same value, in utils, on a tax change that is the same proportion of their before-tax incomes. But this makes little sense. The value one places on a given dollar does not depend on how much money one would have had if no taxes had been imposed; instead, the utility derived from that dollar depends on how much money one actually has after taxes.

An example can illuminate this proposition. Take two taxpayers, one earning $25 pre-tax and the other earning $30. Suppose that the low earner is taxed at only a twenty percent rate, while the high earner is taxed at a thirty-three percent rate. Both are left with $20

Taking the integral:

$$U = \int_{I_o}^{Io^{(1+p)}} \frac{C}{I}(dI)$$

$$U = [C(\ln(I))]_{I_o}^{I_o^{(1+p)}}$$

$$U = C\ln(I_o(1+p)) - C\ln(I_o)$$

$$U = C\ln(1+p) + C\ln(I_o) - C\ln(I_o)$$

$$U = C\ln(1+p),$$

showing that the utility derived from any given percent change in after-tax income is the same irrespective of one's level of after-tax income.

[89] *See* HM TREASURY, THE GREEN BOOK: APPRAISAL AND EVALUATION IN CENTRAL GOVERNMENT 93 (2003), *available at* http://www.hm-treasury.gov.uk/media/3/F/green_book_260907.pdf (concluding that, in British context, "the empirical evidence suggests that . . . the utility of a marginal pound is inversely proportional to the income of the recipient"); Richard Layard et al., *The Marginal Utility of Income* (Ctr. for Econ. Performance, Discussion Paper No. 784, 2007), *available at* http://cep.lse.ac.uk/pubs/download/dp0784.pdf (using survey evidence from over fifty countries to broadly confirm hypothesis that marginal utility of income is inversely proportional to income).

post-tax. In absolute terms, a neutral tax cut would either raise or lower the taxpayers' sacrifices by the same number of utils. But, a tax change that cuts both taxpayers' average tax rates by the same number of percentage points—say, ten percentage points—will not be neutral in this sense. It will provide a tax cut of $2.50 to the low earner and a tax cut of $3.00 to the high earner. Given that both begin with the same after-tax incomes (and so should be expected to value a given dollar similarly), the high earner will have seen his tax sacrifice drop by more utils than the low earner. In sum, a tax change that appears neutral in terms of change in average tax rates will not be neutral in terms of welfare sacrificed.

This analysis has shown that, while the theory of equal sacrifice does not identify a single measure as necessarily the best one, it does narrow the possibilities. If inequality of sacrifice is conceived of in relative terms, percent change in tax burden (Measure A) or percentage point change in share of total taxes paid (Measure B) may serve as reasonable measures of progressivity. On the other hand, if inequality of sacrifice is measured in absolute terms, percent change in after-tax income (Measure D) represents a plausible measure of progressivity.

D. Utilitarianism

The utilitarian principle requires that society be organized so as to maximize social welfare as calculated by summing the utility of all members of society.[90] As this Section explains, this rule should lead the utilitarian to reject the progressivity framework as normatively meaningless. From the utilitarian perspective, those trying to assess the progressivity of a tax change ask the wrong question in evaluating the distribution of a tax change—namely, they ask which income classes have done better than others. Instead, the utilitarian believes that the relevant question for distributional analysis is whether this tax change has maximized total utility. Although the distribution of a tax change is key to answering either question, these two approaches are fundamentally different—progressivity focuses on fairness while utilitarianism assesses optimality.

[90] *See, e.g.*, JOHN STUART MILL, *Utilitarianism*, *in* ON LIBERTY AND OTHER ESSAYS 131, 137 (John Gray ed., Oxford Univ. Press 1991) (1861) ("The creed which accepts as the foundation of morals, Utility, or the Greatest Happiness Principle, holds that actions are right in proportion as they tend to promote happiness; wrong as they tend to produce the reverse of happiness."); RAWLS, *supra* note 68, at 20 ("The main idea [of utilitarianism] is that society is rightly ordered, and therefore just, when its major institutions are arranged so as to achieve the greatest net balance of satisfaction summed over all the individuals belonging to it.").

Utilitarianism denies that justice derives from the fair treatment of individuals.[91] Instead, utilitarianism sees justice as maximizing the sum of utility. As the philosopher Bernard Williams observes, utilitarianism seeks to maximize an "agglomeration of satisfactions which is basically indifferent to the separateness of those who have the satisfactions."[92] Since the separateness of individuals is treated as irrelevant under utilitarianism, fairness—which is about comparing how different people are treated—is, similarly, meaningless from this perspective.[93] This is in stark contrast to the three other theories of justice discussed here, which entirely concern themselves with the fair distribution of resources and tax sacrifice among the population.

This does not mean that distributional tables are irrelevant to utilitarianism; in fact, they are quite important for evaluating the optimality of a tax change. The total utility produced by a tax change can be thought of as a function of two factors: its distributional effects and its efficiency effects.[94] Distribution matters since a dollar in the hands of those with lower incomes would be expected to generate more utility than a dollar in the hands of those with higher incomes.[95] Efficiency matters since more utility can be derived from a larger economic pie, which a more efficient system makes possible.

Thus, both those concerned with progressivity and those concerned with maximizing utility will look to distributional tables—but they will take very different approaches. Those focused on progressivity will want to know which income classes have "done better" and which have "done worse." The utilitarian, by contrast, will be interested in whether the distribution of resources has served to maximize utility. The difference between these two approaches can be high-

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[91] *See* MURPHY & NAGEL, *supra* note 11, at 56 (contrasting utilitarianism with theories that advocate "fairness approach").

[92] BERNARD WILLIAMS, MORAL LUCK: PHILOSOPHICAL PAPERS 1973–1980, at 3 (1981). In a similar vein, Rawls famously observes that "[u]tilitarianism does not take seriously the distinction between persons." RAWLS, *supra* note 68, at 24.

[93] If a very unequal distribution of, say, resources or tax sacrifice would maximize total utility, the utilitarian would be unmoved by this seeming unfairness. *See* SEN, *supra* note 47, at 15–18 ("As a framework of judging inequality, utilitarianism is . . . a non-starter.").

[94] *See, e.g.*, Kaplow & Shavell, *supra* note 82, at 989–98 (defending welfarism—of which utilitarianism is one form—and explaining why and how welfarists should take into account both efficiency and distribution).

[95] Indeed, the decreasing marginal utility of income can lead utilitarians to call for radical redistribution. In a renowned article, the utilitarian Peter Singer argues as follows:

> [W]e ought to give [to those in need] until we reach the level of marginal utility—that is, the level at which, by giving more, I would cause as much suffering to myself or my dependents as I would relieve by my gift. This would mean, of course, that one would reduce oneself to very near the material circumstances of a Bengali refugee.

Peter Singer, *Famine, Affluence, and Morality*, 1 PHIL. & PUB. AFF. 229, 241 (1972).

lighted by asking whether utilitarianism has any stake in the debate about progressivity measures. While, under a fairness framework, the emphasis on who has "won" and who has "lost" necessarily requires one to determine which metric should be used to judge "winning" and "losing," this issue is a red herring according to the utilitarian. What matters instead is how the change has affected aggregate utility and, as such, there is no need to choose a single distributional metric for judging who has "won" or "lost" more. This debate is a distraction from what matters: namely, where resources have gone and if this distribution has maximized total utility.

Nonetheless, in trying to calculate how a tax change has affected aggregate utility, a utilitarian will tend to find certain distributional measures to be more helpful than others. Specifically, a measure that stands as a good proxy for how much utility has changed in absolute terms would prove particularly useful. The utilitarian could then focus on either maximizing the aggregate increase (in the case of a tax cut) or minimizing the aggregate decrease (in the case of a tax increase) in this measure.

Identifying a good proxy for change in utility brings this Note back to a previous discussion—regarding what measure might best capture absolute changes in "sacrifice."[96] This Note explained in the previous Section that the most plausible proxy for absolute changes in the level of utility among the five measures is percent change in after-tax income (Measure D). Specifically, Measure D would track absolute changes in utility if the marginal utility of money falls at a specific—but plausible—rate.[97]

Note that even if percent change in after-tax income (Measure D) is a good proxy for absolute changes in utility, this would not suggest that the progressivity of a tax change has moral significance in the utilitarian framework. What has significance is maximizing total utility for any given increase or decrease in tax revenues (with change in utility proxied by the percent change in after-tax income). But, determining which income class has seen its utility increase the most is not relevant to this task.

It may seem inconsistent to claim that the progressivity of a tax change has no independent moral significance according to utilitari-

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[96] *See supra* Part III.C.

[97] For percent change in after-tax income to proxy absolute changes in utility, the marginal utility of income must be inversely proportional to income. *See supra* notes 87–88 and accompanying text. Recent empirical work has suggested that this is a plausible description of the marginal utility of income. *See supra* note 89 and accompanying text. If this holds, then for any given percent change in after-tax income, a person's utility will change by the same number of utils, irrespective of his income level.

anism but that, at the same time, the distribution of a tax change matters for determining the tax change's optimality. An example can help illustrate how this is so. Assume that there is a tax system that has been designed to maximize utility. Further assume that the government experiences a one-time windfall (e.g., selling rights to oil drilling), the proceeds of which the government distributes through the tax system.[98] Being a one-time, surprise distribution, this will have no efficiency effects. The optimal distribution of this tax change, according to utilitarianism, is then clear: It should all go to those at the bottom of the income distribution, since they are expected to have the highest marginal utility of income. But what would a distributionally "neutral" tax change look like? It would, by some measure, spread the benefits equally across all income classes, as this would hold "fairness" constant. Doing so, however, would not hold constant anything of normative significance in the utilitarian framework. All that matters for the utilitarian is maximizing utility, and by distributing the tax cut across income classes, a previously optimal tax system would no longer be so.

This example is indicative of the fundamental disconnect between the progressivity framework and utilitarian analysis: The progressivity framework can be dangerously misleading from the utilitarian perspective. In this example, the progressivity framework would result in fewer resources going to those at the bottom than utilitarianism would recommend in order to hold optimality constant.

In sum, debates about the progressivity of tax changes—whether they be the Bush tax cuts or other policies—are entirely misguided according to utilitarianism. Instead of talking about whether a tax change is progressive or not, the discussion should focus on whether the tax change has maximized total utility and, if not, how far the tax system is from its optimal structure. Certain distributional measures—most plausibly, percent change in after-tax income (Measure D)—may prove useful in calculating the change in total utility. But, in employing this measure, the utilitarian would not be concerned with which income groups won or lost more—the *sine qua non* of progressivity. Instead, the utilitarian would be focused solely on aggregate utility.

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[98] Such a windfall would allow the government to either cut taxes or increase spending compared to what it otherwise could have done in the absence of the windfall. *See supra* notes 56–57 and accompanying text (discussing government's intertemporal budget constraint). This hypothetical assumes that the proceeds of the windfall are distributed via a tax cut.

E. Summary

This Part has brought to bear this Note's proposal for using theories of tax justice to evaluate the muddle of inconsistent measures of progressivity. It has shown that different measures are consistent with different conceptions of distributive justice—and has found that only one measure, percent change in after-tax income, could plausibly be considered meaningful according to all four theories of justice discussed here. The results of this analysis are summarized in Table 6.

TABLE 6
THEORIES OF DISTRIBUTIVE JUSTICE AND THE MEASURES OF PROGRESSIVITY WITH WHICH THEY ARE CONSISTENT*

	Equality of Resources	Difference Principle	Equal Sacrifice	Utilitarianism
Measure A: Percent Change in Tax Burden			X†	
Measure B: Percentage Point Change in Share of Tax Burden			X†	
Measure C: Percentage Point Change in Average Tax Rate				
Measure D: Percent Change in After-Tax Income	X†	X†	X§	X‡
Measure E: Tax Change in Dollars	X§	X§		

* This table is subject to the various caveats and assumptions detailed *supra* Part III.A.–D.
† Appropriate measure if inequality is gauged in relative terms.
§ Appropriate measure if inequality is gauged in absolute terms.
‡ According to the utilitarian principle, progressivity is not meaningful. But, percent change in after-tax income may be useful in measuring something other than progressivity: namely, the total utility derived from a tax change, which is what matters to the utilitarian.

CONCLUSION

This Note has not arrived at a determinative conclusion as to which progressivity measure is "best," instead finding that "it depends." But, in outlining exactly what this decision depends on, it moves the discussion forward in a number of ways.

First, this Note provides a mapping of theories of distributive justice onto progressivity measures, allowing a person to choose which measure of progressivity to use depending on how that person conceives of tax justice. In other words, this approach allows people to evaluate tax changes in a manner consistent with their own philosophies. Absent analysis like that applied here, people may be misled by progressivity measures and use these measures to justify policies that are actually in tension with their vision of tax justice.

Second, this analysis cautions that the progressivity framework is not necessarily consistent with all theories of distributive justice. In fact, according to one dominant theory of justice—utilitarianism—the progressivity framework is a flawed one. From this perspective, the entire debate about progressivity measures is a red herring and distracts from what matters: maximizing total utility. This point highlights the importance of analyzing progressivity measures with a theory of distributive justice in mind and warns against adopting the progressivity framework without understanding how it connects to one's conception of tax justice.

Finally, this Note's approach pushes the debate beyond bald assertions about which progressivity measure is superior. There will still be disagreements about progressivity measures, but these disagreements should be framed in terms of theories of justice. This allows for a richer debate that addresses substantive issues about how fairness should be defined and offers greater potential for moral progress.

APPENDIX

This Appendix demonstrates that the five measures of progressivity discussed in this Note diverge in a predictable fashion. As shown in Tables 4 and 5, certain measures require more of a tax cut to go to low-income Americans for that tax cut to be described as progressive, while others require less. Furthermore, to the extent that a measure favors an income class in the context of a tax cut, it symmetrically disfavors that income class in the context of a tax increase.

To simplify matters, this Appendix splits the income distribution into two classes—income class High and income class Low. It further assumes that there is a tax cut of a fixed size, ΔT_{Total}.[99] Given this tax cut, the calculations show the size of the tax cut that must go to income class Low for the tax cut to be considered "neutral." This demonstrates that, for a tax cut to be considered neutral, the share going to lower-income classes systematically differs measure by measure as indicated in Tables 4 and 5.

Definition of Variables

Let:

Y_H/Y_L = total pre-tax income in dollars for income class High/Low.

T_H/T_L = total tax liability in dollars for income class High/Low prior to tax cut.

ΔT_{Total} = total tax cut in dollars for both income classes.

$\Delta T_{H(A)}/\Delta T_{L(A)}$ = total tax cut in dollars that income class High/Low must receive for the tax cut to be neutral in terms of *percent change in tax burden* (Measure A).

$\Delta T_{H(B)}/\Delta T_{L(B)}$ = total tax cut in dollars that income class High/Low must receive for the tax cut to be neutral in terms of *percentage point change in share of taxes paid* (Measure B).

$\Delta T_{H(C)}/\Delta T_{L(C)}$ = total tax cut in dollars that income class High/Low must receive for the tax cut to be neutral in terms of *percentage point change in the average tax rate* (Measure C).

$\Delta T_{H(D)}/\Delta T_{L(D)}$ = total tax cut in dollars that income class High/Low must receive for the tax cut to be neutral in terms of *percent change in after-tax income* (Measure D).

[99] For the purposes of the calculations in this Appendix, a tax cut is considered a positive number. A tax increase would be a negative number. The Appendix illustrates the relationship between the five measures in the context of a tax cut. To see the relationship in the context of a tax increase, the final result, Equation 10, must be multiplied by -1.

$\Delta T_{H(E)}/\Delta T_{L(E)}$ = total tax cut in dollars that income class High/Low must receive for the tax cut to be neutral in terms of *dollars* (Measure E).

N_H/N_L = number of people in income class High/Low.

Proof

This proof shows that, for any tax cut of size ΔT_{Total}, the tax cuts for income class Low that are necessary to achieve neutrality according to the five progressivity measures have the following relationship:

$$\Delta T_{L(E)} > \Delta T_{L(D)} > \Delta T_{L(C)} > \Delta T_{L(B)} = \Delta T_{L(A)}$$

In other words, the share of the tax cut going to income class Low necessary to achieve neutrality according to the dollar measure (Measure E) is larger than the share necessary to achieve neutrality according to percent change in after-tax income (Measure D), and so on.

1. Percent Change in After-Tax Income (Measure D) Versus Dollars (Measure E)

Step 1: Solving for $\Delta T_{L(E)}$

For the tax cut to be neutral according to the dollar measure (Measure E):

$$\frac{\Delta T_{L(E)}}{N_L} = \frac{\Delta T_{H(E)}}{N_H}$$

$$\frac{\Delta T_{L(E)}}{N_L} = \frac{\Delta T_{Total} - \Delta T_{L(E)}}{N_H}$$

$$\Delta T_{L(E)}(N_H) = \Delta T_{Total}(N_L) - \Delta T_{L(E)}(N_L)$$

$$\Delta T_{L(E)}(N_H) + \Delta T_{L(E)}(N_L) = \Delta T_{Total}(N_L)$$

$$\Delta T_{L(E)}(N_H + N_L) = \Delta T_{Total}(N_L)$$

$$\Delta T_{L(E)} = \frac{\Delta T_{Total}(N_L)}{N_H + N_L} \quad \underline{\text{Equation 1}}$$

Step 2: Solving for $\Delta T_{L(D)}$

For the tax cut to be neutral according to percent change in after-tax income (Measure D):

$$\frac{\Delta T_{L(D)}}{Y_L - T_L} = \frac{\Delta T_{H(D)}}{Y_H - T_H}$$

$$\frac{\Delta T_{L(D)}}{Y_L - T_L} = \frac{\Delta T_{Total} - \Delta T_{L(D)}}{Y_H - T_H}$$

$$\Delta T_{L(D)}(Y_H - T_H) = \Delta T_{Total}(Y_L - T_L) - \Delta T_{L(D)}(Y_L - T_L)$$

$$\Delta T_{L(D)}(Y_H - T_H) + \Delta T_{L(D)}(Y_L - T_L) = \Delta T_{Total}(Y_L - T_L)$$

$$\Delta T_{L(D)}(Y_H - T_H + Y_L - T_L) = \Delta T_{Total}(Y_L - T_L)$$

$$\Delta T_{L(D)} = \frac{\Delta T_{Total}(Y_L - T_L)}{Y_H - T_H + Y_L - T_L} \quad \underline{\text{Equation 2}}$$

Step 3: Proving that $\Delta T_{L(E)} > \Delta T_{L(D)}$

Assume that:

$$\frac{Y_H - T_H}{N_H} > \frac{Y_L - T_L}{N_L} \quad \underline{\text{Assumption 1}}$$

In other words, this proof assumes that the average after-tax income of those in income class High is greater than the average after-tax income of those in income class Low.

If this is true, then:

$$\frac{Y_H - T_H}{Y_L - T_L} > \frac{N_H}{N_L}$$

$$\frac{Y_H - T_H}{Y_L - T_L} + 1 > \frac{N_H}{N_L} + 1$$

$$\frac{1}{\frac{N_H}{N_L} + 1} > \frac{1}{\frac{Y_H - T_H}{Y_L - T_L} + 1}$$

$$\frac{N_L}{N_H + N_L} > \frac{Y_L - T_L}{Y_H - T_H + Y_L - T_L}$$

$$\frac{\Delta T_{Total}(N_L)}{N_H+N_L} > \frac{\Delta T_{Total}(Y_L-T_L)}{Y_H-T_H+Y_L-T_L}$$

Substituting based on Equations 1 and 2 above:

$$\Delta T_{L(E)} > \Delta T_{L(D)} \quad \text{Equation 3}$$

2. Percentage Point Change in Average Tax Rate (Measure C) Versus Percent Change in After-Tax Income (Measure D)

Step 1: Solving for $\Delta T_{L(C)}$

For the tax cut to be neutral in terms of percentage point change in the average tax rate:

$$\frac{\Delta T_{L(C)}}{Y_L} = \frac{\Delta T_{H(C)}}{Y_H}$$

$$\frac{\Delta T_{L(C)}}{Y_L} = \frac{\Delta T_{Total}-\Delta T_{L(C)}}{Y_H}$$

$$\Delta T_{L(C)}(Y_H) = \Delta T_{Total}(Y_L) - \Delta T_{L(C)}(Y_L)$$

$$\Delta T_{L(C)}(Y_H) + \Delta T_{L(C)}(Y_L) = \Delta T_{Total}(Y_L)$$

$$\Delta T_{L(C)}(Y_H+Y_L) = \Delta T_{Total}(Y_L)$$

$$\Delta T_{L(C)} = \frac{\Delta T_{Total}(Y_L)}{Y_H+Y_L} \quad \text{Equation 4}$$

Step 2: Proving that $\Delta T_{L(D)} > \Delta T_{L(C)}$

Assume that:

$$\frac{T_H}{Y_H} > \frac{T_L}{Y_L} \quad \text{Assumption 2}$$

In other words, this proof assumes that the tax system is progressive—that the average tax rate for those in income class High is greater than the average tax rate for those in income class Low.

If this is true, then:

$$\frac{T_H}{T_L} > \frac{Y_H}{Y_L}$$

$$-\frac{Y_H}{Y_L} > -\frac{T_H}{T_L}$$

$$-\frac{Y_H}{Y_L} - 1 > -\frac{T_H}{T_L} - 1$$

$$-1 > \frac{-\frac{T_H}{T_L} - 1}{\frac{Y_H}{Y_L} + 1}$$

$$-1 > \frac{-\frac{T_H}{T_L} - 1}{\frac{Y_H}{Y_L} + 1} \left(\frac{(T_L)(Y_L)}{(T_L)(Y_L)} \right)$$

$$-1 > \frac{-T_H - T_L}{Y_H + Y_L} \left(\frac{Y_L}{T_L} \right)$$

$$-\frac{T_L}{Y_L} > \frac{-T_H - T_L}{Y_H + Y_L}$$

$$-\frac{T_L}{Y_L} + \frac{Y_L}{Y_L} > \frac{-T_H - T_L}{Y_H + Y_L} + \frac{Y_H + Y_L}{Y_H + Y_L}$$

$$\frac{Y_L - T_L}{Y_L} > \frac{Y_H - T_H + Y_L - T_L}{Y_H + Y_L}$$

$$\frac{Y_L - T_L}{Y_H - T_H + Y_L - T_L} > \frac{Y_L}{Y_H + Y_L}$$

$$\frac{\Delta T_{Total}(Y_L - T_L)}{Y_H - T_H + Y_L - T_L} > \frac{\Delta T_{Total}(Y_L)}{Y_H + Y_L}$$

Substituting from Equations 2 and 4 above:

$$\Delta T_{L(D)} > \Delta T_{L(C)} \quad \text{Equation 5}$$

3. Percentage Point Change in Share of Taxes Paid (Measure B) Versus Percentage Point Change in Average Tax Rate (Measure C)

Step 1: Solving for $\Delta T_{L(B)}$

For the tax cut to be neutral in terms of percentage point change in share of taxes paid:

$$\frac{T_L - \Delta T_{L(B)}}{T_H + T_L - \Delta T_{H(B)} - \Delta T_{L(B)}} - \frac{T_L}{T_H + T_L} = 0$$

In words: The share of taxes paid by income class Low must be the same after the tax cuts as before the tax cuts. Given that there are only two income classes in this proof, if the share of taxes paid by income class Low remains constant, so will the share paid by income class High.

$$\frac{T_L - \Delta T_{L(B)}}{T_H + T_L - (\Delta T_{Total} - \Delta T_{L(B)}) - \Delta T_{L(B)}} - \frac{T_L}{T_H + T_L} = 0$$

$$\frac{T_L - \Delta T_{L(B)}}{T_H + T_L - \Delta T_{Total}} - \frac{T_L}{T_H + T_L} = 0$$

$$\frac{T_L - \Delta T_{L(B)}}{T_H + T_L - \Delta T_{Total}} = \frac{T_L}{T_H + T_L}$$

$$T_L - \Delta T_{L(B)} = \frac{T_L(T_H + T_L - \Delta T_{Total})}{T_H + T_L}$$

$$T_L - \Delta T_{L(B)} = \frac{T_L(T_H + T_L) - \Delta T_{Total}(T_L)}{T_H + T_L}$$

$$T_L - \Delta T_{L(B)} = T_L - \frac{\Delta T_{Total}(T_L)}{T_H + T_L}$$

$$-\Delta T_{L(B)} = -\frac{\Delta T_{Total}(T_L)}{T_H + T_L}$$

$$\Delta T_{L(B)} = \frac{\Delta T_{Total}(T_L)}{T_H + T_L} \quad \text{Equation 6}$$

Step 2: Proving that $\Delta T_{L(C)} > \Delta T_{L(B)}$

Assume that:

$$\frac{T_H}{Y_H} > \frac{T_L}{Y_L} \quad \text{Assumption 3}$$

This is the same as Assumption 2—namely, that the tax system is progressive.

If this is true, then:

$$\frac{T_H}{T_L} > \frac{Y_H}{Y_L}$$

$$\frac{T_H}{T_L} + 1 > \frac{Y_H}{Y_L} + 1$$

$$\frac{1}{\frac{Y_H}{Y_L} + 1} > \frac{1}{\frac{T_H}{T_L} + 1}$$

$$\frac{Y_L}{Y_H + Y_L} > \frac{T_L}{T_H + T_L}$$

$$\frac{\Delta T_{Total}(Y_L)}{Y_H + Y_L} > \frac{\Delta T_{Total}(T_L)}{T_H + T_L}$$

Substituting from Equations 4 and 6 above:

$$\Delta T_{L(C)} > \Delta T_{L(B)} \text{ Equation 7}$$

4. Percentage Point Change in Tax Burden (Measure A) Versus Percent Change in Share of Taxes Paid (Measure B)

Step 1: Solving for $\Delta T_{L(A)}$

For the tax cut to be neutral in terms of percent change in tax burden:

$$\frac{\Delta T_{L(A)}}{T_L} = \frac{\Delta T_{H(A)}}{T_H}$$

$$\frac{\Delta T_{L(A)}}{T_L} = \frac{\Delta T_{Total} - \Delta T_{L(A)}}{T_H}$$

$$\Delta T_{L(A)}(T_H) = \Delta T_{Total}(T_L) - \Delta T_{L(A)}(T_L)$$

$$\Delta T_{L(A)}(T_H) + \Delta T_{L(A)}(T_L) = \Delta T_{Total}(T_L)$$

$$\Delta T_{L(A)} = \frac{\Delta T_{Total}(T_L)}{T_H + T_L} \text{ Equation 8}$$

Step 2: Proving that $\Delta T_{L(B)} = \Delta T_{L(A)}$

Substituting from Equation 6 into Equation 8:

$$\Delta T_{L(B)} = \Delta T_{L(A)} \text{ Equation 9}$$

5. Combining Equations 3, 5, 7, and 9

$$\Delta T_{L(E)} > \Delta T_{L(D)} > \Delta T_{L(C)} > \Delta T_{L(B)} = \Delta T_{L(A)} \text{ Equation 10}$$