ARE PROGRESSIVE TAX RATES PROGRESSIVE POLICY?

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Why do income tax systems across the world consistently feature progressive marginal rates? The existing literature tells a political story focusing on the top of the rate schedule and the preferences of the poor and the middle class. According to this standard view, higher rates at the top result from the poor and the middle class using the political process to "soak the rich." However, this explanation is inconsistent with research showing that public policy is generally more responsive to the preferences of the rich. Explaining marginal rate progressivity as a universal (and exceptional) triumph of the poor and the middle class rings hollow.

This Article resolves the tension in the existing literature by demonstrating how progressive marginal rates are consistent with the preferences of the rich. Marginal rate progressivity is the combination of two policies—higher rates at the top and lower rates at the bottom. This Article shifts the focus to the bottom of the rate schedule and argues that the rich and the middle class benefit from inframarginal tax cuts—rate cuts at low levels of income. The intuition is that taxpayers benefit from rate cuts if they occur at levels that are at or below their own income.

This means that rate progressivity is not entirely progressive policy. Increasing marginal rates at the top increases the progressivity of the fiscal system. But marginal rate cuts at low levels of income can have the opposite effect. They are particularly pernicious because they can be framed as "low-income" tax cuts. A cynical view of marginal rate progressivity is that it allows the rich and politicians to pay cheap lip service to progressivity, even though there are many better tools available for achieving that goal. Unfortunately, cutting inframarginal rates remains politically popular. Both House Speaker Paul Ryan and President Donald Trump's tax plans feature such tax cuts prominently. Understanding the regressive effect of inframarginal rate cuts has never been more important.

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INTRODUCTION

As taxpayers earn more income, the tax rate they face on each additional dollar increases. Marginal rate progressivity is a near universal feature of statutory income tax rates.[1] Rate progressivity is observed in countries with very different legislative systems and levels of income inequality.[2] It persists whether conservative or liberal parties are in power. An important question in public economics is why this is so.

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[1] This is true of nominal statutory rates. *See, e.g.*, Klara Sabirianova Peter et al., *Global Reform of Personal Income Taxation, 1981–2005: Evidence from 189 Countries*, 63 NAT'L TAX J. 447, 463–64 (2010) (noting that the results of a survey of 189 countries show that while there has been a worldwide trend towards less progressive tax schemes, including 29 countries that have adopted flat tax schemes, progressive tax rates are still prevalent around the world). Of course, e*ffective* tax rates can depart from statutory rates due to various credits, phase-outs, and other preferences in the income tax system. Incorporating the effect of federal spending programs and non-income taxes adds yet another layer of complexity onto effective rates. *See* CONG. BUDGET OFFICE, EFFECTIVE MARGINAL TAX RATES FOR LOW- AND MODERATE-INCOME WORKERS 6 (2012). One can imagine going yet a step further to include state and local programs. In this Article, I focus on a political economy question regarding nominal statutory rates. Put another way, holding all of these other complications constant, why do we observe the nominal income tax rates that we do?

[2] *See* Peter et al., *supra* note 1, at 462–65.

The existing literature argues that progressivity can best be explained by focusing on the preferences of the lower and middle classes[3]: higher rates at the top of the rate schedule allow the poor and the middle class to achieve more redistribution at the expense of high-income taxpayers.[4] In this standard narrative, progressive marginal tax rates are a consequence of tax policy reflecting the preferences of the poor and the middle class.[5] But there are reasons to doubt this narrative. The poor generally do not succeed in expropriating from the rich through high income taxes. Research by Larry Bartels, Martin Gilens, and others has shown that when rich and poor citizens have divergent preferences, adopted policies tend to track the preferences of the rich.[6] Explaining marginal rate progressivity as a universal and excep-

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[3] For purposes of this paper, I use the terms "poor," "middle class," and "rich" to refer to a taxpayer's position on the income distribution. I will use "rich" and "upper class" interchangeably. I will also use "poor" and "lower class" interchangeably.

[4] This is reflected both in historical accounts of progressive rate income taxation and the economic modeling literature that tries to explain its prevalence. For historical accounts, see LOUIS EISENSTEIN, THE IDEOLOGIES OF TAXATION 17–18 (1961) ("The tax, they argued, should also be progressive; the rates should increase as incomes increase. With malice aforethought they sought to reverse the existing situation, so that the more prosperous would pay a relatively larger tax than the less prosperous. In the language of today, they requested a redistribution of income."); KENNETH SCHEVE & DAVID STASAVAGE, TAXING THE RICH: A HISTORY OF FISCAL FAIRNESS IN THE UNITED STATES AND EUROPE 77 (2016) ("[Rate progressivity] may have been a consequence of an expanding franchise and of labor and socialist parties influencing political competition."); SVEN STEINMO, TAXATION AND DEMOCRACY 51 (1993) ("In [Britain, Sweden, and the United States], progressive taxation became a major ambition and policy goal of mobilizing working classes.").

For a discussion of the economic modeling literature and relevant citations, see *infra* notes 80–83 and accompanying text.

[5] This is the standard narrative regarding progressive fiscal policy more generally. *See, e.g.*, Daron Acemoglu & James A. Robinson, *Why Did the West Extend the Franchise? Democracy, Inequality, and Growth in Historical Perspective*, 115 Q.J. ECON. 1167, 1168 (2000) ("Our answer is that the elite were forced to extend the franchise because of the threat of revolution. We argue that extending the franchise acted as a commitment to future redistribution and prevented social unrest."); Allan H. Meltzer & Scott F. Richard, *A Rational Theory of the Size of Government*, 89 J. POL. ECON. 914, 924–25 (1981) (concluding that when the decisive voter has an income less than the median they would choose to raise taxes and fund more redistribution and that this serves as an explanation for why taxes rose in the nineteenth and twentieth centuries); Kevin W.S. Roberts, *Voting over Income Tax Schedules*, 8 J. PUB. ECON. 329, 332 (1977) ("If the median income is less than the mean income, . . . then majority voting will lead to the tax schedule with the highest marginal tax rate being adopted."); Thomas Romer, *Individual Welfare, Majority Voting, and the Properties of a Linear Income Tax*, 4 J. PUB. ECON. 163, 183 (1975) (concluding that "[f]or a given government revenue requirement, the poorer individuals tend to favour higher marginal tax rates" and as a result "[t]he conflict between high national income and distributional equality is paralleled by a conflict of interest between rich and poor").

[6] *See generally* LARRY M. BARTELS, UNEQUAL DEMOCRACY: THE POLITICAL ECONOMY OF THE NEW GILDED AGE (2008); MARTIN GILENS, AFFLUENCE & INFLUENCE: ECONOMIC INEQUALITY AND POLITICAL POWER IN AMERICA (2012); Martin Gilens,

tional triumph of the poor and the middle class over the rich rings hollow.

This Article bridges these two literatures by showing how progressive marginal rates are consistent with the preferences of the rich. I start with a straightforward observation. Marginal rate progressivity is the combination of two policies: higher marginal rates at the top of the rate schedule and lower marginal rates at the bottom. Much of the political and academic focus has been on the former policy. Academics such as Thomas Piketty and Gregory Mankiw debate the desirability of raising rates at the top.[7] Parties on the left and right constantly debate the same thing.[8] This Article considers the latter policy—why do we observe lower marginal rates on modest incomes? What are the preferences of the lower, middle, and upper classes regarding the bottom of the rate schedule? Can these preferences explain why rates at the bottom are consistently low?

By changing the focus of the inquiry, I suggest an alternative explanation for progressivity. The rich and the middle class benefit from reductions to tax rates at the *bottom* of the rate schedule. These tax cuts predominantly inure to their benefit. The intuition is that taxpayers benefit from rate cuts if they occur at a level that is at or below their own income level.

To be clear, the narrative offered in this Article is complementary to the standard story. Sometimes the lower and middle classes will succeed in pushing rates at the top of the rate schedule upward. At the same time, the rich and the middle class often succeed in pushing

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Inequality and Democratic Responsiveness, 69 PUB. OPINION Q. 778 (2005); Martin Gilens & Benjamin I. Page, *Testing Theories of American Politics: Elites, Interest Groups, and Average Citizens*, 12 PERSP. ON POL. 564 (2014). *See* KAY LEHMAN SCHLOZMAN ET AL., THE UNHEAVENLY CHORUS: UNEQUAL POLITICAL VOICE AND THE BROKEN PROMISE OF AMERICAN DEMOCRACY (2012); *See also infra* notes 175–90 and accompanying text.

[7] *Compare* N. Gregory Mankiw et al., *Optimal Taxation in Theory and Practice*, 23 J. ECON. PERSP. 147, 151–55 (2009) (advocating for declining tax rates at higher incomes), *with* THOMAS PIKETTY, CAPITAL IN THE TWENTY-FIRST CENTURY 513 (Arthur Goldhammer trans., 2014) ("The evidence suggests that a rate on the order of 80 percent on incomes over $500,000 or $1 million a year not only would not reduce the growth of the US economy but would in fact distribute the fruits of growth more widely while imposing reasonable limits on economically useless (or even harmful) behavior.").

[8] In the 2016 election cycle, the Republican candidate, Donald Trump, proposed lowering the top marginal rate to 25%. *Trump: Tax Reform That Will Make America Great Again*, TRUMP-PENCE: MAKE AM. GREAT AGAIN!, https://assets.donaldjtrump.com/trump-tax-reform.pdf (last visited June 22, 2017). The Democratic candidate, Hillary Clinton, proposed increasing the top marginal rate by 4% on those who make more than $5 million. *Factsheet: Investing in America by Restoring Basic Fairness to Our Tax Code*, HILLARY FOR AM.: THE BRIEFING, https://www.hillaryclinton.com/briefing/factsheets/2016/01/12/investing-in-america-by-restoring-basic-fairness-to-our-tax-code/ (last visited June 22, 2017).

down rates at the bottom. The prevalence of progressive marginal rates can be explained through this asymmetric tilting of the income tax schedule.

To develop this intuition, Parts I and II explore a simplified model of labor income taxation.[9] Models of this type have been usefully deployed by political economists to explore how citizen preferences shape the tax system.[10] They have two attractive features: (1) they incorporate the key tradeoff in labor income taxation—taxes discourage labor effort but fund government spending and redistribution[11] and (2) they capture how taxpayers of different incomes have disparate preferences regarding the tax system.[12] The poor, middle class, and rich prefer different tax systems based on how much they are personally taxed, how the tax system affects the behavior of other citizens, and how much redistribution occurs.[13] These models can therefore be used to explore popular support for various changes to the rate schedule.

Part I introduces the basic building blocks of these models and then focuses on how taxpayers would vote on small changes to the rate schedule.[14] I show that taxpayers will generally support small rate cuts if they occur at a level that is at or below their own level of income.[15] This means that rate reductions below the median level of income will generally be supported by a majority of taxpayers—a coalition of the middle class and the rich. In other words, middle- and upper-income taxpayers benefit from reductions in marginal rates at low incomes, even though such incremental changes make the marginal rate structure appear more progressive.

By focusing on incremental changes, Part I develops important intuitions about how majoritarian preferences might shape the rate schedule. But changes to the rate schedule are not always incremental;

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[9] These models have been widely used to explore the optimal taxation of labor income. *See, e.g.*, Thomas Piketty & Emmanuel Saez, *Optimal Labor Income Taxation*, *in* 5 HANDBOOK OF PUBLIC ECONOMICS 391 (Alan J. Auerbach et al. eds., 2013); J.A. Mirrlees, *Optimal Tax Theory: A Synthesis*, 6 J. PUB. ECON. 327 (1976) [hereinafter Mirrlees, *Optimal Tax Theory*]; J. A. Mirrlees, *An Exploration in the Theory of Optimum Income Taxation*, 38 REV. ECON. STUD. 175 (1971) [hereinafter Mirrlees, *Exploration in the Theory*].

[10] *See, e.g.*, Meltzer & Richard, *supra* note 5, at 916–17; Roberts, *supra* note 5, at 330–31; Romer, *supra* note 5, at 183.

[11] *See* Piketty & Saez, *supra* note 9, at 392–93 (mentioning the "classical trade-off" in optimal tax theory between promoting social welfare through taxation and preventing negative influences on economic productivity).

[12] *See, e.g.*, Meltzer & Richard, *supra* note 5, at 920–23.

[13] *See, e.g.*, Roberts, *supra* note 5, at 331–32; Romer, *supra* note 5, at 171–78.

[14] In mathematical terms, Section I.D focuses on *infinitesimal* rate changes. For ease of reading, I will predominantly use the terms "small" or "incremental" in this Article.

[15] This is subject to some important caveats explored in Section I.D.1.

they are often dramatic.[16] The question explored in Part II is whether the intuition persists if policymakers are not limited to small incremental changes.

This is a difficult question to answer because rate schedules are generally unstable.[17] We see this in the U.S. where Congress constantly tinkers with the rate schedule. Coalitions will be fluid and the rate schedule will be ever-changing. Thus, it is important to use methods that investigate how tax schedules are expected to change and what tax schedules are most likely. Part II performs statistical simulations to explore what rate schedules are most likely when tax rates are determined by majority voting. These simulations provide further support for the core argument of this Article. Tax schedules with progressive marginal rates become *more likely* as political power is concentrated in the hands of the rich.

Parts I and II describe a three-step political mechanism. Inframarginal rate cuts benefit the rich, the rich like inframarginal rate cuts, and the rich disproportionately get their way in the political process. Part III looks to evidence in the U.S. to evaluate whether the three-step mechanism of the model is realistic or reasonable. There is substantial support for each proposition.[18] Governmental projections confirm that inframarginal rate cuts disproportionately benefit the middle class and the rich. Polling data suggests the rich prefer low inframarginal rates. And there is a growing body of evidence that the rich dictate policy in most areas including taxation.

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16 The political science literature has recognized that policy changes can be incremental or significant. *Compare* Charles E. Lindblom, *The Science of "Muddling Through,"* 19 PUB. ADMIN. REV. 79, 84–85 (1959) (arguing that policy decisions in the United States and in other western democracies are "almost entirely" made incrementally), *and* AARON WILDAVSKY & NAOMI CAIDEN, THE NEW POLITICS OF THE BUDGETARY PROCESS 45–46 (5th ed. 2003) (discussing how the policy decisions within federal budget making are made incrementally), *with* FRANK R. BAUMGARTNER & BRYAN D. JONES, AGENDAS AND INSTABILITY IN AMERICAN POLITICS 89 (1993) (explaining how dramatic revisions may follow long periods of stable policy), *and* FRANK R. BAUMGARTNER ET AL., LOBBYING AND POLICY CHANGE: WHO WINS, WHO LOSES, AND WHY 25–26 (2009) (arguing that the infrastructure of different interest groups each seeking to maintain the status quo means that when policy changes do occur those changes are often significant and not incremental).

17 In a multidimensional policy space (like nonlinear income schedules) majoritarian voting generally will not yield a stable equilibrium. *See* Otto A. Davis et al., *An Expository Development of a Mathematical Model of the Electoral Process*, 64 AM. POL. SCI. REV. 426, 427–28 (1970); Gerald H. Kramer, *On a Class of Equilibrium Conditions for Majority Rule*, 41 ECONOMETRICA 285 (1973); Richard D. McKelvey, *Intransitivities in Multidimensional Voting Models and Some Implications for Agenda Control*, 12 J. ECON. THEORY 472 (1976).

18 *See infra* Sections III.A–C.

What are the policy implications? First, this Article highlights the importance of thinking about how politics and preferences shape the entire rate schedule. It is not enough to think about top rates or average rates. This is necessarily a more difficult question because a single number cannot summarize an entire rate schedule. As I show in this Article, even studying a simplified rate schedule involving two rates yields important insights.

Second, to answer the question posed by the title, marginal rate progressivity is not entirely "progressive." It is once again helpful to think about rate progressivity as the combination of two policies. Increasing marginal rates at the top moves fiscal policy in a progressive direction. But marginal rate cuts at low levels of income often make fiscal policy more *regressive*. One of the important takeaways of this Article is that lowering rates at the bottom of the rate schedule may actually result in a less progressive fiscal system.[19]

In fact, *raising* rates at the bottom may actually result in a more progressive fiscal system. Low-income taxpayers may sometimes be better off with rate increases that superficially increase their tax liability but result in an increased net transfer once the knock-on effect to spending is included. What ultimately matters from a public policy perspective is how progressive or redistributive the overall fiscal system is—after taking into account all taxing and all spending.[20] Unfortunately, it will often be difficult (if not impossible) for taxpayers to accurately connect changes in taxation to changes in spending.[21]

That fiscal illusion poses a substantial problem. Rate cuts at the bottom of the rate schedule continue to be politically popular. Both Paul Ryan's tax plan and President Trump's recent tax proposal include substantial rate reductions at low levels of income.[22] In their proposed form, those rate cuts will primarily benefit the middle class and the rich.

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[19] *See infra* Section III.D.

[20] As others have pointed out, it is possible to fund progressive spending using regressive taxation. *See, e.g.*, EDWARD D. KLEINBARD, WE ARE BETTER THAN THIS: HOW GOVERNMENT SHOULD SPEND OUR MONEY 364–66 (2015); Eric M. Zolt, *Inequality in America: Challenges for Tax and Spending Policies*, 66 TAX L. REV. 641, 643–44 (2013) (noting that in order to fund progressive spending programs, Western European countries have implemented taxes that are more regressive, allowing them to maintain the political support and funding for the programs).

[21] For further discussion on the confusion that can arise in taxpayer knowledge of the effects of tax rate changes, see *infra* notes 151–53 (discussing polls that indicate taxpayers may have been confused about the effects of the Bush tax cuts).

[22] *See A Better Way: Our Vision for a Confident America*, A BETTER WAY 17 (June 24, 2016), https://abetterway.speaker.gov/_assets/pdf/ABetterWay-Tax-PolicyPaper.pdf; *Trump: Tax Reform That Will Make America Great Again*, *supra* note 8.

I
THE POLITICAL ECONOMY OF PROGRESSIVE RATES

A. Tax Model Basics

When taxes are increased, there is a plus and a minus. The plus is that tax revenue can be used to fund important governmental spending (including things like the military, healthcare, or education) or to redistribute to the poor. But the minus is that taxes discourage people from working.[23] There is an unavoidable tension between raising revenue and distorting taxpayer behavior.[24]

Given this tradeoff, optimal tax models provide insight into what tax systems should look like.[25] In a seminal paper, James Mirrlees devised a model that allowed him to explore the tradeoffs between redistribution and distortion in labor income taxation.[26] These models have proved to be powerful tools for studying how governments should tax wages.

Consider the following simple setup. The government must raise a minimum amount of revenue through an income tax that applies to all citizens.[27] All revenue above the minimum amount is redistributed equally to all citizens through a cash grant—called a "demogrant."[28] What tax system makes society the best off?

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[23] *See, e.g.*, Edward J. McCaffery & James R. Hines Jr., *The Last Best Hope for Progressivity in Tax*, 83 S. CAL. L. REV. 1031, 1054 (2010) ("In the face of high marginal tax rates, taxpayers . . . might 'shirk,' substituting leisure for labor . . . .").

[24] *See* Piketty & Saez, *supra* note 9, at 392–93.

[25] *See, e.g.*, Lawrence Zelenak & Kemper Moreland, *Can the Graduated Income Tax Survive Optimal Tax Analysis?*, 53 TAX L. REV. 51, 51 (1999) (framing the question that optimal tax models seek to answer as: "What . . . is the ideal tax-and-transfer system . . . ?"); *see also* McCaffery & Hines Jr., *supra* note 23, at 1081–90 (analyzing the optimal tax model as it compares to the United States tax structure and noting how, although quite similar in some ways, the United States tax structure could be changed to better reflect the optimal tax model).

[26] *See* Mirrlees, *Exploration in the Theory*, *supra* note 9. Labor income taxation is a key component of tax systems around the world. According to the Congressional Budget Office, in 2015 roughly three-quarters of U.S. federal income tax revenue derived from labor taxation (non-capital gain income taxes and payroll taxes). *See* CONG. BUDGET OFFICE, UPDATED BUDGET PROJECTIONS: 2016 TO 2026, at 15 (2016), https://www.cbo.gov/sites/default/files/114th-congress-2015-2016/reports/51384-MarchBaseline_OneCol.pdf. There is also well-developed literature on the optimal taxation of capital income. *See, e.g.*, Christophe Chamley, *Optimal Taxation of Capital Income in General Equilibrium with Infinite Lives*, 54 ECONOMETRICA 607 (1986).

[27] *See* Piketty & Saez, *supra* note 9, at 410–14 (describing a basic model for optimal labor taxation).

[28] *See id.* at 410; *cf.* Joseph Bankman & Thomas Griffith, *Social Welfare and the Rate Structure: A New Look at Progressive Taxation*, 75 CALIF. L. REV. 1905, 1908 (1987) (showing an example of how a demogrant works). The demogrant approximates all non-income-dependent governmental spending programs. Any income-dependent spending

The model requires a few important inputs. First, one needs to know how sensitive taxpayers are to tax rates—their "elasticity of taxable income."[29] If elasticities are relatively high, then taxpayers will change their behavior dramatically in response to higher taxes and the efficiency costs of taxation will be significant.[30] If taxpayers are relatively inelastic, the efficiency costs of taxation will be smaller.[31] It is challenging to measure the elasticity of taxable income for a number of reasons. It can be difficult to separate changes in real behavior (i.e., reduction in hours worked) from avoidance and planning behavior (i.e., shifting compensation from one time period to another).[32] There is also evidence that elasticity varies by age,[33] gender,[34] level of income,[35] and countries.[36] Thus, one must be clear about exactly what elasticity is being measured. Even when focused on the same elasticity, different studies will produce varying results, depending on the

(such as an earned income tax credit) is absorbed into the nonlinear schedule of income tax rates.

29 *See, e.g.*, Piketty & Saez, *supra* note 9, at 403.

30 *See* Bankman & Griffith, *supra* note 28, at 1963 ("[A] high elasticity indicates that an increase in the price of consumption relative to the price of leisure causes an individual to reduce significantly his work hours in favor of leisure time."); Piketty & Saez, *supra* note 9, at 415–19.

31 *See* Bankman & Griffith, *supra* note 28, at 1963 ("A low elasticity . . . indicates that an individual maintains a uniform ratio of consumption to leisure even if a high tax rate on labor income makes consumption much more expensive."); Piketty & Saez, *supra* note 9, at 412 (showing the effect of varying the elasticity in an optimal taxation model).

32 *See* Emmanuel Saez et al., *The Elasticity of Taxable Income with Respect to Marginal Tax Rates: A Critical Review*, 50 J. ECON. LITERATURE 3, 13–14 (2012) (explaining that long-term tax responses are difficult to identify empirically).

33 *See, e.g.*, Eric French, *The Effects of Health, Wealth, and Wages on Labour Supply and Retirement Behaviour*, 72 REV. ECON. STUD. 395, 411–12 (2005) (calculating that elasticity increases from a range of 0.19–0.37 before age sixty to 1.04–1.33 after age sixty).

34 These studies have generally found that women are more responsive than men to changes in tax rates. *See, e.g.*, Anil Kumar & Che-Yuan Liang, *Declining Female Labor Supply Elasticities in the United States and Implications for Tax Policy: Evidence from Panel Data*, 69 NAT'L TAX J. 481, 482 (2016), http://www.dallasfed.org/assets/documents/research/papers/2015/wp1501.pdf (noting that this has historically been true but that this trend may be changing).

35 *See, e.g.*, Jon Gruber & Emmanuel Saez, *The Elasticity of Taxable Income: Evidence and Implications*, 84 J. PUB. ECON. 1, 3 (2002) (finding that the overall elasticity of taxable income is 0.4 but that it rises to 0.57 for those with a level of income above $100,000).

36 For a review of the literature, see Emmanuel Saez et al., *The Elasticity of Taxable Income with Respect to Marginal Tax Rates: A Critical Review* 49–58 (Nat'l Bureau of Econ. Research, Working Paper No. 15012, 2009), http://www.nber.org/papers/w15012.pdf; *see also* Saez et al., *supra* note 32, at 40 n.71 ("We reiterate that, for reasons discussed earlier, there is no reason to expect that the [elasticity of taxable income] would be the same across countries because it is a function not only of arguably relatively uniform aspects of preferences, but also of the details of countries' tax systems.").

methodology, the data used, and the population and time period studied.[37]

Second, the optimal tax system depends on the distribution of taxpayer earning ability.[38] Are there relatively more or fewer high-wage workers?[39] How big is the middle class and how large is the gap between the earning ability of the rich and the poor?[40] However, measuring the distribution of earning ability is not without its challenges.[41] First, earning ability (in contrast to wages) is fundamentally unobservable. Second, the distribution of earning ability or wages will be different in each country.[42] Third, there are particular challenges with respect to measuring the earning ability or wages of extremely high earners.[43]

Finally, one needs to pick a social welfare function.[44] A social welfare function combines the utilities of all members of society into a single number. Each tax system will result in a certain level of utility for each member of our society.[45] If a change to the tax system will make everyone better off, then such change is clearly desirable. But

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[37] *See, e.g.*, Kumar & Liang, *supra* note 34, at 511 (mentioning that their results differ from other studies measuring trends in female labor supply elasticity).

[38] Mankiw et al., *supra* note 7, at 159–61; Mirrlees, *Exploration in the Theory*, *supra* note 9, at 176–77.

[39] It is assumed that the earning abilities of taxpayers are unobservable, so the government must tax income. The fundamental challenge in optimal taxation is that the government cannot tax the immutable characteristic (ability) and can only tax a manipulable characteristic (income). Taxpayers can control their income by changing how much they work. Labor income taxes therefore distort taxpayer behavior. If ability were instead taxed directly, taxpayer behavior would be less distorted. This has led to interesting proposals to tax immutable characteristics like height that are correlated with wage levels. *See, e.g.*, N. Gregory Mankiw & Matthew Weinzierl, *The Optimal Taxation of Height: A Case Study of Utilitarian Income Redistribution*, 2 AM. ECON. J. 155 (2010).

[40] *See, e.g.*, Mankiw et al., *supra* note 7, at 159–61 (considering how a social planner should respond to a widening in the distribution of ability); Emmanuel Saez, *Using Elasticities to Derive Optimal Income Tax Rates*, 68 REV. ECON. STUD. 205, 206 (2001).

[41] *See, e.g.*, Mankiw et al., *supra* note 7, at 152 ("Estimating the distribution of ability is a task fraught with perils.").

[42] *See Luxembourg Income Study Database: By Country*, CROSS-NAT'L DATA CTR. IN LUX., http://www.lisdatacenter.org/our-data/lis-database/by-country/ (last visited June 22, 2017) (showing income data for different countries).

[43] In the U.S., there is an ongoing debate regarding whether a Pareto or lognormal distribution better approximates the top end of the distribution. *Compare* Peter Diamond & Emmanuel Saez, *The Case for a Progressive Tax: From Basic Research to Policy Recommendations*, 25 J. ECON. PERSP. 165, 168 (2011) (using a Pareto distribution), *with* Mankiw et al., *supra* note 7, at 152 (discussing the differences in using a lognormal or Pareto distribution).

[44] *See* Mankiw et al., *supra* note 7, at 153 ("[T]he question of what appropriate social welfare function to use—and in particular how much concern there should be over inequality—is a normative question that cannot be answered with data.").

[45] *See, e.g.*, Zelenak & Moreland, *supra* note 25, at 53 (discussing how the social welfare function one chooses affects different members of a society).

what if a change will make some people better off and others worse off? How are we going to combine the utilities of the people in our population? Are we going to value them all equally? Are we going to value the worst-off more?

If people are more sensitive to taxes,[46] if there is more inequality,[47] and if we care more about the poor,[48] then the optimal tax system changes. Unsurprisingly, the inputs to the model matter, and they matter a lot.[49] For example, if the elasticity of taxpayer behavior is high, the optimal tax system will generally feature lower rates.[50] The optimal top tax rate will change if the distribution of earning ability at the top end of the population is different.[51]

But the optimal tax literature does offer some relatively robust insights, which do not entirely depend on the particular assumptions used in the model. One such insight is that redistribution is best pursued through a combination of relatively flat rates and a significant demogrant.[52]

Why? The intuition is that when raising revenue, it is best to raise it in a way that minimizes the distortion to people's labor decisions.[53] Take a simple example. Assume that you're running your own law firm, and you make a million dollars this year. When you think about whether to work harder, and earn an extra $50,000, you care a lot about the marginal tax rate that applies to the extra $50,000. But in

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[46] *See, e.g.*, McCaffery & Hines Jr., *supra* note 23, at 1057–58 (discussing how important a variable elasticity is to the model).

[47] *See, e.g.*, Mankiw et al., *supra* note 7, at 160 (summarizing the Mirrlees model's conclusion that with greater inequality comes greater tax rates and applying that assumption of the model to changes in U.S. wage distribution).

[48] *See, e.g.*, Zelenak & Moreland, *supra* note 25, at 53–54 (discussing how sensitive the optimal tax model is to utilitarian versus egalitarian philosophies about how much society desires to assist the poor).

[49] *See, e.g.*, McCaffery & Hines Jr., *supra* note 23, at 1057 (discussing how "optimal tax models are extremely sensitive to changes in key assumptions and parameters").

[50] *See generally* Bankman & Griffith, *supra* note 28, at 1965 (showing how inputting different elasticities can change the outcome of the Mirrlees model); Piketty & Saez, *supra* note 9, at 412 (showing that "the optimal tax rate decreases with the aggregate elasticity").

[51] *See supra* note 43.

[52] *See, e.g.*, Bankman & Griffith, *supra* note 28, at 1945 ("[A] progressive tax is best implemented through demogrants combined with constant or even declining marginal rates, rather than through constantly rising marginal rates."); McCaffery & Hines Jr., *supra* note 23, at 1055 ("In all optimal tax models, progressivity in average tax rates is achieved by means of demogrants, combined with the pattern of often increasing (over low to middle income ranges), but intermittently decreasing (especially over upper income ranges), marginal rates.").

[53] *See* Saez, *supra* note 40, at 215–19 (arguing that the desirability of any incremental change to a tax schedule depends on balancing the behavioral distortions induced against the revenue raised).

making that decision, you do not care very much about the tax rate that applies to the first $25,000 you make.

If the government were to raise the tax rate that applied to the first $25,000 of income, it would have a negligible effect on your decision whether to earn additional income. Because you earn well in excess of $25,000, this policy change is "inframarginal" for you and a lot of other taxpayers. Since there are many taxpayers earning over $25,000, raising this rate would result in a lot of revenue but relatively little distortion.

But consider rates at high levels of income. Here it is the exact opposite. If the government raises tax rates at high levels of income, it distorts the behavior of the rich,[54] and it does not raise a significant amount of revenue. There are fewer taxpayers for whom the rate change is inframarginal. Many optimal tax models thus suggest that the best way to redistribute is to have relatively flat (or even declining) marginal rates and a significant demogrant.[55]

B. Modeling the Political Economy of Tax Schedules

The optimal tax literature asks a normative question: What should tax systems look like?[56] But the building blocks of these models can also be used to explore political questions. Why do tax systems look the way they do? What tax systems are likely given that people at least indirectly vote on them?

These models are attractive for this purpose because (1) they capture the key trade-off between efficiency and redistribution[57] and (2) they capture how taxpayers of different incomes have divergent preferences regarding the tax system.[58] The poor, middle class, and rich

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[54] Under certain assumptions, the original Mirrlees model yielded the result that the marginal rate at the very top should be 0%. *See, e.g.*, McCaffery & Hines Jr., *supra* note 23, at 1055 (noting that "though Mirrlees himself did not have this top rate of zero," his result is a major implication of the model and subsequent literature). The practical relevance of this conclusion has been questioned. *See, e.g.*, MATTI TUOMALA, OPTIMAL INCOME TAX AND REDISTRIBUTION 6–8 (1990). Others have argued that the basic intuition may still support declining marginal rates at the top of the income distribution. *See, e.g.*, Mankiw et al., *supra* note 7, at 151–55; *cf.* Gruber & Saez, *supra* note 35, at 3 (noting how high-income taxpayers are particularly sensitive to changes in the tax structure compared to other income groups).

[55] *But see* Zelenak & Moreland, *supra* note 25, at 56 (asking what tax schedules should look like if demogrants were not politically possible).

[56] *See* Diamond & Saez, *supra* note 43, at 165–66 ("[O]ptimal income tax theory is first a normative theory that shows how a social welfare objective combines with constraints arising from limits on resources and behavioral responses to taxation in order to derive specific tax policy recommendations.").

[57] *See, e.g.*, Piketty & Saez, *supra* note 9, at 392.

[58] *See, e.g.*, Meltzer & Richard, *supra* note 5, at 920–23.

prefer different tax systems based on how much they are taxed and how much redistribution occurs.[59]

This literature has yielded important insights about how preferences shape taxes and redistribution.[60] Much of the early literature focused on linear income taxes.[61] If only linear income taxes are allowed, the preferred tax rate of the median voter will often be a stable equilibrium policy under a majoritarian voting system.[62] The median voter theorem can be grasped through a simple example. Assume that A, B, and C respectively want a linear tax rate of 30%, 20%, and 10% and that any change to the tax rate requires a majority vote. The 20% rate will prevail over any lower tax rate because A and B will oppose any rate reduction. Similarly, 20% will prevail over any higher tax rate because B and C will oppose any rate increase. The preference (20%) of the median voter (B) is a stable equilibrium in this example.

Using this theory, Allan Meltzer and Scott Richard argued that tax rates should be higher (and redistribution should be greater) as the gap between the income of the median voter and the average taxpayer increases.[63] Lower income taxpayers will prefer higher tax rates and more redistribution.[64] If the median voter has relatively low income, then the equilibrium tax rate (and equilibrium level of redis-

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[59] *See supra* note 13 and accompanying text.

[60] For examples of early seminal contributions, see Meltzer & Richard, *supra* note 5; Roberts, *supra* note 5; Romer, *supra* note 5.

[61] *See, e.g.*, Meltzer & Richard, *supra* note 5, at 917; Roberts, *supra* note 5, at 329–30; Romer, *supra* note 5, at 164. The decision to restrict the policy space to linear income taxes can be defended. As a practical matter, it makes models significantly more tractable. Mankiw and others have argued that optimal tax schedules may be approximately linear. *E.g.*, Mankiw et al., *supra* note 7, at 155–59. In a famous study of the overall incidence of U.S. taxes, Joseph Pechman and Benjamin Okner reported that taxes were approximately linear. JOSEPH A. PECHMAN & BENJAMIN A. OKNER, WHO BEARS THE TAX BURDEN? 4–10 (1974). But see Thomas Piketty & Emmanuel Saez, *How Progressive is the U.S. Federal Tax System? A Historical and International Perspective*, 21 J. ECON. PERSP. 3 (2007), for a more recent study of the overall incidence of federal taxes.

[62] If preferences are single-peaked, the median voter theorem says that the preference of the median voter will be a stable equilibrium under majority voting. Linear income taxes are not the only one-dimensional tax policy spaces that have been studied. Joshua Gans and Michael Smart demonstrate more generally that a majority voting equilibrium exists if the set of tax systems is one-dimensional and preferences over that set satisfy a "single-crossing condition." Joshua S. Gans & Michael Smart, *Majority Voting with Single-Crossing Preferences*, 59 J. PUB. ECON. 219 (1996). For example, Philippe De Donder and Jean Hindriks restrict the space to tax systems that are ideal for one or more taxpayers and show that an equilibrium will generally exist. Philippe De Donder & Jean Hindriks, *The Politics of Progressive Income Taxation with Incentive Effects*, 87 J. PUB. ECON. 2491 (2003).

[63] Meltzer & Richard, *supra* note 5, at 924–25.

[64] *Id.* at 921.

tribution) will be relatively high.[65] As the median voter becomes relatively poorer, the median voter theorem predicts that a majority will support a higher tax rate and more redistribution.[66]

Although the Meltzer-Richard hypothesis has mixed empirical support,[67] the basic intuition has a strong appeal.[68] Progressivity and

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[65] *Id.* at 917–23.

[66] *Id.* at 924 ("When the mean income rises relative to the income of the decisive voter, taxes rise, and vice versa.").

[67] *Compare* Peter H. Lindert, *What Limits Social Spending?*, 33 EXPLORATIONS ECON. HIST. 1, 12–13, 17 (1996) ("[T]he anti-spending effect of greater income inequality casts doubt on theories predicting that greater inequality would raise taxes on the rich and propertied."), *and* Roberto Perotti, *Growth, Income Distribution, and Democracy: What the Data Say*, 1 J. ECON. GROWTH 149, 172 (1996) ("An even more important message of this table is that there is also very little evidence of a negative association between equality and fiscal variables in democracies."), *with* Branko Milanovic, *The Median-Voter Hypothesis, Income Inequality, and Income Redistribution: An Empirical Test with the Required Data*, 16 EUR. J. POL. ECON. 367, 394 (2000) ("More unequal factor-income countries redistribute more toward the poor and very poor."), *and* Torsten Persson & Guido Tabellini, *Is Inequality Harmful for Growth?*, 84 AM. ECON. REV. 600, 617 (1994) (finding "(weak) evidence" that inequality leads to greater transfer spending). There are also a number of studies that look at how popular support for redistribution changes as inequality increases. Several of these studies find that increasing inequality has actually decreased the amount of support for redistribution in the U.S. (as measured by Stimson's public mood, an aggregate variable that indicates general attitudes towards more or less government). *See, e.g.*, Nathan J. Kelly & Peter K. Enns, *Inequality and the Dynamics of Public Opinion: The Self-Reinforcing Link Between Economic Inequality and Mass Preferences*, 54 AM. J. POL. SCI. 855 (2010) (finding increased conservatism towards spending among all groups); Matthew Luttig, *The Structure of Inequality and Americans' Attitudes Toward Redistribution*, 77 PUB. OPINION Q. 811 (2013) (finding that increased inequality has resulted in increased conservatism in attitude towards spending).

[68] There are a number of theories why we might not observe the expected relationship between inequality and redistribution. One theory is that rising inequality might reduce the affinity between the middle class and the poor, reducing middle class support for redistributive policies. *See, e.g.*, Lorenzo Kristov et al., *Pressure Groups and Redistribution*, 48 J. PUB. ECON. 135, 155–56 (1992) (finding that governmental transfers tend to increase as the gap between the rich and middle class increases and decrease as the gap between the poor and middle class increases); Noam Lupu & Jonas Pontusson, *The Structure of Inequality and the Politics of Redistribution*, 105 AM. POL. SCI. REV. 316, 316 (2011) (finding that "both redistribution and nonelderly social spending increase as the dispersion of earnings in the upper half of the distribution increases relative to the dispersion of earnings in the lower half of the distribution"). This may be exacerbated by differences in ethnic/racial composition across the income distribution. *See* ALBERTO ALESINA & EDWARD L. GLAESER, FIGHTING POVERTY IN THE U.S. AND EUROPE: A WORLD OF DIFFERENCE 133–36 (2004) (reviewing evidence from the literature that ethnic and racial heterogeneity have been linked to lower levels of and popular support for redistribution); Matz Dahlberg et al., *Ethnic Diversity and Preferences for Redistribution*, 120 J. POL. ECON. 41, 72 (2012) (finding that increased immigration reduces support for redistribution especially among high income earners in Sweden). In a recent article, James Alt and Torben Iversen offer a different argument based on increased segmentation of the labor market. They focus on the insurance function of redistribution and argue that changes in the labor market have made the labor market less risky for the middle class. James Alt & Torben Iversen, *Inequality, Labor Market Segmentation, and Preferences for Redistribution*, AM. J. POL. SCI. 21 (2017). Roland Bénabou argues that some policies will

redistribution are seen as a struggle between the lower and middle classes on the one hand and the rich on the other. Redistribution involves taking from the rich and giving to the poor.[69] This is a common feature in political models that are trying to explain progressivity.[70] In most of these papers, a key assumption is that the median taxpayer is poorer than the average taxpayer—there are relatively more poor taxpayers than rich.[71]

C. The Difficulty of Nonlinear Income Taxes

This Article uses the same basic models to offer an alternative explanation for progressive marginal rates. Since the goal of this Article is to better understand rate progressivity, it is necessary to move beyond the linear taxes that are the focus of Meltzer and Richard and much of the subsequent literature.[72] This presents a significant difficulty, as there will generally not be a stable equilibrium once voters can choose among nonlinear rate schedules.

To see why this is so, let us return to the example with three voters: A, B, and C. Assume that the tax system now consists of two rates: one that applies to the first $20,000 of income, and another that applies to all income over $20,000. A prefers both rates to be 45%. B prefers the bottom-bracket rate to be 5% and the top-bracket rate to be 45%. C prefers both rates to be 5%. Assume that the current tax

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have a positive effect on ex-ante welfare (e.g., growth or output). Support for these policies will be greater in more equal societies. Roland Bénabou, *Unequal Societies: Income Distribution and the Social Contract*, 90 AM. ECON. REV. 96–98, 119 (2000). He argues that support for redistribution will have a U-shaped response to growing inequality. *Id*. at 97. There are also a number of political factors that may influence the relationship between inequality and redistribution. *See infra* notes 170–73 and accompanying text.

[69] *See supra* note 5 and accompanying text (discussing the long-standing narrative of progressive taxation being a triumph of the lower and middle classes over the rich); *see also* Morten Blekesaune, *Economic Strain and Public Support for Redistribution: A Comparative Analysis of 28 European Countries*, 42 J. SOC. POL'Y 57, 57–58 (2013) (characterizing survey results regarding public opinion about redistribution as reflecting public attitudes about the transference of wealth and income from "rich to poor").

[70] *See, e.g.*, Meltzer & Richard, *supra* note 5, at 924 (arguing that voters below a certain income level vote for candidates who favor a more progressive rate structure and that this is why enfranchisement to lower income groups in the nineteenth and twentieth centuries led to an increase in progressive taxation); Roberts, *supra* note 5, at 332 ("If the median income is less than the mean income . . . then majority voting will lead to the tax schedule with the highest marginal tax rate being adopted."); Romer, *supra* note 5, at 183 ("The conflict between high national income and distributional equality is paralleled by a conflict of interest between rich and poor.").

[71] *See, e.g.*, Meltzer & Richard, *supra* note 5, at 920–23; Roberts, *supra* note 5, at 339–40; Romer, *supra* note 5, at 177.

[72] *See supra* note 61 and accompanying text.

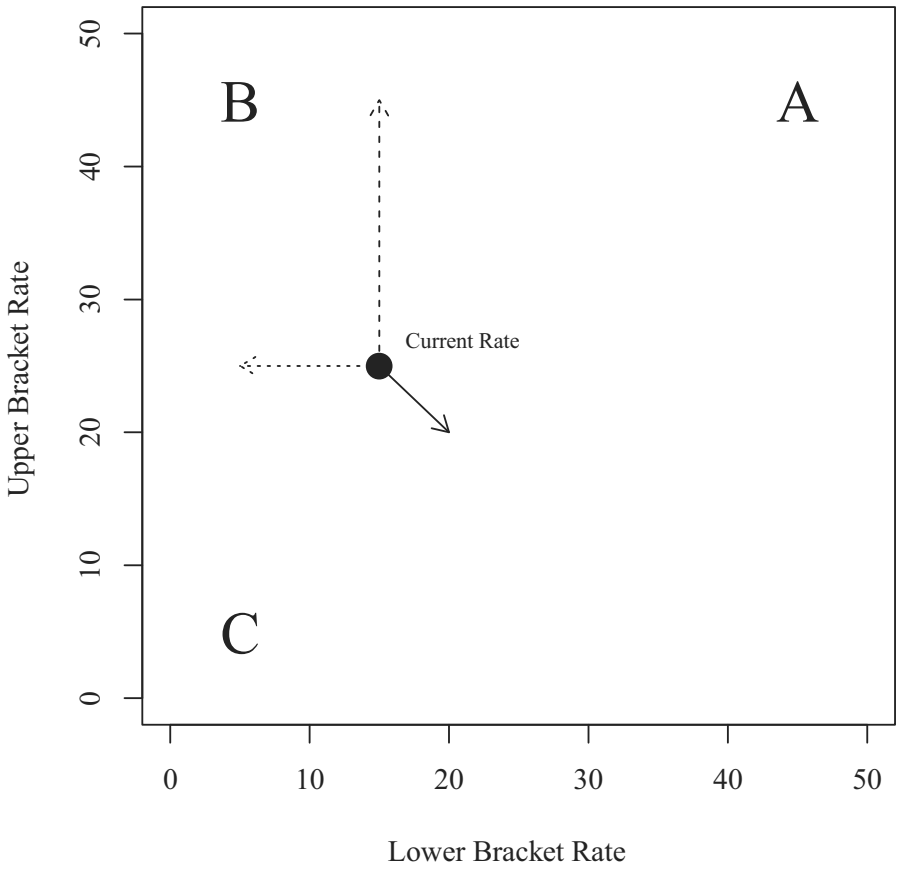
schedule has a bottom-bracket rate of 15% and a top-bracket rate of 25%.[73]

The existing tax schedule is unstable to several different possible coalitions. For example, if A and B form a coalition, they could agree to move the top rate up from 25% to 45% (the dashed arrow in Figure 1(a)). Alternatively, if B and C form a coalition, they could agree to move the bottom rate down to 5% (the dotted arrow in Figure 1(a)). Finally, if A and C form a coalition, they could agree to move the top rate and the bottom rate to 20% (the solid arrow in Figure 1(a)). Regardless of what the current rate schedule is, there are always several possible changes that will bring the rate schedule closer in line with two of the three taxpayers' preferences.[74]

[73] For purposes of this example, assume that A, B, and C are equally concerned about deviations from their ideal bottom-bracket rate and deviations from their ideal top-bracket rate.

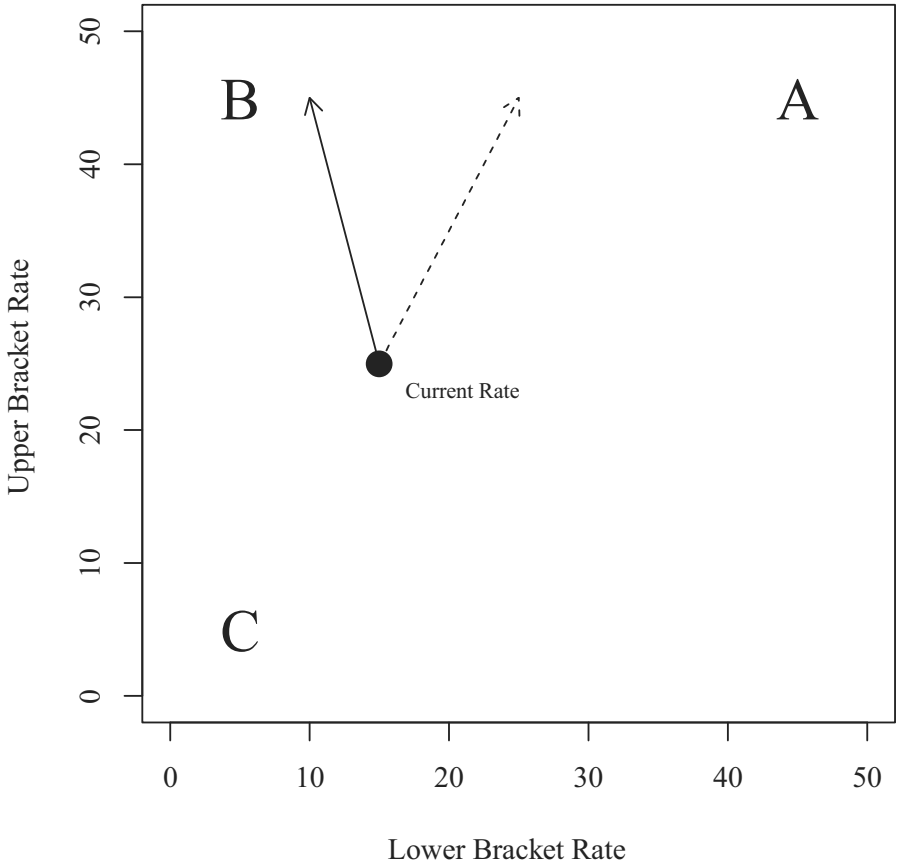
[74] This is significantly different than the earlier linear tax example. In that earlier example since there was only one dimension of policy, the median voter theorem guaranteed a stable policy outcome.

FIGURE 1(A). INSTABILITY OF NONLINEAR RATE SCHEDULES: DIFFERENT POLICY CHANGES DEPENDING ON THE COALITION



There is an additional degree of uncertainty even if the relevant coalition includes A and B. Figure 1(b) shows two alternatives depending on whether A or B has agenda control—i.e., the power to propose the alternative schedule. If A has control over the agenda, A could pair an increase in the top rate from 25% to 45% with a small increase to the bottom rate, say from 15% to 25% (the dashed arrow in Figure 1(b)). This would still make B better off, but would bring the overall tax schedule much closer to A's ideal tax schedule. Alternatively, if B controls the agenda, B could pair the same increase in the top rate with a small decrease to the bottom rate, say from 15% to 10% (the solid arrow in Figure 1(b)). This proposal would still make A slightly better off and would bring the rate structure very close to B's ideal.

FIGURE 1(B). INSTABILITY OF NONLINEAR RATE SCHEDULES: DIFFERENT POLICY CHANGES DEPENDING ON AGENDA CONTROL



These examples demonstrate two important features of nonlinear income taxes. First, there is no stable equilibrium.[75] Regardless of what current policy is, there are always changes to the tax schedule that will attract majority support. In fact, the variety of coalitions available means that there will usually be a broad set of potential changes. A change that benefits the middle and upper classes will look very different from a change that benefits the lower and middle classes. Second, agenda control matters. Since there are so many different policy outcomes that will attract majority support, the trajectory of policy change will often be dictated by who has the power to propose the alternative.

[75] *See* Davis et al., *supra* note 17, at 427–28; McKelvey, *supra* note 17, at 472.

D. Asymmetric Instability of Marginal Rate Schedules

Given the instability of nonlinear income tax schedules, this Part starts by considering incremental changes to the rate schedule.[76] Specifically, this Part considers the popularity of small changes to an existing rate schedule under the assumption that a taxpayer's preferences depend only on his or her own utility. What types of tweaks will enjoy majority support? Similar to Meltzer and Richard's work, this Part asks what tax policies would be supported by a majority of taxpayers.[77] However, it poses that question with respect to nonlinear rate schedules.

Regardless of what tax system is currently in place, this Part finds that there are two categories of incremental change that will be supported by a majority. First, small tax increases above the median voter's income level will enjoy majority support. Consider a small rate increase at the 67th percentile of income.[78] Those voters for whom such a tax increase is supramarginal (i.e., those taxpayers who make less than that amount of income) will vote in favor. Intuitively, the poor and the middle class will support a tax increase on the rich because it will raise additional revenue at no cost to the poor and the middle class. Such changes to the income tax schedule are consistent with the standard narrative of rate progressivity.[79]

Second, incremental tax cuts below the median voter's income level will also enjoy majority support. This is somewhat less intuitive. When considering a small tax cut at the 33rd percentile of income, those voters for whom such a tax increase is inframarginal (i.e., those taxpayers who make more than that amount of income) will vote in favor. In other words, it is the middle class and the rich that will support an inframarginal rate cut because it results in a net increase in their utility. Thus, the rich and the middle class have an incentive to bend the marginal tax schedule in a way that increases marginal rate progressivity.

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[76] *See generally infra* Part II (confronting more squarely the instability of the rate schedule by considering what rate schedules are most likely if the rate schedule is subjected to repeated change through majoritarian voting).

[77] *See* Meltzer & Richard, *supra* note 5, at 914–16; *see also* Roberts, *supra* note 5, at 329–31.

[78] This could be achieved, for example, by shifting an existing bracket cutoff downward so that a small amount of income is subjected to a higher rate.

[79] For purposes of this explanation, it is perhaps helpful to think of the poor, the middle class, and the rich as referring to thirds of the population. This means that rich is used to reference a rather large group, namely the top third of the population. In other contexts, the rich are defined more narrowly as the top decile, top 1%, or even the top 0.1%. Thus, this model does not distinguish between the "rich" (the top third) and what one might call the "super-rich" (the top decile, 1%, or 0.1%).

This suggests that majoritarian pressure on the tax system is asymmetric: downward on marginal rates at below-median incomes and upward on marginal rates at above-median incomes.

The approach taken in this Part has the most in common with a strand in the literature that focuses on pairwise comparisons of tax systems with majoritarian voting. Francisco Marhuenda and Ignacio Ortuño-Ortín show that tax systems with increasing marginal rates will generally prevail over regressive tax schedules.[80] This initial paper does not incorporate incentive effects—the distribution of income is taken as fixed. Tapan Mitra, Efe A. Ok, and Levent Koçkesen generalize this result, allowing for incentive effects and for relative income preferences.[81] The authors show that progressive rate schedules still generally prevail over regressive ones under these alternative conditions.[82]

However, the approach taken in this Part is different in one important respect. These other papers generally start with the assumption that the median income of the population is lower than the mean income—i.e., there are relatively more poor and middle class taxpayers than rich.[83] This (quite reasonable) assumption highlights that these proofs focus on poor-and-middle-class-against-the-rich arguments.[84] The idea is that if the median taxpayer has lower income than the population mean, he will vote for a more progressive rate structure. This is consistent with the standard narrative of progressivity more generally—as a struggle pitting the poor and the middle class against the rich.

In contrast to the approach taken by the existing literature, this Part makes few assumptions regarding the shape of the income distribution. The asymmetric pressures on the rate schedule do not depend on the relationship between the median and mean income of the pop-

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[80] Francisco Marhuenda & Ignacio Ortuño-Ortín, Note, *Majority Voting and Progressivity*, 19 INVESTIGACIONES ECONÓMICAS 469, 472 (1995) (Spain).

[81] Tapan Mitra et al., *Popular Support for Progressive Taxation and the Relative Income Hypothesis*, 58 ECON. LETTERS 69, 70 (1998).

[82] *Id.* at 75. *But see* Jean Hindriks, *Is There a Demand for Income Tax Progressivity?*, 73 ECON. LETTERS 43, 49 (2001) ("In this paper we have supplemented the *popular support for progressivity theorem* of Marhuenda and Ortuno-Ortin [sic] . . . with a novel *popular support for regressivity theorem* to establish the inevitable voting cycle between regressivity and progressivity."); Esteban F. Klor, *On the Popular Support for Progressive Taxation*, 5 J. PUB. ECON. THEORY 593, 602 (2003) (describing exceptions to the result derived by Marhuenda & Ortuño-Ortín, *supra* note 80, showing that non-progressive tax systems will sometimes prevail over progressive tax systems).

[83] *E.g.*, Hindriks, *supra* note 82, at 44; Marhuenda & Ortuño-Ortín, *supra* note 80, at 470–72; Mitra et al., *supra* note 81, at 71.

[84] *See supra* notes 4–5 and accompanying text (discussing the poor-versus-rich prism of viewing rate progressivity).

ulation. These same preferences over incremental changes to the tax schedule exist even if the median voter has higher income than the population average.

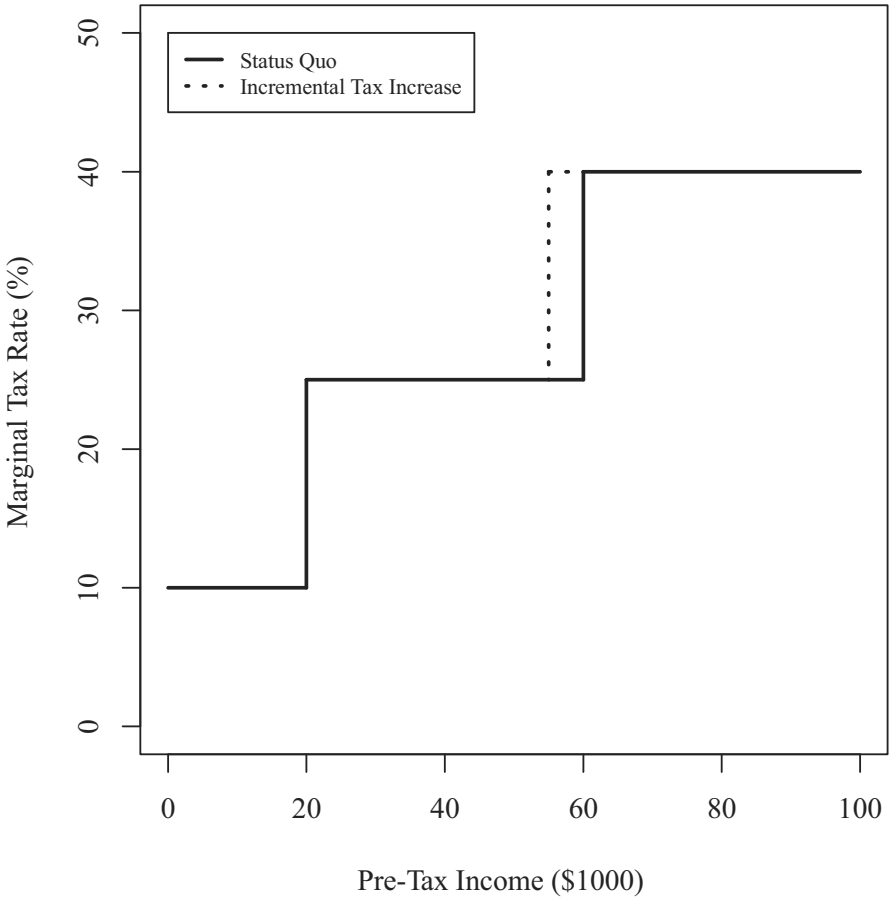
1. Intuition

This Section develops the intuition of how incremental changes to the marginal rate structure affect the behavior and utility of taxpayers. I define an incremental rate change as a small change to a marginal rate over a small range of income.[85] In response to increased rates, taxpayers can have two different responses that push in opposite directions. The substitution effect measures how much the higher rate encourages them to work less and enjoy more leisure. The income effect measures how much the higher rate causes taxpayers to work more to maintain their after-tax income. For simplicity, this discussion assumes that there are substitution effects but no income effects.

The solid line in Figure 2(a) shows a hypothetical rate structure with three different rates. Income between $0 and $20,000 is taxed at 10%, income between $20,000 and $60,000 is taxed at 25%, and income over $60,000 is taxed at 40%. Assume that in our population, the median level of income is $40,000.

[85] Perhaps the easiest example of an incremental adjustment is a small change to a cutoff between marginal rate brackets. As an example, consider a tax system with two rates: 40% on the first $50,000 of income and 50% on all income thereafter. One possible incremental adjustment (a tax increase) would be to move the cutoff $1000 downward from $50,000 to $49,000. That would result in a 10% tax increase over that range of income. Similarly, the opposite adjustment (a tax decrease) can be achieved by moving the bracket cutoff up to $51,000.

FIGURE 2(A). MARGINAL RATE STRUCTURE BEFORE AND AFTER AN INCREMENTAL RATE INCREASE



The dotted line shows an incremental rate increase. The start of the top rate bracket is moved down to $55,000. In other words, the rate change increases the rate on income between $55,000 and $60,000 from 25% to 40%. This rate increase funds a slight increase in spending—i.e., the demogrant increases in size.

How does this rate change affect the utility of taxpayers? There are three different categories of taxpayers that must be considered: those above, below, and at the rate change.

For those taxpayers who earn materially more than $60,000, the incremental rate change is inframarginal. Since we are assuming no income effects, the incremental adjustment to the rate schedule does

not change their behavior (i.e., the amount of labor supplied).[86] The small increase in their taxes reduces their utility because the tax increase is only partially offset by the increase in the demogrant (the demogrant is split over the entire population while the tax increase is split over only the part of the population earning at least $55,000). These taxpayers experience a reduction in utility. They prefer the original rate structure.

For those taxpayers who earn materially less than $55,000, the incremental rate change is supramarginal. The incremental rate adjustment does not change their behavior (i.e., the amount of labor supplied). The change to the tax schedule results in a larger demogrant. These taxpayers enjoy an increase in utility. They support the new rate structure.

The effect on taxpayers who earn income in the neighborhood of the rate change is more complicated. These marginal taxpayers will generally adjust their behavior as a result of the incremental tax increase. Faced with a higher marginal tax rate, these taxpayers will reduce their labor supply. The overall change in their utility depends on the change in labor supply, change in pre-tax income, change in taxes, and change to the demogrant.

In the optimal income tax endeavor, it is exactly these marginal incentives that are most important. However, marginal taxpayers are relatively less important in studying the political economy of incremental rate changes. If the rate changes are restricted to be small and over a narrow band of income, this population will generally be vanishingly small. This allows us to focus on the effect of incremental tax changes to those taxpayers for whom the change is either supramarginal or inframarginal.

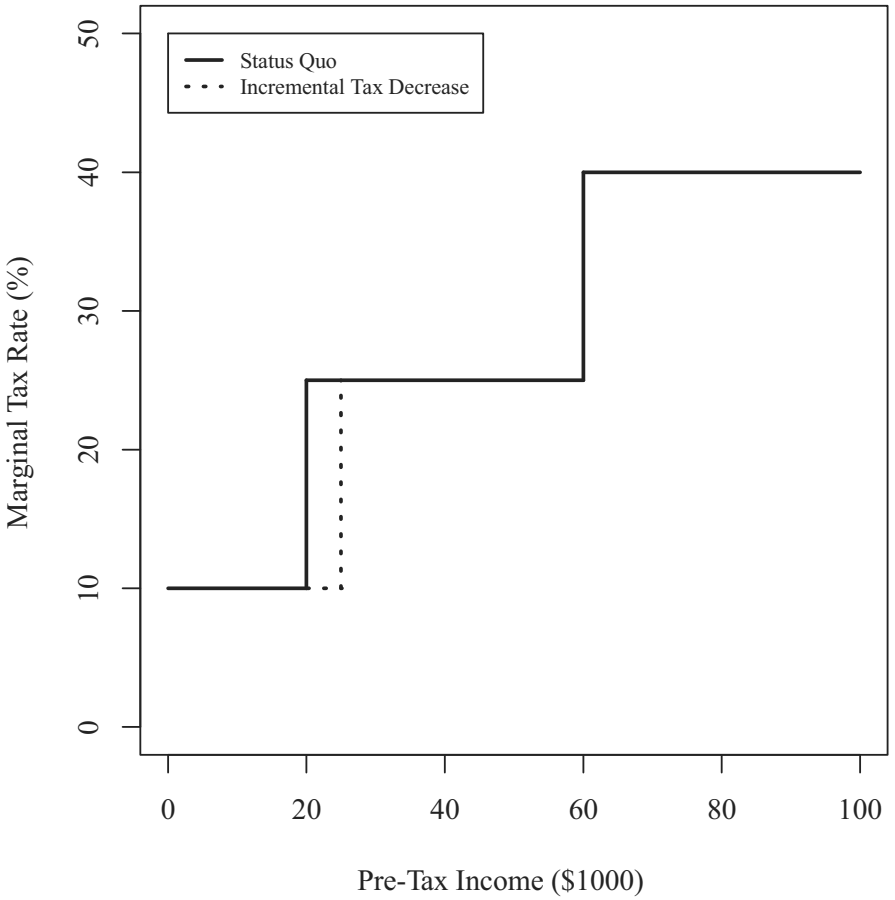
With respect to an incremental tax increase, taxpayers for whom the increase is supramarginal will expect their utility to increase and therefore vote in favor. Taxpayers for whom the increase is inframarginal will anticipate a reduction in utility and vote against. Thus, incremental tax increases above the median level of income will generally be supported by a majority of taxpayers. Intuitively, the poor and the middle class will vote for an incremental tax increase on the rich to fund more revenue and greater redistribution. In our example, since the rate increase occurred above the median income of $40,000, a majority of taxpayers would support the rate change.

Figure 2(b) shows the converse situation of an incremental rate cut. The lowest bracket applies to income up to $25,000. In other

[86] *See supra* Section I.A (discussing the behavioral effects of inframarginal rate changes for a hypothetical law firm partner).

words, the rate that applies to income between $20,000 and $25,000 is taxed at 10% instead of 25%. This tax cut reduces the available money for redistribution. In other words, the demogrant gets smaller.

FIGURE 2(B). MARGINAL RATE STRUCTURE BEFORE AND AFTER AN INCREMENTAL RATE CUT



When voting on an incremental tax cut, taxpayers for whom the cut is inframarginal will vote in favor, while the taxpayers for whom the cut is supramarginal will vote against. Those taxpayers who have income materially below $20,000 will vote against the tax change because their labor supply remains unchanged and the reduced demogrant decreases their utility. Those taxpayers who earn materially more than $25,000 will vote for the tax change because it reduces

their taxes (and that tax reduction is greater than the reduction in the demogrant).[87]

Focusing on majoritarian support for incremental rate cuts, any incremental tax reduction below the median level of income will be supported by a majority of taxpayers. It is the rich (and the middle class) who benefit from an inframarginal rate reduction even though it may superficially appear to benefit lower-income taxpayers.

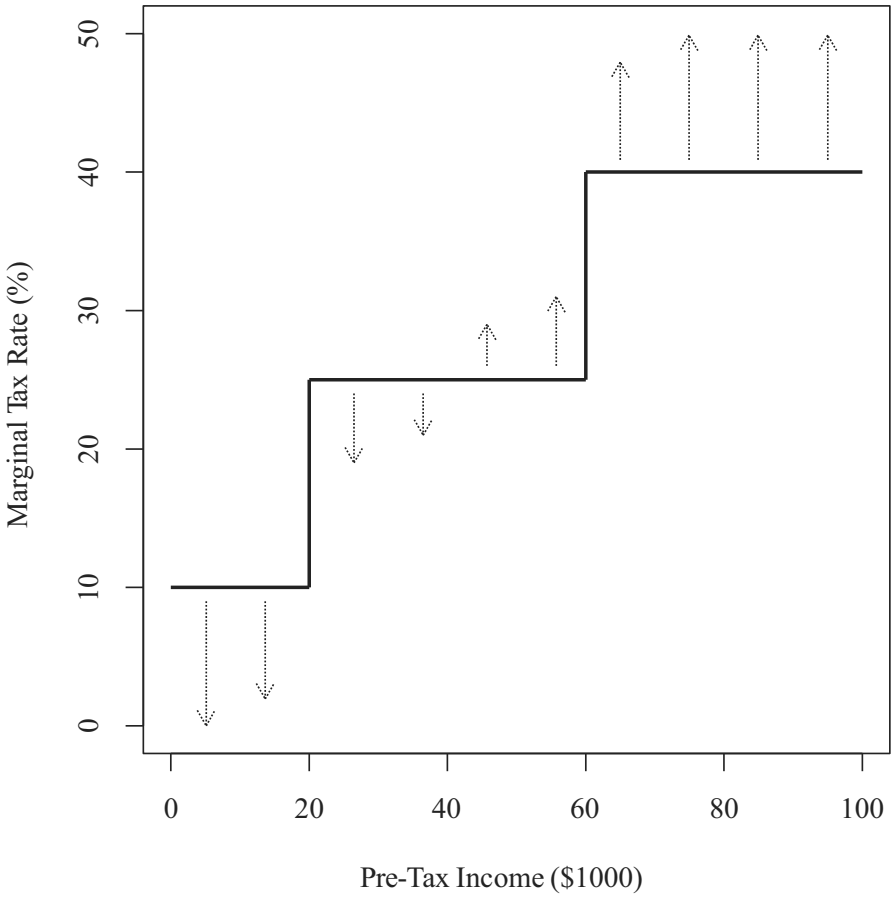
Another way to grasp the intuition is that an incremental rate reduction is equivalent to replacing part of the demogrant with a phased-in demogrant of equivalent revenue cost.[88] Because the phased-in demogrant is only available to a portion of the population, the size of the phased-in demogrant for those who receive it is larger than the replaced demogrant. The taxpayers who are below the phase-in are worse off. Those taxpayers who are above the phase-in are better off.

In summary, whether a majority will approve an incremental rate change depends on (1) whether it is a rate increase or decrease and (2) the percentile of income at which the incremental change occurs. Given any income tax schedule, an incremental rate cut below median income or an incremental rate increase above median income will generally be supported by a majority of the population. Figure 2(c) shows this asymmetric pressure on the rate structure.

[87] Again, the effect on marginal taxpayers is complicated and depends on the assumed substitution effect. Facing a lower marginal tax rate, these taxpayers will supply more labor. The combination of a tax reduction, reduced demogrant, and increase in labor supply will have an ambiguous overall effect on utility for these taxpayers.

[88] Hat tip to Kirk Stark for this intuition.

FIGURE 2(C). ASYMMETRIC PRESSURE ON THE MARGINAL RATE STRUCTURE



The result holds if the change actually changes revenue in the expected direction. This would not be the case in some extreme situations. For example, imagine an incremental rate increase at a level of income that is supramarginal or marginal for almost all taxpayers (i.e., rate changes at the very top of the income distribution). That rate increase will actually lose revenue and make everyone worse off. More generally, an incremental rate increase will not raise revenue if the effect on marginal taxpayers is sufficiently large and/or there are an insufficient number of taxpayers above the income at which the tax increase occurs.

There is a similar caveat regarding incremental rate decreases. One can imagine rate decreases that actually increase revenue. For example, if an incremental tax cut is at a level of income that is

supramarginal or marginal for almost all taxpayers, that rate decrease may actually raise revenue and be supported by many taxpayers.[89]

The discussion in this Section has put aside income effects. When income effects are incorporated, the math becomes more complicated. This is because income effects can potentially affect the behavior of all taxpayers and not just marginal taxpayers. Consider an incremental rate increase. With income effects, taxpayers for whom the rate increase is supramarginal will adjust their behavior by working less in response to the increase in the demogrant. Similarly, taxpayers for whom the rate change is inframarginal will work more in response to the increase in taxes and the change in the demogrant. These changes in behavior will affect the amount of tax revenue raised and in turn influence the change in the demogrant. Thus, the change in the demogrant must be calculated implicitly. Despite these complications, the same general conclusions hold even if income effects are incorporated. Incremental rate cuts will generally make those taxpayers who earn less than that level of income worse off and make taxpayers who earn more than that level of income better off. Once again, the key intuition holds so long as the incremental rate increase or the incremental rate decrease changes overall revenue in the expected direction.

2. Implications and Limitations

Section I.D.1 described two categories of majoritarian changes that can be made to *any* given rate schedule. To be clear, these incremental changes are *not* the only changes that would enjoy majority support. As discussed earlier in Section I.C, nonlinear rate schedules are generally not stable. For any rate schedule, it will always be possible to make any number of changes that will make more than half of taxpayers better off.

Then why study incremental changes at all? Focusing on how incremental changes affect taxpayer utility provides the building blocks for thinking about more significant changes to the rate schedule. And it yields an important insight. There is asymmetric pressure on any nonlinear income tax schedule. There will be popular support for rate increases at high levels of income and rate cuts at low levels of income. Thus, the analysis suggests that any schedule will be susceptible to tilting toward more marginal rate progressivity.

Is there reason to believe that such changes are likely in practice? It is particularly interesting to think about the likelihood of rate cuts

[89] This corresponds to the familiar Mirrlees result that income taxes on the highest earner's marginal income should approach zero. *See supra* note 54.

at low levels of income. First, many observed changes to rate schedules are similar to the incremental changes described in Section I.D.1. These can occur either through rate adjustments or bracket adjustments. Any upward increase in the size of an income bracket is an incremental rate cut.[90] If that bracket increase occurs at a level of income that is below median income, then the analysis in Section I.D.1 would suggest that it benefits a majority of taxpayers. For example, the 15% bracket in 2014 for individual U.S. taxpayers started at a taxable income of $9,075.[91] Income up to that level was taxed at 10%. Due to inflation adjustments,[92] in 2015, the bracket cutoff between 10% and 15% increased to $9,225.[93] This bracket increase incrementally reduces the taxes of those taxpayers that have taxable income in excess of $9,075.[94] Similarly, an increase in the standard deduction or the personal exemption is a tax cut that is inframarginal relative to most taxpayers.[95]

Second, these low-income rate cuts can be touted as tax cuts that benefit the poor.[96] This is only partially true. Such tax cuts only benefit those taxpayers who would otherwise earn more than that level of income.[97] For the poor that earn less than this amount, the knock-on effect of the tax cut is less revenue, less spending, and less redistribution.[98] In other words, a rate reduction at a low level of income superficially makes the rate schedule look more progressive but has a

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[90] This is assuming that marginal rates are increasing. If marginal rates are decreasing, an upward increase in the size of an income bracket would be an incremental rate increase.

[91] Rev. Proc. 2013-35, 2013-47 I.R.B. 539.

[92] I.R.C. § 1(f) (2014).

[93] Rev. Proc. 2014-61, 2014-47 I.R.B. 862.

[94] Since the purpose of the inflation adjustments to the brackets is to keep them the same size in terms of real dollars, it is perhaps better to consider inflation adjustment to the brackets as *preventing* incremental tax increases.

[95] Things become more complicated if these exemptions are phased-out (as they often are in the U.S. federal income tax). Phase-outs increase the effective marginal tax rate in the phase-out range. For example, in 2015, the U.S. personal exemption is phased out once a (single) taxpayer's adjusted gross income exceeds $258,250. Rev. Proc. 2014-61, 2014-47 I.R.B. 866. The phase-out percentage is 2%. If the taxpayer's statutory marginal tax rate is 33%, the phase-out increases the effective marginal tax rate to 33.66%. At an income of $380,750, the personal exemptions are completely phased out. *Id.*

[96] Former President George W. Bush liked to point out that under his tax plan a single waitress with two kids and earning $20,000 per year would pay no tax. Jonathan Chait, *Going for Gold*, NEW REPUBLIC (May 21, 2001), https://newrepublic.com/article/87096/going-gold ("'Under my plan,' he likes to boast, the waitress 'will pay no income tax at all.' That's true. Because the waitress almost certainly doesn't pay any income taxes to begin with.").

[97] This is particularly clear if an incremental rate reduction is conceptualized as a phased-in demogrant. *See supra* text accompanying note 88.

[98] *See infra* Section III.A (discussing the various knock-on effects that a reduction in revenue could possibly have). In the context of this simple one-period model, the effect of the reduced revenue is to reduce the demogrant and therefore decrease redistribution.

differential effect on the poor (with a particularly pernicious effect on the worst off). This highlights the importance of measuring the overall progressivity of the tax-and-transfer system rather than considering the tax system separately.[99]

Third, the rates that apply to lower levels of income have much lower salience than the top marginal rate. In modern U.S. politics, the top marginal rate has taken on a talismanic importance. The top rate preference of a politician can be quite accurately predicted by how liberal or conservative that politician is.[100] Most Democrats want to move the top marginal rate up, while President Trump and most other Republicans want to move the top marginal rate down.[101] It is less clear whether the two parties disagree on what should happen with respect to the bottom or middle of the rate schedule. Both parties often talk about reducing the tax burden on the "middle class."[102] What is clear is that the shape of the middle of the rate schedule is not nearly as salient as the top marginal rate. This makes inframarginal rate cuts even easier to enact.

Finally, the popularity of these inframarginal rate cuts is unaffected even if the rich dominate the political process. Rate schedules would continue to be unstable to incremental rate cuts. If political participation (or political power) increases with income, we can think of this as simply changing the income of the effective median voter. Rate schedules would still be unstable to reductions in marginal rates below that effective median income. Consider a situation in which the top 1% has as much political power as the bottom 99%. The effective median income would be the 99th percentile of income. This would allow the top 1% to stop increases to marginal tax rates on very high incomes. At the same time, the top 1% (and change) could vote significant decreases to inframarginal tax rates. One could still observe rate schedules that look very progressive.

This is an important intervention in the existing literature because there is evidence that enacted policy tends to reflect the pref-

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[99] *See* KLEINBARD, *supra* note 20, at 232–40; Zolt, *supra* note 20, at 656–57.

[100] *See* Jason S. Oh & Chris Tausanovitch, *Quantifying Legislative Uncertainty: A Case Study in Tax Policy*, 69 TAX L. REV. 485, 501–06 (2016).

[101] *See supra* note 8 (mentioning President Trump's campaign proposals).

[102] *See, e.g.*, *Our Platform: The 2016 Democratic Platform*, DEMOCRATS.ORG, https://www.democrats.org/party-platform#fair-share (last visited July 3, 2017) ("We will offer tax relief to hard working, middle-class families for the cost squeeze they have faced for years from rising health care, childcare, education, and other expenses."); *We Believe in America: The 2012 Republican Platform*, AM. PRESIDENCY PROJECT, http://www.presidency.ucsb.edu/papers_pdf/101961.pdf (last visited Aug. 24, 2017) (stating the Republican platform agendas including eliminating certain taxes on "lower and middle-income taxpayers").

erences of the rich.[103] If the political process is skewed towards the rich, there is something hollow about explaining progressive marginal rates by an appeal to the power of the poor and the middle class to manipulate the tax system in their favor. By focusing on incremental changes, this Part shows how progressive marginal rates can prevail even in a policymaking landscape dominated by the rich.

It also provides another possible explanation for why empirical studies have generally not found much support for Meltzer and Richard's hypothesis that tax rates should be higher (and redistribution should be higher) when the median voter is poorer relative to the population average.[104] Majoritarian voting systems may manipulate income tax schedules not only by manipulating average tax rates, but also by manipulating the shape of the nonlinear income tax schedule.[105] Remember that the Meltzer and Richard hypothesis focused on linear taxes.[106] But tax systems are almost never linear.[107] Rather, an income tax encompasses a number of different decisions on how to tax the lower, middle, and upper classes. The takeaway is that coalitions can and do shift. The middle class can ally with either the rich or the poor and the income tax schedule is plastic to both coalitions. It is important to think about how politics affects not just the average level of taxation but also the distribution of that burden. Models that focus on linear taxes inevitably elide these interesting complications.

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103 *See supra* note 6 and accompanying text; *infra* notes 175–90 and accompanying text.

104 For alternative theories, see *supra* note 68.

105 In this model, the bending of the rate schedule depends on whether the middle class allies with the rich or the poor. This is consistent with several important articles that look more generally at redistribution across countries. *See, e.g.*, Torben Iversen & David Soskice, *Electoral Institutions and the Politics of Coalitions: Why Some Democracies Redistribute More than Others*, 100 AM. POL. SCI. REV. 165 (2006) (arguing that differences in redistribution between countries with proportional electoral systems and countries with majoritarian systems can be explained by the greater likelihood of the middle class to ally with the poor in proportional systems); Kristov et al., *supra* note 68, at 149 ("A democratic setting in which the middle-income ranks see themselves as more likely to trade places with those currently poorer than with the more isolated rich elite is a setting ripe for soaking the rich . . . ."); Lupu & Pontusson, *supra* note 68, at 316 (noting that an assumption for their framework is that the support of middle-class voters is "critical to the implementation of redistributive policies"). In a cross-country study of 18 countries, Lupu and Pontusson find that redistribution increases when the ratio of middle-class to upper-class income increases and when the ratio of middle-class to lower-class income decreases. *See id.* at 333. The United States is an outlier among the countries that they study—increasing inequality has not brought about the same redistribution that has occurred in other countries. *Id.*

106 *See supra* notes 61, 63–66 and accompanying text.

107 *See* Peter et al., *supra* note 1, at 463–64 (showing that progressive rates are most common worldwide).

II
The Instability of Rate Schedules

Incremental adjustments are not the only changes that can be made to the rate schedule. As discussed in Section I.C, any rate schedule can be modified in numerous ways depending on who has control of the agenda and what coalition is formed. Studying incremental changes is a useful first step in understanding the political economy of nonlinear tax rates, but a more complete treatment must describe the rate schedules that one might observe if more significant changes to the rate schedule are possible.[108]

Since nonlinear rate schedules are fundamentally unstable, the goal is to describe what types of rate schedules are most likely if changes to the rate schedule are made through majoritarian voting. This Part provides a simple model of how a nonlinear income tax might evolve by using a series of Markov chain Monte Carlo (MCMC) simulations.[109]

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[108] *See generally supra* note 16 and accompanying text (noting that policy changes can either be incremental or significant).

[109] There are other strategies that can be used to deal with this instability. One strategy in the existing literature (but not used in this paper) is to employ probabilistic voting. These papers assume that instead of deterministically voting for the policy that is closer to their ideal, actors probabilistically vote based on how close each alternative is to their ideal preference. *See, e.g.*, Peter Coughlin, *Pareto Optimality of Policy Proposals with Probabilistic Voting*, 39 Pub. Choice 427 (1982); Jenny De Freitas, *A Probabilistic Voting Model of Progressive Taxation with Incentive Effects*, 190 Revista de Economía Pública 9 (2009) (Spain); Emma Galli & Paola Profeta, *Tax Complexity with Heterogeneous Voters*, 9 Pub. Fin. & Mgmt. 1 (2009); Assar Lindbeck & Jörgen W. Weibull, *Balanced-Budget Redistribution as the Outcome of Political Competition*, 52 Pub. Choice 273 (1987). Parties are assumed to propose policies that maximize their expected vote share. Modeling voting as probabilistic often yields stable equilibrium policies.

Another approach is to assume that preferences are incomplete. Intuitively, if parties have incomplete preferences over the policy space (i.e., if there are large numbers of policies between which a party cannot choose), then policies will be more stable. For example, Roemer uses incomplete preferences to solve for Nash equilibria in tax policy. *E.g.*, John E. Roemer, *The Democratic Political Economy of Progressive Income Taxation*, 67 Econometrica 1 (1999).

Still another approach is to focus on mixed strategy equilibriums in two-party voting games. A mixed strategy is one in which a party picks between multiple policies with some probability. A mixed strategy equilibrium is achieved if each party has no incentive to change its own mixed strategy based on the mixed strategies of the other party. *See* Oriol Carbonell-Nicolau & Efe A. Ok, *Voting over Income Taxation*, 134 J. Econ. Theory 249 (2007); Oriol Carbonell-Nicolau & Esteban F. Klor, *Representative Democracy and Marginal Rate Progressive Income Taxation*, 87 J. Pub. Econ. 2339 (2003); *see also* De Donder & Hindriks, *supra* note 62 (comparing the mixed strategy to several others). The general approach in these papers is to describe a set of politically viable tax systems within which there will be some cycling. These papers generally find that progressive tax systems are predominant in the mixed equilibrium strategies.

The MCMC simulation approach is similar to the mixed strategy equilibrium approach. It describes the policy instability and cycling observed when rate schedules are

This Part introduces MCMC simulations and then uses them to explore the political economy of nonlinear rate schedules. The simulations suggest that (1) progressive rate schedules become more likely as political power is concentrated in the hands of the rich and (2) progressive rate schedules are predominant even if there are relatively more rich than poor. In short, progressive marginal rates are consistent with the preferences of the rich.

As a disclaimer, the approach used in this Part intentionally simplifies taxpayer and legislator preferences and elides many of the complexities of the legislative process. To the skeptical reader, the analysis set forth in this Part should be understood as a heuristic to study how the preferences of the rich might influence the rate structure towards more progressivity. Part III reconsiders many of the simplifying assumptions and transitions the intuitions of Part II into the real world.

A. MCMC Basics

MCMC is a statistical technique that is used to simulate probability distributions of outcomes. Recall the example in Section I.C. There were three voters—A, B, and C—who each had different preferences regarding a two-rate tax schedule. That Section demonstrated that there was no equilibrium policy outcome. MCMC can be used to estimate a probability distribution of outcomes if A, B, and C repeatedly vote on the rate schedule.

Start with a random rate schedule, say a bottom bracket of 5% and a top bracket of 20%. Then randomly choose A, B, or C to act as the agenda-setter. Let's say that A is chosen to be the first agenda-setter. Given the preferences of B and C, the best that A can do is propose a rate schedule with a bottom rate of 25% and a top rate of 45%.[110] B will agree to the proposal and the change will be made.

Repeat the process again by randomly selecting another agenda-setter. Let's assume that this time C is chosen. The best that C can do is to propose a rate schedule with a bottom rate of 5% and a top rate of 30%. B will agree to this proposal and the change will be made.

This process (randomly selecting an agenda-setter and allowing the agenda-setter to propose an alternative that is voted on) produces

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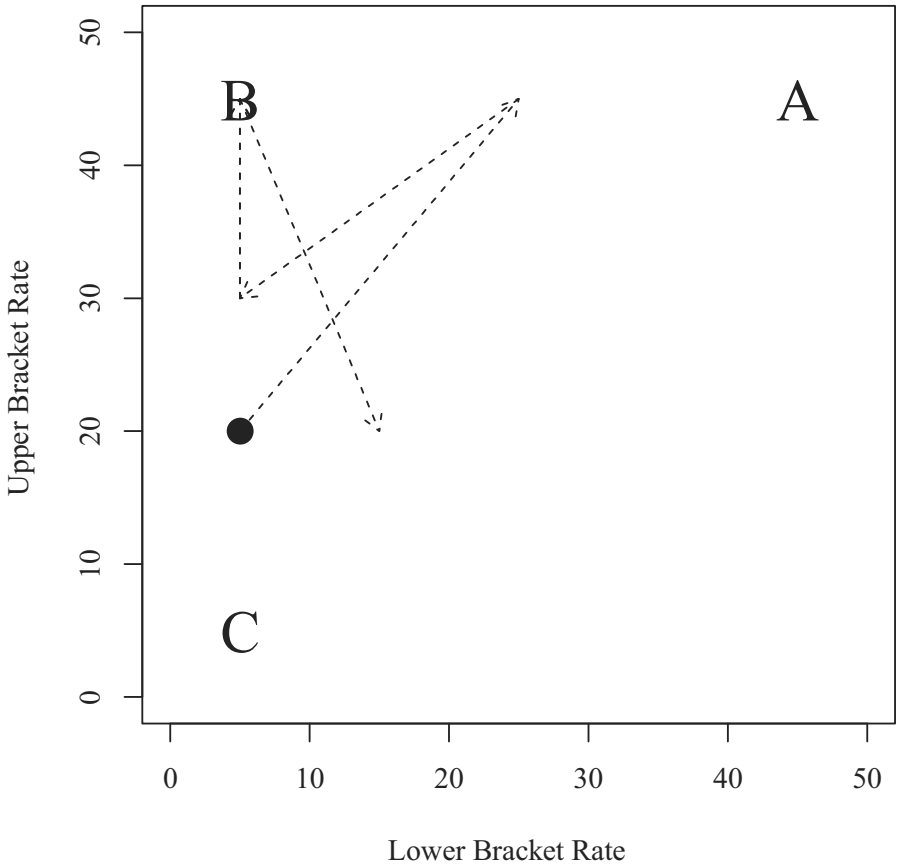
determined through majoritarian voting with a randomly selected agenda-setter. It differs in that it does not focus on the strategic interaction of parties. Instead it subjects the tax system to a more generalized majoritarian process.

[110] For simplicity, let's assume that all rates must be multiples of 5%. A rate schedule with a bottom rate of 25% and a top rate of 45% is the closest that A can get to his ideal while also moving B closer to his. It is also closer to his ideal than any change that could be enacted by forming a coalition with C.

what is called a "Markov chain." Figure 3(a) shows the first five steps in the Markov chain. It starts at (5%, 20%), moves to (25%, 45%), moves to (5%, 30%), moves to (5%, 45%), and then to (15%, 20%).

FIGURE 3(A). FIRST FIVE TAX SCHEDULES IN EXAMPLE MARKOV CHAIN



It turns out that if these steps are repeated enough times, the Markov chain will approximate the desired distribution—i.e., the likelihood of observing various tax schedules given the preferences of the three voters.[111] Figure 3(b) is a heat map showing the relative likeli-

[111] The number of steps required to achieve a stable distribution varies. Convergence is tested for as the Markov chain is evolved. As a technical matter, the beginning of the chain is discarded to avoid any influence on the distribution by the initial state. Convergence of the probability distribution can be tested by periodically observing how much the probability distribution changes as the Markov chain is evolved. On another technical note, it is also important to test that the probability distribution is unique. For example, it is theoretically possible for there to be two separate cycles: A-B-C and D-E-F. If the starting state is A, then you end up with the A-B-C cycle. If the starting state is D, then you end up

hood of various rate schedules. It shows the most likely tax systems after the Markov chain has been evolved for 10,000 steps.

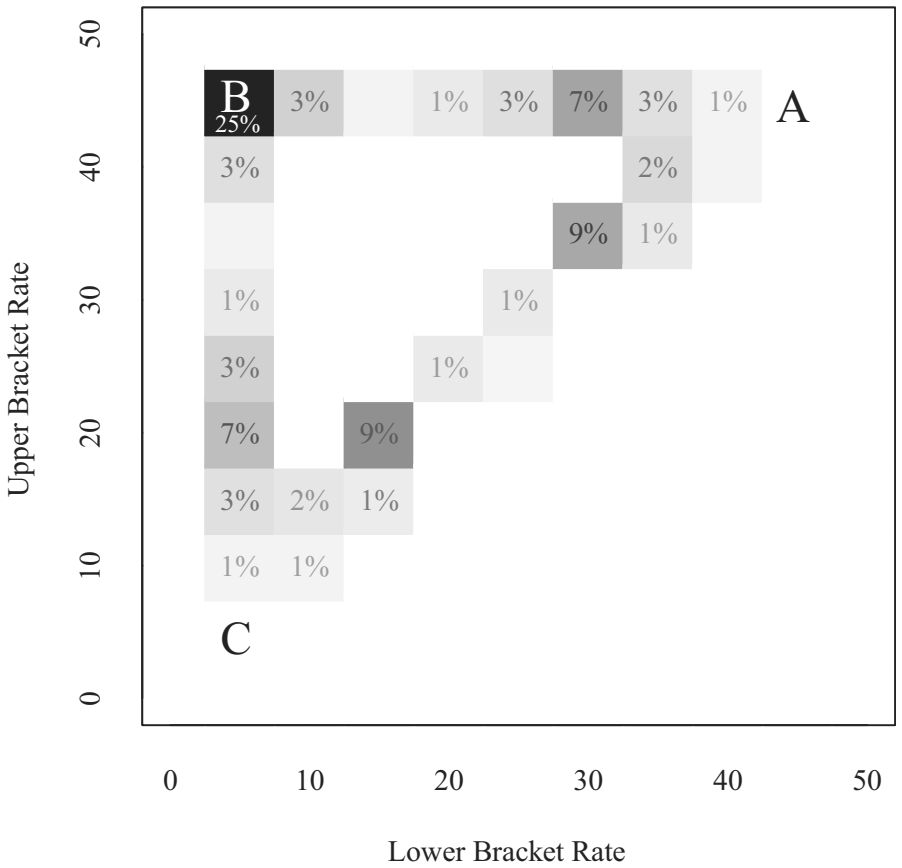
As expected given the discussion in Section I.C, there is significant instability in the rate schedule. There is a wide variety of observed schedules: Twenty rate schedules have a likelihood of greater than 1%. However, the heat map shows that some rate schedules are much more likely than others. Figure 3(b) shows that B's ideal rate schedule (with a bottom-bracket rate of 5% and a top-bracket rate of 45%) is the most likely, with a probability of roughly 25%.

There is a tie for the next most likely tax schedules: one with a bottom-bracket rate of 15% and a top-bracket rate of 20% and the other with a bottom-bracket rate of 30% and a top-bracket rate of 35%.

The heat map in Figure 3(b) shows the results of a Markov chain with 10,000 steps. However, the probabilities would be the same and the heat map would look the same if the Markov chain were simulated with a hundred thousand steps or a million steps. This is the key feature of MCMC simulations. If the Markov chain is evolved for a sufficiently large number of steps, the resulting distribution will be stable even though the underlying process is unstable.

with the D-E-F cycle. It is possible to test whether the probability distribution is unique by testing all starting states.

FIGURE 3(B). HEAT MAP SHOWING THE PROBABILITY OF RATE SCHEDULES AFTER MARKOV CHAIN IS SUFFICIENTLY EVOLVED



B. How Likely Are Progressive Marginal Rates?

This Part uses the MCMC technique to explore what nonlinear rate schedules are most likely if the rates are subjected to majoritarian voting with more realistic taxpayer preferences and greater flexibility in the tax system. This is an elaboration of the MCMC example performed in the previous Section. Instead of arbitrarily designating three voters and their preferences over rate schedules, we use assumptions common in the optimal tax literature to derive more realistic preferences across the population.

However, the basic goal is the same. Take a rate schedule. Allow voters to change it over and over. If that process is repeated enough times, it will produce a stable probability distribution. Even though any particular rate schedule is unstable, the distribution of rate sched-

ules produced by the MCMC simulation is stable. This will allow an investigation of how likely rate progressivity is under different conditions.

1. Model Assumptions

Whereas the analysis in Section I.D imposed no assumptions regarding the parameters of the model, this Part adopts assumptions common in the optimal tax literature.[112]

The first decision is to model how taxpayers will decide to work and how sensitive they are to taxes.[113] As a starting assumption, this Part will use an elasticity of 0.25, which means that a 1% increase in the tax rate will result in a 0.25% decrease in the amount that taxpayers decide to work. This is a typical elasticity from the existing literature.[114] The model presented here also uses a distribution of wages that is standard in the literature[115] and assumes that the tax system is purely redistributive (i.e., all revenue raised is redistributed).[116]

The results of the MCMC simulation are qualitatively similar with other parameterizations: different assumed elasticity, different types of utility functions, different revenue requirements, and other distributions of wages. To be explicit, I am not interested in picking partic-

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[112] *See, e.g.*, TUOMALA, *supra* note 54 (discussing the optimal tax literature); Saez, *supra* note 40.

[113] To be more specific, this Part uses utility functions of this type:

$$u = \log\left(c - \frac{l^{(1+k)}}{1+k}\right)$$

c is the taxpayer's consumption and l is his or her labor supply (e.g., how much the taxpayer decides to work). This type of utility function is used widely in the optimal tax literature. *See, e.g.*, Saez, *supra* note 40, at 222. Taxpayers are assumed to pick their labor supply to maximize this utility function based on the tax schedule that they face. The constant k determines the sensitivity of taxpayers to rates. That elasticity is equal to 1/k. Since this Part presents results with an assumed elasticity of 0.25, k is set to 4. See *infra* Section II.D.1, for exploration of other elasticities. The qualitative results remain the same.

[114] This Part assumes that there are only substitution effects and no income effects. *See supra* Section I.D.1 (describing income and substitution effects). Many studies of taxpayer elasticities have found that income effects are very small. *See* Saez et al., *supra* note 32, at 6 (noting that most studies have found small or negligible income effects). When income effects are incorporated, the qualitative results remain the same. Results are available upon request from author.

[115] The model here uses a lognormal distribution of ability following Tuomala and Mirrlees. TUOMALA, *supra* note 54, at 95–100; Mirrlees, *Exploration in the Theory*, *supra* note 9, at 200–04. The distribution of wages is not tuned to the earning distribution of any particular country. Other earning distributions are explored at Section II.D.2. The qualitative results remain the same.

[116] Qualitative results are unchanged if the model requires some amount of revenue to be raised for non-redistribution purposes.

ular model assumptions as being more accurate than others. The MCMC approach is generalizable and can be layered onto any model assumptions.

2. Decision-Making Process

For MCMC, a social welfare function does not need to be chosen. Instead a decision-making process must be specified. This Part explores a simple majoritarian process. Assume that a large number of legislators are uniformly drawn from the population. One of the legislators is randomly designated the agenda-setter. The agenda-setter proposes an alternative tax system. That tax system is adopted if it is preferred to the status quo by more than fifty percent of the legislators. Legislators are assumed to vote their personal preferences.[117] Legislators are also assumed to have complete information, so the agenda-setter knows the preferences of all other legislators. Thus, the agenda-setter is assumed to pick her most preferred tax system from the set that a majority would prefer to the status quo.[118]

This process is repeated enough times to generate a stable probability distribution of rate schedules.

3. Set of Tax Policies

The agenda-setter is permitted to propose any two-bracket rate schedule. Any rate schedule can be summarized by three numbers: the rate that applies to the initial bracket, the size of the initial bracket, and the rate that applies to all income earned beyond the initial bracket.[119] The two rates are restricted to be between 0 and 100% in multiples of 10. This permits for rate schedules that are progressive, regressive, or linear.

Focusing on schedules with two rates keeps the MCMC simulation computationally manageable. As the space of possible tax schedules increases, it becomes increasingly difficult to calculate the proposal of the agenda-setter conditional on the preferences of the

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[117] In other words, legislators vote for the tax system that maximizes their utility.

[118] The agenda-setter is strategic to a degree because she picks the best of the rate schedules that would attract majority support. However, the agenda-setter does not consider the decisions of future legislatures and future agenda-setters in making her choice.

[119] The lower bracket is set at one of two levels: (1) at roughly the 33rd percentile of pre-tax income or (2) at roughly the 67th percentile of pre-tax income. These cutoffs are approximate because the pre-tax income distribution is plastic (taxpayers change their behavior in response to different tax schedules). Crucially, the break between the brackets can either be above the median level of income or below the median level of income. Results do not qualitatively change if the bracket cutoff is allowed to vary more substantially.

other legislators. With two rates and a lower bracket of variable size, there are already three degrees of freedom.[120] It also becomes increasingly difficult to visually represent the outcomes of the MCMC process as the possible rate schedules become more complicated.[121]

C. *Likelihood of Progressivity*

MCMC simulation provides a probability distribution of what tax schedules are likely to be enacted through majoritarian voting. There will be instability, but some tax schedules are much more likely than others.

Figure 4(a) is a heat map showing the relative likelihood of various rate schedules. The lower-bracket rate is plotted on the x-axis. The upper-bracket rate is plotted on the y-axis. The dotted line indicates proportional (or linear) taxes, in which one rate applies to all income. The squares above the line represent progressive rate schedules—in which the upper-bracket rate is higher than the lower-bracket rate. The squares below the gray dotted line represent regressive rate schedules—in which the upper-bracket rate is lower than the lower-bracket rate. The relative likelihood of tax schedules is indicated by their shading: Darker shades indicate higher probability. Because we are limited to two dimensions, the bracket cutoffs cannot be displayed separately in the heat map—the heat map shows the aggregate probability of observing schedules with those rates.[122] Schedules that are observed at least 1% of the time are labeled with their likelihood.

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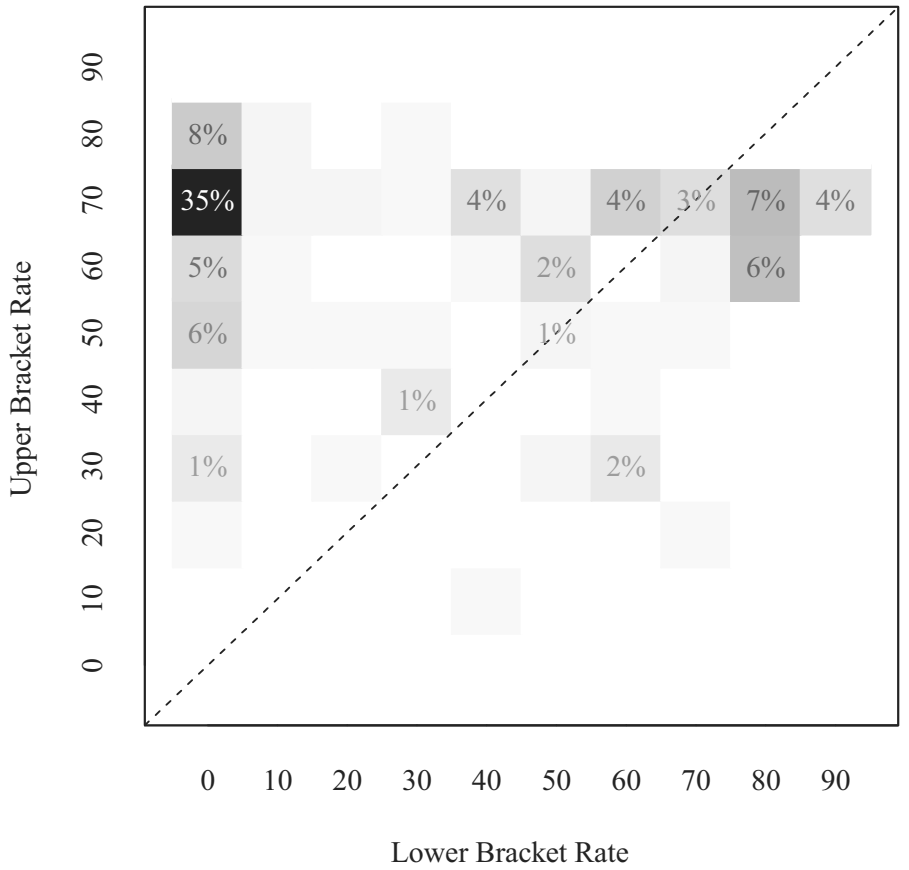
[120] Two-rate schedules have been studied in the past in the optimal tax literature. *See* Joel Slemrod et al., *The Optimal Two-Bracket Linear Income Tax*, 53 J. PUB. ECON. 269 (1994). One limitation in using two-rate schedules is that all rate schedules are progressive, regressive, or proportional. There are no rate schedules, for example, where the marginal rate first increases, then decreases. An alternative approach used in the literature is to focus on quadratic tax systems. *See, e.g.*, Alex Cukierman & Allan H. Meltzer, *A Political Theory of Progressive Income Taxation*, *in* POLITICAL ECONOMY 76 (1991); De Donder & Hindriks, *supra* note 62, at 2492; Hindriks, *supra* note 82, at 45–46. Quadratic tax schedules also have three degrees of freedom and are therefore computationally efficient. Compared to the two-rate schedules studied in this Part, quadratic rate schedules have the advantage of including schedules that are neither progressive nor regressive—for example, a rate schedule that at first increases and then decreases. I employ two-rate schedules because they are closer to the rate schedules actually observed in the real world.

[121] Moving to a three-rate schedule increases the degrees of freedom to five: three rates and two bracket sizes. MCMC results for these simulations are available from the author.

[122] So for example, the modal rate schedule observed has a bottom rate of 0% and a top rate of 70%. This includes some observations where the bracket cutoff is low and other observations where the bracket cutoff is high.

FIGURE 4(A). PROBABILITY DISTRIBUTION OF RATE SCHEDULES



The heat map shows that the modal tax system features steeply progressive marginal rates. The most likely rate structure has a bottom-bracket rate of 0% and a top-bracket rate of 70%. Consistent with what is usually observed in the real world, progressive rate schedules are more common than regressive schedules.[123] In this simulation, progressive rate schedules are three times more likely to be observed than regressive ones.[124]

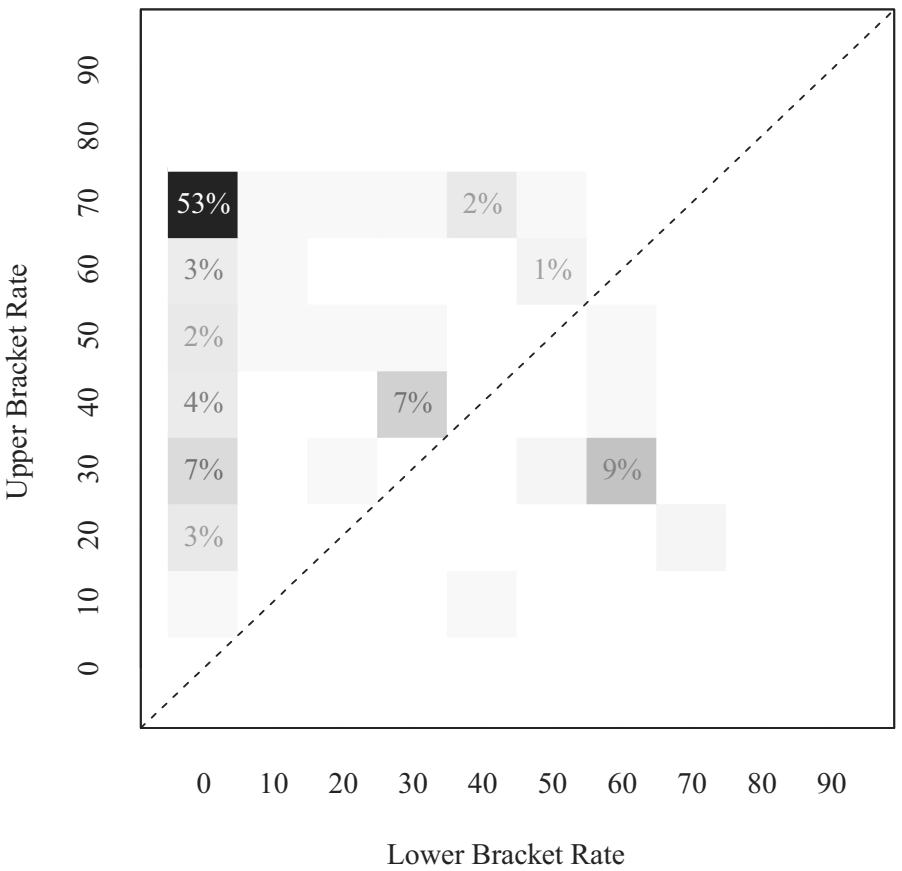
[123] *See supra* note 1 (describing the prevalence of progressive rate schedules worldwide versus flat or regressive rate schedules).

[124] More than half of the observed rate schedules have a top rate of 70%. This result is driven by the assumed elasticity. When the elasticity is increased to 0.5, a top rate of 60% becomes modal. *See infra* Section II.D.1. High tax rates become less popular as taxpayers become more sensitive to rates (i.e., as the elasticity increases). For low- and middle-income taxpayers, excessively high rates are counterproductive if they result in less revenue being raised from the rich.

1. Assuming the Rich Control the Legislative Agenda

The next MCMC simulation further tests the hypothesis by preferentially selecting the agenda-setter from the top half of the income distribution. Recall from the discussion in Section I.C that the agenda-setter is very important in determining the direction and extent of policy change. By drawing the agenda-setter from only the top half of the income distribution (instead of from the entire population), more influence is given to the rich. Figure 4(b) summarizes the probability distribution of rate schedules when this change is made.

FIGURE 4(B). PROBABILITY DISTRIBUTION OF RATE SCHEDULES WHERE AGENDA-SETTER IS DRAWN FROM TOP HALF OF THE INCOME DISTRIBUTION



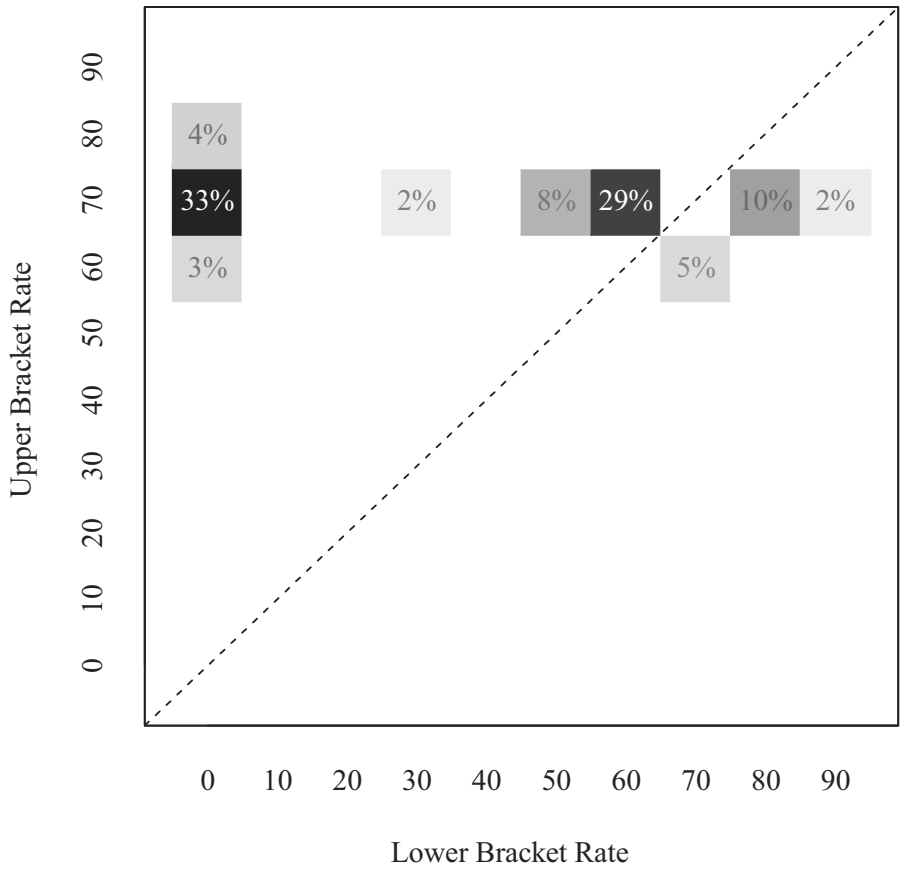
Comparing Figure 4(b) to Figure 4(a), the modal tax system is still steeply progressive. The bottom-bracket rate is 0%, and the top-bracket rate is 70%. Progressive rate schedules are even more likely—

now eight times as likely as regressive schedules. This is consistent with the intuition in Section I.D. When high-income taxpayers are given more agenda control, progressive marginal rates become more likely. More specifically, *low inframarginal rates* become much more likely. Over 72% of the time, the bottom-bracket rate is 0%. In this model, the more control over policymaking the top half of the income distribution has, the more likely it is that steeply progressive marginal tax rates are observed.

2. Assuming the Poor Control the Legislative Agenda

This conclusion is further confirmed when the simulation is run with the opposite assumption regarding the agenda-setter. Figure 4(c) plots the likelihood of rate schedules if the agenda-setter is drawn from the *bottom* half of the income distribution. This model is informative not because it reflects the reality of political power but rather because it underlines the incentives of the poor with respect to the shape of nonlinear income tax schedules.

FIGURE 4(C). PROBABILITY DISTRIBUTION OF RATE SCHEDULES WHERE AGENDA-SETTER IS DRAWN FROM THE BOTTOM HALF OF THE INCOME DISTRIBUTION



When the agenda-setter is restricted to be drawn from those with below-median incomes, the distribution of tax schedules produced by the MCMC simulation changes dramatically. One change in the distribution is that the upper-bracket rate is always at least 60%. This is unsurprising and fits the conventional wisdom that low-income taxpayers prefer higher rates on large incomes.[125]

At the same time, lower-income taxpayers are not as excited about low rates on the bottom bracket of income. The weight of the distribution is in the upper-right quadrant of the plot (where both rates are high) rather than the upper-left quadrant of the plot. Although tax schedules with regressive marginal rates remain rela-

[125] *See supra* note 4 and accompanying text (discussing the conventional wisdom that progressive rates are driven by the preferences of low-income taxpayers).

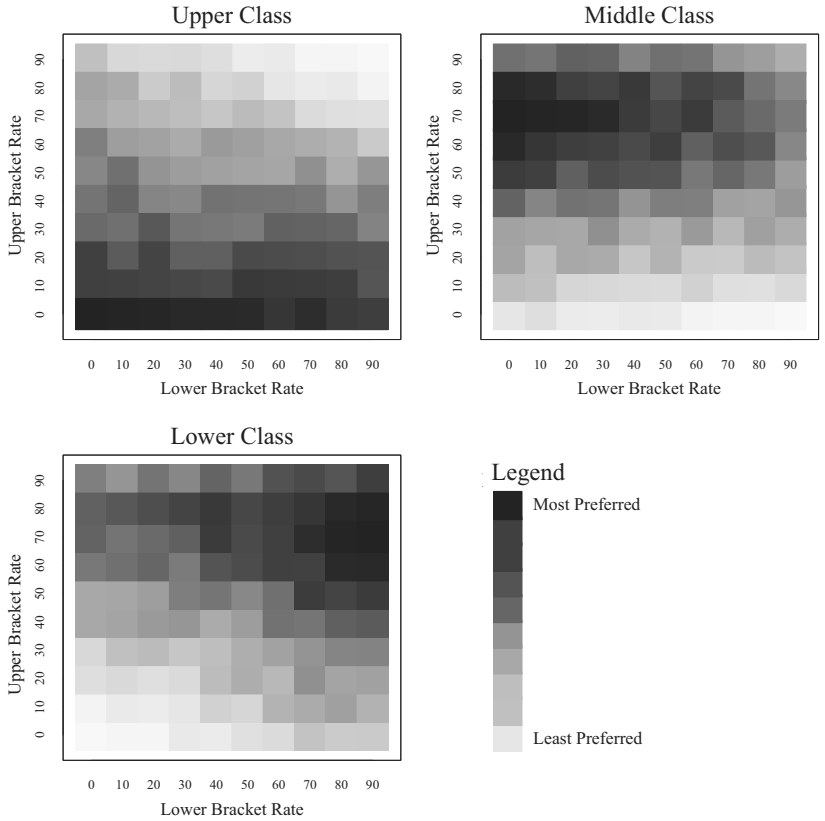
tively uncommon (only 18%), more than half of rate schedules (56%) have a tax rate on the lower-bracket that is at least 50%.

The conventional wisdom is correct with respect to low-income taxpayers' preferences with respect to rates on high incomes. However, low-income taxpayers should prefer bottom-bracket rates to be high as well. This is partially because some taxpayers have no income at all; their consumption is entirely funded by the demogrant. But more importantly, even those that do pay taxes are better off if significant inframarginal taxes are paid by the rich to fund significant redistribution.

3. Preference Maps

To understand these results, it is helpful to consider what rate schedules are preferred by taxpayers of different incomes. Figure 5 plots the preference maps from the upper, middle, and lower classes. These taxpayers come from the 90th, the 50th, and the 10th percentiles respectively. These preference maps are graphical representations of what rate schedules our representative taxpayers like and dislike.

FIGURE 5. PREFERRED RATE SCHEDULES FOR UPPER-, MIDDLE-, AND LOWER-CLASS TAXPAYERS



Darker shades indicate tax schedules that are most preferred by the representative taxpayer. Lighter shades indicate tax schedules that are disfavored.

Low-income taxpayers prefer tax schedules with high rates on all income. The plot representing the relative preferences of the lower class is darkest in the upper-right quadrant. Notably, the representative low-income taxpayer prefers high rates on the lower-bracket of income even though this rate will apply to her own income. Any detriment is outweighed by the redistribution funded by the significant revenue raised from the application of such rates to all taxpayers' income.

The preference map for the representative middle-class taxpayer shows a preference for rate schedules with low rates on the bottom-bracket and high rates on the top-bracket of income. This plot is darkest in the upper-left quadrant. The middle-class taxpayer wants to push taxes onto higher-income taxpayers.

Finally, the preference map for the upper-class taxpayer shows a preference for rate schedules with low rates on all income. This plot is darkest in the lower-left quadrant. The upper class is happiest if the tax system does almost nothing. Any tax and transfer system redistributes income away from them.

Figure 5 sheds light on how the probability of various tax schedules changes as the agenda-setting power is restricted. If the agenda-setting power is unrestricted, we see cycling through all three types of tax schedules—there are high-rate tax schedules, low-rate tax schedules, and steeply progressive rate schedules (see Figure 4(a)).

As agenda-setting power is concentrated in the hands of the rich, it moves the probability distribution towards those schedules preferred by the middle- and upper-income taxpayers. Steeply progressive rate schedules and low-rate tax schedules become more prevalent. Figure 4(b) shows that most of the tax schedules are in the upper-left and lower-left quadrants.

If the agenda is instead controlled by lower-income taxpayers, the probability distribution shifts towards those schedules preferred by middle- and lower-income taxpayers. Steeply progressive and high-rate tax schedules become more likely. Figure 4(c) shows that the weight of the probability distribution is in the upper-left and upper-right quadrants.

These preference maps also highlight one other important point. In Section II.C.1, political power was shifted into the hands of the rich by giving them agenda control. However, the model still assumed that any proposal made by the agenda-setter needed majority support. The key is that the rich agenda-setters still needed to make proposals that made at least half of all taxpayers better off. They could not make proposals that only benefitted the rich.

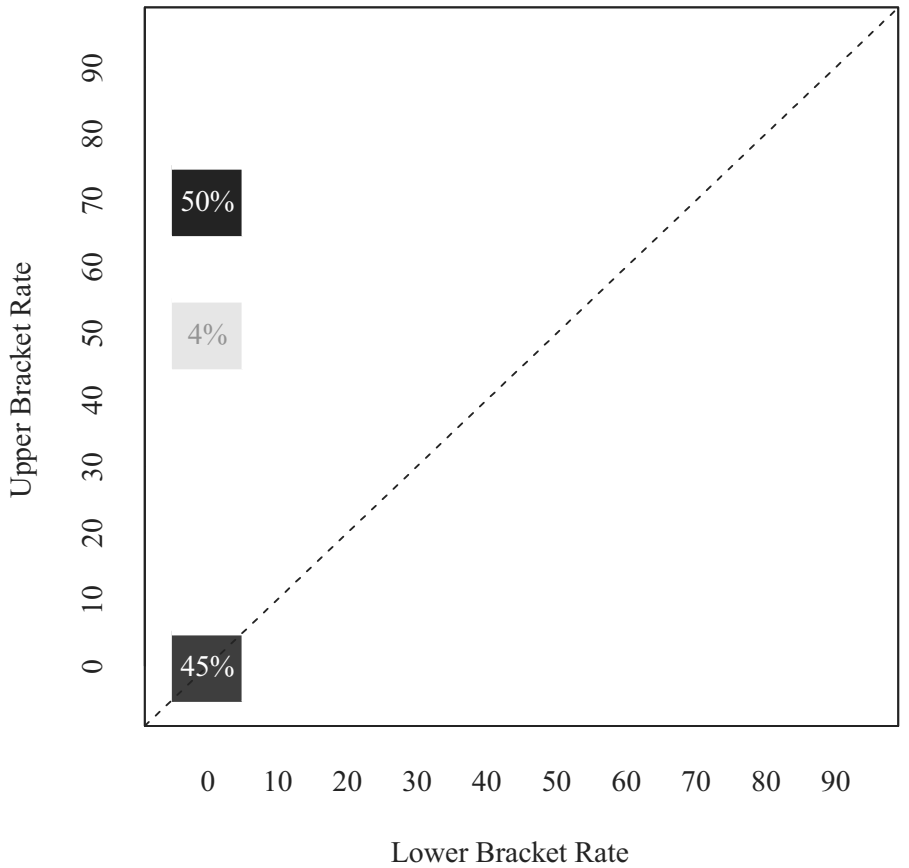
If agenda control *and voting* were limited to the top half of the population, then the probability distribution of tax schedules looks very different. Figure 6 plots the probability distribution of rate schedules if only the top half of the population gets to vote on changes to the rate schedule. The agenda-setter is also drawn from the top half of the population. The probability distribution changes dramatically and looks very close to bimodal.

One of the likely tax systems (observed 50% of the time) is familiar—it has a lower-bracket rate of 0% and an upper-bracket rate of 70%. However, the other likely tax system was not observed in any of the previous simulations. A tax system with no taxes at all is observed 45% of the time. In this simulation, an upper-class agenda-setter no longer needs a majority of the population to approve changes to the tax schedule. The agenda-setter can be much more

aggressive in proposing low-rate income tax schedules. In the models, the rich need both agenda-control and restricted voting rights to achieve low-rate/no-rate taxation.

This sheds further light on the preferences of the rich. Figure 5 shows that the upper class would ideally have low (or 0%) rates apply to all income. But the *enactable* preferences of the rich, given the preferences of the rest of the population, are progressive rate schedules. Progressive marginal rates are therefore consistent with but not completely reflective of upper class preferences.

FIGURE 6. PROBABILITY DISTRIBUTION OF RATE SCHEDULES IF ONLY THE TOP HALF VOTE



This Part has shown that if rate schedules are chosen through a simple majoritarian process, progressive rates are more likely than regressive or linear rates. When the agenda-setter is restricted to the top half of the population, rate progressivity becomes even more likely. The MCMC simulations confirm the theoretical intuitions

developed in Section I.D. In these simulations, the agenda-setter was free to propose *any* tax system regardless of the status quo. Progressive rate schedules remain popular. *This bias becomes stronger when upper-income taxpayers set the legislative agenda.*

D. Rate Progressivity Dominates Even if . . .

Section II.C reports MCMC simulations of one particular specification of the tax model. The natural question is whether the results are robust to changes in the underlying model assumptions.[126] This Part reports the results of two alternative specifications.[127] Although changing the model specifications does shift the probability distribution of tax schedules, it does not change the fundamental result. Progressive schedules remain more likely than non-progressive schedules, and progressive schedules become relatively more likely as agenda control is concentrated in the hands of the rich.

1. Taxpayers Are More Sensitive to Taxes

What if the original model underestimated the sensitivity of taxpayers to tax rates? Recall that in Section II.C, an elasticity of 0.25 was assumed. What happens to the probability distribution of tax schedules if that elasticity is higher? This Part reports the results of MCMC simulations in which taxpayers are assumed to be twice as sensitive to changes in rates.

Figure 7(a) shows the results of the MCMC simulation in which the agenda-setter is drawn from the entire population. Figure 7(a) looks similar to Figure 4(a). Progressive rate schedules are more likely to be observed than regressive schedules. Moreover, the modal rate schedule features steeply progressive marginal rates—a lower-bracket rate of 0% and an upper-bracket rate of 60%.

However, a notable difference between Figures 7(a) and 4(a) is that the upper-bracket rate is substantially lower. Instead of top rates of 70% or 80%, the new MCMC simulation features upper-bracket rates between 50% and 60%. When the assumed elasticity is higher, top rates come down. If taxpayers are more sensitive to changes in tax rates, then high rates will be more distortive and less effective at raising revenue. High rates will be less attractive to all voters.

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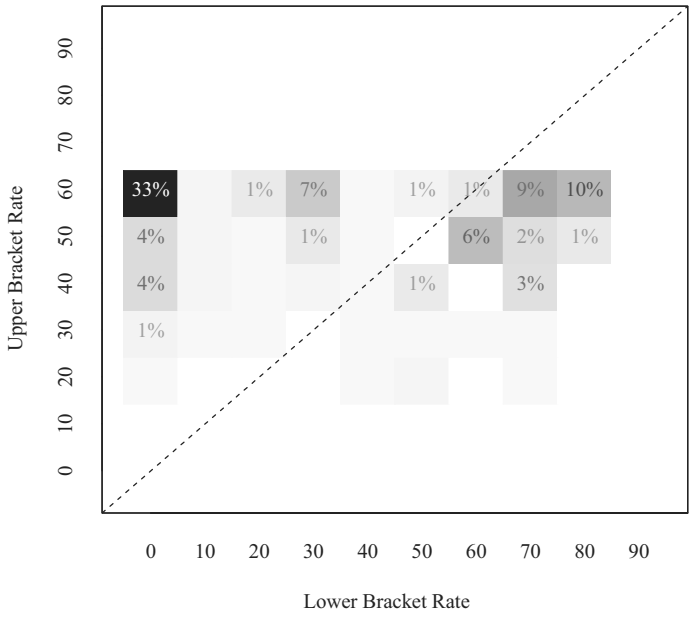
[126] Section II.C.1 has already reported one robustness check with respect to concentrating power (i.e., agenda control) in the hands of the rich.

[127] Due to space constraints, I report the result of only two robustness checks. The qualitative results described here are persistent across many different specifications of wage distribution, elasticity of taxable income, utility function, and type of tax schedules allowed.

FIGURE 7. PROBABILITY DISTRIBUTION OF RATE SCHEDULES WHEN TAXPAYERS ARE MORE SENSITIVE TO RATES

(a) Agenda-Setter Drawn from Whole Population



(b) Agenda-Setter Drawn from Top Half of the Income Distribution

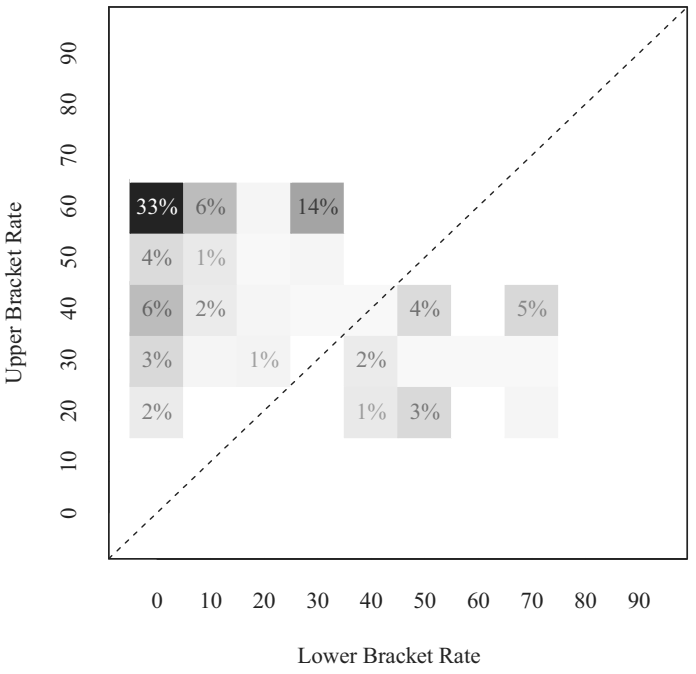


Figure 7(b) plots the distribution of tax schedules if the agenda-setter is only drawn from the top half of the income distribution (the analog to Figure 4(b)). The shift in agenda control leads to a leftward shift in the probability distribution. The upper-bracket rate stays the same, but the lower-bracket rate decreases.

Drawing the agenda-setter exclusively from the top half of the income distribution makes progressive rate schedules even more likely. Progressive rates are now more than four times as likely as regressive or linear rate schedules. The modal tax system is the same progressive tax system with an initial rate of 0% and a subsequent rate of 60%. That modal tax system is even more likely to be observed.

Just as in optimal tax models, different assumptions lead to different outcomes from the MCMC simulation. A higher assumed elasticity leads to a different probability distribution—one with lower rates. However, the fundamental result persists. Progressive marginal rates become more likely as agenda control is concentrated in the hands of the rich.

2. There Are More Rich than Poor

The intuition spelled out in Section I.D was completely independent of the assumed distribution of income or wages. This is in stark contrast with the prior literature, which assumes that the median voter earns less than the population average.[128] Redistribution, according to Meltzer and Richard and others, depends on the median voter earning less than the average taxpayer.[129] Those models predict greater redistribution as the gap between the median voter and the average taxpayer increases.[130]

In contrast, the analysis in Section I.D suggests that rate progressivity can result even if the relationship between the median and average taxpayer is reversed. Specifically, even if the income distribution is skewed such that the median taxpayer makes more than the average taxpayer, rate progressivity may still be a dominant policy. Recall why this is so. Inframarginal rate cuts are attractive. Supramarginal rate increases are attractive. Both changes tilt rate schedules towards more marginal rate progressivity. Neither change depends on the average taxpayer making more than the median taxpayer.

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[128] *See supra* notes 70–71, 83 and accompanying text.

[129] *E.g.*, Meltzer & Richard, *supra* note 5, at 924.

[130] *Id*. (noting that "[w]hen the mean income rises relative to the income of the decisive voter, taxes rise, and vice versa").

The following MCMC simulations explore whether the results of Section II.C are robust to a change in the relationship between the median and average income. In the wage distribution from Section II.B, the median taxpayer earned less than the average taxpayer. In the following models, the wage distribution is flipped.[131] The median voter now earns *more* than the population average. In other words, we are now modeling a society that has a significant number of high-income earners and relatively few poor.

As can be seen in Figure 8, changing the distribution of earning ability dramatically affects the distribution of likely rate schedules. Since there are now many more high-income taxpayers, the probability distribution is dominated by rate schedules with much lower rates.

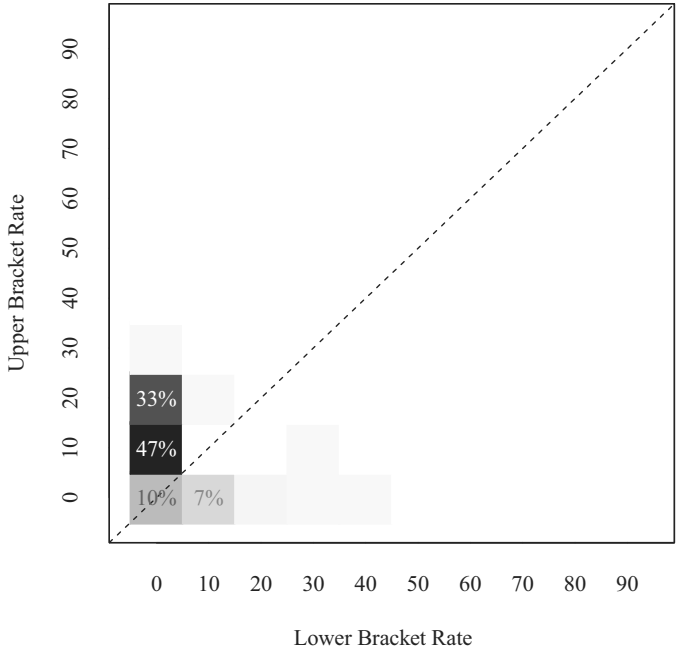
However, rate progressivity is still the dominant policy. Regardless of how the agenda-setter is chosen, progressive rate schedules are much more common than linear or regressive schedules. When the agenda-setter is drawn from the entire population (Figure 8(a)), rates are progressive roughly 80% of the time.

When the agenda-setter is drawn from the top half of the distribution, rates are progressive 100% of the time (Figure 8(b)). *In a population where the rich outnumber the poor and in which agenda-setting power is granted to the rich, rate progressivity is still the dominant policy* even though the rate schedule is determined through majority voting. Marginal rate progressivity does not seem to depend on the median voter being poorer than the average taxpayer.

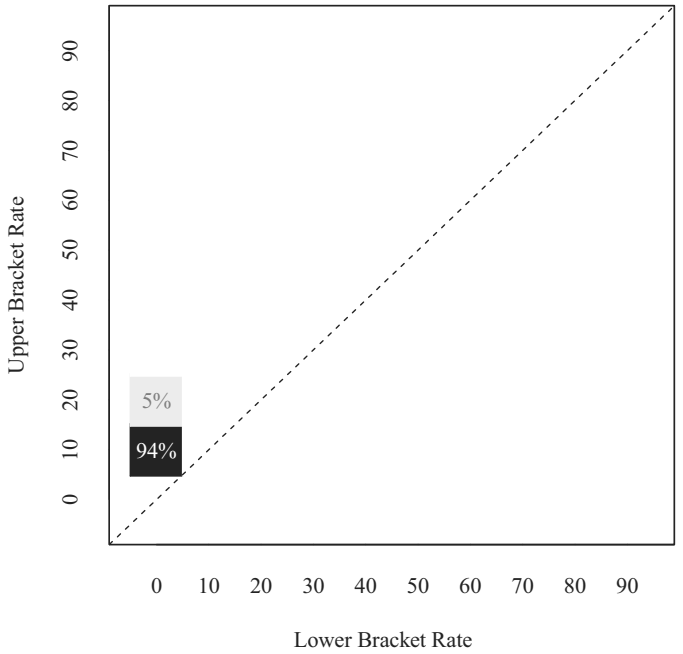
[131] I truncate the distribution at the 99th percentile before flipping since the original (log-normal) distribution extends to infinity.

FIGURE 8. PROBABILITY DISTRIBUTION WITH INVERTED WAGE DISTRIBUTION

(a) Agenda-Setter Drawn from Whole Population



(b) Agenda-Setter Drawn from Top Half of the Income Distribution



III
Moving to the Real World

This Article has stressed the preferences of the upper, middle, and lower classes in shaping the nonlinear rate schedule. It is too simple to think that the poor want higher taxes on the rich and that the rich want lower taxes on themselves. Each group has preferences over the entire rate schedule. Rate progressivity involves the combination of two policies: (1) lower rates at the bottom and (2) higher rates at the top. Part I argued that there are persistent majorities that favor both policies. In particular, inframarginal rate cuts (i.e., pushing rates down at the bottom of the rate schedule) make the relatively rich better off. Part II showed that the likelihood of progressive marginal rates might actually increase as political power (in the form of agenda control) is concentrated in the hands of the rich.

This last Part thinks critically about whether the intuition developed in Parts I and II is transferrable to the real world. The political mechanism can be broken down into three steps: (1) inframarginal tax cuts benefit those taxpayers who earn more than that level of income, (2) upper and middle class taxpayers prefer inframarginal rate cuts, and (3) the upper class often succeeds in enacting its policy preference.

All models require simplifying assumptions. There is no shortage of them here. Demogrants are a very rough way to approximate governmental spending. Taxpayers care about more than just their own utility when forming their opinions on taxes. Willingness to pay taxes depends on spending policies, as well as public perception of spending policies.[132] Taxpayers have incomplete information. Labor taxation is just one of many types of taxation that taxpayers care about.[133] The

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[132] For example, Richard Bird and Eric Zolt argue that the willingness of the middle class in Latin America to pay taxes is tightly connected to the type of spending promised by the government. Richard M. Bird & Eric M. Zolt, *Fiscal Contracting in Latin America*, 67 World Dev. 323, 329–30 (2015); *see also* William W. Franko, *Political Context, Government Redistribution, and the Public's Response to Growing Economic Inequality*, 78 J. Pol. 957, 964 (2016) (finding that public support for education spending is more responsive to increasing inequality than support for welfare); Leslie McCall & Lane Kenworthy, *Americans' Social Policy Preferences in the Era of Rising Inequality*, 7 Persp. on Pol. 459, 464–68 (2009) (exploring how rising inequality has affected U.S. public preferences for various governmental interventions and finding evidence that support for educational spending may have increased while support for redistribution has not).

[133] Taxpayers may have divergent preferences regarding different types of taxation. For example, a rich taxpayer with only capital income may prefer low rates on capital income and favor high rates on labor income. Note that in the United States, even those taxpayers with only capital income benefit from progressive marginal rates because the taxation of capital gains is tied to the same brackets as ordinary income (with lower but still progressive rates). I.R.C. § 1(h)(1) (2012).

legislative process is much more complicated than simple majority voting.

But the value of the model is not whether it employs hyperrealistic assumptions but rather whether it identifies a reasonable mechanism for which we can find evidence. There is substantial real world evidence for each step in the mechanism described above. Distributional estimates of inframarginal tax cuts show that they do disproportionately benefit the rich. When the middle and upper class are polled about tax rates, they consistently express a preference for low inframarginal rates. Political scientists continue to amass data showing that the preferences of the rich are much more likely to be reflected in policy. In other words, there is considerable evidence that the mechanism described in this paper is an important one in understanding the political economy of rate progressivity.

A. The Effect of Inframarginal Tax Cuts

According to the model, a low-income rate cut separates taxpayers into winners and losers. It benefits all those that earn more than that amount of income. It seems reasonable that taxpayers whose tax liability decreases would support a tax cut. But what about those taxpayers whose income taxes do not decrease? In the model, the poor are worse off because the tax cut has the immediate effect of less redistribution (i.e., a smaller demogrant).

But a demogrant is a very rough way to model spending.[134] In the real world, a rate cut could have other consequences. The fundamental question is how it would affect current spending, future spending, or future taxes. If a low-income tax cut were offset by a current reduction in a regressive spending program, say, the mortgage interest deduction, the overall impact could be approximately neutral. On the other hand, if the tax cut were instead offset by a reduction in a progressive spending program, like the EITC, the overall package would be even more regressive.

The tax cut could also increase the deficit. This would mean some combination of future spending cuts or tax increases. The overall effect on progressivity takes on a more complicated intergenerational dimension. The current poor may be rationally indifferent to a low-income rate cut if tax increases or spending reductions will be passed on to future generations.

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[134] *Cf.* McCaffery & Hines Jr., *supra* note 23, at 1086 ("As others have pointed out, the United States is highly unlikely ever to offer demogrants on anything close to the scale contemplated by the standard optimal income tax model."); Zelenak & Moreland, *supra* note 25, at 60–61 (arguing against the political feasibility of demogrants in the United States).

If the knock-on effect is complicated, what can really be said about preferences over the shape of the income tax schedule? First, low-income tax cuts never help the poor for whom the cut is supramarginal—those who earn less than the level of income at which the cut occurs. Second, to the extent that low-income tax cuts are offset by current reductions in spending,[135] the overall effect will be to leave the poor worse off unless the spending cuts are exclusively to regressive programs.

Third, once we acknowledge that the effect on spending is more uncertain while the effect on tax liability is direct, inframarginal rate cuts become even more important for understanding progressivity. When rates at the top are increased, the poor and the middle class may be *indirectly* better off depending on how the additional revenue is used. When rates at the bottom are decreased, the middle class and the rich are *directly* better off because of the reduction to their tax liability. In other words, the attractiveness of inframarginal rate cuts to the rich does not depend on the knock-on effect on spending, while the attractiveness of supramarginal rate increases to the poor and middle class does. To be explicit, the attractiveness of inframarginal rate cuts to the rich does not depend on modeling government spending as a demogrant.

As an example, it is instructive to consider the distributional estimate for a simple low-income rate cut. The Tax Foundation estimated the distributional effect of reducing the 10% rate to 0% for all taxpayers in 2008.[136] This proposal was motivated by a desire to stimulate the economy.[137] In 2008, the 10% rate applied to taxable income below $8,025 for a single taxpayer and $16,050 for a married couple filing jointly.[138] Under the proposal, that rate would have been reduced to 0%.

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[135] A current offset may be required under PAYGO rules, for example. *What Is PAYGO?*, TAX POL'Y CTR., http://www.taxpolicycenter.org/briefing-book/what-paygo (last visited June 17, 2017).

[136] Patrick Fleenor & Gerald Prante, *Tax Revenue and Distributional Effects of Lowering 10% Bracket to Zero for 2008*, TAX FOUND. (Jan. 18, 2008), https://taxfoundation.org/tax-revenue-and-distributional-effects-lowering-10-bracket-zero-2008-2/.

[137] The enacted stimulus took a different form. Taxpayers were given a tax rebate of up to $600 ($1200 for married couples filing jointly) of their 2007 tax liability. Those households who had zero tax liability in 2007 were still eligible to receive $300 ($600 for married couples filing jointly) so long as they had at least $3000 of qualifying income. There were also additional payments available for those with children. The stimulus was phased out for higher income taxpayers. *See* Economic Stimulus Act of 2008, Pub. L. No. 110-185, § 101(a)–(b), (d), 122 Stat. 613, 613–14.

[138] Rev. Proc. 2007-66, 2007-2 C.B. 970.

TABLE 1. ESTIMATED TAX SAVINGS BY INCOME GROUP FOR 2008 PROPOSED RATE REDUCTION

Income Group (By Adjusted Gross Income)	*Average Tax Savings ($)*[139]
0–10K	26
10K–20K	262
20K–30K	466
30K–40K	689
40K–50K	855
50K–75K	1149
75K–100K	1387
100K–200K	1337
200K and over	381

This example makes clear that a rate cut at the bottom of the rate schedule primarily benefits the relatively well-off. Table 1 shows that those with adjusted gross income of $50,000 or higher would have benefitted the most from the proposal. The Tax Foundation also estimated that roughly 41.2 million returns would otherwise be scheduled to pay nothing in federal income tax in 2008 and would therefore have received no savings from the proposed rate cut.[140] They further estimated that roughly 21.7 million returns would only have received a partial tax reduction because those taxpayers did not have enough taxable income.[141] Although net estimates for this proposal were not calculated, the proposal would look even less favorable for low-income taxpayers if the cost of the tax cut were taken into account.

William Gale, Peter Orszag, and Isaac Shapiro performed such net estimates for the 2001 and 2003 Bush tax cuts.[142] Those tax cuts are not as clean an example because the two pieces of legislation made numerous changes that did not involve the rate schedule for ordinary income.[143] However, it does provide a helpful illustration of

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[139] *See* Fleenor & Prante, *supra* note 136, at tbl.2.

[140] *Id.*

[141] *Id.* The variation observed in the table is because (1) more people in higher AGI categories have sufficient taxable income to take full advantage of the rate reduction and (2) a higher percentage of households are married filing jointly in the higher AGI categories. The available tax reduction is roughly $800 for single taxpayers and $1600 for married taxpayers.

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

[143] *See* Jobs and Growth Tax Relief Reconciliation Act of 2003, Pub. L. No. 108-27, 117 Stat. 752; Economic Growth and Tax Relief Reconciliation Act of 2001 (EGTRRA), Pub. L. No. 107-16, 115 Stat. 38. The 2001 legislation significantly reduced marginal tax rates. That legislation reduced the top rate from 39.6% to 35% over the course of several years.

how different the distributional effects of a tax cut can look once its cost is taken into account.

The second column of Table 2 provides the average tax savings from the 2001 and 2003 Bush tax cuts. It shows that the tax savings were predominantly enjoyed by the top income quintile. The bottom income quintile received almost no savings.[144] Citizens for Tax Justice reported that the top 1% of households received a total tax savings of $674 billion while the bottom 80% of households received a total tax savings of only $622 billion.[145] Despite this imbalance, the tax cuts were still broad enough to generate fairly widespread support.[146]

But the picture becomes even starker when the financing of tax cuts is included in the analysis. The third and fourth columns of Table 2 show the net tax savings by income quintile under two different alternatives: where each household pays an equal dollar amount each year to finance the tax cuts and where each household pays an equal percentage of income.[147] Under either financing assumption, it is clear that only those in the top quintile were net beneficiaries under the Bush tax cuts.

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115 Stat. at 42. There were simultaneous changes to lower rates as well. The 28% rate was reduced to 25%, the 31% rate was reduced to 28%, and the 36% rate was reduced to 33%. *Id.* The 15% bracket was partially replaced by a 10% bracket. *Id.* at 41. Those rate reductions were accelerated by the 2003 legislation. 117 Stat. at 755.

144 *See, e.g.*, Larry M. Bartels, *Homer Gets a Tax Cut: Inequality and Public Policy in the American Mind*, 3 PERSP. ON POL. 15, 22 (2005) [hereinafter Bartels, *Homer Gets a Tax Cut*] ("One calculation [of the impact of the Bush tax cuts] . . . suggests that 79 percent of all households are likely to be net losers, with average losses in the bottom four-fifths of the income distribution averaging about $240 per year and average gains in the upper fifth of the income distribution averaging about $950 per year." (citing Gale et al., *supra* note 142)); *see also* Larry M. Bartels, *A Tale of Two Tax Cuts, a Wage Squeeze, and a Tax Credit*, 59 NAT'L TAX J. 403, 406–07 (2006) (showing that the wealthy were among those who supported the Bush tax cuts which, while decreasing their tax burden, also decreased the tax burden on lower incomes).

145 *The Bush Tax Cuts Cost Two and a Half Times as Much as the House Democrats' Health Care Proposal*, CITIZENS FOR TAX JUST. (Sept. 8, 2009), http://www.ctj.org/pdf/bush taxcutsvshealthcare.pdf.

146 *See* Bartels, *Homer Gets a Tax Cut*, *supra* note 144, at 21–22, 25–26 (discussing public support for the Bush tax cuts and finding that attitudes regarding the 2001 tax cut were strongly related to respondents' attitudes toward their own tax liability); Kirk J. Stark & Eric M. Zolt, *Tax Reform and the American Middle Class*, 40 PEPP. L. REV. 1209, 1231 (2013) ("The bottom line here is that middle class tax relief often serves as the political grease that facilitates the enactment of tax cuts for higher-income households.").

147 Gale et al., *supra* note 142, at 1539–40, 1542, 1544. The third column effectively makes the same assumption as in the models used in Parts I and II, where the tax cut reduces the demogrant.

TABLE 2. GROSS AND NET TAX SAVINGS FROM BUSH TAX CUTS BY INCOME QUINTILE

Income Quintile	*Average Tax Savings ($)*[148]	*Net Tax Savings with Equal-Dollar Financing ($)*[149]	*Net Tax Savings with Proportional Financing ($)*[150]
Lowest Quintile	19	-1502	-177
Second Quintile	330	-1190	-165
Middle Quintile	652	-869	-228
Fourth Quintile	1132	-388	-402
Top Quintile	5455	3934	954

B. Taxpayer Preferences Regarding Low Inframarginal Rates

The models make several important assumptions regarding taxpayer preferences. Taxpayers have *complete information*, and they vote based on their *self-interest*. Each of these assumptions is worth reconsidering.

In the models, taxpayers have complete information and understand how changes to the tax system affect their own utility and the behavior of others. This is consistent with much of the prior literature, but it is unclear the extent to which taxpayers fully grasp the effect of tax law changes. Taxpayers seem to understand broadly that tax rates affect incentives to work. However, taxpayers often do not specifically understand how changes to the tax system affect their tax liability or the overall effect on revenue. Page and Shapiro suggest that the complicated nature of tax policy provides significant opportunities for the public to be confused or misled.[151] Bartels describes polling data consistent with widespread confusion regarding how the benefits of the 2001 and 2003 Bush tax cuts were distributed.[152] Although taxpayers seem to have understood that the benefits of the tax cut were tilted

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[148] *Id.* at 1540 tbl.1.

[149] *Id.* at 1542 tbl.3.

[150] *Id.* at 1544 tbl.5.

[151] BENJAMIN I. PAGE & ROBERT Y. SHAPIRO, THE RATIONAL PUBLIC: FIFTY YEARS OF TRENDS IN AMERICANS' POLICY PREFERENCES 166 (1992) ("[T]ax policy—like monetary policy—is a highly technical realm that is ripe for concealment and mystification.").

[152] *E.g.*, BARTELS, *supra* note 6, at 162–96 (analyzing polling data regarding the Bush tax cuts); Bartels, *Homer Gets a Tax Cut*, *supra* note 144, at 16 ("The results of my analysis suggest that most Americans supported [the Bush] tax cuts not because they were indifferent to economic inequality, but because they largely failed to connect inequality and public policy.").

An interesting example outside the income tax context is the U.S. estate tax. The estate tax remains extremely unpopular in the United States despite the fact that it affects a very small portion of the population. *See* MICHAEL J. GRAETZ & IAN SHAPIRO, DEATH BY A THOUSAND CUTS: THE FIGHT OVER TAXING INHERITED WEALTH 123–30 (2005).

towards those with high incomes, it is less clear whether they understood the consequences of the tax cuts regarding future spending and the deficit.[153]

Assuming complete information also means that taxpayers face no uncertainty. This means that the models have effectively assumed away the social insurance function of progressive taxation. In addition to redistributing income, progressive policies protect taxpayers against future income shocks. These two functions of progressive taxation are distinct. For example, Karl Ove Moene and Michael Wallerstein report that inequality may increase support for redistribution but reduce support for social insurance.[154] Since the models used in this Article do not include decisions made over multiple periods or income uncertainty, the influence of social insurance on taxpayer's preferences for progressivity has not been treated.

The models also assume that taxpayers vote consistently with their self-interest.[155] Low-income and high-income taxpayers have different preferences regarding the tax system that seem to track self-interest.[156] Benjamin Page and Robert Shapiro find that preferences regarding redistributive and social welfare programs tend to vary substantially based on income level and that those differences have been relatively stable over time.[157] They report, however, that differences in tax preferences are less pronounced—a surprising number of low-income taxpayers oppose taxes that are only paid by high-income or wealthy taxpayers.[158] Martin Gilens and Larry Bartels similarly find

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Michael Graetz and Ian Shapiro attribute much of the lack of public support to Americans' misperceptions. *Id.* at 125–26.

153 *See* GILENS, *supra* note 6, at 232 ("In surveys fielded during 2001 . . . about half of the American public thought it was possible to enact the proposed tax cut without increasing the federal deficit, or cutting spending on Social Security, education, or healthcare.").

154 Karl Ove Moene & Michael Wallerstein, *Inequality, Social Insurance, and Redistribution*, 95 AM. POL. SCI. REV. 859, 871 (2001). This suggests that increasing inequality might have an ambiguous effect on overall progressivity. *See id.* at 866, 870–71.

155 *See* Meltzer & Richard, *supra* note 5, at 920 ("The decisive voter chooses the tax rate that maximizes his utility."); Roberts, *supra* note 5, at 330. Anthony Downs pointed out an important irony in the application of rational voting models. He pointed out that a rational self-interested voter would not incur the costs of acquiring complete information given that his own vote is so unlikely to be decisive. ANTHONY DOWNS, AN ECONOMIC THEORY OF DEMOCRACY 265 (1957).

156 *See* Peggy A. Hite & Michael L. Roberts, *An Experimental Investigation of Taxpayer Judgments on Rate Structure in the Individual Income Tax System*, 13 J. AM. TAX'N ASS'N 47, 59–60 (1991).

157 PAGE & SHAPIRO, *supra* note 151, at 300–02.

158 *See id.* at 128–29 (discussing the lack of support for "heavy taxes on the rich" to fund redistribution and for the confiscation of excess wealth by the government); *id.* at 300 ("Income-group differences are not nearly as great on tax policy as on social welfare. There is a tendency for those who have a lot of money not to want the government to take it

that preferences on redistributive policies are differentiated by income level but perhaps to a lesser degree than one might expect.[159]

Self-interest is also defined using a utility function that does not distinguish how consumption is financed. The model assumes that taxpayers are indifferent between a dollar earned and a dollar received via government spending. If taxpayers place substantially greater value on a dollar earned, then this could substantially affect the preferences of the lower and middle class for redistribution.

Self-interest is important in shaping preferences about tax policy, but other considerations including distributive justice and fairness may be equally important. Scholars use different methodologies to explore the relative importance of self-interest and perceptions of fairness in evaluating alternative tax regimes in the U.S. These studies report that preferences are generally shaped by both.[160] Perceptions of fairness may also partially explain why surveys in the U.S. tend to find limited public support for higher tax rates on the wealthy and why preferences regarding tax policy are not more strongly differentiated by income.[161] Partisanship is also an extremely important predictor of tax policy preferences.[162]

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away . . . . But so do many people of low income—partly, perhaps, because they are confused or misled about complex matters of tax incidence."); *see also* Kelly & Enns, *supra* note 67, at 865–66 (finding that low-income and high-income attitudes have both shifted towards more conservatism even as inequality in the U.S. has increased). *But see* William Franko et al., *Inequality, Self-Interest, and Public Support for "Robin Hood" Tax Policies*, 66 POL. RES. Q. 923, 929–31 (2013) (reporting higher support among low-income voters for Washington State's Proposition 1098, which would have enacted a new income tax on high-income citizens and attributing the finding to the fact that the distributional impact of Proposition 1098 was clear).

159 *E.g.*, BARTELS, *supra* note 6, at 26 ("[T]he reality is that very few people—even very few poor people—favor aggressive redistribution of the sort implied by these simple economic models."); GILENS, *supra* note 6, at 119 ("In sum, preferences on welfare reform display a surprising degree of consensus across income groups . . . ."). The Downs paradox calls into question whether any rational self-interested voter should incur the costs of acquiring complete information given that their own vote is so unlikely to be decisive.

160 *See, e.g.*, Hite & Roberts, *supra* note 156, at 59–60 (finding that preferences for tax rate schedules varied in a way that seemed consistent with economic self-interest); Valerie C. Milliron et al., *Policy Judgments of Taxpayers: An Analysis of Criteria Employed*, 2 ADVANCES TAX'N 201, 201 (1989) (using multidimensional scaling to explore what criteria polled individuals used to judge tax policies and finding that "fairness/equity construct appears twice as salient as the other two constructs: simplicity and self-interest"); Thomas M. Porcano, *Distributive Justice and Tax Policy*, 59 ACCT. REV. 619, 628 (1984) (finding that subjects preferred a tax policy where "the more a taxpayer made, the smaller the percentage he was allowed to keep").

161 *See, e.g.*, BARTELS, *supra* note 6, at 139–43; PAGE & SHAPIRO, *supra* note 151, at 163–65.

162 *See* Arthur Lupia et al., *Were Bush Tax Cut Supporters "Simply Ignorant?" A Second Look at Conservatives and Liberals in "Homer Gets a Tax Cut,"* 5 PERSP. ON POL. 773 (2007) (stressing the importance of partisanship in understanding how people formed their opinions about the Bush tax cuts). Party identity and income are only weakly related.

In sum, there are reasons to doubt each of the specific assumptions made regarding how taxpayer preferences are formed. Taxpayer preferences vary by income but not as much as one might expect: taxpayers have some information but it seems incomplete, and taxpayers care about other things than self-interest when forming preferences.

Fortunately, polling provides some direct evidence that taxpayers of all incomes (including the rich) prefer low rates at the bottom of the rate schedule. In a recent conjoint survey, Cameron Ballard-Rosa, Lucy Martin, and Kenneth Scheve asked respondents to pick between two random marginal rate schedules with different rates applying to six brackets of income. They find that respondents are more likely to support a given rate schedule as the tax rate on the lowest brackets of income decreases.[163] In fact, they report that the probability of support for a tax schedule depends much more strongly on the rate that applies to the bottom than the rate that applies to the top.[164]

Moreover, when preferences were broken down by self-reported income, all groups, including the rich and middle class, prefer low rates on those making less than $35,000 a year.[165] Taxpayers of all incomes seem to prefer low rates on low levels of income.[166]

Due to framing effects, we should be careful when interpreting polls that ask taxpayers about their preferences on tax systems. For example, Hite and Roberts finds that there is a significant increase in the desired level of progressivity when tax burdens are expressed in average rates rather than dollars.[167] Results of similar studies vary substantially depending on whether tax burdens are expressed in average rates, marginal rates, or dollars.[168] Nevertheless, when taxpayers are asked about their preferences regarding the marginal rate structure, they consistently prefer very low rates on low levels of income.[169] Whether these preferences among the rich are driven by

See ANDREW GELMAN ET AL., RED STATE, BLUE STATE, RICH STATE, POOR STATE: WHY AMERICANS VOTE THE WAY THEY DO 46–48 (2008).

163 Cameron Ballard-Rosa et al., The Structure of American Income Tax Policy Preferences 13–15 (Jan. 20, 2016) (unpublished manuscript), http://www.law.nyu.edu/sites/default/files/upload_documents/Lucy%20Martin.pdf.

164 *Id.* at 14 fig.1.

165 *Id.* at 19 fig.2.

166 *Id.*

167 Hite & Roberts, *supra* note 156.

168 *See, e.g.*, Michael L. Roberts et al., *Understanding Attitudes Toward Progressive Taxation*, 58 PUB. OPINION Q. 165, 171–86 (1994) (reporting that when students were asked to assign dollar amounts of tax liability to different hypothetical taxpayers, a majority assigned tax burdens that were proportional or regressive).

169 *See* Ballard-Rosa et al., *supra* note 163, at 19 fig.2; *see also* Hite & Roberts, *supra* note 156, at 55 tbl.1 (reporting a schedule of average rates that is consistent with progressive marginal rates).

self-interest, some conception of fairness, or incomplete information is perhaps less relevant than the fact that they have the preference at all.

C. The Rich Usually Get Their Way

When voters have different preferences, how does that spectrum of preferences get translated into policy? The answer to that question depends significantly on legislative process. The political science literature has shown that the extent of redistribution in a country depends on (among other things) the structure of the electoral process,[170] the

[170] *See* ALESINA & GLAESER, *supra* note 68, at 78 ("[P]roportional representation is more likely to produce larger redistributive policies than a majoritarian system or a district system like in the United States."); Michael Becher, *Endogenous Credible Commitment and Party Competition over Redistribution Under Alternative Electoral Institutions*, 60 AM. J. POL. SCI. 768, 770 (2016) (discussing how the problem of making credible commitments to redistribution can lead left parties in majoritarian systems—but not proportional systems—to sometimes shift to the right in response to increasing inequality); Iversen & Soskice, *supra* note 105 (arguing that different incentives in coalition formation result in center-left governments being more likely under proportional systems than majoritarian systems and that proportional systems redistribute more than majoritarian ones); Gian Maria Milesi-Ferretti et al., *Electoral Systems and Public Spending*, 117 Q. J. ECON. 609, 646 (2002) (arguing that proportional electoral systems skew towards more redistribution spending). *But see* Shin-Goo Kang & G. Bingham Powell Jr., *Representation and Policy Responsiveness: The Median Voter, Election Rules, and Redistributive Welfare Spending*, 72 J. POL. 1014, 1022–25 (2010) (reporting that the impact of the median voter is similar for proportional and single-member district systems but that systems that have proportional elections appear to have higher levels of redistribution that cannot be completely explained by the fact that median voters in those countries are generally more left-leaning).

legislative process,[171] the number and type of parties,[172] and the relative importance of federalism.[173]

The simulations do not attempt to model the intricacies of the U.S. or any other legislative process. Rather than a weakness, the attractiveness of these simulations is that they rely on very few assumptions. The simulations reveal something fundamental about how taxpayer preferences over income tax schedules are expressed through any democratic political process. The models successfully explain marginal rate progressivity in a political process dominated by the rich and middle class.

Modeling particular legislative processes would not substantially strengthen the account. Progressive marginal rates are observed in countries that have very different income distributions and political processes.[174] As this is the phenomenon I am seeking to explain, abstracting away from specific legislative processes seems particularly appropriate.

There is increasing empirical evidence that the rich differentially get their way when their policy preferences diverge from the poor.

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171 *See* EVELYNE HUBER & JOHN D. STEPHENS, DEVELOPMENT AND CRISIS OF THE WELFARE STATE: PARTIES AND POLICIES IN GLOBAL MARKETS 66–79 (2001) (reporting a negative relationship between the number of constitutional veto points and various measures of governmental spending); Iversen & Soskice, *supra* note 105, at 175 (finding that the number of constitutional veto points reduces redistribution). *See generally* GEORGE TSEBELIS, VETO PLAYERS: HOW POLITICAL INSTITUTIONS WORK 143–60 (2002) (analyzing veto points in various legislative systems). Tsebelis's work focuses on the number of veto players in a country's legislative process. Veto players are individuals or collective actors who have to agree in order for policy to change. *Id.* at 2–6. His work provides a streamlined approach to think about how bicameralism, presidents, and parties affect the policymaking process.

172 *See* ALESINA & GLAESER, *supra* note 68, at 79–81 (discussing the importance of socialist parties in the adoption of a more generous welfare state); HUBER & STEPHENS, *supra* note 171, at 79 ("The results of our analyses confirmed that social democratic incumbency led to the construction of large welfare states, with generous entitlements, a heavy emphasis on public provision of social services, on labor mobilization, and on redistribution through the tax and transfer system."); Alexander M. Hicks & Duane H. Swank, *Politics, Institutions, and Welfare Spending in Industrialized Democracies, 1960–82*, 86 AM. POL. SCI. REV. 658, 665–68 (1992) (finding that welfare spending tends to increase during periods when centrist or left parties control the government but finding that centrist parties have been associated with greater expansion); *cf.* Walter Korpi, *Power, Politics, and State Autonomy in the Development of Social Citizenship: Social Rights During Sickness in Eighteen OECD Countries Since 1930*, 54 AM. SOC. REV. 309, 319–23 (1989) (finding that left parties have been important in the development of public sickness insurance).

173 *See* ALESINA & GLAESER, *supra* note 68, at 87–89 ("[I]n the United States, much more so than in Europe, many public programs that have redistributive impacts are taken locally. . . . Because of tax competition, and mobility, taxes are kept lower. . . . Second, redistributive flows from wealthy localities to poorer ones are avoided, at least as far as locally provided goods are concerned.").

174 *See supra* note 1 (discussing the prevalence of progressive rate tax schemes in different countries worldwide).

Focusing on political resources and participation, Kay Lehman Schlozman, Sidney Verba, and Henry E. Brady report that the rich are more likely to vote, more likely to work for campaigns, and more likely to donate money.[175] It is also notable that U.S. legislators are richer than the population and disproportionately come from upper-income jobs.[176] Nicholas Carnes reports that legislators' voting records appear to be affected by their class backgrounds.[177]

There is increasing evidence that the inequality in political resources and participation actually affects policy outcomes. Martin Gilens matched polling data on 1779 survey questions with policy outcomes.[178] He then performed statistical tests to see how the preferences of different income groups affected policy.[179] He found that when the preferences of the rich deviated from the preferences of the poor and middle class, the preferences of the rich had a much stronger effect on policy outcomes.[180] The same representational inequality is present when the analysis focuses only on economic issues (which include tax issues) or social welfare issues (which include many programs that redistribute in various ways).[181] Martin Gilens finds that donations are the only component of political participation that tracks the representational inequality that he documents.[182]

In a follow-up article, Martin Gilens and Benjamin I. Page attempted to incorporate the effect of various special interest groups (organized business groups and mass public interest groups) into the analysis.[183] They explored the policy effect of the preference of the median citizen (by income), the preference of the 90th percentile cit-

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175 SCHLOZMAN ET AL., *supra* note 6, at 240–42. The median dollar is contributed by a household with an income of $80,000, an amount substantially greater than the mean U.S. household income. *Id.* at 242.

176 *See* Nicholas Carnes, *Does the Numerical Underrepresentation of the Working Class in Congress Matter?*, 37 LEGIS. STUD. Q. 5, 6 (2012) ("And lawyers and businesspeople, who comprised approximately 10% of the nation throughout most of the twentieth century, made up more than 75% of every Congress that served during that time.").

177 *Id.* at 19–20 (reporting significant gaps in how lawyers and business people vote on economic policy issues compared to other legislators). U.S. legislators all have relatively high income simply as a result of the salary they draw for serving in Congress. The Congressional Research Service reported in 2016 that each Representative and Senator earned at least $174,000 in salary compensation. IDA A. BRUDNICK, CONG. RESEARCH SERV., CONGRESSIONAL SALARIES AND ALLOWANCES: IN BRIEF 1 (2016). Interestingly, Carnes finds no independent effect of wealth or outside income on economic policy voting. Carnes, *supra* note 176, at 21–22; *see also* GILENS, *supra* note 6, at 235–38.

178 GILENS, *supra* note 6, at 57–60 (describing the dataset).

179 *Id.* at 77–87.

180 *Id.*

181 *Id.* at 101–04.

182 *Id.* at 239.

183 Gilens & Page, *supra* note 6, at 568–69 (describing their data and how they coded special interest influence).

izen (by income), and the balance of the positions of large interest groups. They found that the preferences of the 90th percentile citizen and organized business groups had substantial impacts on government policy, while the median citizens and "mass-based" interest groups had little effect.[184]

There are alternative studies that test unequal representation by comparing the ideology of legislators with the ideology of their constituents. For example, Larry M. Bartels performed a statistical analysis comparing Senators' ideology with the average ideology of low-, middle-, and upper-income constituents.[185] He finds a strong relationship between the average ideology of high-income constituents and the ideology of Senators.[186] The relationship is weaker with the ideology of middle-income constituents and almost nonexistent with the ideology of lower-income constituents.[187]

This growing body of evidence suggests that policies tend to be much more responsive to the preferences of the rich.[188] If the rich benefit from inframarginal rate cuts, and the rich say they prefer inframarginal rate cuts, there is every reason to believe that their preferences will often become policy. This is especially true because it seems that the lower-income taxpayers also prefer low-income tax cuts.[189] As Gilens points out, when policy changes track the prefer-

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184 *Id.* at 571–75.

185 To measure Senator ideology, Bartels uses the W-NOMINATE scores developed by Keith Poole and Howard Rosenthal. KEITH T. POOLE & HOWARD ROSENTHAL, IDEOLOGY & CONGRESS (2007). These ideology scores are calculated using the roll call voting record of legislators. Bartels uses self-reported conservatism scores from the Senate Election Study survey to calculate average constituent ideology. BARTELS, *supra* note 6, at 255–57.

Other studies have investigated the effect of race on unequal representation. John Griffin and Brian Newman find evidence that legislator ideology better tracks the ideology of white constituents. JOHN D. GRIFFIN & BRIAN NEWMAN, MINORITY REPORT: EVALUATING POLITICAL EQUALITY IN AMERICA 77–78 (2008). However, they also find evidence that Latinos and African Americans may be better represented on welfare and other differentially salient issues. *Id.* at 122–42.

186 BARTELS, *supra* note 6, at 259–62.

187 *Id.*; *cf.* Jan Rosset et al., *More Money, Fewer Problems? Cross-Level Effects of Economic Deprivation on Political Representation*, 36 W. EUR. POL. 817 (2013) (studying representation in Western European democracies and finding that parties in economically unequal countries do a worse job in representing the preferences of the poor).

188 *But see* Joseph Daniel Ura & Christopher R. Ellis, *Income, Preferences, and the Dynamics of Policy Responsiveness*, 41 PS: POL. SCI. & POL. 785 (2008) (constructing a measure of "policy liberalism" using survey questions on government spending, finding that this measure of policy liberalism across quartiles is quite similar, and finding no evidence of differential policy responsiveness). Given the strong correlation of their constructed measure of policy liberalism across quartiles, it is perhaps unsurprising that they find no evidence of differential policy responsiveness in a time series regression.

189 *See* Ballard-Rosa et al., *supra* note 163, at 19 fig.2.

ences of low-income taxpayers, it is usually because they happen to share the preferences of the rich.[190]

D. The Illusion of Progressive Marginal Rates

Marginal rate progressivity seems fair.[191] Marginal tax rates increase as incomes go up. This means that higher-income people pay more in taxes than lower-income people. However, the structure of income tax brackets means that any change to the bottom of the rate schedule *directly* affects the tax liability of all taxpayers who make more than that amount, and may *indirectly* affect the after-tax-and-transfer income of even those taxpayers that make less than that amount.

Where does that leave those who want to use the income tax system to achieve greater redistribution?[192] One answer is to raise additional revenue from the top of the income distribution. Raising the top marginal rate can be difficult given its political salience.[193] A more politically plausible approach may be to adjust the brackets or rates other than the top rate. The U.S. is relatively idiosyncratic in that it has several rates that apply to incomes higher than $100,000.[194] For example, decreasing the size of the 33% or 35% bracket and moving the start of the 39.6% bracket to a lower income would increase tax revenue. It would also be possible to raise additional revenue by clawing back the benefits of the low brackets through the use of phase-outs (as is currently done in the U.S. corporate income tax

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190 *See* GILENS, *supra* note 6, at 83 ("[F]or Americans below the top of the income distribution, any association between preferences and policy outcomes is likely to reflect the extent to which their preferences coincide with those of the affluent.").

191 *See supra* notes 163–69 and accompanying text (discussing studies that show polling has generally found that taxpayers prefer a progressive rate scheme); *see also* HAROLD M. GROVES, TAX PHILOSOPHERS: TWO HUNDRED YEARS OF THOUGHT IN GREAT BRITAIN AND THE UNITED STATES 89 (Donald J. Curran ed., 1974) (quoting a British Royal Commission stating in 1954 that "not merely progressive taxation, but a steep gradient of progressive taxation, is needed in order to conform with the notions of equitable distribution that are widely, almost universally accepted").

192 There are limits to how much redistribution can be achieved through a progressive income tax. Richard Bird and Eric Zolt have argued that this is particularly true in developing countries where income taxation is such a small portion of the fiscal picture. Richard M. Bird & Eric M. Zolt, *Redistribution via Taxation: The Limited Role of the Personal Income Tax in Developing Countries*, 52 UCLA L. REV. 1627 (2005). Personal income taxes are responsible for less than 10% of revenue in developing countries and are only about 1.9% of GDP. *Id.* at 1656.

193 *See supra* notes 100–01 and accompanying text; *see also* McCaffery & Hines Jr., *supra* note 23, at 1033–37 (discussing the difficulty of raising marginal rates in the current political climate).

194 For example, the top bracket in Ireland starts at roughly thirty-three thousand euros. In Belgium, the top bracket starts at roughly thirty-eight thousand euros.

context).[195] Of course, this means that higher effective rates will apply over the phase-out range, but those high effective rates may be more politically expedient than higher statutory rates. In a similar vein, the personal exemption phase-out[196] and the phase-out of itemized deductions[197] for high-income taxpayers act as low-salience effective rate increases on the moderately rich in the United States.

But it is more difficult to make clear prescriptions for the bottom of the rate schedule. To anchor the discussion, consider the tax rate that applies to taxable income between $20,000 and $30,000 (currently 15%). Increasing that rate would increase the tax liability of all those who earn more than $20,000, with only those making more than $30,000 feeling the full brunt. It is questionable whether such a change would be desirable. That tax increase would increase the tax liability of a significant number of lower and middle class taxpayers. Depending on how the revenue is spent, those who make less than $20,000 may be better off. On the other hand, a rate cut would decrease the taxes of those making $20,000 or more but would reduce the amount of revenue raised.

Whether this particular rate is increased or decreased, there will be winners and losers at the bottom of the income distribution. Incremental changes to the bottom of the rate schedule benefit some of the poor but hurt others. Small changes to the bottom of the rate schedule will generally not have the effect of making the poor universally better off. From an optimal tax perspective, whether such rate should be increased or decreased will depend crucially on the pre-tax income distribution and taxpayer sensitivity to rates. But it will also depend on how the welfare of the poor is measured against the welfare of the relatively less poor.[198]

Conclusion

Rate progressivity is best understood as a combination of two phenomena: higher marginal rates on large incomes and lower marginal rates on small incomes. Too often, explanations of progressivity

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195 *See* I.R.C. § 11(b) (2014) (flush language).

196 I.R.C. § 151(d)(3) (2013).

197 I.R.C. § 68(a) (2013).

198 If there is no political will to increase these low-income tax rates in ways that would be consistent with the optimal tax theory, one partial solution may be to expand the use of phase-outs. Instead of giving every taxpayer the benefit of low marginal rates in the lower brackets, the benefit could be eliminated over a higher range of income. This is already done in the corporate income tax and several state income tax systems. Improperly designed phase-outs can create other issues. Most importantly, phase-outs increase the effective marginal tax rate over the phase-out range of income. These (often substantial) bubble rates can have significant efficiency costs.

focus exclusively on the former and ignore the latter. This Article has highlighted the importance of thinking about preferences regarding the entire shape of the income tax rate schedule, particularly the marginal rates that apply at the bottom end.[199]

This yields a number of important findings. First, low-income rate cuts are often not in the best interest of the poor. These rate cuts are expensive, they predominantly benefit the middle class and the rich, and they do not encourage more economic activity for the middle class or the rich. As was just discussed, the losers from these types of tax cuts are some combination of the current poor and future taxpayers.

Second, the rich may prefer progressive marginal rates to flatter rate structures. This paper provides an interesting lens on why progressivity is generally pursued through progressive marginal rates rather than through a significant demogrant. The optimal tax literature suggests that rates should generally be flatter and that redistribution is optimally pursued through significant lump-sum payments. In almost all fiscal systems, we instead observe progressive marginal rates. Why? One answer is that the rich and the middle class prefer progressive marginal rates. Inframarginal rate cuts are equivalent to phased-in demogrants. At the same cost, more of the benefit accrues to the middle and upper classes. Low-income rate cuts are a relatively "selfish" way for the middle and upper classes to satisfy demands for progressivity.[200]

Finally, one of the recurring themes in this Article is that progressivity should be considered on a net tax-and-spend basis. One way to understand the counterintuitive result that the rich are (in part) responsible for increasing marginal rates is that rate progressivity may not be progressive policy after all. Inframarginal rate cuts appear to increase progressivity from a marginal rate perspective but are not progressive once knock-on effects are incorporated. Unfortunately, rate cuts at the bottom of the rate schedule continue to be politically popular. Both Paul Ryan's tax plan and President Trump's recent tax proposal include substantial rate reductions at low levels of income. Rather than trying to help the poor through the tax system (especially given that most poor taxpayers already have zero tax liability or even

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[199] This analysis can easily be extended to explain progressivity in cash-flow consumption taxes. Because we are focusing on a single-period model, consumption and income are the same. Thus, we should expect the same majoritarian pressures on a cash-flow consumption tax.

[200] *See* Bird & Zolt, *supra* note 192, at 1683 ("A progressive income tax, whatever its defects in practice, may be an important and sometimes critical symbol of concern with the distributive outcomes of the market system. Symbols matter.").

receive an EITC refund), it would be better to help the poor through the spending side—whether through increased in-kind benefits (such as more effective public education) or increased cash benefits (such as a more generous EITC).