

**The Rising Tide Tax System:
Indexing the Tax System for Changes in Inequality**

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"A rising tide lifts all boats."

President John F. Kennedy
Remarks in Pueblo, Colorado, August 17, 1962,
Public Papers of the Presidents: 1962, p. 626.

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Abstract

Experience over the past three decades suggests that growing inequality is a serious risk. A change in the tax system to index against changes in inequality is motivated both by financial theory and by classical welfare economics. Inequality indexation would partially insure against future increases in after-tax inequality. Tax rates would endogenously adjust to changes in inequality to dampen changes in the after-tax “Lorenz curve.” We develop a method of implementing the system using U.S. tax return data and illustrate its effect using the Urban-Brookings Tax Policy Center Microsimulation Model. We study the outcomes if inequality indexation had begun in 1979 or 1994. Distributive effects and incentive effects are described. If future inequality is unpredictable and redistribution were costless then it is easy to demonstrate that full indexation would increase social welfare (assuming risk aversion). Redistribution is, of course, costly—for example, because high marginal tax rates entail disproportionately large efficiency costs—so partial indexation is likely to be optimal. This conclusion also holds if policies that could increase both economic growth and inequality are subject to electoral approval. Basically, the expected winners could use indexation to induce the expected losers to approve pro-growth, but inequality-increasing, policies.

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Income inequality has grown dramatically over the past two decades, approaching levels last seen just before the great depression. We view rising inequality as undesirable, but even those who are unconcerned about a continuing skew in the income distribution have reason to worry about its political consequences. Unease among middle-class voters who see their economic status slipping relative to higher-income families may lead to policies, such as restrictions on trade and aggressive market regulation, that stifle economic growth (and may not even help the putative beneficiaries).

We propose a better approach to mitigating the trend, which is to automatically adjust income tax rates to reduce the spread in *after-tax* incomes when pre-tax incomes are diverging. The proposal would first define a target distribution of after-tax income—say the distribution in the year of enactment of inequality indexing. In subsequent years, tax rates would be adjusted automatically to offset a fixed fraction of deviations of income shares from the target levels. For example, suppose the middle quintile of the income distribution earned 15 percent of after-tax income in the base year; that is the target income share for the middle-income group. Suppose that the adjustment fraction were set at 25 percent and that in some subsequent year, the middle quintile would earn 14 percent of after-tax income before indexation. Rates would adjust so that the middle quintile received 14.25 percent of after-tax income. Other income groups would similarly receive 25 percent of the income share they received in the base year plus 75 percent of the income share that would apply before indexation.

If inequality is not expected to increase or decrease, then this proposal is not redistribution, *ex ante*. If the dispersion of pre-tax incomes declined, the income tax schedule would automatically become less progressive. If pre-tax income inequality increased, the tax schedule would become more progressive. Basically, the proposal provides a kind of partial insurance against unpredictable changes in economic inequality (Shiller 2005).

Even if inequality is expected to increase (and thus rates are expected to grow more progressive over time), high-income taxpayers have reason to support the proposal if the policies that give rise to increased inequality also contribute significantly to economic growth. In that case, the Rising Tide Tax System guarantees that low- and middle-income households will gain a larger share of the benefits from economic growth than they would under the status quo—that is, inequality indexation improves the chances that the rising tide really would lift all boats (income classes), not just the yachts. This, in turn, could help build support for pro-growth policies.

In addition, to the extent that people move across income strata, this pooling arrangement has the added advantage of reducing the volatility of after-tax income relative to before-tax income over time.

This paper develops a method that the Internal Revenue Service could use, if so instructed by legislation, to automatically adjust the tax system to match a target distribution of after-tax income. The paper also discusses economic, administrative, and political aspects of such a scheme, and simulates the effect of implementation on tax rates, economic incentives, and the distribution of tax liabilities, using historical experience as the basis for examination. Even though, under certain circumstances, full

indexation—that is, setting rates so that the distribution of after-tax income never changes—might be optimal, partial indexation is likely to be optimal if redistribution is costly. It is also likely to be more sustainable politically. Finally, the paper discusses some variants on the basic framework.

Rationale for Inequality Indexation

Is unequal distribution of income a problem?

A very unequal distribution of incomes may have economic costs. Alesina and Roderick (1992) concluded based on a cross-country comparison that growth rates decline as the share of national income going to the top 5 percent and top 20 percent of earners increases. Persson and Tabellini (1994) develop a theoretical argument for why inequality should be negatively related with economic growth: more inequality results in redistributive policies that stifle economic incentives and hamper the economy. They conclude that a historical panel of data from nine countries is consistent with the predictions of the theoretical model.

However, others have argued that at least some inequality creates economic incentives that spur growth. Economists back to Adam Smith have argued that inequality stems at least in part from voluntary life choices, such as working longer hours or in a more demanding job, and it would be inefficient to distort those choices.¹ Rosen (1997) goes on to illustrate cases in which people facing a limited number of high-cost and low-cost alternatives might gamble for the chance to consume the high-cost lifestyle. In this situation, people would voluntarily move from the interior of the income distribution to

¹ Cited in Rosen (1997).

the extremes. Rosen calls this “manufactured inequality” because it arises from voluntary choices of citizens.

Forbes (2000) surveyed this evidence and concluded that although there was an emerging consensus that inequality reduced economic growth, the evidence supporting that conclusion was flawed by measurement error and omitted variable bias. When she used corrected data and panel data estimation techniques to remove the effect of missing country-specific variables, the sign of the relationship between inequality and growth changed while remaining strongly statistically significant. She concluded that, at least in the short- to medium-term, “an increase in a country’s level of income inequality has a significant positive relationship with subsequent economic growth.” (p. 885) She cautions that her panel is not long enough to draw firm conclusions about the effect of inequality on growth over the long run.

Thurow (1971) argues that the income distribution meets all the tests of a pure public good: all members in society face the same income distribution.² The benefits of a more equal income distribution might include a sense of distributive justice (i.e., people feel better if they feel that resources are shared more broadly), but also pure self-interest—less crime, fewer panhandlers, etc. Thus income redistribution may be desirable on efficiency grounds because the income distribution is an argument in individual utility functions, and a “better” income distribution creates positive externalities.

² Its consumption is nonexclusive and nonrival. And, as for all public goods, individuals have no incentive to reveal how much they would be willing to pay to improve the income distribution (Thurow, p. 329).

Attitudes towards inequality

Ever since the early days of the American republic, taxation has reflected communal values about fair distributions of tax burdens (Brownlee 2000, p. 31).³ As early as 1798, a progressive property tax was employed to finance the naval buildup against France (Brownlee 2000). The federal government first assessed an income tax to finance the Civil War. However, it was not until the end of the 19th century when the easing of tax burdens borne by the rich coincided with the 1890's depression that support for using the tax code to redistribute income and wealth took hold. A progressive tax on corporate profits and the incomes of the very wealthy was enacted, after much rhetoric about the government's responsibility to punish and discourage special privilege. The tax was declared unconstitutional, but the Sixteenth Amendment was passed in 1913, legalizing a federal income tax. Between then and 1917, there was a decided increase in the concentration of incomes and added focus on using the tax system as a tool of redistribution. However, with the Republican ascension to power in 1921, substantial, across-the-board tax reductions in taxes on corporations and the rich were enacted. Treasury Secretary Mellon advocated the tax cuts on the basis of supply-side arguments rather than opposition to progressivity.

The pendulum swung again during the depression and the implementation of the New Deal. Roosevelt sought "to restrain the growth of unwholesome and sterile accumulations [of wealth] and to lay the burdens of Government where they can best be carried," but his avowed goals went further, namely "to create a broader range of opportunity" (Brownlee 2000, p. 52). World War II converted the income tax from a

³ Even earlier, Adam Smith endorsed the notion of progressive taxation in *The Wealth of Nations*, writing "it is not very unreasonable that the rich should contribute to the public expense, not only in proportion to their revenue, but something more than in proportion." (Quoted in Brownlee 2000, p. 31).

“class tax”—affecting a small percentage of high-income taxpayers—into a “mass tax,” affecting most wage earners—an expansion made possible by the innovation of payroll tax withholding. By the end of the war, there was bipartisan agreement on the essentials of tax policy, rejecting both progressive assaults on corporations and regressive taxes on consumption.

Though established through the democratic process, there is widespread dissatisfaction with the tax code. When asked in a 2002 National Election Study survey, almost half of all respondents felt they paid too much in federal income taxes and more than half thought rich people paid too little (Bartels, p. 42).⁴ Similarly, a 2003 Kaiser/NPR/Harvard poll found 51 percent of respondents thought middle-income groups face the highest average burden (Penner, p. 10).

Public ignorance about tax policy is pervasive, however. In the 2002 National Election Study survey, more than 40 percent of respondents admitted the 2001 tax cut was something they “haven’t thought about” (Bartels, p. 44) and 69 percent of those who favored abolishing the estate tax (57 percent of the sample) felt so inclined because it might affect them someday (Bartels, p. 26).⁵ When the Kaiser/NPR/Harvard (2003) poll asked about the term “progressive taxes,” 59 percent of respondents had not heard of it, and another 23 percent, though recognizing the phrase, did not know what it meant (Penner, p. 10).

⁴ However, when a 1995 Roper Center/Reader’s Digest survey asked about the highest combined federal, state, and local tax burden it would be fair to impose on a family of four with \$200,000 of income, the mean response was 27 percent and the median was 25 percent—not much different from the actual level (Penner, p. 10).

⁵ Slemrod (2006) notes that at current levels of the exemption, the estate tax applies to about 2 percent of the decedent population. The results in the Kaiser/NPR/Harvard study are equally startling: fully 82 percent favored eliminating the estate tax and 49 percent of respondents say that most families have to pay it.

Data on whether the public is aware of and sensitive to increasing income inequality yields mixed conclusions. The results from periodic Gallup polls between 1984 and 1996 are relatively stable: approximately 30 percent felt the (then) current distribution of income and wealth was fair while 60 percent would have liked to see a more even distribution (Ladd and Bowman, p. 110). This is a bit surprising given that income inequality increased between 1984 and 1996, yet the survey responses do not change substantially over time.

By the 2003 National Election Study survey, most of the public had concluded that inequality had increased. Although 25 percent of respondents did not recognize increasing inequality, 75 percent said the difference in income between rich and poor was larger than 20 years earlier, and 40 percent said it was much larger (Bartels, p. 7). However, when asked whether increasing inequality was a bad thing, 50 percent had not thought about it or did not know, and 7 percent thought it was a good thing (Bartels, p. 40).⁶ Results such as these led Bartels to conclude, “most Americans support tax cuts not because they are indifferent to economic inequality, but because they largely fail to connect inequality and public policy” (Bartels, p. 4).⁷

⁶ The public is similarly ambiguous when asked about what causes inequality. Though opportunity for education looms largest, followed closely by self-selection in terms of work effort, there is general belief in a mix of societal and personal factors with no dominant cause (Bartels, p. 41). Importantly, respondents think the role of government is less important in explaining economic inequality than educational opportunities, work effort, innate ability to learn and discrimination, ahead of self-selection in job choice and “God made people different from one another” (Bartels, p. 41).

⁷ That is, an explanation for conflicting responses lies in “misplaced self-interest” (Bartels, p. 21). An alternate explanation may lie in Hochschild’s (1981) finding that rich and poor respondents “define political freedom as strict equality, but economic freedom as an equal chance to become unequal” (p. 278) (p. 278, cited in Bartels, p. 5). The Council of Economic Advisers (2003) cite data showing considerable movement up and down the income structure, though downward mobility seems to be more extreme than upward mobility (Penner, p. 12).

Evidence on Increasing Inequality

Evidence suggests inequality could continue to grow. Recent increases in inequality appear to be associated with major trends that show no signs of abating.

Goldin and Margo [1992] found that inequality in the United States was decreasing from 1930 to 1970 but increasing from 1970 to 1990. They explained the U-shaped pattern of inequality as due to the rise and fall of unionization, the decline and recovery of immigration, and the decline and recovery in the share of international trade.

Much of the discussion of the rise in inequality since 1990 has focused on skill-based technical change, that rewards the more capable workers, and, most recently, on the effects of new information technology that foster replication and dissemination, increasing the rewards to the most skilled workers.

Autor, Katz and Kearney (2005) find that after 1987, hourly earnings inequality increases became especially favorable to the top ten percent of earners. They conclude that the factors described by Goldin and Margo and skill-based technical change do not seem to explain this, and they resort instead to factors that lead to a polarization of the labor market. They cite evidence reported by Autor, Levy and Murnane (2003) that computerization may be a cause of polarization, by raising the relative demand for scarce cognitive and interpersonal skills; see also Levy and Murnane (2004).

Dew-Becker and Gordon (2005) find that the growth of labor productivity in the United States from 1966 to 2001 was not shared equally by all workers. In fact, growth of real wage and salary income equal to or above the growth rate of economy-wide productivity over this period was confined to the top ten percent of the income distribution. The authors concluded that skill-based technical change is not the most

likely explanation of this concentration of rewards. They attributed rising inequality at least in part to “the economics of superstars where technology has broadened audiences and increased the rewards for the very best as compared with the next best.” (p. 61)

If these conclusions are correct, then this raises serious concerns about the future, because information technology continues to evolve in ways that broaden audiences and market opportunities for superstars and lead to further polarization of the income distribution. The rising wage inequality experienced in the United States between 1967 and 1996 was not caused by differences in propensity to work (Heathcote et al., 2004).

Consumption inequality has increased less than income inequality (Heathcote, Storesletten and Violante 2004). People may use various methods to smooth their consumption over time. In years of low income, they postpone durable goods purchases; the cyclical volatility of durable goods consumption in the National Income and Product Accounts is evidence of this. They also postpone maintenance and repairs on their homes in bad years. (Gyourko and Tracy 2003.) But, some of these attempts to smooth consumption may have a long-term nature that suggests risks ahead. The gradual decline in the personal saving rate since 1980, to negative values in 2005, suggests that most people, who find themselves not keeping up with the economic growth that they see around them, are betting on some improvement in their economic status in future decades. There could be important consequences if this does not happen (Iacoviello 2005). Personal bankruptcy rates have been climbing, apparently related wishful thinking that encourages people to try to try too hard to mimic the consumption patterns of richer people (Sullivan Warren and Westbrook, 2001).

Rationale for Inequality Indexation

Partially indexing the tax system for inequality would dampen the effects of future income inequality, but it would also provide other benefits. One is that inequality indexation would provide a kind of insurance—one not easily attainable in the marketplace. A second is that it would build in a kind of compensation mechanism for public policies whose aggregate benefits exceed aggregate costs, but which do not benefit all income groups equally. This is desirable both on ethical grounds and political grounds.

Inequality Indexation as a Form of Insurance

Our progressive income tax system is an important risk-managing institution, insuring individuals against unlucky draws (Moss 2004). Taxpayers share a large portion of their income when things work out well in exchange for a higher after-tax income when they fall on bad luck.

When viewed from the perspective of a young person, who has not yet learned how he or she will fare in the economy, or when viewed from the “original position,” described by philosopher John Rawls, the progressive tax system is a preeminent risk management system. In Rawlsian philosophy, as clarified by economist John Harsanyi, there is only a fine line between the risk management motivation and moral motivation, for what is often described as altruism is really an act of viewing the situation from the original position, as a matter of sharing risks with others.

Rawlsian logic implies that people would pay for this kind of insurance before they knew their actual position. Since asking people to make their decision before they

know their actual position is infeasible, such insurance could only be sponsored by the government.

By the very fact that we are uncertain about the future pattern of the income distribution, inequality indexation is best thought of as risk management or, in rough terms, as a form of insurance. If people already knew the future—and whether they will be richer or poorer—it would not be risk management. It would be redistribution.

If there is no knowledge about the future shocks to the Lorenz curve and redistribution is costless, then a policy that optimally manages the risk of these future shocks will have the effect of pegging the Lorenz curve—that is, fixing the share of after-tax income that accrues to each income group. By “no knowledge” we mean that, while random shocks are expected, the mathematical expectation today of each point on the future Lorenz curve is the same as today’s value. We have no prior expectation about whether inequality will decrease or increase.

To see why this is true, consider a simple example economy in which there are two kinds of people—rich and poor—and one group will see a 10 percent rise in income while the other will experience no change. There is no way to predict in advance who will gain. Suppose there are 1,000 poor people who each earn \$10,000 and 10 rich people who each earn \$1,000,000. Thus each group earns half of total income (\$10 million each). If they are risk-averse, it would be in both groups’ interests to agree to share any gains to their income. That is, half of gains of the winners will be taxed away and transferred to the losers so they will both be guaranteed a five percent income gain. (Risk-averse people would always prefer a sure 5 percent return to 50-50 chance of

earning 10 percent.) Both income groups' after-tax share of income would remain fixed at 50 percent.

The tax system would become more progressive if the rich win, less progressive if the poor win. That is why the idea of pegging the income distribution was originally called “inequality insurance” (Shiller 2003).

By the logic of risk management, if the future income distribution is unknown and redistribution is costless, full insurance—that is, pegging the after-tax Lorenz curve at current levels—would be optimal for risk-averse agents. Relaxing those unrealistic assumptions makes less than full insurance optimal, but an *ex ante* agreement to share in some of future economic gains is still likely to be desirable under a range of assumptions.

Inequality indexing as compensation mechanism

First, consider the situation where the income distribution is expected to deteriorate under a continuation of current policies. As noted, this is a plausible description of reality. It may be desirable on purely normative grounds to commit to retarding future increases in inequality, but there is also a positive justification for at least partial indexing. Suppose that further inequality arises from policies that produce economic growth and, furthermore, that they increase the variance of incomes across the income spectrum. (Alternatively, we could assume that they reduce incomes for a majority of people, even though they increase aggregate income.) Arguably, free trade falls in that category, at least in the perception of populist lawmakers and a growing number of voters. In that case, assuming that lawmakers represent voter wishes, the policies will only be adopted if the median voter benefits from the program or is

compensated for his or her expected losses. The winners would have to agree to a convincing mechanism for sharing at least a portion of income gains with losers. Put differently, high-income voters have a reason to favor this form of *ex ante* redistribution out of pure self-interest—because they would expect higher after-tax income than if there were no indexation and pro-growth policies were abandoned.

There is also an ethical argument for building in such a compensation mechanism. Economists J.R. Hicks and Nicholas Kaldor argued in the 1930s that economic policies for which the aggregate benefits exceed the aggregate costs were desirable, even if the people who received the benefits differed from those who incurred the costs, because the winners could compensate the losers making everyone better off. In that sense, such policies were deemed “potential *pareto opima*”—that is, policies that raise economic welfare and are thus desirable.⁸ Oxford economist I.M.D. Little (1950), however, argued that there was a fundamental flaw in the cost-benefit calculus. If the winners did not actually compensate the losers, then the desirability of the policy depends on interpersonal comparison of utility—i.e., an assessment that one person’s gain adds more to society than another person’s loss subtracts. Such a comparison is inherently subjective and cannot be justified on objective grounds. Moreover, in some (possibly many) cases, compensation may be very costly or even impossible because of the high cost of assigning gains and losses to individuals as well as costs from the compensation mechanism itself.⁹

⁸ Other issues arise that can change this calculus. For example, a policy that is admissible on cost-benefit grounds might not be desirable if it precludes another policy with an even larger net social benefit.

⁹ For example, if the compensation is done in the form of tax and transfer policy, both may distort economic incentives and also involve administrative and compliance costs.

Little's critique undermines the ethical underpinning of a number of pro-growth policies. For example, almost all economists favor free trade because it makes society much richer, but there is no guarantee that everyone is better off with unimpeded commerce. Indeed, in the public mind, free trade is associated with a great deal of dislocation and, for that reason, free trade policies often face considerable political opposition. In the case of trade, explicit policies are aimed at partially compensating those who lose jobs because of trade, but those policies have been criticized as poorly targeted and as incurring large economic costs because they can delay individuals' adaptation to circumstances altered by trade.

An advantage of full inequality indexation is that it would build in a kind of compensation mechanism for pro-growth policies. If the economy grows, people at every income stratum would be guaranteed of sharing a portion of the gains, even if the pre-tax gains are highly concentrated. Inequality indexation would not prevent individual dislocations—for example, a job loss that would move someone down the income distribution—but it would prevent policies from causing a secular shift in the distribution of after-tax income.

The ethical justification for pro-growth policies would be stronger (although not absolute because there could still be individual winners and losers). Perhaps more important, as noted, the new tax system would strengthen the stake of individuals at all income levels in pro-growth policies. That is, it would attenuate the class divisions in support for particular policies, increasing the odds that pro-growth policies could succeed politically.

The Rising Tide Tax System would only partially index the tax system for reasons discussed below, so every income group would not be guaranteed to gain from economic growth, but it would improve their chances of coming out ahead

Optimality of Partial Indexation with Costly Redistribution

It is unrealistic to posit costless redistribution, especially if the income distribution is expected to deteriorate further. If the income distribution continues to follow past practice, top tax rates would have to become very high to preserve the current income distribution as shown below. This would entail a substantial excess burden.

Gruber and Saez (2000), after reviewing the literature on the responsiveness of taxable income to marginal tax rates concluded that the elasticity of taxable income with respect to the net of tax price of earning income ($1-\tau$, where τ is the marginal tax rate) is likely to range from 0.18 to 0.57, with the highest elasticities applying at the highest income levels. An elasticity of 0.3, for example, means that a 1 percent increase in $1-\tau$ would result in about a 0.3 percent reduction in taxable income.

The economic costs of taxation are highly uncertain. Some researchers suggest that the marginal excess burden of the income tax – that is, the efficiency cost over and above the amount of revenue collected – is as much as a dollar or more for every dollar raised. (Browning 1987) Other estimates put the costs far lower. Slemrod (1996) points out that the costs depend in part on the nature of the economic response. Timing responses—shifting income from one year to another to reduce one's tax bill are fairly easy, involve little cost, and are likely to be most sensitive to tax incentives. Real

responses – such as working harder or saving more – are likely to be least responsive and carry the greatest social cost.

The excess burden of taxation constrains the degree of redistribution even if the social welfare function is one where more equal distributions are preferred to less equal ones. The optimal level of indexing would balance the gains from insurance, promoting pro-growth policies, and possibly from explicit redistribution against the costs of potentially high marginal tax rates. Effectively, this is a standard insurance problem, except that the deadweight loss of the income tax is the constraint rather than moral hazard. As in the standard insurance problem, the solution is less than full insurance—that is, some degree of coinsurance on the part of the insured individuals. The optimal degree of coinsurance—that is, the extent of indexing—depends on the degree of risk aversion (the value of insurance), the expected gains from advancing pro-growth public policies, and the cost of redistribution.

There is also a political benefit of partial indexation. Full indexation implies fixing the Lorenz curve at current levels. That would mean that the lowest-income fifth of the population would never receive more than 5.1 percent of after-tax income if the base year is 2002 (CBO 2005). With partial indexation, lower-income people would be guaranteed at least some growth dividend—either in the form of higher wages or a smaller tax bill (or larger refundable tax credits)—but their share of the pie would increase if their group's pre-tax income rose. If the pre-tax income distribution became more equal, the tax system would become less progressive (because there would be less need for redistribution), but low-income people would keep a share of the gains (to the

extent that the tax system is unindexed). This appears to be a politically much more sustainable system.

Other Considerations

The Advantage of Framing

An underlying motivation of the proposal to index tax rates to a measure of inequality is that it should be easier to get an electorate to agree to making taxes more progressive in response to increased inequality if they were asked to decide to do this *in advance*, before the increase in inequality actually transpires, by deciding on a *rule* for doing this, and so as to *frame* the tax system as a tool against inequality. Substantial research, from psychology, economics, and political science, supports this.

First of all, psychological research has confirmed that people are more principled, idealistic and altruistic about decisions that do not require immediate action. The experiments with human subjects by psychologists Liberman and Trope (1998) and their colleagues confirm this.

Underlying their experiments is a “temporal construal theory” which, in the authors’ words, proposes that “construals of distant future events are likely to be more abstract and consist of features that are central to the meaning of the event, whereas the construal of near future events is likely to be more concrete and include more peripheral and incidental features.” (Liberman and Trope, 1998, p. 8) Judgments about risk management, as well as about altruistic principles, are based on abstract deliberations and so they are more likely to be made about future events. In contrast, these judgments tend to get brushed aside in decisions about immediate events, because of the salience of other concerns.

Eyal *et al.* (2005) tested the temporal construal theory with a number of experiments. For example, in one experiment, they asked their student subjects to respond to the following question:

“Try to think of yourself next week (in a week a year from now) deliberating on the following dilemma: On the one hand, you are considering working extra hours in order to improve your chances for promotion. On the other hand, you could help a friend who asked for your help (for example, help him/her with school work, with family issues, with the job.)” (p. 9)

The subjects were assigned to two treatment groups, one read the question about next week, the other read the question about a week a year from now. They found that the subjects who were asked about a year from now were significantly more likely to choose to help the friend. The subjects were also asked to fill out the Schwartz (1992) values questionnaire, which scored them on their achievement values versus their universalism values. It was found that the differences across individuals in values (abstract considerations closer to the real meaning of the choice) had a bigger effect on the differences across individuals in decisions made for a year from now than in decisions made for next week. Thus, in accordance with temporal construal theory, individual abstract values emerge more strongly in influencing decisions about the distant future than about the near future.

Secondly, another dimension of the proposed inequality indexation is the reframing of concepts that it entails. Political psychologists have demonstrated experimentally that exposure to a framing of thought about core values affects the frequency of thoughts that are consistent with the values and the political decisions that are made. Brewer and Gross (2005)] conducted an experiment about the school voucher controversy in which each participant was randomly assigned to one of four conditions

that differed only in value framing. Two frames of school vouchers were considered: an equality frame, that assumes school vouchers promote equality of opportunity, and an inequality frame, that assumes vouchers undermine equality. The participants were then read versions of an article extracted from real newspaper articles about school vouchers, but in one of four different forms (conditions) altered in terms of framing. The four conditions were no frame, first frame, second frame, and both frames. Subjects were then asked to write comments about the school voucher proposal, and their comments were assessed for reference to an equality frame. Only five percent of those who were not given either frame used equality language in their responses, contrasted with 23 percent of those receiving pro-voucher equality frames, 24 percent of those using anti-voucher equality frames, and 41 percent of those using both.

Thirdly, there are human impulses that resemble concern with inequality but do not always take that form, unless there is a framing that melds the two. Lerner and Simmons (1966), in a highly influential article, argued that people have a need to believe in a “just world,” to reassure themselves about their own safety, but that this belief does not always have the effect of impelling them to promote equality as a value. It has emerged through a number of experiments that, when subjects observe others’ suffering, there is an initial empathic emotional involvement with the victim, but as time progresses, and if there are no immediate means to help the victim, the subjects tend to denigrate the victim and invent shortcomings in the victim that are thought to have brought on the suffering. Belief in a just world is an essential human impulse, but may not lead to sustained efforts to combat injustice unless there is some institution that frames these efforts as part of a just world.

Another psychological literature concerns aspirations and social comparisons. The social psychologist Leon Festinger described an innate human comparison drive, a drive to compare oneself with others around them and continually rate one's own performance against others. Festinger argued (1954) that this is an innate human drive, present in all societies and cultures, though the measures of success that are compared vary widely: comparisons are highly subject to framing changes. This innate drive works against the emotions of empathy that promote egalitarian thinking, and is a fundamental obstacle towards reducing economic inequality, but implies that framing changes can make a fundamental difference.

Benjamin Friedman, in his book *The Moral Consequences of Economic Growth* (2005) argued that many of the social comparisons that people make are actually not with other people today but with their memories of the past. People compare themselves with their parents or others they knew from their parents' generations, and with themselves in the past. Friedman argued that when growth stalls, the comparisons become unfavorable, and the resulting malaise can have deleterious effects; notably, social intolerance can be magnified.

For Friedman, the conclusion was that economic growth should be pursued along a steady, sustained rate. But, another conclusion also follows from his line of argument, namely that all elements of society should see their incomes grow steadily, and not suffer reversals. The current *ad hoc* system of Congress judgmentally adjusting income tax brackets from time to time, means that any government response to increasing inequality would necessarily involve large changes in tax liability and after-tax income, including tax changes larger than changes in annual pre-tax income, bringing on unpleasant

comparisons. A system of indexation of the tax system to inequality would assure that responses to changing inequality would be made smoothly so that no one would see annual gains in pre-tax income translate into reductions in after-tax income.

Another psychological literature concerns a human tendency towards vengeance. If an action is perceived as coming from hostile behavior of others, then the reaction may be strong and visceral. Matthew Rabin (1993) has effected a small revolution in game theory by postulating that the axioms of the theory should involve that people are willing to sacrifice their own well being to punish those who are being unkind to them. Any after-the-fact measures to redress increases in income inequality may tend to be viewed as the result of self-interested hostile behavior of others, while, in contrast, a set of abstract rules that were made before the outcomes in terms of inequality were known could not be so interpreted.

Political Sustainability

A key question is whether symmetric indexing is politically sustainable. It is key for several reasons. First, the economic benefits of the rising tide system depend in large measure on symmetry. If the tax system may only be indexed in one direction, e.g., in favor of a more equal distribution of income, then it would tend to reduce expected after-tax income for people at the top of the income distribution, would not reduce the variability of after-tax income by as much as symmetric indexing (that is, would be a far less effective insurance mechanism), and would tend to increase top marginal tax rates, thus increasing the deadweight loss of the income tax. Moreover, many taxpayers would not perceive it as fair *ex ante* and so it would be a less effective framing mechanism.

The political pressures for asymmetric indexing could be strong under certain circumstances. For example, during a recession in which total income fell but the share of income earned by those with low incomes increased (as in the great depression), symmetric indexing would call for cutting top rates and increasing rates (or reducing credits) for people with lower incomes. Advocates for low-income people would be tempted to argue that this would be adding insult to injury—those least able to manage the difficulties of a recession would see their taxes increase (or subsidies fall) while those most able would receive a tax cut. Such a redistribution could also tend to deepen a recession since the tax increases on lower-income people would tend to reduce aggregate consumption by much more than the offsetting tax cuts on high-income people would increase consumption.¹⁰

This problem could be mitigated by committing to a countercyclical tax policy—that is, running deficits during recessions and surpluses (or smaller deficits) during economic expansions. The stimulative policy during the recession could be explicitly designed to guarantee that no one paid higher taxes or received smaller credits because of the automatic indexing during recessions.¹¹ Tax increases could be deferred until aggregate income had risen for a specified number of quarters and then phased in. If the pre-tax income distribution reversed its course during the expansion, any deferred tax increases would be reduced.

Another issue is that it is impossible, barring a constitutional amendment, to bar politicians from fiddling with the tax code, and it is unlikely that this plan would terminate their tendency to micromanage. However, it is possible that it would limit the

¹⁰ High-income people save a much larger share of their income than low-income people, who spend virtually all of their income.

¹¹ A practical problem is that recessions are often not identified until after the fact.

dimensions by which they would manipulate the code. For example, after the Economic Relief Tax Act of 1981 indexed various income tax parameters for inflation, it was still possible that legislators could have undone the effect. But, despite numerous tax changes, the rate brackets, exemptions, etc. have remained subject to annual indexation. One might expect a similar response to the inequality indexation scheme, especially if it commanded widespread support and people perceived it as inherently fair. As long as political tinkering is not aimed at undoing the indexation scheme, its effect should not diminish the advantages of this proposal.

Difficulty of contemporaneous adjustment (and risk of adding uncertainty)

One of the practical problems with indexing for inequality is that the income distribution will not be known until after the end of the tax year. Currently, there is about a two year lag between the end of a filing season and the release of preliminary income tax statistics by the IRS. Thus, it is infeasible to adjust current year income tax rates, brackets, and credits to adjust for current changes in the income distribution. It would, however, be possible to adjust after the end of the tax year.

One option would be to include an inequality insurance premium in individuals' base tax liability—say one percent of taxable income. When the IRS has compiled statistics on the actual after-tax income distribution, it could issue rebates (insurance payouts).¹² Those rebates could be mailed to taxpayers or deposited into an account, such

¹² The IRS could probably make a rough estimate of the income distribution shortly after annual income tax returns were filed, based on unaudited income tax returns. There would be errors due to inadvertent mistakes (not caught in the course of regular math-error processing) and fraud on tax returns, transcription errors for returns filed on paper, and missing data because of late-filed returns, but the IRS could presumably make adjustments for these factors based on historical experience. Alternatively, the tax authorities could wait for two years to make the rebates when better data are available.

as a Roth IRA.¹³ These contributions might be allowed without regard for income or contribution limits that otherwise apply. This could provide another incentive for higher-income people to support the rising tide system, and might also prove an effective way to induce lower-income people to save, since it would be relatively painless.

Another issue is whether the distribution should be adjusted based only on current year income, or based on a moving average. The argument for using a moving average is that it could reduce the size of average adjustments. A single anomalous year would have a smaller effect on tax liabilities, and it would reduce the effect of cyclical factors on tax burdens. However, smoothing would also diminish the insurance value of the proposal. The process would adjust only for secular changes in the income distribution.¹⁴

Implementation

We describe here a system with endogenous tax rates that are adjusted automatically so as either to peg a level of inequality or at least to dampen changes.

Shiller (2003) proposed to index the tax rates in such a way that the after-tax Lorenz curve was fixed in future years. With 100-percent indexing, tax legislation would direct the tax authorities to find a set of tax rates and tax brackets that would peg the Lorenz curve for after-tax income forever at a specified level, perhaps the level at the time of the legislation. The Rising Tide Tax System proposed here would involve partial indexing, say $\frac{1}{4}$. The legislation would direct the tax authorities to find a set of tax rates

¹³ Roth IRA's are retirement savings accounts for which contributions are made out of after-tax income. That is, contributions are not tax deductible, but earnings accrue tax free and as long as withdrawals are made after age 59 $\frac{1}{2}$, they are tax-free as well. (In traditional IRAs, contributions are deductible, but withdrawals are taxable.)

¹⁴ If averaging is employed, the adjustments would have to be phased in over the moving average period.

and tax brackets that would reduce the movement in the Lorenz curve by the specified factor (e.g., $\frac{1}{4}$) from what it would be under pre-existing legislation.

The Method of Implementing Inequality Indexing

We illustrate the implementation of the Rising Tide Tax System using the Tax Policy Center Microsimulation Tax Model, which calculates tax liability and after-tax income for a sample of individual income tax returns.¹⁵ The method begins by finding the tax rates that best match the target distribution of income using a Gaussian nonlinear optimization algorithm to minimize the sum of squared differences between the target after-tax income levels and the actuals, minimizing over parameters that consist of income tax rates for the various tax brackets (measured in percent), as well as a demogrant (that is, a refundable credit available to all households measured in dollars). Total tax revenue is constrained to be constant (so there is no net tax increase or decrease). For simplicity, the rate bracket thresholds are assumed given exogenously for each filing status, at the current levels.

We use the model to calculate income tax liability for a sample of individual income tax returns in a base year (for our simulations 2002), augmented with data from the Current Population Survey to reflect nonfiling households. The sample is a stratified random sample of tax returns produced by the Statistics of Income (SOI) division of the Internal Revenue Service. SOI includes a set of sampling weights that can be used to create population estimates based on the sample. To speed simulations, we use only a

¹⁵ See Rohaly, Carasso, and Saleem (2005) for a description of the TPC microsimulation tax model and underlying databases.

random one-in-five subsample of our matched SOI-CPS dataset. After subsampling, our sample includes 19,976 returns. For the simulations, we exclude dependent tax returns.¹⁶

Total tax liability includes individual income taxes, payroll taxes, corporate income taxes (assumed to be borne by recipients of capital income), and excise taxes. The latter three taxes are held constant for the simulations—only income tax parameters change and they are assumed not to affect other taxes. When we simulate the effect of endogenous behavioral responses below, we assume that only individual income taxes are affected by individual income tax rates.¹⁷

To illustrate the effect of inequality indexation, we consider what would have happened if it had been put in place at some date in the past and examine how the system would change tax rates and incomes in 2002. For purposes of the exercise with full indexation, we set the target at the distribution of after-tax income in 1979 or 1994. We use data on after-tax income shares reported by CBO (2005).

How should the target be defined? For the simulations, we construct a measure of pre-tax income that is closely analogous to CBO's comprehensive household income—an expanded measure of income that starts with adjusted gross income and adds in certain income items excluded from AGI such as cash and in-kind transfers, and certain fringe benefits. Since our target is after-tax income, we then subtract federal taxes from our income measure.

¹⁶ Ideally, we would like to be able to include dependents' income on their parents' returns, but there is no way to do that with information available on the public use file.

¹⁷ In fact, corporate income taxes and payroll taxes might both be affected by changes in individual income tax rates. When the individual income tax rate is much higher than the corporate income tax rate, there is an incentive to convert individual income into corporate income. For example, sole proprietors might choose to incorporate. To the extent that high income tax rates discourage people from working, that would also reduce payroll tax receipts. In our simulations, we ignore such behavioral responses.

To measure economic status, we adjust income for family size. The Congressional Budget Office argues that income needs grow approximately with the square root of family size. (CBO 2001) Thus, we assign people to quintiles based on income divided by square root of family size. We base the target distributions on the distributions of after-tax income adjusted for family size estimated by the Congressional Budget Office (2005).

Various other issues arise in the calculations we did to compute the necessary tax changes and measure their effects. First, taxable income is very different from economic status. Thus, there is not a one-to-one correspondence between tax rates and after-tax income. For example, raising the top tax rate will affect people in all income categories (although mostly people in the top). This means that finding the set of tax rates that matches changes in the distribution of income is not straightforward. Our minimization algorithm allows us to match as closely as possible the target distribution of after-tax income, and we shall see from this exercise how closely we can match it with our method.

Second, to simplify the simulations, we simplify the income tax system somewhat. We eliminate the alternative minimum tax (AMT) and tax capital gains and dividends the same as ordinary income. We recalibrate income tax rates so that the distribution of tax burdens and revenue in 2002 are the same as under actual law (abstracting from any effects of our simplifications on excess burdens).¹⁸

¹⁸ The AMT and the alternative tax rates applying to capital gains and dividends both introduce considerable nonlinearities into the tax system. If we left them in place in the model, we would have to make an assumption about how AMT and capital gains rates change as income tax rates are adjusted. Since our purpose here is simply to illustrate how the indexation procedure works, we chose to ignore those complexities.

Third, we have to decide how the demogrant is defined. We assume that the demogrant varies with the square root of family size. Thus, if the base demogrant is \$1,000 for a single person, it is \$1,414 for a couple and \$2,000 for a family of four.

Regularity Conditions

For our base simulations, we constrain the tax rate schedule to be a non-decreasing function of taxable income. That is, each marginal tax bracket has to be at least as high as the next lower one. This is consistent with the shape of actual statutory rate schedules.¹⁹ The regularity condition is helpful because there is not a one-to-one correspondence between taxable income and economic status; thus, there are likely many tax schedules that could mimic the distribution of income taxes.²⁰

Endogenous Income

Probably the single greatest drawback to income redistribution is that high marginal tax rates can discourage working and saving, and encourage unproductive tax avoidance and evasion—all of which serve as a drag on the economy. Of particular concern are timing responses, which involve relatively low cost and thus are easiest to accomplish. (Slemrod 1990) Burman, Clausing, and O’Hare (1994), for example, found a huge response of capital gains at the end of 1986 to the increase in rates enacted in August, 1986, but not effective until 1987. The response basically involved accelerating

¹⁹ Implicit tax rates do not, however, always follow a monotonic path. For example, the phase-out of the benefit of the 15-percent tax bracket in effect from 1988 to 1990 created a phantom 33-percent tax bracket for taxpayers with incomes in the phase-out range (known as “the bubble”). Currently, the phase-out of the AMT exemption has the same effect on AMT taxpayers in the phase-out range.

²⁰ In fact, simulations conducted in Stata suggest that this is true. When the solution is unconstrained, there are numerous very different tax vectors that produce very similar distributions of income taxes.

realizations of gains on assets that would have otherwise been sold within a few years of 1986.

To the extent that the inequality indexation implicit in the rising tide system involves more frequent and anticipated changes in marginal tax rates, it might produce timing responses, especially if the rate changes can be anticipated in advance. But, if changes in marginal tax rates are made each year as inequality indexation would require and indexation is only partial, the changes will be more gradual than is often the case today, and timing responses are likely to be decreased, not increased. Of greater concern is that higher marginal tax rates could produce much more real and financial responses designed to shelter income from tax. If high tax rates reduce reported taxable income, then rates might have to be increased even further to meet targets for after-tax income and it is possible that some targets become infeasible.

To illustrate the effect of tax avoidance and evasion under the indexing scheme, we apply a simple model of taxable income determination. We assume that taxable income is determined by a very simple semi-log model:

$$TI_i = K_i e^{-at} \quad (1)$$

Where TI_i is taxable income for individual i , t_i is the marginal tax rate for household i , K_i is a constant that reflects differences in preferences, wealth, and ability to earn income for individual i , and a is a parameter assumed to be constant across the population. In the semi-log model, the elasticity of taxable income with respect to the tax rate is simply at —that is, it grows linearly with the tax rate.

For our simulations with behavioral response, we choose $a = 4/3$, which implies that the elasticity is 0.4 at a tax rate of 30 percent. The revenue maximizing tax rate is 75

percent, at which point the elasticity is -1.0. Further increases in the tax rate would be counterproductive in the sense that tax revenue would decrease.

Under the assumption of zero income elasticity of taxable income, a straightforward simulation methodology may be derived consistent with equation (1). For each tax unit, K is chosen so that TI equals actual baseline income (TI^0) when the marginal tax rate is set at the baseline level (t_0). That is,

$$K = TI_0 e^{\frac{4}{3}t_0} \quad (2)$$

To simulate changes in tax rates, we are searching for a tax rate that is consistent with endogenous taxable income. Figure 1 shows the solution process for the two most common cases. In Figure 1a, the equilibrium tax rate (for a married couple filing jointly in 2002) is 15 percent, which corresponds to a desired taxable income of about \$90,000. Since the 15 percent bracket spans from \$46,700 to \$112,850, the desired income is consistent with the tax rate so this is an equilibrium. In Figure 1b, there is no desired income consistent with a single tax bracket. At a tax rate of 15 percent, the taxpayer desires to earn more income than \$112,850, the top of the tax bracket, but at a tax rate of 25 percent, the taxpayer desires taxable income less than \$112,850. The solution in this case is for the taxpayer to earn exactly \$112,850—that is, just up the income at which he would be pushed into the higher tax bracket.

A third possible case (Figure 1c) arises when tax rates decline with income. In that case, there may be multiple equilibria. Since we generally constrain rate schedules to be non-decreasing in income, this is not usually a problem. When it occurs, we choose the equilibrium closest to the initial taxable income.

To simplify the simulations, we assume that changes to taxable income do not change any other item on the income tax return.²¹

Results

Static

Our first step is to estimate a set of tax rates under the modified law (excluding the AMT and taxing capital gains and dividends as ordinary income) that generates a distribution of after-tax income that matches the one under actual law for 2002 (See Table 1). For this baseline simulation, we not only constrain the tax rates to be non-decreasing in taxable income but also restrict the demogrant to equal zero. Since the AMT was a relatively minor aspect of the tax code in 2002, it is the treatment of capital gains as ordinary income that has the most impact on our modified rate structure. The vast majority of capital gains are reported by individuals in the top tax bracket. Thus, removing the preferential treatment for capital gains means that the top rate must fall from 38.6 percent to 34.7 percent to preserve the distribution of after-tax income observed under current law. Other rates do not differ greatly from their current-law values.

²¹ This is a significant simplification relative to current law. Technically, we are assuming that the income changes affect taxable income, but not necessarily adjusted gross income (AGI). Changes to itemized deductions (for example, if the taxpayer decides to give more or less to charity) or below-the-line deductions such as IRA contributions would be in this category, but a change in wages and salaries, interest, or dividends would not. We assume that AGI does not change under the simulations because, when AGI changes, other things like itemized deductions, personal exemptions, AMT exemption, taxable portion of Social Security, IRA deductions, and a host of credits can also change because of various AGI-related phase-ins and phase-outs. The result is that the effective marginal tax rate can vary significantly from statutory rates, which would vastly complicate modeling the behavioral response. The assumption would also be approximately valid if taxpayers responded to their statutory rate, rather than their marginal effective tax rate. (There would still be a problem that, if the actual behavioral response affected AGI, we would be mismeasuring tax liabilities for affected taxpayers—probably by about 1 percent of income.)

The next step is to estimate what the tax rate structure would be like in 2002 if we implemented our indexation proposal with the target distribution of after-tax income chosen to be that which prevailed in one of two specific past years, 1994 and 1979. We chose 1979 since it is the earliest year for which the CBO data on the distribution of after-tax income are available. We chose 1994 because it provides a distribution that is more similar to the one that existed in 2002 given that it is before the huge run-up in the stock market that occurred in the late 1990s. For both of the two years, we examine what the tax system would look like under degrees of indexation ranging from full indexation – eliminating all differences between the 2002 distribution and that of the given year – to 1/16th indexation, in which tax rates are altered to eliminate 1/16th of the difference in the income distribution.²² As noted, partial indexation—e.g., with considerable coinsurance on the part of individual taxpayers—is likely to be both the economically and politically optimal choice.

Going from the 2002 distribution of after-tax income to the 1979 distribution requires large increases in the top tax rate – from 34.7 percent to 77 percent in the case of full indexation. This is not surprising given that returning to the 1979 distribution requires the share of after-tax income going to the top one percent of the population to fall by more than 50 percent, from 11.4 percent to 7.5 percent. The substantial demogrant, \$2,452, is necessary to raise the share of after-tax income going to the bottom quintile; virtually no tax units in that income range are affected by changes in statutory rates since they do not actually pay a positive amount of individual income tax. This in

²² Suppose that the share of after-tax income for a given quintile of the population were to rise from 10 percent to 11.6 percent (a 16 percent increase). Under full indexation, we would alter tax rates so that the quintile's share remains at its original 10 percent. Under 1/16th indexation, we would alter tax rates so that the quintile's share rises by only 15/16ths of that original change or 15 percent, resulting in a share of after-tax income of 11.5 percent.

turn means that the bottom two tax rates must be raised – to 18.4 percent – in order to offset the effects of the large demogrant on individuals in the second and middle quintiles of the income distribution whose after-tax incomes do not need to rise proportionately as much as those in the bottom quintile.

As expected, for partial indexation, the general pattern remains the same, but the required changes in tax rates are much more moderate. But the sheer magnitude of the difference in the 1979 and 2002 distributions of after-tax income can be seen by the fact that even under 1/16th indexation, the top rate would need to rise by almost 20 percent, from 34.7 to 41.6 percent, two percentage points higher than the top rate before the 2001 tax cuts were implemented.

If we target the 1994 distribution of after-tax income – since it is more similar to the 2002 distribution – the required changes in tax rates are also smaller. Under full indexation, the top three rates would rise to between 42.3 and 54 percent, still substantially higher than any rates in place for the last two decades. Since the share of after-tax income going to the bottom quintile did not fall nearly as much between 1994 and 2002 as it did between 1979 and 2002, the required demogrant is significantly smaller here, only \$414. Partly because of the demogrant's small size, and partly because the second and middle quintiles saw their share of after-tax income change by roughly the same proportion as the bottom quintile, the lowest tax rate actually falls in this case, to 5.6 percent from 9.8 percent, as opposed to the increase observed when indexing to the 1979 distribution.

With Behavioral Response

Given the magnitude of the changes in statutory rates required to match the distributions of both 1994 and 1979 – particularly in the top brackets – allowing for a behavioral response of tax rates on reported income could have a potentially large impact on our simulation results.

For our simulations with endogenous taxable income, we again constrain tax rates to be non-decreasing in taxable income and allow for a demogrant that increases with the square root of the number of members of the tax unit.

Table 2 presents our results for the simulations allowing for behavioral response. Targeting the 1994 distribution of after-tax income – which is not strikingly dissimilar from the baseline distribution in 2002 – requires very large increases in each of the top four tax rates; all are greater than 60 percent. One interesting result is that for the case of full indexation, the required bottom tax rate is negative. We allowed a negative bottom tax rate for simplicity – accepting that it implies some counter-intuitive tax-minimizing behavior such as not taking any deductions – and believe that it is best interpreted as indicating that a more generous earned income tax credit (EITC) could accomplish the same result.

The tax rates required to return the distribution of after-tax income to the one that existed in 1979 are even higher. Under full indexation, the top four tax rates would need to rise to 69.5 percent.

Tables 3 through 7 summarize how well we can hit the targets in the various cases, as well as give further information about the tax brackets that would do so. Usually, we are quite successful, but not always. For example, Table 7 shows that the

optimization algorithm was unable to find a set of tax rates that brought the share of after-tax income for the top one percent of earners down close to its share in 1979 if the behavioral response occurs. The share of after-tax income going to the top one percent exceeds its 1979 value by more than one-third. Even eliminating only 1/16th of the difference in the distribution between 2002 and 1979 requires each of the top three tax rates to rise to more than 40 percent. This bolsters the case for partial indexation rather than full indexation.

It is worth noting that the simulations with behavioral response assume that the responses do not change underlying economic status—only the amount that is reported as taxable income. To the extent that responses are real—people working or saving less, for example—the target Lorenz curve may be achieved with smaller rate changes since before-tax income of top earners actually declines (moving it closer to the target after-tax income). This is not reassuring, however, since it also means that the deadweight loss is larger. Redistribution is undermining economic growth. This may be mitigated to the extent that the Rising Tide Tax System is enabling more pro-growth policies, but it reinforces our belief that partial indexation is preferable.

Possible Enhancements

A drawback of this approach is the disconnect between taxable income and economic status. A significant fraction of low tax bracket individuals have high cash incomes—for example, because they earn significant tax-exempt interest—and some higher-bracket individuals have more modest economic status—for example, because they do not own a home and choose not to itemize deductions. (See Table 8.) Indexing

existing tax brackets would mean that many beneficiaries of indexing would, in fact, not be falling behind in the income distribution and others who are losing ground might get no benefit or even face higher taxes. What is more, taxable income is a narrower base than cash income, since it is after all the deductions from income allowed for tax purposes, only some of which are related to economic status. As a result, the changes in tax rates needed to achieve distributional targets are larger than they would be if applied to a broader base. And, finally, adjusting income tax rates means that those who lose from indexation would face not only higher penalties on work and saving, but also larger rewards for claiming deductions and electing other methods of sheltering income from tax.

Another factor is that many of largest year-to-year changes in the income distribution arise from extraordinarily high or low capital gains—either because people choose to realize an unusually large amount (as they did in 1986 in anticipation of a 1987 tax rate increase) or because of stock market booms and busts. A partial solution to this problem could be to replace actual realized capital gains with imputed accrued capital gains in the income tax database based on imputed wealth, and use that less volatile income distribution as the basis for any tax rate adjustments. This is only a partial solution because high earners often have the value of stock options included in reported compensation, making that aspect of compensation as volatile as realized capital gains.

The problem of the mismatch between taxable income and economic status might be reduced by tying indexing adjustments to a broader measure of income. One option would be to require taxpayers to calculate cash income and pay a fraction of that income as an inequality insurance premium. Once the actual distribution of pre-tax income is

determined, the IRS could send rebate checks based on reported cash income and the degree of indexation. This would make tax filing more complex; in some ways, it is analogous to the add-on minimum tax that was the precursor to the current alternative minimum tax. However, unlike the AMT, which serves little or no legitimate policy rationale, inequality insurance advances several legitimate policy ends.

The ideal solution might be to pair the Rising Tide Tax System with a more comprehensive reform of the income tax. One such reform, advocated by Batchelder, Goldberg, and Orszag (2006), would convert into refundable tax credits all income tax deductions that are not related to the measurement of ability to pay. Under that scheme, tax liability before credits would be based on a measure of income much closer to cash income. In that case, adjustment to tax rates would accurately adjust after-tax income within cash income classes. And the combination of the Batchelder, et al, proposal and the Rising Tide Tax System would be considerably simpler than present law.

Conclusions and Recommendations

We have presented a case for adopting partial inequality indexation in our tax system, and argued that if we do so it can improve the prospects for growth-enhancing economic policies. The rising tide that lifts all boats may then become a reality rather than a slogan.

Although full indexation might be optimal if future income inequality is unpredictable and redistribution were costless, our simulations show that behavioral responses to taxation could undermine some or all of the efficiency gains from full

indexation. For that reason and others, partial indexation appears to be the optimal strategy.

There are some key implementation issues, including the basis upon which indexing adjustments would apply (e.g., taxable income or a broader measure of income, such as cash income) and the time frame over which such adjustments would occur. Perfect indexation could only occur after a lag because it takes several years for the government to measure the distribution of pre-tax income. Imperfect indexation could be based on lagged or a moving average of the distribution of income, or the scheme could be implemented as pure insurance, with individuals paying “premiums” based on incomes and receiving insurance settlements once the insurable event (changing inequality) could be verified. It may also be desirable to tie the Rising Tide Tax System to a broader income tax reform that would connect taxable income more closely with economic status, although we worry that this could derail the whole enterprise. We do not wish for the perfect to be the enemy of the good.

In future research, we hope to develop a model to derive the determinants of the optimal extent of indexation in the context of social welfare maximization with endogenous responses to taxation and endogenous policy making. Uncertainty about key parameters, such as the behavioral response to taxation, the degree of risk aversion, and the costs and benefits of pro-growth policies, will make pinpoint calculations of the degree of indexation highly imprecise. The best approach may, indeed, be to set the parameter as part of the political process, subject to revision over time. The “fair share”—that is, the portion of future economic growth that is guaranteed to each income group—might initially be set low to test the program, but it could also be set higher. As

long as top tax rates are not increasing much, it could stay close to 1. If pre-tax inequality increases, however, and tax rates increase significantly, it would be appropriate to adjust the fair share down as the marginal economic costs of future redistribution increase.

If reducing inequality is deemed to be an important policy goal, the Rising Tide Tax System might not be the only or most important policy to achieve that end. The best policies would be those that dealt with the underlying sources of economic inequality, including disparities in human and physical capital accumulation. To the extent that those inequities are addressed successfully, the inequality of pre-tax income will decrease (or increase less slowly), meaning that the indexing adjustments would automatically be reversed (or moderated). The Rising Tide Tax System is a complement, not a substitute, for policies aimed at improving economic opportunity.

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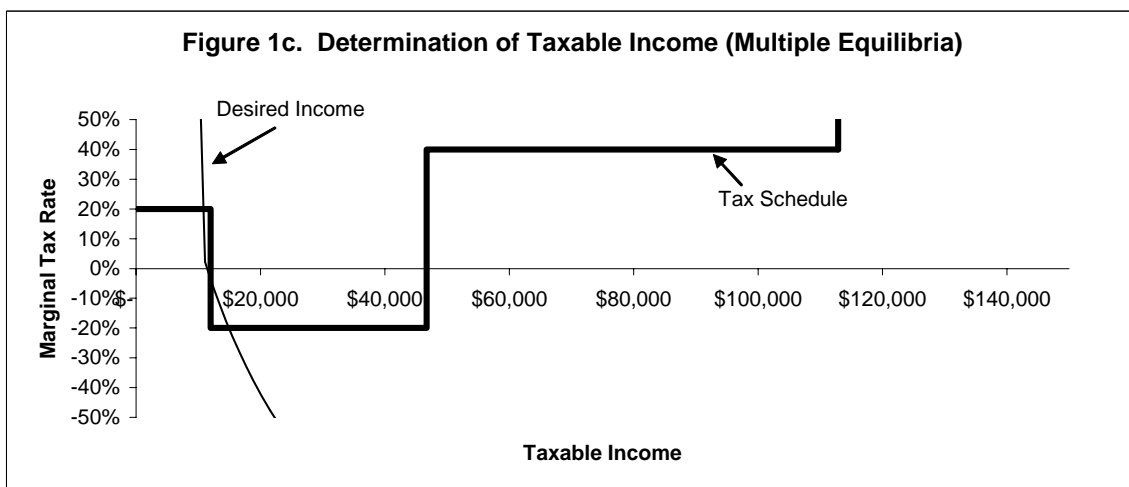
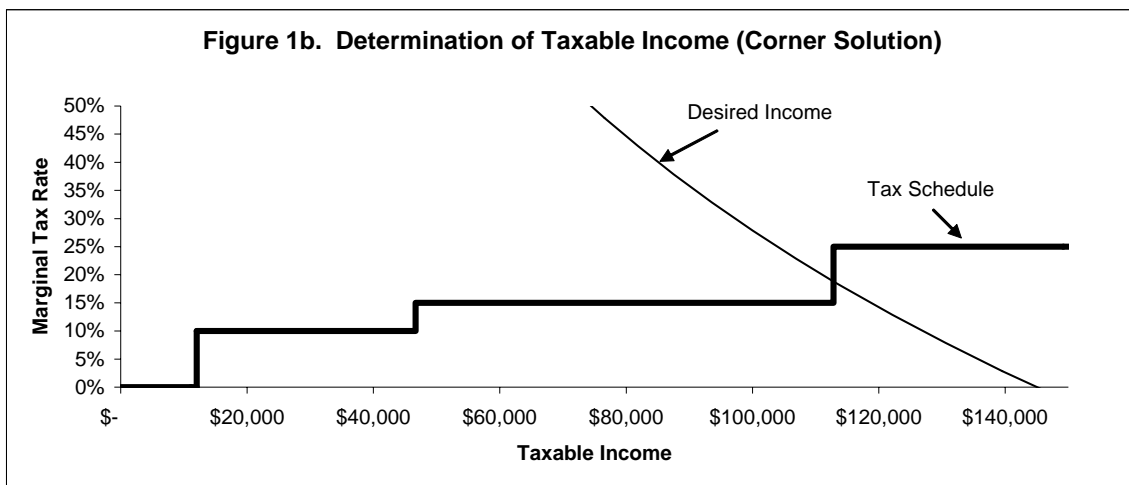
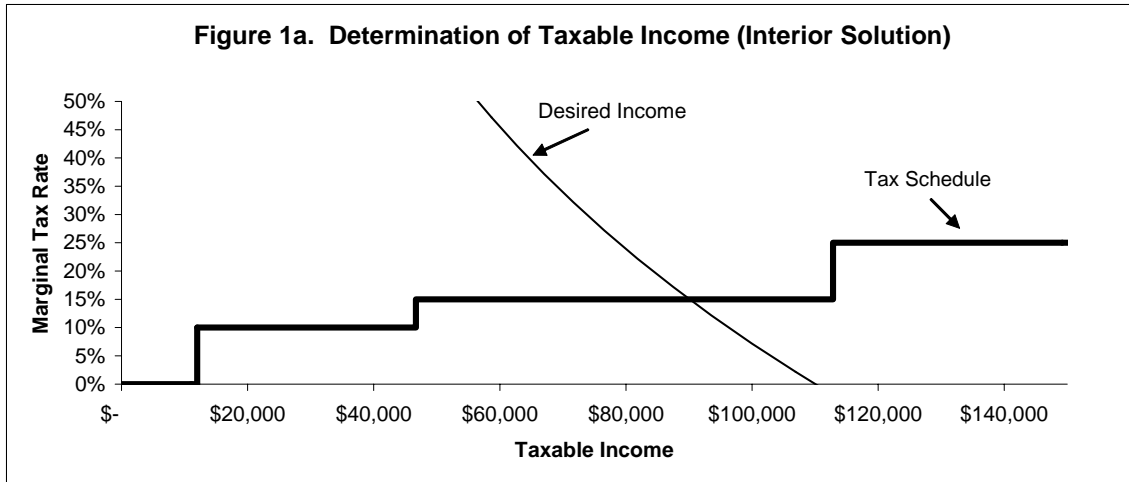


Table 1. Individual Income Tax Rates Required to Match Prior-Year Distributions of After-Tax Income

Target Distribution of After-Tax Income	Required Tax Rates In Modified Individual Income Tax System ¹						Demogrant (Dollars) ²
2002 Current Law Baseline	10	15	27	30	35	38.6	0
Imposing Non-Decreasing Tax Rates							
2002 Current Law³	9.8	15.1	26.9	31.1	34.7	34.7	0
1994 Current Law							
Full Indexation	5.6	14.6	26.4	42.3	42.3	54.0	414
1/2 Indexation	7.6	14.9	26.7	37.0	37.0	46.6	204
1/4 Indexation	8.8	15.0	26.8	34.4	34.4	42.9	101
1/16 Indexation	9.7	15.0	26.9	32.4	32.4	40.1	24
1979 Current Law							
Full Indexation	18.4	18.4	27.7	65.3	65.3	77.0	2,452
1/2 Indexation	14.7	16.5	27.4	48.5	48.5	58.2	1,231
1/4 Indexation	12.5	15.7	27.2	40.1	40.1	48.7	617
1/16 Indexation	10.7	15.2	27.0	33.8	33.8	41.6	154

Source: Urban-Brookings Tax Policy Center Microsimulation Model (version 0305-3A)

Notes:

(1) Modified individual income tax system is 2002 current law with the following changes: the individual alternative minimum tax (AMT) is repealed; long-term capital gains are taxed at the same rate as ordinary income.

(2) Demogrant is multiplied by the square root of the number of members of the tax unit. Thus a tax unit with four members receives twice the demogrant shown. The demogrant is constrained to be non-negative.

Table 2. Individual Income Tax Rates Required to Match Prior-Year Distributions of After-Tax Income Allowing For Behavioral Response¹

Target Distribution of After-Tax Income	Required Tax Rates In Modified Individual Income Tax System (percent) ²						Demogrant (Dollars) ³
	10	15	27	30	35	38.6	
2002 Current Law Baseline							0
Imposing Non-Decreasing Tax Rates							
1994 Current Law							
Full Indexation	-8.7	27.0	62.2	64.8	64.8	64.8	118
1/2 Indexation	5.8	17.8	40.0	56.5	56.5	56.5	193
1/16 Indexation	9.7	15.1	28.0	33.4	38.5	38.5	25
1979 Current Law							
Full Indexation	0.0	55.2	69.5	69.5	69.5	69.5	2,137
1/2 Indexation	1.7	33.3	65.6	65.6	65.6	65.6	1,083
1/16 Indexation	10.6	15.7	29.8	40.6	40.6	40.6	154

Source: Urban-Brookings Tax Policy Center Microsimulation Model (version 0305-3A)

Notes:

- (1) Taxable income is assumed to change based on the percentage difference between the tax unit's marginal tax rate under current law and under the indexation proposal. The elasticity of taxable income with respect to the marginal tax rate is assumed to be proportional to the tax rate and equals 0.4 at a rate of 30 percent.
- (2) Modified individual income tax system is 2002 current law with the following changes: the individual alternative minimum tax (AMT) is repealed; long-term capital gains are taxed at the same rate as ordinary income.
- (3) Demogrant is multiplied by the square root of the number of members of the tax unit. Thus a tax unit with four members receives twice the demogrant shown. The demogrant is constrained to be non-negative.

Table 3. Comparison of After-Tax Income Targets and Actual Values After Optimization Algorithm, 2002, in

Income Percentile	Target	Actual	Difference (Percent)
0-20	19,864.8	19,865.1	0.0
20-40	41,886.6	41,895.9	0.0
40-60	62,717.4	62,717.4	0.0
60-80	97,870.3	97,857.0	0.0
80-90	70,367.9	70,400.1	0.0
90-95	47,449.9	47,423.4	-0.1
95-99	62,677.1	62,679.2	0.0
99-100	65,501.7	65,501.5	0.0
All	466,862.7	468,339.6	0.3

Source: Urban-Brookings Tax Policy Center Microsimulation Model (version 0305-3A)

Table 4. Comparison of After-Tax Income Targets and Actual Values After Optimization Algorithm, 1994, in \$millions

Income Percentile	Full Indexation			1/2 Indexation			1/16 Indexation		
	Target	Actual	Difference (Percent)	Target	Actual	Difference (Percent)	Target	Actual	Difference (Percent)
0-20	20,684.1	21,198.7	2.5	20,272.0	20,521.2	1.2	19,912.2	19,941.7	0.1
20-40	44,392.9	43,458.8	-2.1	43,135.8	42,673.5	-1.1	42,038.1	41,982.3	-0.1
40-60	64,039.4	64,660.2	1.0	63,374.8	63,691.7	0.5	62,794.3	62,834.3	0.1
60-80	100,351.1	100,209.5	-0.1	99,114.6	99,040.6	-0.1	98,034.9	98,023.5	0.0
80-90	71,866.2	71,689.9	-0.2	71,137.9	71,051.4	-0.1	70,502.0	70,495.9	0.0
90-95	47,832.8	48,017.7	0.4	47,631.0	47,722.6	0.2	47,454.7	47,462.4	0.0
95-99	61,502.1	61,492.4	0.0	62,133.4	62,128.6	0.0	62,684.6	62,684.2	0.0
99-100	56,194.4	56,194.5	0.0	60,063.1	60,063.2	0.0	63,441.8	63,441.8	0.0
All	466,862.7	466,921.7	0.0	466,862.7	466,892.8	0.0	466,862.7	466,866.1	0.0

Source: Urban-Brookings Tax Policy Center Microsimulation Model (version 0305-3A)

Table 5. Comparison of After-Tax Income Targets and Actual Values After Optimization Algorithm With Behavioral Response, 1994, in \$millions

Income Percentile	Full Indexation			1/2 Indexation			1/16 Indexation		
	Target	Actual	Difference (Percent)	Target	Actual	Difference (Percent)	Target	Actual	Difference (Percent)
0-20	20,684.1	20,636.4	-0.2	20,272.0	20,487.9	1.1	19,912.2	19,945.5	0.2
20-40	44,392.9	44,013.9	-0.9	43,135.8	42,738.8	-0.9	42,038.1	41,981.3	-0.1
40-60	64,039.4	65,220.1	1.8	63,374.8	63,661.3	0.5	62,794.3	62,821.2	0.0
60-80	100,351.1	99,182.5	-1.2	99,114.6	98,964.4	-0.2	98,034.9	98,038.4	0.0
80-90	71,866.2	72,423.2	0.8	71,137.9	71,361.1	0.3	70,502.0	70,489.8	0.0
90-95	47,832.8	48,582.4	1.6	47,631.0	47,335.1	-0.6	47,454.7	47,453.8	0.0
95-99	61,502.1	60,842.6	-1.1	62,133.4	62,178.7	0.1	62,684.6	62,683.5	0.0
99-100	56,194.4	58,842.9	4.7	60,063.1	60,165.9	0.2	63,441.8	63,441.5	0.0
All	466,862.7	469,744.0	0.6	466,862.7	466,893.2	0.0	466,862.7	466,855.0	0.0

Source: Urban-Brookings Tax Policy Center Microsimulation Model (version 0305-3A)

**Table 6. Comparison of After-Tax Income Targets and Actual Values After Optimization Algorithm, 1979,
in \$millions**

Income Percentile	Full Indexation			1/2 Indexation			1/16 Indexation		
	Target	Actual	Difference (Percent)	Target	Actual	Difference (Percent)	Target	Actual	Difference (Percent)
0-20	26,988.3	27,720.6	2.7	23,425.3	23,808.0	1.6	20,306.5	20,357.3	0.3
20-40	50,481.4	48,896.7	-3.1	46,182.3	45,385.6	-1.7	42,419.2	42,320.3	-0.2
40-60	66,743.9	68,081.8	2.0	64,728.1	65,374.3	1.0	62,963.6	63,039.0	0.1
60-80	102,513.3	102,074.4	-0.4	100,197.5	99,985.0	-0.2	98,170.4	98,143.4	0.0
80-90	72,170.7	72,084.5	-0.1	71,291.1	71,256.0	0.0	70,521.2	70,522.8	0.0
90-95	47,666.9	47,833.7	0.3	47,548.3	47,623.1	0.2	47,444.4	47,448.6	0.0
95-99	57,437.7	57,428.7	0.0	60,099.9	60,095.9	0.0	62,430.3	62,430.1	0.0
99-100	42,860.5	42,860.6	0.0	53,390.1	53,390.1	0.0	62,606.9	62,606.9	0.0
All	466,862.7	466,981.0	0.0	466,862.7	466,918.0	0.0	466,862.7	466,868.4	0.0

Source: Urban-Brookings Tax Policy Center Microsimulation Model (version 0305-3A)

Table 7. Comparison of After-Tax Income Targets and Actual Values After Optimization Algorithm With Behavioral Response, 1979, in \$millions

Income Percentile	Full Indexation			1/2 Indexation			1/16 Indexation		
	Target	Actual	Difference (Percent)	Target	Actual	Difference (Percent)	Target	Actual	Difference (Percent)
0-20	26,988.3	26,730.3	-1.0	23,425.3	23,348.3	-0.3	20,306.5	20,357.8	0.3
20-40	50,481.4	49,239.8	-2.5	46,182.3	45,801.5	-0.8	42,419.2	42,329.1	-0.2
40-60	66,743.9	70,489.2	5.6	64,728.1	66,343.3	2.5	62,963.6	63,015.3	0.1
60-80	102,513.3	101,260.2	-1.2	100,197.5	98,648.8	-1.5	98,170.4	98,160.2	0.0
80-90	72,170.7	69,090.6	-4.3	71,291.1	71,293.2	0.0	70,521.2	70,527.4	0.0
90-95	47,666.9	46,407.4	-2.6	47,548.3	48,212.5	1.4	47,444.4	47,420.5	-0.1
95-99	57,437.7	58,902.8	2.6	60,099.9	60,305.3	0.3	62,430.3	62,436.2	0.0
99-100	42,860.5	58,039.5	35.4	53,390.1	58,541.7	9.6	62,606.9	62,607.5	0.0
All	466,862.7	480,159.8	2.8	466,862.7	472,494.6	1.2	466,862.7	466,854.0	0.0

Source: Urban-Brookings Tax Policy Center Microsimulation Model (version 0305-3A)

Table 8. Correspondence Between Taxable Income and Cash Income, 2002

		Taxable Income Percentile								All
		0-30.21	30.21-40	40-60	60-80	80-90	90-95	95-99	99-100	
Cash Income Percentile	0-20	20.89	1.76	0.00	0.00	0.00	0.00	0.00	0.00	22.65
	20-40	6.80	6.66	6.94	0.00	0.00	0.00	0.00	0.00	20.40
	40-60	1.95	1.04	10.66	5.31	0.01	0.00	0.00	0.00	18.98
	60-80	0.35	0.26	2.14	12.24	3.92	0.19	0.00	0.00	19.11
	80-90	0.11	0.04	0.15	2.13	4.63	2.23	0.21	0.00	9.50
	90-95	0.05	0.01	0.06	0.22	1.21	1.96	1.26	0.00	4.76
	95-99	0.03	0.02	0.04	0.08	0.20	0.60	2.40	0.33	3.70
	99-100	0.01	0.00	0.01	0.02	0.02	0.03	0.13	0.67	0.91
	All	30.21	9.79	20.00	20.00	10.00	5.00	4.00	1.00	100.00

Notes:

(1) Taxable income percentile from 0-30.21 includes all tax units with 0 taxable income.

(2) Cash Income percentile breaks put equal numbers of persons, not equal numbers of tax units, into quintiles. So, for example, the bottom quintile of cash income includes 20 percent of persons, but 22.65 percent of tax units.