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## Social Welfare and the Rate Structure: A New Look At Progressive Taxation

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*The progressive rate structure of the federal income tax has always been controversial. In this Article, Professors Bankman and Griffith explore the moral underpinnings and economic effects of the progressive income tax. Observing that all rate structures must be premised upon, and measured by, a theory of distributive justice, they first consider possible normative bases for a tax structure. They select as the normative basis for their analysis welfarist theories of distributive justice, which judge the tax structure on the basis of its effect on societal welfare. They next reexamine the traditional economic arguments against progressive taxation. They critically analyze both the labor-related efficiency costs of progressive taxation and the traditional arguments that progressivity imposes significant administrative costs, promotes the misallocation of capital, and increases tax evasion. Finally, they describe an optimal tax model for calculating the most desirable tax rate, balancing the costs of progressivity against possible gains from redistribution. The model proposed by Bankman and Griffith produces two results of particular importance. First, under most welfarist theories, the optimal tax rate is progressive, but not confiscatory. Second, a progressive tax is best implemented not by graduated or rising marginal*

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rates, but rather through a combination of cash grants and constant or even declining marginal rates.

### INTRODUCTION

The federal income tax rate structure is progressive: High income individuals pay a greater percentage of their income to the government than do low income individuals.<sup>1</sup> A progressive rate structure has been part of the federal income tax system since its inception in 1913.<sup>2</sup> Notwithstanding its lineage, the progressive rate structure has always been controversial, and the degree of progressivity has been subject to constant, and occasionally radical, change. Congress has adopted well over a dozen progressive rate structures since the income tax was first enacted, and change continues today.

The importance and persistence of the tax rate controversy might be expected to have generated a rich legal literature. In fact, although tax lawyers and academics have at various times spoken out in favor of or in opposition to the progressive tax,<sup>3</sup> serious legal scholarship in the field is scarce. The complex issues raised by the progressive rate structure are comprehensively analyzed in only one article, *The Uneasy Case for Progressive Taxation*, written by Professors Walter J. Blum and Harry Kalven, Jr. in 1952.<sup>4</sup> Blum and Kalven's analysis is erudite and thoughtful and has shaped the opinions of two generations of tax scholars. However, Blum and Kalven did not and could not discuss the implications of recent developments in economics and moral theory for the structure of the progressive income tax.

This Article explores the moral, economic, and administrative effects of a progressive rate structure with reference to the insights of

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1. I.R.C. § 1 (West Supp. 1987).

2. Income Tax (Revenue) Act of 1913, ch. 16, 38 Stat. 114, 166-67 (current version at I.R.C. § 1 (West Supp. 1987)). This act imposed a "normal" tax of 1% and a "surtax" ranging from 1% on net incomes between \$20,000 and \$50,000 to 6% on net incomes exceeding \$500,000.

3. See, e.g., C. GALVIN & B. BITTKER, *THE INCOME TAX: HOW PROGRESSIVE SHOULD IT BE?* (1969); W. KLEIN, *POLICY ANALYSIS OF THE FEDERAL INCOME TAX* 8-45 (1976); REPORT OF THE ROYAL COMMISSION ON TAXATION (Canada 1966); Blum, *Progressive Taxation Reconsidered—North of the Border*, 45 TAXES 718 (1967); Blum, *Revisiting the Uneasy Case for Progressive Taxation*, 60 TAXES 16 (1982); Blum & Kalven, *The Uneasy Case for Progressive Taxation*, 19 U. CHI. L. REV. 417 (1952); Cohen, *Reflections on the U.S. Progressive Income Tax: Its Past and Present*, 62 VA. L. REV. 1317 (1976); Doernberg, *A Workable Flat Rate Consumption Tax*, 70 IOWA L. REV. 425 (1985); Feld, *Fairness in Rate Cuts in the Individual Income Tax*, 68 CORNELL L. REV. 429 (1983); Graetz, *The 1982 Minimum Tax Amendments as a First Step in the Transition to a "Flat-Rate" Tax*, 56 S. CAL. L. REV. 527 (1983); Groves, *Toward a Social Theory of Progressive Taxation*, 9 NAT'L TAX J. 27 (1956); O'Kelley, *Tax Policy for Post-Liberal Society: A Flat-Tax-Inspired Redefinition of the Purpose and Ideal Structure of a Progressive Income Tax*, 58 S. CAL. L. REV. 727 (1985); Smith, *High Progressive Tax Rates: Inequity and Immorality?*, 20 U. FLA. L. REV. 451 (1968); Vickrey, *The Problem of Progression*, 20 U. FLA. L. REV. 437 (1968).

4. Blum & Kalven, *supra* note 3. The article was published in book form in 1953. W. BLUM & H. KALVEN, *THE UNEASY CASE FOR PROGRESSIVE TAXATION* (1953).

modern political theory and economics. Part I discusses the normative underpinnings of a tax rate structure. Popular and scholarly literature is often premised on the assumption that a proportionate tax is somehow "natural" but that progressive or regressive taxes require justificatory theories. In fact, all rate structures must be premised upon, and measured by, a theory of distributive justice. This Article examines "welfarist" theories of distributive justice, which judge a society's tax structure by its impact on the welfare of the members of that society.

Part II examines the case against a progressive tax. It first addresses the impact of the progressive tax on the supply and the allocation of labor. A progressive tax produces higher marginal rates than an equal revenue proportional tax; these rates discourage work effort and reduce welfare. However, the magnitude of the welfare loss is less clear cut than is generally asserted, and much of the loss appears to be borne by discrete socioeconomic groups. Tax relief targeted at these groups is likely to be more effective in reducing the efficiency costs of taxation than a reduction in the level of progressivity.

Part II then explores the administrative costs imposed by a progressive rate structure. We conclude that only a small portion of administrative costs associated with the income tax is attributable to a progressive rate structure. Finally, Part II critically examines the asserted links between progressivity and the misallocation of capital, and between progressivity and tax evasion. We conclude that these asserted costs of progressivity are less serious than opponents of progressive taxation have argued.

In Part III, we evaluate the costs and benefits of progressivity under various welfarist ethics. To make that evaluation, we rely on models developed in a branch of public economics known as optimal taxation. Optimal tax models calculate the most desirable tax rate under a variety of empirical assumptions and theories of distributive justice. Two conclusions are emphasized. First, the optimal tax under most normative theories and empirical assumptions is progressive, but not confiscatory. Second, the optimal progressive tax is not characterized by graduated or rising marginal rates. Instead, it is implemented through a combination of cash payments and constant, or even declining, marginal rates.

### *Definitions and Assumptions*

The progressivity of a tax rate structure is defined by the effective tax burden on differing income classes. Under a progressive tax, the percentage of income paid to the government, or average tax rate, rises as income rises.

A progressive tax may be implemented through graduated marginal rates: The first \$10,000 of income might be taxed at 10%, while all sub-

sequent income might be taxed at 30%. A progressive tax may also be implemented by a combination of constant or declining marginal rates and cash transfers or "demogrants."<sup>5</sup> For example, all income might be taxed at a 30% rate, and all taxpayers might receive a \$2,000 demogrant from the government. Under either approach, an individual with an income of \$10,000 would pay a net tax of \$1,000 for an average tax of 10%; an individual with an income of \$20,000 would pay a net tax of \$4,000 for an average tax rate of 20%. Each tax structure would be progressive because the percentage of income paid to the government would increase with income.

Under a regressive tax, the percentage of income paid to the government falls as income rises, although the absolute amount paid to the government may rise, fall, or remain constant. Proportionate and regressive taxes, like progressive taxes, may be implemented solely through the marginal rate structure, or through a combination of the marginal rate structure and cash payments.

Under a proportionate, or "flat," tax, the percentage of income paid to the government remains constant as income rises.<sup>6</sup> High income individuals pay a greater absolute amount of tax to the government than low income individuals, but the ratio of tax to income is identical.

It is important to distinguish a "flat" tax from a "broad-based" tax.<sup>7</sup> A flat tax collects a constant percentage of the income of individuals. A broad-based tax reduces the number of tax preferences and establishes a more uniform treatment of different items of income and expense. There is no necessary connection between a broad-based tax and a flat tax. It is possible to imagine a progressive tax structure with no tax preferences and a proportionate tax structure with many tax preferences.

The current nominal rate structure is progressive and is implemented through a series of graduated marginal rates. The 1988 rate

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5. The idea of a demogrant as a replacement for the personal and dependency deductions was suggested (and later abandoned) by George McGovern in his unsuccessful 1972 presidential campaign. See McGovern, *On Taxing and Redistributing Income*, N.Y. REV. BOOKS, May 4, 1972, at 7 (proposing a "Minimum Income Grant"). The idea had been developed earlier by Earl Rolph and James Tobin. E. ROLPH, *THE THEORY OF FISCAL ECONOMICS* (1954); Tobin, *Raising the Incomes of the Poor*, in *AGENDA FOR THE NATION* 77, 105-14 (K. Gordon ed. 1968); Rolph, *The Case for a Negative Income Tax Device*, 6 *INDUS. REL.* 155, 160-63 (1967); see also A. KRAGEN & J. McNULTY, *CASES AND MATERIALS ON FEDERAL INCOME TAXATION* 760-62 (4th ed. 1984).

6. The term "flat tax" is sometimes used to describe a tax that is proportionate above an exempted amount of income. Such a tax is really a progressive tax with two rates—a zero rate up to the exemption amount and a constant positive rate above that amount. The average rate of such a tax increases with income because the exempted amount is a decreasing percentage of the taxpayer's total income. The progressivity of such a tax increases as the size of the exemption increases. A shift to a proportionate tax with a small exemption would reduce the level of progressivity in much the same manner as a shift to a truly proportional tax.

7. See Pechman, *Introduction*, in *A CITIZEN'S GUIDE TO THE NEW TAX REFORMS* 1, 2-8 (J. Pechman ed. 1985).

structure has four separate brackets for individual taxpayers. Under that structure, a married couple with no children filing a joint return pays a nominal or statutory rate of tax of 15% on taxable income below \$29,751; 28% on additional income up to \$71,900; 33% on additional income up to about \$220,000; and 28% on all additional income.<sup>8</sup>

In practice, of course, there are a number of reasons why nominal rate structures may not reflect the actual distribution of the tax burden. First, Congress may define taxable income to exclude many items included in most economic definitions of income.<sup>9</sup> For example, taxable income currently does not include certain medical benefits, the rental value of owner-occupied housing, or unrealized capital gains.<sup>10</sup> In addition, taxable income is reduced by personal exemptions and other deductions.<sup>11</sup>

Second, taxes may affect behavior and therefore shift the incidence of the tax burden. Individuals facing high marginal rates may switch to more pleasant jobs at lower pay, replacing taxable salary with untaxed psychic benefits, or they may reduce their taxable hours worked and increase the amount of untaxed domestic labor they perform.<sup>12</sup> Employers also may find it necessary to raise the pre-tax wages of highly taxed employees in order to retain them. The actual impact and even the direction of the changes in behavior caused by an income tax are extremely difficult to determine.

Finally, the nominal rate structure does not incorporate the conse-

8. I.R.C. § 1 (West Supp. 1987). The 33% rate is used to phase out the benefits of the personal exemption and the 15% rate on the first \$29,750—leaving the high income taxpayer with an average, as well as a marginal, tax rate of 28%. Without the phaseout, the average tax rate would never quite reach 28%, since the taxpayer would pay only a 15% rate on the first \$29,750.

9. Most tax scholars have adopted the "Haig-Simons" definition of income. Goode, *The Economic Definition of Income*, in COMPREHENSIVE INCOME TAXATION 1, 7-8 (J. Pechman ed. 1977). Under the Haig-Simons formulation, economic income is defined as the amount a person might have consumed during a time period without altering his wealth. H. SIMONS, PERSONAL INCOME TAXATION 49-50 (1938); Haig, *The Concept of Income—Economic and Legal Aspects*, in THE FEDERAL INCOME TAX 1, 7 (R. Haig ed. 1921). For a discussion of some conceptual problems relating to the definition of income, see A. ATKINSON, THE ECONOMICS OF INEQUALITY 35-60 (2d ed. 1983).

10. The exclusion of medical benefits is statutory. See I.R.C. §§ 105, 106. The nontaxation of imputed rental income is without specific statutory or case authority but is nonetheless a fundamental feature of the present tax law. See I. B. BITTKER, FEDERAL TAXATION OF INCOME, ESTATES AND GIFTS ¶ 5.3.3 (1981). The nontaxation of appreciated property is generally attributed to the Supreme Court's decision in *Eisner v. Macomber*, 252 U.S. 189 (1920).

11. See, e.g., I.R.C. § 63 (West Supp. 1987) (standard deduction in lieu of itemized deductions); *id.* § 151 (personal exemptions); *id.* § 163 (deductions for certain interest expenses); *id.* § 164 (deductions for certain taxes); *id.* § 170 (deduction for charitable contributions); *id.* § 213 (deduction for medical expenses).

12. A classic discussion of the problems posed by imputed income may be found in H. SIMONS, *supra* note 9, at 110-24. A survey of the economic literature on the effects of the tax system's treatment of imputed income may be found in A. ATKINSON & J. STIGLITZ, LECTURES ON PUBLIC ECONOMICS 23-61 (1980).

quences of government expenditures on the wealth of individuals.<sup>13</sup> The amount of benefit that individuals of different income classes derive from many public services—national defense, interstate highways, the judiciary—is extremely difficult to determine.<sup>14</sup> It is generally assumed, however, that the combined tax-transfer system of the federal government is much more progressive than the tax system alone.<sup>15</sup>

Determination of the effective tax rate raises difficult empirical, theoretical, and normative issues. Most analysts, however, believe the effective federal income tax rate structure is progressive, although not as progressive as the nominal rate structure.<sup>16</sup>

## I

### A NORMATIVE FRAMEWORK

#### A. *Past Literature: The Default Assumption in Favor of a Proportionate Tax*

There are countless attributes and consequences of any rate structure. A tax structure may affect aggregate production of goods and services in one way, disadvantaged groups in another way, and education and family structure in still another. To determine the desirability of a tax structure, it is necessary to have a theory of distributive justice that determines whether, and how much, to weigh the particular consequences of that structure.

A number of legal scholars have discussed the consequences and desirability of progressivity.<sup>17</sup> Very few, however, have identified the normative theory that supports and drives their conclusions. Key assumptions upon which those conclusions are based are left unstated or unexamined.

Perhaps the most significant and pervasive assumption is that the burden of proof lies on supporters of progressivity. A proportionate tax is often seen as “natural” or “neutral,” and therefore is thought to require no justificatory theory.<sup>18</sup> In contrast, arguments in favor of a

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13. For a comprehensive analysis of redistributive government transfer payments, see R. BOADWAY & D. WILDASIN, *PUBLIC SECTOR ECONOMICS* 445-96 (2d ed. 1984).

14. If one considers the impact of the more easily allocated public services such as education, transportation, and health services, the progressivity of the federal tax-transfer system is substantially increased. R. MUSGRAVE & P. MUSGRAVE, *PUBLIC FINANCE IN THEORY AND PRACTICE* 261-65 (4th ed. 1984). The distributive effect of public services such as national defense or the court system is obviously much more problematic.

15. A. ATKINSON & J. STIGLITZ, *supra* note 12, at 283-84; R. MUSGRAVE & P. MUSGRAVE, *supra* note 14, at 256-65.

16. See, e.g., A. ATKINSON & J. STIGLITZ, *supra* note 12, at 29-30; R. BOADWAY & D. WILDASIN, *supra* note 13, at 419; J. PECHMAN, *WHO PAID THE TAXES, 1966-85?* 42-62 (1985) (federal tax structure progressive except at the bottom of the income scale).

17. See sources cited *supra* note 3.

18. See, e.g., Kiesling, *Violations of Scientific Impartiality in Tax Analysis*, 40 *PUB. FIN.* 157

progressive tax are considered successful only if accompanied by a convincing theory of distributive justice. The theoretical case for a regressive tax, such as one that requires equal contributions from each taxpayer, is thought so weak that it is rarely discussed.<sup>19</sup> The belief that progressive and regressive taxes must meet affirmative burdens operates as a default assumption in favor of a proportionate tax.

The assumption that a progressive tax must meet an affirmative burden while a proportionate tax need not is perhaps the core premise of Blum and Kalven's influential article, *The Uneasy Case for Progressive Taxation*.<sup>20</sup> Although first published in 1952, *The Uneasy Case* is still uniformly cited as the best analysis of progressivity in the legal literature; both its conclusions and method of argument have been widely copied by supporters of a proportionate tax.<sup>21</sup> Indeed, the viewpoint expressed in *The Uneasy Case* and the mode of analysis upon which it is premised are probably more widely accepted today than at the time the work was first published.<sup>22</sup>

In *The Uneasy Case*, Blum and Kalven define the rate structure debate as follows: "On what grounds is a progressive tax on income to be preferred to a proportionate tax on income?"<sup>23</sup> Blum and Kalven begin the article with a brief and "admittedly not conclusive" discussion of the costs of progressivity.<sup>24</sup> They assert, however, that this brief analysis is sufficient to establish a prima facie case against progressive taxation.<sup>25</sup>

Blum and Kalven then discuss and reject various ethical theories said to support a progressive tax structure. In particular, they reject the

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(1985) (arguing that "ethics free" tax analysis requires an indifference to distribution of utility and a benchmark assumption of constant marginal utility of money).

19. See Shannon, *The Tax Expenditure Concept in the United States and Germany: A Comparison*, 33 TAX NOTES 201, 209-10 (1986) (arguing that a regressive tax, while supportable on other grounds, would be inconsistent with the principles underlying the income tax).

20. Blum & Kalven, *supra* note 3. Blum repeated his view that the case for progressive taxation is uneasy in Blum, *Revisiting The Uneasy Case for Progressive Taxation*, *supra* note 3, at 16-21, and Blum, *The Uneasy Case for Progressive Taxation in 1976*, in INCOME REDISTRIBUTION 147-56 (C. Campbell ed. 1977)

21. Almost all articles that discuss the issue of progressivity refer to Blum and Kalven. See, e.g., W. KLEIN, *supra* note 3, at 12; Doernberg, *supra* note 3, at 427; Gwartney & Long, *Is the Flat Tax a Radical Idea?*, 5 CATO J. 407, 411 (1985); Lane, *A Theory of the Tax Base: The Exchange Model*, 3 AM. J. TAX POL'Y 1, 29 n.46 (1984); O'Kelley, *supra* note 3, at 728 n.3, 729 n.9; Shannon, *supra* note 19.

22. At the time *The Uneasy Case* was published there was a tradition in the economics literature in favor of progressive taxation. See, e.g., A. FIGOU, *THE ECONOMICS OF WELFARE*, 710-36 (4th ed. 1932); H. SIMONS, *supra* note 9, at 1-40; W. VICKREY, *AGENDA FOR PROGRESSIVE TAXATION* (1947); Vickrey, *An Exchange of Questions between Economics and Philosophy*, in ECONOMIC JUSTICE 35-62 (E. Phelps ed. 1973) (originally published as *The Goals of Economic Life*, in GOALS OF ECONOMIC LIFE (A. Ward ed. 1953)).

23. Blum & Kalven, *supra* note 3, at 419.

24. *Id.* at 430.

25. *Id.* at 430-44.

argument that welfare would be improved by redistributing wealth from rich to poor. The connection between wealth and welfare, Blum and Kalven state, is too tenuous to serve as the cornerstone of tax policy.<sup>26</sup>

Blum and Kalven's critique of the progressive tax, although in our opinion unconvincing, is detailed and considered. Its impact is dulled, however, by the authors' failure to subject the proportionate tax structure to an equally rigorous critique.<sup>27</sup> While Blum and Kalven closely examine and reject certain theories of distributive justice that might justify progressive taxation, they fail even to articulate what a normative basis of a proportionate tax might look like.

Since the publication of *The Uneasy Case*, academic and popular support for a flat tax has grown.<sup>28</sup> But few scholars have identified a theory of distributive justice upon which that tax could be predicated.<sup>29</sup> In fact, while there are a number of plausible theories of distributive justice that support a progressive tax or even certain regressive taxes,<sup>30</sup> it is surprisingly difficult to derive a theory of distributive justice that supports a proportionate tax. The few theories implied or suggested by flat-tax proponents are inchoate, inconsistent, or unsatisfactory.

Many commentators appear to support a proportionate tax on efficiency grounds. Richard Doernberg, for example, argues that progressivity operates as "an excise levy on increasing productivity."<sup>31</sup> Further,

26. *Id.* at 472-79. Blum and Kalven recognize, however, that welfare considerations are valid when comparing the tax burden on two individuals, one with an income below subsistence and one with an income above. *Id.* at 473.

27. *See*, H. GROVES, *TAX PHILOSOPHERS* 59 (1974) (noting failure of Blum and Kalven to defend proportional taxation).

28. Of the few articles in the legal literature published since 1952 that have taken a position on the rate structure, most have been critical of progressivity. *See, e.g.*, Blum, *Revisiting the Uneasy Case for Progressive Taxation*, *supra* note 3; Doernberg, *supra* note 3; O'Kelley, *supra* note 3. *But see* W. KLEIN, *supra* note 3.

29. Two writers who based their support of a flat tax on a theory of distributive justice are F.A. Hayek and Charles O'Kelley. *See* Hayek, *Progressive Taxation Reconsidered*, in *ON FREEDOM AND FREE ENTERPRISE* 265 (M. Sennholz ed. 1956) (arguing that high marginal rates on the wealthiest taxpayers reduce upward mobility without significantly redistributing economic advantages to the poor); O'Kelley, *supra* note 3 (making a Rawlsian argument for a proportional tax structure); *see also* J. RAWLS, *A THEORY OF JUSTICE* 277-80 (1971) (discussing tax implications of his theory of justice).

30. A regressive lump-sum tax might be justified on "efficiency" grounds. *See infra* text accompanying notes 61-62. A regressive tax might also be justified by a benefits-received theory of taxation, provided that it could be empirically demonstrated that the benefits of government to an individual rise less rapidly than his income. A proportionate or progressive tax might also be justified on benefits-received grounds, provided that government benefits to an individual were believed to rise as fast or faster than income. Most benefits-received notions of taxation rest, however, on a consent theory of government, which generally does not permit compulsory taxation. *See* K. WICKSELL, *A NEW PRINCIPLE OF JUST TAXATION* (1896), *translated and reprinted in part in CLASSICS IN THE THEORY OF PUBLIC FINANCE* 72 (R. Musgrave & A. Peacock eds. 1958); Wagner, *Normative and Positive Foundations of Tax Reform*, 5 *CATO J.* 385 (1985).

31. Doernberg, *supra* note 3, at 428.



he says, "High marginal rates have spawned a cottage industry of tax planners who have dreamed up an impressive array of income-shifting devices."<sup>32</sup> In *The Uneasy Case*, Blum and Kalven claim that a graduated rate structure "greatly complicates the positive law of taxation" and "dampens incentives."<sup>33</sup>

Efficiency fails to justify a proportionate tax for two reasons. First, as noted below, the same efficiency-based reasoning that rejects a progressive tax in favor of a proportionate tax would, if applied consistently, reject a proportionate tax in favor of a lump-sum head tax.<sup>34</sup> A head tax is "efficient" because it is unavoidable and does not change the behavior of any taxpayer.<sup>35</sup> Since a poor taxpayer pays a greater portion of her income under a head tax than does a rich person, an exclusive concern for economic efficiency implies a regressive, rather than proportional, tax. Second, the concept of economic efficiency carries normative force only when tied to the welfare of individuals. But scholars who support a proportionate tax on efficiency grounds do not articulate the link between efficiency and welfare. Indeed, some scholars, such as Blum and Kalven, who believe a proportionate tax is superior to a progressive tax on efficiency grounds reject the notion that any meaningful connection can be drawn between income and individual welfare.<sup>36</sup>

A proportionate tax might be supported more plausibly as a compromise between the perceived efficiency costs of a progressive tax and the perceived inequities of a lump sum tax. Such a "compromise" choice of a proportionate tax is suggested by Blum and Kalven's discussion of the effect of progressivity on savings. They argue that the switch to a proportionate rate structure would increase savings,<sup>37</sup> but go on to state:

A regressive tax system would be even more efficacious in promoting savings, but surely in our society the proposal to have such a system would give way before considerations of justice among taxpayers. This is sufficient evidence that the drawbacks of progression in terms of productivity must be weighed against its possible merits in allocating the tax burden fairly.<sup>38</sup>

The difficulty with this position is that it does not explain what conceptions of fairness and justice are strong enough to rule out a regressive tax

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32. *Id.*

33. Blum & Kalven, *supra* note 3, at 444.

34. *See infra* text accompanying notes 61-65.

35. In a simple partial equilibrium analysis, any tax that changes taxpayer behavior is generally assumed to be inefficient. Such a tax will tend to decrease societal wealth. R. BOADWAY & D. WILDASIN, *supra* note 13, at 174-75. The reduction in societal wealth caused by an income tax, as opposed to a lump-sum head tax, under both partial and general equilibrium analyses, is discussed *infra* text accompanying notes 57-101.

36. Blum & Kalven, *supra* note 3, at 472-79; *see also supra* note 26.

37. *Id.* at 441-42.

38. *Id.* at 443-44 (footnote omitted).

but are not strong enough to justify a progressive tax. It would appear mere chance that the opposing goals of efficiency and justice should reach equipoise at a proportionate tax.

Other possible arguments in support of a proportionate tax lack even surface plausibility. For example, a proportionate tax can be shown to leave unchanged the level of inequality as determined by measures that consider only the relative amount of income held by each income task, such as the Gini coefficient<sup>39</sup> or the variance of the logarithms of incomes. It is not clear, however, that leaving such measures unchanged is desirable,<sup>40</sup> and there are other statistical measures of inequality that are not left unchanged under a proportionate tax.<sup>41</sup>

Perhaps the most realistic, but least satisfying, explanation for the appeal of a proportionate tax lies in the concept of "prominence."<sup>42</sup> This concept is grounded in the tendency of individuals seeking to solve a problem in concert with others to settle on the most prominent, or conspicuous, solution.<sup>43</sup> Because it is so simple, a tax structure that imposes the same rate on all individuals is more "prominent" than any of the countless rate structures that impose different rates on individuals of different rate classes. Faced with a requirement to select a tax structure, an individual might choose a proportionate rate structure simply because no other rate structure comes immediately to mind. It is as if, in choosing a tax structure, the polity were a lost traveller faced with a selection of equally well trodden paths. Lacking any convincing rationale to turn right or left, the traveller continues on the path that leads straight ahead.<sup>44</sup>

Perhaps we can do no better than the lost traveller and are con-

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39. The Gini coefficient is one-half the expected difference between the incomes of two randomly selected individuals as a proportion of mean income. A Gini coefficient of zero indicates complete equality. A. ATKINSON, *supra* note 9, at 53-54; J. MEADE, *THE JUST ECONOMY* 116-17 (1976).

40. A measure of inequality explicitly incorporating normative judgments is considered in A. ATKINSON, *supra* note 40; see also A. SEN, *CHOICE, WELFARE AND MEASUREMENT* 416-20 (1982).

41. One such measure is the variance of incomes, which indicates a reduction in inequality upon the application of a proportionate tax. A. ATKINSON, *On the Measurement of Inequality*, in *SOCIAL JUSTICE AND PUBLIC POLICY* 15, 22-23 (1983). For discussions of the characteristics of various measures of inequality, see A. ATKINSON, *supra* note 9, at 53-59; J. MEADE, *supra* note 39, at 112-35.

42. See T. SCHELLING, *THE STRATEGY OF CONFLICT* 53-80 (1960). One test of the prominence concept involved a game played by isolated individuals, who were asked to respond to the following question: "Name 'head' or 'tails.' If you and your partner name the same, you both win a prize." Respondents overwhelmingly answered "heads." *Id.* at 55 n.1.

43. *Id.* at 57-58.

44. Blum and Kalven use a similar metaphor to argue against a progressive rate structure, quoting with approval a nineteenth-century economist: "The moment . . . you abandon . . . the cardinal principle of exacting from all individuals the same proportion of their income or their property, you are at sea without rudder or compass, and there is no amount of injustice or folly you may not commit." Blum & Kalven, *supra* note 3, at 461 (quoting J. McCULLOCH, *TAXATION AND*

demned to raise and redistribute a substantial portion of the world's wealth on a formula selected through intuition. But before resigning ourselves to that fate, it would be worthwhile to examine theories of distributive justice that might shape the tax structure.

### B. Entitlement and Welfarist Theories of Distributive Justice

There are many theories of distributive justice. A detailed discussion of all such theories is beyond the scope of this Article; for our purposes, it is sufficient to explore the differences between entitlement and welfarist theories of distributive justice.<sup>45</sup>

Under entitlement theories, a person deserves goods because of some action the person has taken or some trait the person possesses. One entitlement theory is the notion, sometimes associated with John Locke, that a person has a right to what he produces.<sup>46</sup> A modern variant, offered by Robert Nozick in *Anarchy, State and Utopia*, states that a person is entitled to those goods acquired in uncoerced exchanges with others.<sup>47</sup>

Welfarist theories of distributive justice, on the other hand, judge the goodness of social states solely by the welfare or utility enjoyed by the individuals in those states.<sup>48</sup> Perhaps the two best known welfarist theories are utilitarianism, which judges the welfare of a society according to the unweighted sum of the utilities of its individual members,<sup>49</sup> and the

THE FUNDING SYSTEM 142 (London 1842)). The difficulty with the metaphor is, of course, its assumption that a proportionate tax offers some sort of safe harbor.

45. Theories of distributive justice are summarized in R. MUSGRAVE & P. MUSGRAVE, *supra* note 14, at 82-101; A. SEN, *RESOURCES, VALUES AND DEVELOPMENT* 277-92, 300-02 (1984). Recent and classical writings on distributive justice in taxation are collected in *ECONOMIC JUSTICE* (E. Phelps ed. 1973).

46. For Locke's elaboration of his theory of property, see chapter 5 of J. LOCKE, *THE SECOND TREATISE OF GOVERNMENT*, 18-30 (C.B. MacPherson ed. 1980) (1690).

47. R. NOZICK, *ANARCHY, STATE, AND UTOPIA* (1974). Nozick adopts a theory of property rights under which a person has a right to property if he acquired it in accordance with the principle of "justice in acquisition" or in accordance with the principle of "justice in transfer" from someone else who was entitled to it. *Id.* at 149-294. Nozick attempts to distinguish his theory from desert theories that judge the goodness of the world according to whether the distribution of goods is consistent with a person's endowment with some quality. Instead, Nozick evaluates the justice of a person's property holdings solely according to the method by which such holdings were acquired. Thus Nozick rejects theories of distribution of the form "To each according to his X" as consequentialist and ahistorical rather than process-based. *Id.* at 198-204.

The tax system most consistent with Nozick's views is, perhaps, consent-basis taxation along the lines suggested by Wicksell. See K. WICKSELL, *supra* note 30. For recent applications of a consent-based normative theory to tax reform, see Dorn, *Introduction: The Principles and Politics of Tax Reform*, 5 *CATO J.* 361 (1985); Wagner, *supra* note 30. For critiques of entitlement theories of taxation, see Okun, *Further Thoughts on Equality and Efficiency*, in *INCOME REDISTRIBUTION* 13, 27-28 (C. Campbell ed. 1977); Vickrey, *supra* note 22.

48. Formal definitions of welfarist and other theories of distributive justice may be found in A. SEN, *supra* note 45.

49. The classic work is J.S. MILL, *UTILITARIANISM* (London 1863). The utilitarian ethic is still widely debated. See, e.g., *UTILITARIANISM AND BEYOND* (A. Sen & B. Williams eds. 1982); J.

"leximin," based loosely upon the philosophy of John Rawls, which judges the welfare of a society according to the well-being of its least well off member.<sup>50</sup> Lying between utilitarianism and the leximin with respect to preference for equality are weighted utility theories that, like utilitarianism, consider the welfare of each individual in determining social welfare, but that give greater weight to the well-being of the less well-off members of society.<sup>51</sup>

Although concern for incentive and demoralization effects may lead some welfarist theories to consider how individuals acquired goods in determining distribution, the fundamental focus of welfarist theories is often thought to be at odds with that of entitlement theories. Under entitlement theories and certain other nonwelfarist theories, an individual has a *right* to a good regardless of whether her ownership of the good is consistent with the welfare of others or even with her own welfare. For example, according to Nozick, a person who acquires a good in a just manner would have a right to the good even if it were of little or no value to her and of enormous value to others.<sup>52</sup>

In contrast, welfarist theories consider the fact that a person has created a good only to the extent that allocating goods to their creators improves social welfare by encouraging production or stability. The creator would not, however, have a claim to the good derived solely from the act of creation. Thus, welfarist theories of distributive justice permit taxation either to finance public goods or to redistribute income, if the well-being of individuals in the society is thereby improved.

### C. A Welfarist Theory of Distributive Justice

In the following sections we discuss the implications of welfarist theories of distributive justice for the tax structure. We focus on welfarist

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SMART & B. WILLIAMS, UTILITARIANISM: FOR AND AGAINST (1973). For an axiomatic derivation of utilitarianism, see Harsanyi, *Cardinal Welfare, Individualistic Ethics, and Interpersonal Comparisons of Utility*, 63 J. POL. ECON. 309 (1955).

50. J. RAWLS, *supra* note 29. The leximin is derived from the second of Rawls' two principles of justice, which maintains that society should be structured so as to maximize the amount of primary goods held by the least well off class. *Id.* at 60-61, 101. This principle is to guide societal structure only after society has implemented Rawls' first principle of justice, which calls for the maximization of the liberty of each individual, consistent with the preservation of a like amount of liberty for others. *Id.* at 60. The welfarist leximin, unlike Rawls' theory, maximizes the welfare, not the primary goods, enjoyed by the worst off individual and considers the distribution of liberty only as it affects the level of welfare. See A. ATKINSON & J. STIGLITZ, *supra* note 12, at 339-40.

Under a leximin, if the least well off individuals in two societies are equally well off, the societies are judged by the welfare of the second least well off individual and so on. If only the welfare of the least well off individuals are considered, then the term "maximin" is used rather than leximin. *Id.*

51. Welfarist theories that weight the welfare of the better off members of society more heavily than the welfare of the less well-off are logically possible but appear to have no adherents. The least egalitarian of the plausible welfarist theories is utilitarianism.

52. R. NOZICK, *supra* note 47, at 30.

rather than entitlement theories, in part because we believe that such ethics, while not without problems, have more to commend them. It seems plausible, at least, to judge government policies by the impact those policies have on the welfare of the individuals in the society.

One particularly attractive feature of a welfarist analysis of taxation is its responsiveness to the efficiency effects of various tax structures—effects that nearly everyone finds relevant. Another virtue of welfarist theories is their consistency with the Pareto principle: They view as desirable any change that makes some member of society better off without making any other member worse off.<sup>53</sup> Entitlement theories, on the other hand, may not endorse a tax that increases the welfare of an “undeserving” individual even if that change does not reduce the welfare of any other person. While it may be possible to formulate a coherent ethical theory that rejects the Pareto principle, acceptance of this principle is frequently considered a prerequisite of any acceptable social decision-making rule.<sup>54</sup>

A final reason for our focus on welfarist theories is that entitlement theories do not clearly justify any rate structure. *Any* tax imposed on an unwilling taxpayer may be inconsistent with a system based on the view that a person has a right to what he produces. Under such an entitlement theory, a state might be permitted only to levy taxes that lead to Pareto improvements—making every member of the society as well off or better off than she was before the tax. For example, compulsory taxation might be justified to maintain a government strong enough to protect the rights of the individuals living under it. Even if this notion is accepted, however, it provides little guidance as to the appropriate rate structure.

The tax implications of welfarist ethics have been explored in the important economics literature on “optimal taxation.”<sup>55</sup> Mathematical models derived from that literature can be used to determine the optimal rate structure under a wide variety of economic assumptions and welfarist ethics.

Welfarist ethics are not without their own difficulties, however. Many reject such theories because they do not value rights except to the extent that they improve the welfare of individuals. Others find the inter-

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53. See A. ATKINSON & J. STIGLITZ, *supra* note 12, at 339-40. This is true even under the leximin, which, generally speaking, judges social states by the well-being of the worst off member of the state since, if the level of welfare of the worst off individual is the same in two social states, one looks to the well-being of successively better off individuals to order the states. A. SEN, *supra* note 40, at 24-25.

54. See Y. NG, WELFARE ECONOMICS: INTRODUCTION AND DEVELOPMENT OF BASIC CONCEPTS 30-32 (1980); Michelman, *Property, Utility, and Fairness: Comments on the Ethical Foundations of “Just Compensation” Law*, 80 HARV. L. REV 1165, 1176 (1967). The Pareto principle is shown to be inconsistent with absolute individual rights in Sen, *The Impossibility of a Paretian Liberal*, 78 J. POL. ECON. 152 (1970).

55. See *infra* text accompanying notes 178-241.

personal comparisons of utility required by welfarist theories to be not only difficult to make, as most supporters of welfarism would admit, but also meaningless.<sup>56</sup>

The rejection of an exclusively welfarist ethic does not necessarily imply acceptance of an ethic that is exclusively entitlement-based. Conceivably, a just society could consider both the welfare of individuals and entitlements in determining a fair system of distribution. Optimal taxation analysis should be of interest to those who believe in a mixed ethic, since it provides insight into the tax structure inspired by any theory of distributive justice that is at least partly concerned with individual welfare.

In Part II, we discuss the efficiency costs of a progressive rate structure. We then use the methods of optimal taxation to explore how the efficiency costs and redistributive features of various progressive rate structures comport with a wide variety of welfarist ethics, ranging from utilitarianism to the Rawlsian leximin.

## II

### AN ANALYSIS OF THE PRIMA FACIE CASE AGAINST PROGRESSIVITY

The prima facie case against progressivity argues that the progressive rate structure is undesirable because it reduces labor efficiency and output, increases the cost and complexity of tax administration, promotes the misdeployment of capital, and reduces tax compliance. In this Part, we critically analyze each of these criticisms and find that each is overstated.

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56. The seminal attack on interpersonal comparisons of utility is contained in L. ROBBINS, *AN ESSAY ON THE NATURE AND SIGNIFICANCE OF ECONOMIC SCIENCE* 136-43 (2d ed. 1935). Robbins argued that there was no way of "scientifically" comparing the utility levels of different people. *Id.* at 139-40. Robbins' views were accepted by most economists and public choice theorists; by 1952 Blum and Kalven reflected the conventional wisdom in their rejection of interpersonal utility comparisons. See Blum & Kalven, *supra* note 3, at 472-79; Scitovsky, *The State of Welfare Economics*, 41 *AM. ECON. REV.* 303 (1951) (noting and deploring the widespread rejection of interpersonal utility comparisons).

In recent years, some economists have argued that noncomparable ordinal utility measures provide insufficient information for social decisionmaking and thus interpersonal comparisons may be necessary. See, e.g., Y. NG, *supra* note 54, at 12-15; A. SEN, *supra* note 40, at 264-68; J. MEADE, *supra* note 39, at 20-29.

Lerner has demonstrated that even if we cannot determine how additional consumption increases the welfare of any particular individual, we can still determine that expected utility is maximized by the equalization of incomes as long as we know that for each person additional units of consumption increase utility at a diminishing rate. A. LERNER, *THE ECONOMICS OF CONTROL* 29-32 (1944). Sen has shown that this result generalizes to all welfarist social welfare functions. Sen, *On Ignorance and Equal Distribution*, 63 *AM. ECON. REV.* 1022 (1973).

### A. Effects of Progressivity on the Labor Supply

#### 1. Purported Decline in Efficiency and Output

The progressive rate structure is often criticized as inefficient. This criticism centers around two arguments. First, progressivity is claimed to reduce work effort. Second, progressivity is said to increase the complexity of the tax law and thereby increase the costs associated with tax planning and compliance.

The progressive rate structure's reduction of the labor supply has often been considered a strong argument for a proportionate tax.<sup>57</sup> Blum and Kalven, for example, cite reduced work effort, together with the increased costs of tax planning, as establishing "a sort of *prima facie* case" in favor of a proportionate tax structure.<sup>58</sup> More recently, an increase in work effort has been predicted by sponsors of legislation designed to reduce the progressivity of the tax structure.<sup>59</sup> Most supporters of a progressive tax structure accept the notion that progressivity entails a "trade-off" between equity and efficiency.<sup>60</sup>

Individuals who believe that progressivity adversely affects labor output are unlikely to believe that the tax system is the sole determinant of work effort. But it is generally assumed that the net effect of a progressive rate structure is to reduce significantly labor output and efficiency. One scholar concludes:

By progressively reducing the net return from any given increment of gross income or gain, progressive taxation discourages additional efforts or activities, or a change in the direction of efforts or activities, which might be prompted by greater material rewards.<sup>61</sup>

The intuition behind the view that an income tax reduces work effort is not difficult to apprehend. Individuals value both consumption and leisure, so that an individual will work only if the value of the additional consumption she will enjoy by doing so is at least as great as the value of the leisure she gives up. Imposing an income tax reduces the amount of additional consumption an individual will be able to enjoy by working an extra hour. If all else is equal, an individual will be less will-

57. See, e.g., R. HALL & A. RABUSHKA, *THE FLAT TAX* 23, 70-72 (1985); Blum & Kalven, *supra* note 3, at 444; Johnson, *President Reagan's Modified Flat Tax: Analysis and Comparison*, 5 *CATO J.* 499, 502-03 (1985); O'Kelley, *supra* note 3, at 743; Smith, *supra* note 3, at 456; Vickrey, *supra* note 3, at 447.

58. Blum and Kalven, *supra* note 3, at 430.

59. See *Major Tax Reform Options: Hearings Before the Senate Comm. on Finance*, 98th Cong., 2d Sess. pt. 1, at 58, 61 (1984) (statement of Senator Kasten that "the steep and graduated tax schedule provides an incentive to avoid activities that are subject to high taxes—activities such as work"); *id.* at 285, 287 (statement of Senator Quayle, Sponsor of the SELF Tax Plan Act of 1985). See generally *1985 Tax Reform: Hearing on S.409, S.411 and S.1006 Before the Senate Comm. on Finance*, 99th Cong., 1st Sess (1985).

60. See, e.g., A. OKUN, *EQUALITY AND EFFICIENCY: THE BIG TRADEOFF* (1975).

61. Smith, *supra* note 3, at 456; see also Doernberg, *supra* note 3, at 445-46.

ing give up leisure because the additional consumption earned will be reduced.

Consider, for example, an individual with a pre-tax wage of \$10 per hour who would be willing to sacrifice an hour of the leisure she currently enjoys in return for \$9 of consumption. In the absence of a tax, the individual will work that hour and will receive a net benefit of \$1 because she receives consumption worth \$10 for the sacrificed leisure worth \$9. On the other hand, if an income tax of 20% is imposed, the individual will not work the additional hour, because the sacrifice of \$9 of leisure will yield only \$8 of consumption. This change in the willingness of individuals to sacrifice leisure for consumption is the "substitution effect" of the tax.

The tax-induced distortion of the trade-off between leisure and consumption is inefficient. Indeed, in this case the tax has benefitted no one. The individual is worse off because she is denied the gain she would have made by exchanging leisure for consumption; the employer is worse off because he loses the benefit of the labor; and the fisc is not enriched, because no tax revenues are raised. This tax-induced distortion could be avoided by a head or lump-sum tax, which would be due regardless of income and therefore would not influence the work-leisure decision.

The above example is simplistic, of course. An income tax seldom causes an individual to stop working entirely. Moreover, any tax based on income will have an "income effect" as well as a substitution effect. The income effect reflects the fact that a poorer individual will value a given amount of income more than a richer individual. For a poorer taxpayer, therefore, a tax that reduces net wealth tends to increase the value of additional income and the willingness to work. The increase in work effort due to the reduction in income by a tax may more than offset the decrease in work effort due to the substitution effect.

It is nonetheless true that an income tax, unlike a lump-sum tax, drives a wedge between the value of an individual's labor and the amount an individual receives for that labor. This wedge, rather than the aggregate effect on work effort, creates the efficiency loss. An increase in the marginal rates increases this wedge between the value of an individual's labor and the amount she receives for it. Very high marginal rates are quite inefficient; the efficiency costs of a tax system vary with the square of the marginal tax rate.<sup>62</sup> An increase in the marginal tax rate from 70% to 80%, for example, causes more than twice as great an efficiency loss as an increase from 30% to 40%.<sup>63</sup> It is high marginal rates, and not

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62. R. BOADWAY & D. WILDASIN, *supra* note 13, at 387-89.

63. This measure of welfare loss is derived from a partial equilibrium analysis. *Id.* at 391. However, a rate increase has also been found to generate a more than proportionate welfare loss under general equilibrium analysis. See Fullerton, Shoven & Whalley, *Replacing the U.S. Income*



progressivity, that produce large efficiency losses.

A progressive tax does not necessarily require steep marginal rates. The effective tax burden on each income class under current tax law, for example, is about the same as the burden under the law prior to the enactment of the Tax Reform Act of 1986, yet marginal rates on almost all taxpayers are lower because the tax base is broader. As discussed below, a combination of cash grants and constant marginal rates can produce a fairly high degree of progressivity with relatively modest marginal rates.<sup>64</sup>

Moreover, a switch from a progressive to a proportionate tax that raised equal revenue would not eliminate efficiency costs, nor would it reduce efficiency costs for all taxpayers. Instead, a proportionate tax would produce higher marginal rates for lower-income taxpayers and lower marginal rates for higher-income taxpayers. Although the mean marginal rate, as adjusted to reflect the fact that high-income individuals would have more dollars subject to tax than low-income individuals, would be somewhat lower under a proportionate tax than under a regressive or progressive tax that raised equal revenue,<sup>65</sup> the precise impact of the elimination of progressivity would depend on the distribution of income in the society and the particular rate structure chosen.

Progressivity, then, is responsible for only a fraction of the efficiency costs associated with the income tax. Nevertheless, if the efficiency costs of the income tax are extremely high, even a modest portion of those costs might be unacceptable. Therefore, it is important to examine the total labor-related costs associated with the tax.

## 2. Empirical Approaches and Estimation

The responsiveness of individuals to changes in their wage rates (with total wealth held constant) is measured by the compensated elasticity of the labor supply.<sup>66</sup> A high compensated elasticity indicates that the wage rate has a substantial effect on work effort so that individuals will work fewer hours if their effective wage rate is reduced by an income tax. A low compensated elasticity indicates that work effort is only

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*Tax with a Progressive Consumption Tax: A Sequenced General Equilibrium Approach*, 20 J. PUB. ECON. 3 (1983).

64. See *infra* text accompanying notes 177-241.

65. The reduction in the adjusted or weighted mean marginal rate may be illustrated by imagining a two-taxpayer society in which one taxpayer earns an hourly wage of \$30 and the other taxpayer earns an hourly wage of \$10. Assume the replacement of a two-level 30% and 10% progressive tax with a proportionate tax of 20%. Under the progressive tax, a \$30 wage was taxed at a 30% rate and a \$10 wage was taxed at a 10% rate, for a weighted mean of 25%. The proportionate tax produces a weighted mean of 20%. The nonweighted mean would be 20% in either case.

66. For a discussion and formal definition of compensated elasticity, see R. BOADWAY & D. WILDASIN, *supra* note 13, at 248-55, 297-301.

slightly affected by changes in the wage rate so that a reduction in the effective wage rate will not cause a significant reduction in hours of labor. If the compensated elasticity is low, the efficiency costs of an income tax will be small and the costs associated with progressivity smaller still.

At least four different approaches have been used to estimate compensated elasticity: cross-section studies,<sup>67</sup> controlled experiments,<sup>68</sup> time-series studies,<sup>69</sup> and direct interviews.<sup>70</sup> Each approach raises both recurrent and unique sets of methodological issues, and a given study may attack those issues in a manner different from other studies.<sup>71</sup> Notwithstanding the great diversity in methodology, however, estimates

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67. Cross-section studies examine the relationship across society between labor supply, wage rate, and nonwage income. A finding that, among individuals with equal combined wage and nonwage income, low wage rates are associated with short workweeks suggests that wages have a large effect on the marginal tradeoff between work and leisure. If, in such circumstances, low wages reduce work effort, taxes would also reduce work effort, since taxes reduce effective wages. The main drawback of cross-section studies is that the approach shows only correlation, not causation. A positive relationship between wage rate and work effort may suggest that high wages increase labor supply, but it may also suggest that the willingness to work longer hours leads to higher wages.

Examples of recent cross-section studies include: Cain & Dooley, *Estimation of a Model of Labor Supply, Fertility, and Wages of Married Women*, 84 J. PUB. ECON. 179 (1976); Cogan, *Fixed Costs and Labor Supply*, 49 ECONOMETRICA 945 (1981); Hausman, *Stochastic Problems in the Simulation of Labor Supply*, in BEHAVIORAL SIMULATION METHODS IN TAX POLICY ANALYSIS 47 (M. Feldstein ed. 1983); Ippolito, *Income Tax Policy and Lifetime Labor Supply*, 26 J. PUB. ECON. 327 (1985). Leading cross-section studies are collected in INCOME MAINTENANCE AND LABOR SUPPLY: ECONOMETRIC STUDIES (G. Cain & H. Watts eds. 1973) [hereinafter INCOME MAINTENANCE] and TAXATION AND LABOR SUPPLY (C. Brown ed. 1981). An excellent summary of cross-section literature is found in M. KILLINGSWORTH, LABOR SUPPLY (1983).

68. See, e.g., A GUARANTEED ANNUAL INCOME: EVIDENCE FROM A SOCIAL EXPERIMENT (P. Robins, R. Spiegelman, S. Weiner & J. Bell eds. 1980); THE NEW JERSEY INCOME-MAINTENANCE EXPERIMENT, VOL. II: LABOR-SUPPLY RESPONSES (H. Watts & A. Rees eds. 1976); WELFARE IN RURAL AREAS: THE NORTH CAROLINA-IOWA INCOME MAINTENANCE EXPERIMENT (J. Palmer & J. Pechman eds. 1978). In theory, the correlation-causation problem described in relation to cross-section studies could be circumvented through controlled experiments in which individuals in similar economic circumstances are subject to varying tax rates and are given varying amounts of nonemployment income. Costs and political controversy have limited this approach to short-term experiments with individuals below or near the poverty level. The results of such experiments are obviously biased by the sample group and period. Moreover, the controlled experiments have suffered from design defects and the inability to maintain "laboratory" conditions.

69. Time-series studies measure the relationship between wages and work effort over time, and are extremely sensitive to exogenous influences on the economy. For example, increased work force participation by members of certain minority groups may be caused more by a lessening of discrimination than an increase in wage rates. See, e.g., Abbott & Ashenfelter, *Labour Supply, Commodity Demand and the Allocation of Time*, 43 REV. ECON. STUD. 389 (1976); Jones, *New Estimates of Hours of Work per Week and Hourly Earnings, 1900-1957*, 45 REV. ECON. & STATISTICS 374 (1963).

70. Direct interviews simply ask taxpayers how they would respond to a change in the tax rate. This approach requires taxpayers to predict a reaction to a counterfactual situation. See, e.g., Break, *Income Taxes and Incentives to Work: An Empirical Study*, 57 AM. ECON. REV. 529 (1957); Brown & Levin, *The Effects of Income Taxation on Overtime: The Results of a National Survey*, 84 ECON. J. 833 (1974).

71. See *supra* notes 67-70. All approaches raise certain recurring issues such as the selection of data sets and the choice of statistical methods.

of compensated elasticity cluster around a reasonably narrow range. A majority of studies have found the compensated elasticity with respect to labor for males (the dominant wage-earner group) of all income classes to be low, ranging from 0.1 to 0.3.<sup>72</sup> With total income held constant, a tax cut that increases after-tax wages by 10% would be expected to increase labor supply by less than 3%.<sup>73</sup>

The effect on work effort of a compensated elasticity of 0.3 may be illustrated by hypothesizing a graduated progressive tax structure with

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72. The authors reviewed the conclusions of 21 studies published in the last 15 years. Thirteen reported compensated elasticity for males (or, where reported figures are disaggregated by race or income and no aggregate figures are given, for white males or males with incomes above the poverty line) of less than 0.2; three reported compensated elasticity of above 0.2; and five reported compensated elasticities that ranged above and below 0.2. The studies reviewed are: A. TELLA, D. TELLA & C. GREEN, *THE HOURS OF WORK AND FAMILY INCOME RESPONSE TO NEGATIVE INCOME TAX PLANS: THE IMPACT ON THE WORKING POOR* (1971); Ashenfelter & Heckman, *Estimating Labor-Supply Functions*, in *INCOME MAINTENANCE*, *supra* note 67, at 265; Ashworth & Ulph, *Endogeneity I: Estimating Labour Supply with Piecewise Linear Budget Constraints*, in *TAXATION AND LABOUR SUPPLY*, *supra* note 67, at 53; Ashworth & Ulph, *Household Models: On the Structure of Family Labor Supply Decisions*, in *TAXATION AND THE LABOUR SUPPLY*, *supra* note 67, at 117; Atkinson & Stern, *On the Switch from Direct to Indirect Taxation*, 14 *J. PUB. ECON.* 195 (1980); Atkinson & Stern, *On Labour Supply and Commodity Demands*, in *ESSAYS IN THE THEORY AND MEASUREMENT OF CONSUMER BEHAVIOR* 265 (A. Deaton ed. 1981); Atrostic, *The Demand for Leisure and Nonpecuniary Job Characteristics*, 72 *AM. ECON. REV.* 428 (1982); Blundell & Walker, *Modelling the Joint Determination of Household Labour Supplies and Commodity Demands*, 92 *ECON. J.* 351 (1982); Boskin, *The Economics of Labor Supply*, in *INCOME MAINTENANCE*, *supra* note 67, at 163; Brown, Levin & Ulph, *Estimates of Labour Hours Supplied by Married Male Workers in Great Britain*, 23 *SCOT. J. POL. ECON.* 261 (1976); Fleisher, Parsons & Porter, *Asset Adjustments and Labor Supply of Older Workers*, in *INCOME MAINTENANCE*, *supra* note 67, at 279; Garfinkel, *On Estimating the Labor-Supply Effects of a Negative Income Tax*, in *INCOME MAINTENANCE*, *supra* note 67, at 205; Hall, *Wages, Income, and Hours of Work in the U.S. Labor Force*, in *INCOME MAINTENANCE*, *supra* note 67, at 102; Ham, *Estimation of a Labor Supply Model with Censoring Due to Unemployment and Underemployment*, 49 *REV. ECON. STUD.* 335 (1982); Hausman, *Labor Supply*, in *HOW TAXES AFFECT ECONOMIC BEHAVIOR* 27 (H. Aaron & J. Pechman eds. 1981); Hausman & Wise, *Social Experimentation, Truncated Distributions, and Efficient Estimation*, 45 *ECONOMETRICA* 919 (1977); Kniesner, *An Indirect Test of Complementarity in a Family Labor Supply Model*, 44 *ECONOMETRICA* 651 (1976); Ruffell, *Endogeneity II: Direct Estimation of Labour Supply Functions with Piecewise Linear Budget Constraints*, in *TAXATION AND LABOUR SUPPLY*, *supra* note 67, at 101; Wales & Woodland, *Labour Supply and Progressive Taxes*, 46 *REV. ECON. STUD.* 83 (1979); J. Dickinson, *Revealed Preferences, Functional Forms and Labor Supply* (Discussion Paper No. 546-79, Institute for Research on Poverty, University of Wisconsin) (1979); R. Ransom, *Estimating Family Labor Supply Models Under Quantity Constraints* (Working Paper No. 150, Industrial Relations Section, Princeton University) (1982). Many of these studies are summarized in *INCOME MAINTENANCE*, *supra* note 67, at 332-33, and M. KILLINGSWORTH, *supra* note 67, at 119-21, 193-94.

73. A few recent studies have challenged the methodology used in traditional studies and have found the compensated elasticity to be greater than 0.3. See, e.g., Hausman, *supra* note 67; Hausman, *supra* note 72. The methodology and data base of these studies, however, are problematic. See Browning, *A Critical Appraisal of Hausman's Welfare Cost Estimates*, 93 *J. POL. ECON.* 1025 (1985); Heckman, *Comment*, in *BEHAVIORAL SIMULATION METHODS IN TAX POLICY ANALYSIS* 70-82 (M. Feldstein ed. 1983). Moreover, these studies have produced implausible compensated elasticity estimates. The leading revisionist study, for example, predicts that a male currently working 40 hours per week in a high wage job would choose to work over 67 hours per week if he were offered overtime at time-and-a-half wage rate. Browning, *supra*, at 1031.

marginal rates of 33% and 20% that is replaced by a proportionate tax of 25% without altering the amount of revenue collected. The reduction in the top marginal tax rate would increase the after-tax wage rate of the high-bracket taxpayers by about 13%.<sup>74</sup> Assuming a compensated elasticity of 0.3, this reduction would trigger a 3.9% increase in the labor supplied by those taxpayers.<sup>75</sup> On the other hand, the increase in the bottom marginal rate would decrease the after-tax wage rate of the lower-bracket taxpayers by about 6%.<sup>76</sup> This would trigger a 1.8% decrease in the labor supplied by those taxpayers.<sup>77</sup> Thus, the net effect of the change will be less than a 3.9% increase in the labor supply (with the precise result dependent on the distribution of taxpayers and income levels).

The relatively modest estimates of how responsive most individuals are to changes in the wage rate suggest that work is conditioned more by social forces and mores than by wages.<sup>78</sup> Work plays a central role in determining an individual's social standing and self-esteem.<sup>79</sup> Moreover, even individuals who view work primarily as a source of wages may not have the freedom to vary their work week.<sup>80</sup>

Estimates of aggregate labor-related efficiency costs vary. One recent study estimated that the total efficiency costs of the 1984 federal tax system ranged from 7.5% to 28.5% of tax revenue.<sup>81</sup> The tax rate

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74. The 33% progressive bracket would reduce a before-tax wage of \$10 per hour to an after-tax wage of \$6.67 per hour. The 25% proportionate tax would reduce a before-tax wage of \$10 to an after-tax wage of \$7.50 per hour. The \$7.50 per hour after-tax wage rate under the proportionate tax is approximately 13% greater than the \$6.67 per hour after-tax wage rate under the progressive tax.

75. A compensated elasticity of 0.3 times a 13% wage increase equals a 3.9% increase in labor output.

76. The 20% progressive tax would reduce a before-tax wage of \$10 per hour to an after-tax wage of \$8 per hour. The 25% proportionate tax would reduce a before-tax wage of \$10 to an after-tax wage of \$7.50 per hour. The \$7.50 per hour after-tax wage rate under the proportionate tax is approximately 6% less than the \$8 per hour after-tax wage rate under the progressive tax.

77. A compensated elasticity of 0.3 times a 6% wage reduction equals a 1.8% decrease in labor output. The 1.8% figure measures only the substitution effect. This is appropriate since it is the substitution effect that results in efficiency loss. As noted in the text accompanying notes 61-62, the imposition of a tax also will cause an income effect, which will increase work effort. The combined impact of the income and substitution effects is measured by the uncompensated elasticity of labor. Most estimates of uncompensated elasticity for males are either negative or close to zero, indicating that an income tax either increases work effort or leaves work effort unaffected. See M. KILLINGSWORTH, *supra* note 67, at 119-22, 185.

78. A. ATKINSON, *supra* note 9, at 44-45; see also Break, *supra* note 70 (survey of taxpayers found taxes played little role in the decision to work); Brown & Levin, *supra* note 70 (same results).

79. Gramm, *Labor, Work, and Leisure: Human Well-Being and the Optimal Allocation of Time*, 21 J. ECON. ISSUES 167, 175 (1987).

80. The long-run elasticity of the labor supply is likely to be somewhat greater than the short-run elasticity because individuals will be able to modify their educational investment and career choice in light of the expected after-tax wage. See Diamond, *Negative Taxes and the Poverty Problem—A Review Article*, 21 NAT'L TAX J. 288, 291 (1968).

81. Browning, *On the Marginal Welfare Cost of Taxation*, 77 AM. ECON. REV. 11 (1987).

used to determine such costs included social security taxes, sales and excise taxes borne by labor, and other income-related taxes; efficiency gains from replacing only the income tax with a lump-sum tax would be a smaller percentage of tax revenue.<sup>82</sup> Another study estimated that the 1973 United States income tax produced an efficiency loss of somewhat more than 20% of tax revenue.<sup>83</sup> This estimate included gains attributable to the elimination of certain tax preferences, such as the favorable treatment of owner-occupied housing. A study of the 1973 United Kingdom income tax structure estimated its efficiency costs to be about 4% of tax revenue.<sup>84</sup>

Replacing the studied tax structures with a proportionate tax would generate less labor-related efficiency gains than these estimates. This is because the switch to a proportionate tax, unlike the switch to a lump-sum tax, would reduce rather than eliminate the efficiency losses by high-income taxpayers and would tend to increase the efficiency costs borne by low-income taxpayers.

On the other hand, for some policymaking purposes, aggregate efficiency costs may be less important than marginal costs. The marginal cost of a tax is the cost of raising an additional dollar of tax revenue. Such costs are difficult to measure, but they are likely to be substantial. Recent estimates of the marginal cost of the United States tax structure, for example, range from under 10% to over 100%.<sup>85</sup>

In sum, although the claim that progressivity substantially reduces work effort must be viewed with skepticism, significant efficiency costs may be incurred if progressivity leads to high marginal rates. Appropriate policymaking requires an explicit weighing of these costs against the benefit of redistribution.

### 3. *A Targeted Approach to Labor-Supply Efficiency*

An analysis of the impact of taxation on the aggregate labor supply may provide insufficient information for policymaking if different segments of the labor market vary in their responsiveness to the tax rate. Disaggregated labor supply studies suggest that two socioeconomic groups are particularly influenced by high marginal rates. The largest and most significant of these groups for policy purposes is married women. Nearly all studies of the labor supply find that married women in general, and married women with young children in particular, are

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82. *Id.* at 14-15.

83. Fullerton, Shoven & Whalley, *supra*, note 63, at 7.

84. J. PIGGOTT & J. WHALLEY, U.K. TAX POLICY AND APPLIED GENERAL EQUILIBRIUM ANALYSIS (1985).

85. Ballard, Shoven & Whalley, *General Equilibrium Computations of the Marginal Welfare Costs of Taxes in the United States*, 75 AM. ECON. REV. 75 (1985) (marginal costs range from 15% to 50%); Browning, *supra* note 81, at 11 (marginal costs range from under 10% to well over 100%).

much more responsive to changes in the tax rate than are men or single women. Estimates place the compensated elasticity of labor for married women close to 1.0;<sup>86</sup> the substitution effect of a tax-induced 20% decrease in the after-tax wage rate would be expected to cause a 20% decline in work effort.

The responsiveness of married women to changes in the effective wage rate may be explained in part by the fact that although men who enter the paid work force receive strong social approval, women who enter the paid work force may face social indifference or disapproval.<sup>87</sup> Therefore, men may work for social reasons while married women may work only if the economic return or job satisfaction outweighs the social pressure to remain home.

The responsiveness of married women to wage rates may also be explained by social and economic factors that often require women to take low-paying service jobs such as sales clerks or waitresses.<sup>88</sup> These jobs, while in many respects undesirable, generally permit easy exit from and entrance to the labor force, plus some flexibility of hours while employed.<sup>89</sup>

Factors that are less directly related to gender also may account for the responsiveness of married women to the wage rate. Married women are usually members of two-income households. In any two-income household, the ability of one earner to leave the work force is enhanced because there will be income even without the foregone wages. In such circumstances, the spouse whose labor decision is most marginal (generally, the lower paid spouse) will not participate in the formal marketplace unless his or her after-tax wages rise above the untaxed imputed value of the household services otherwise performed. Current estimates of labor supply elasticity focus on the responsiveness of married women; a more

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86. Five out of the 14 "second generation" studies discussed in M. KILLINGSWORTH, *supra* note 67, at 193-99, 202, estimated the compensated elasticity of the supply of labor by married women at greater than 1.0, and two estimated compensated elasticity at ranges both above and below 1.0. Only two studies estimated compensated elasticity at less than 0.4. *Id.* Earlier studies, with somewhat lower compensated elasticities, are cited in *id.* at 122-23 and in Cain & Watts, *Toward a Summary and Synthesis of the Evidence*, in INCOME MAINTENANCE, *supra* note 67, at 328, 336-37. Estimation of the compensated elasticity for married women raises the methodological problems discussed *supra* at note 67.

87. See Harris, *Careers, Conflict, and Children: The Legacy of the Cult of Domesticity*, in CAREER AND MOTHERHOOD 55 (A. Roland & B. Harris eds. 1979); Brown, *Sex Typing in Occupational Preferences of High School Boys and Girls*, in SEX ROLE ATTITUDES AND CULTURAL CHANGE 81 (I. Gross, J. Downing & A. D'Heurle eds. 1982); Rodman & Safilios-Rothschild, *Weak Links in Men's Worker-Earner Roles: A Descriptive Model*, in FAMILY AND WORK 55, 57 (M. Brinkerhoff ed. 1984).

88. Holden & Hasen, *Part-Time Work, Full-Time Work, and Occupational Segregation*, in GENDER AND THE WORKPLACE 217 (C. Brown & J. Pechman eds. 1987).

89. Carey & Hazelbaker, *Employment Growth in the Temporary Help Industry*, MONTHLY LAB. REV., April 1986, at 37, 38.

precise analysis would be likely to find *all* second earners to be highly responsive to changes in the wage rate.

Current tax policy increases the welfare losses resulting from the high responsiveness of second earners to the wage rate by levying high marginal rates on their income. Even second earners drawing a modest wage may be taxed at a high marginal rate because their tax rate is determined by the level of combined family income rather than by their own earnings. Many commentators have criticized the steep marginal rates on second earners as inefficient and unfair.<sup>90</sup>

A second group that appears responsive to the wage rate is comprised of elderly persons.<sup>91</sup> Middle-class and upper-class elderly may have sufficient funds that they need no longer work. Other elderly individuals may be reluctant to work because of ill health or a desire to enjoy deferred leisure activities.<sup>92</sup> Moreover, the elderly may perform part-time labor that may easily be varied, such as consulting and clerking.<sup>93</sup> Finally, the decision not to work may entail no social stigma since older individuals are often not expected to work.<sup>94</sup>

Current tax policy strongly discourages work by elderly individuals. At certain income levels, individuals between the ages of 65 and 70 lose 50¢ of social security benefits for every dollar they earn, up to a loss of half of their benefits.<sup>95</sup> Moreover, elderly individuals must include in taxable income up to half of otherwise-excluded social security benefits at a rate of 50¢ for each dollar of income they receive in excess of \$25,000.<sup>96</sup> These reductions in benefits cause many elderly individuals to face a marginal rate of over 70% and a few elderly individuals to face rates greater than 100%.<sup>97</sup>

The responsiveness of second wage earners and the elderly to effec-

90. See, e.g., Bittker, *Federal Income Taxation and the Family*, 27 STAN. L. REV. 1389 (1975); Blumberg, *Sexism in the Code: A Comparative Study of Income Taxation of Working Wives and Mothers*, 21 BUFFALO L. REV. 49 (1971); Gann, *Abandoning Marital Status as a Factor in Allocating Income Tax Burdens*, 59 TEX. L. REV. 1 (1980); Note, *The Case for Mandatory Separate Filing by Married Persons*, 91 YALE L.J. 363 (1981).

91. Most studies of labor-supply responsiveness focus on individuals under age 65. There is evidence, however, that changes in the wage rate may have a significant impact on work effort of the elderly. See W. BOWEN & T.A. FINEGAN, *THE ECONOMICS OF LABOR FORCE PARTICIPATION* 284-86 (1969).

92. See L. COPPERMAN & F. KEAST, *ADJUSTING TO AN OLDER WORK FORCE* 42-43 (1983).

93. See *id.* at 34-48; Parnes & Nestel, *The Retirement Experience*, in *WORK AND RETIREMENT* 155, 168 (H.S. Parnes ed. 1981).

94. See M. DOERING, S. RHODES & M. SCHUSTER, *THE AGING WORKER* 85-89 (1983) (older individuals considered less suitable for employment than younger individuals); Fine, *Older Workers in Pursuit of New Careers*, in *TOWARD AN INDUSTRIAL GERONTOLOGY* 39 (H.L. Sheppard ed. 1970).

95. See 42 U.S.C. § 403(b) (1986).

96. I.R.C. § 86 (West Supp. 1987). For joint returns, the phaseout of the exclusion begins when the taxpayers' income exceeds \$32,000 rather than \$25,000. *Id.*

97. Kemp, *A Fair, Simple, and Pro-Growth Tax Reform*, 5 CATO J. 481, 493-94 (1985).

tive wage rates suggests that high marginal rates on the income of these groups impose substantial efficiency costs. The reduction in overall progressivity urged by proponents of a flat tax would reduce these costs. Reducing overall tax rates to a level that would be optimal for members of these groups, however, would probably also seriously diminish total revenues. Moreover, a reduction in overall progressivity would be a terribly expensive and imprecise way to address the needs of discrete socio-economic groups.

A more effective way to reduce the efficiency costs of the income tax would be to target reductions of the marginal tax burden to these highly responsive groups. For example, the marginal tax burden on married women—or more generally, working spouses in two-earner families—might be reduced by treating each spouse as a separate individual for tax purposes. Alternatively, the two-earner deduction, which was eliminated by the Tax Reform Act of 1986,<sup>98</sup> might be restored. A deduction for work-related child care expenses also might alleviate the inefficiency caused by the nontaxation of self-provided child care.<sup>99</sup> Eliminating the phaseout of social security benefits would reduce the marginal tax on the elderly. Tax burdens on the elderly and on second wage earners also could be reduced by adopting a separate rate schedule for these groups.

Adoption of any of these proposals might, of course, be undesirable for other reasons. Separate filing status is inconsistent with the treatment of the family as a single unit; child care expenses contain elements of personal consumption; the phaseout of social security benefits reflects a conscious societal judgment as to the nature and purpose of those payments; and a special tax rate for one group might seem unfair.<sup>100</sup> Compared to the case for a proportionate tax structure, however, the case for reducing marginal rates on the elderly and second wage earners appears extremely strong. Both sets of reforms involve difficult noneconomic issues. But the efficiency gains (per dollar of tax revenue) from a reduction in overall progressivity appear modest in comparison to the efficiency gains from selective reduction of rates on the elderly and second wage earners.<sup>101</sup>

These cursory suggestions regarding the tax treatment of working spouses and the elderly are not intended as complete solutions to com-

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98. Pub. L. No. 99-514, § 131(a), 100 Stat. 2085, 2113 (1986) (repealing I.R.C. § 221).

99. Blumberg, *supra* note 90, at 59-80; Schaffer & Berman, *Two Cheers for the Child Care Deduction*, 28 TAX L. REV. 535 (1973).

100. W. KLEIN, *supra*, note 3, at 289; Feld, *Another Word on Child Care*, 28 TAX L. REV. 546 (1973); McIntyre, *Individual Filing in the Personal Income Tax: Prolegomena to Future Discussion*, 58 N.C.L. REV. 469, 470 (1980).

101. See Boskin & Sheshinski, *Optimal Tax Treatment of the Family: Married Couples*, 20 J. PUB. ECON. 281-87 (1983) (deadweight loss of income tax reduced by lowering marginal rate of tax on "secondary earners").



plex problems. Rather, they illustrate a variety of possible forms of targeted relief. The basic point remains: Targeted relief is a more efficient means to combat disincentives to labor than is the reduction of overall progressivity.

### B. *Administrative Costs of a Progressive Rate Structure*

Progressivity is widely believed to be responsible for much of the complexity of the tax system.<sup>102</sup> According to Blum and Kalven, progressivity “produces a tax law of almost impenetrable complexity. It invites a distorting attention to the tax aspects of any economic transaction. It affords an excessive stimulus to tax avoidance with perhaps incalculable consequences for taxpayer morale and the general respect for the law.”<sup>103</sup> Charles Galvin writes that “[f]or the principle of progressivity we pay a high price in the extraordinary complexity of our present system,”<sup>104</sup> and he attributes most problems of administration to the graduated rate structure.<sup>105</sup>

The amount of tax levied on a particular sum under a graduated rate structure depends on the marginal rate of the taxpayer. A wealthy taxpayer in the 28% bracket will pay \$28 tax on an additional \$100 of income; a poor taxpayer in the zero bracket will pay no tax on the same amount. Determining the proper taxpayer is therefore important under a graduated tax. Under a proportionate tax, the identity of the taxpayer generally is irrelevant since all income is taxed at the same rate.<sup>106</sup> The taxpayer's identity will affect tax liability under a proportionate tax only if one taxpayer has an otherwise unusable net loss (in which case some additional income may still leave him in the zero tax bracket) or if the proportionate tax has an exemption amount and one taxpayer has income below the exemption level.

In most cases, of course, determining the proper taxpayer is easy. Single individuals are taxed on the salary they earn; there can be no serious argument that the wage earner is not the proper person to pay taxes on her own wages.<sup>107</sup> When wealth is transferred among members of the

102. See, e.g., C. GALVIN & B. BITTKER, *supra* note 3, at 16-19; Blum & Kalven, *supra* note 3, at 434-35; Wallis, *The Case for Progressive Taxation: Easy or Uneasy?*, in *INCOME REDISTRIBUTION* 135 (C. Campbell ed. 1976); see also Doernberg, *supra* note 3, at 428 (arguing that progressivity promotes economic inefficiency and high economic costs).

103. Blum & Kalven, *supra* note 3, at 434-35.

104. C. GALVIN & B. BITTKER, *supra* note 3, at 16.

105. *Id.* at 16-17. Galvin blames progressivity for “the abstruseness and complexity of the income tax [that] will cause the self-assessment system to collapse.” *Id.* at 16.

106. The determination of the proper taxpayer may still be important for reasons unrelated to progressivity. For example, the government may wish to reassess the tax liability of a taxpayer on whom the statute of limitations has not yet run, as opposed to a related taxpayer whose misfeasance is protected by the statute.

107. The principle that wage income is taxed to the wage earner applies to both married and

same family, however, determining the proper taxpayer may be quite difficult. For example, it is not obvious whether interest on a wage earner's invested capital that is spent on a child's education should be taxed to the wage earner, to the wage earner and spouse, or to the child.<sup>108</sup>

The treatment of property transfers among family members or unrelated individuals who share family-like ties is the source of much of the complexity associated with a graduated rate structure. The specific provisions governing gifts, trusts, family partnerships, loans at below-market rates of interest, unearned income of minor children, and divorce or separation agreements can be attributed largely to the progressive rate structure. All of these provisions could be simplified or eliminated by switching to a proportionate tax.<sup>109</sup>

Complexity is also generated by attempts of unrelated parties to

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single taxpayers. See *Helvering v. Eubank*, 311 U.S. 122 (1940) (assignment of income attributable to past services held invalid); *Lucas v. Earl*, 281 U.S. 111 (1930) (assignment of future income held invalid); 3 B. BITTKER, *supra* note 10, ¶ 75. The application of that principle to married taxpayers, however, is somewhat clouded by the treatment of married individuals as a single taxpaying unit that may file a joint return. See I.R.C. § 1 (West Supp. 1987).

108. Under current law, determining the proper taxpayer in such circumstances depends primarily upon the legal ownership of the invested capital, the child's age, and the child's total unearned income. I.R.C. § 1 (West Supp. 1987) (net unearned income of children under age 14 to be taxed at parents' rate); 3 B. BITTKER, *supra* note 10, ¶¶ 75.3, 80 (income taxed to owner of capital or trust beneficiary).

109. I.R.C. § 1015 (1982 & Supp. III 1985) limits the basis of property acquired through gift to the lesser of the donor's basis or the fair market value of the property at the time of the gift. Absent such a limitation, a low-bracket family member could donate property that has declined in value to a high-bracket family member, and the loss on the sale of the property would be recognized by the high-bracket donee. Curiously, the tax law does not directly prevent the similar income shifting possible through the donation of appreciated property from a high-bracket to a low-bracket family member.

The so-called grantor trust rules treat the grantor of certain trusts as the owner of the trust corpus and the recipient of trust income. I.R.C. §§ 671-679 (West Supp. 1987). These rules prevent a high-bracket family member from placing income-producing property in a family-controlled trust, naming a low-bracket family member as the trust beneficiary, and thereby shifting property income to the low-bracket family member.

The family partnership provisions prevent a high-bracket family member from using a partnership to shift personal service income to a low-bracket family member. I.R.C. § 704(e) (1982).

The rules governing below-market interest rate loans limit the use of such loans to shift interest income to low-bracket taxpayers. I.R.C. § 7872 (West Supp. 1987). Prior to the enactment of such rules, high-bracket family members with excess cash often made no-interest loans to low-bracket family members; the low-bracket family members would invest the cash and recognize the interest income. Section 7872 limits the tax advantages of such loans by imputing a market rate of interest income to the high-bracket creditor.

The rules governing unearned income of minor children are designed to limit minimization of family tax burden through donation of income-producing property to (generally low-bracket) children. Under newly adopted I.R.C. § 1(i) (West Supp. 1987), net unearned income of children under age 14 is taxed at the parents' rate.

The divorce and separation agreement provisions characterize certain payments as nondeductible to the payor and excludable from the income of the payee; other payments are deductible to the payor and included as income to the payee. I.R.C. §§ 71, 1041 (West Supp. 1987). The complexity of those provisions is, in part, attributable to the progressive rate structure: If the

shift items of income or loss. Members of a partnership, for example, might agree to allocate tax-exempt income to a high-bracket partner and ordinary income to a low-bracket partner.<sup>110</sup> The mismatching of items of income and expense through prepayments may also achieve a kind of tax-rate arbitrage.<sup>111</sup> Tax provisions governing the allocation and recognition of items of income and loss among parties with common business relationships can be attributed in part to the graduated rate structure.<sup>112</sup>

A third and less significant source of progressivity-related complexity is the interaction between the graduated rate structure and the annual accounting period. A given sum earned during a period of high income will be taxed at a greater rate than will an equal amount earned during a period of low income. A taxpayer may be in the 28% bracket one year, and the 15% bracket the next year. Progressivity-related questions may therefore arise as to the year in which income should be recognized. Such questions have contributed to the development of complex accounting provisions.<sup>113</sup>

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ex-spouses are in different marginal tax brackets, the combination of deduction/inclusion may be more advantageous than the combination of no deduction/no inclusion.

Differing interpretations of the above statutory provisions have generated a large number of cases and administrative rulings; still more complexity has been added by judicial and administrative efforts to limit intra-family income shifting.

110. The general rule of I.R.C. § 704(a) permits any agreed-upon allocation of partnership income and loss. However, section 704(a) is constrained by section 704(b), which strikes down allocations that lack "substantial economic effect." I.R.C. § 704 (1982). Section 704(b) and Treas. Reg. § 1.704-1(b) (as amended in 1987) limit but do not prevent the use of partnerships to achieve rate arbitrage.

111. Such a mismatching might occur, for example, when a high-bracket taxpayer prepays an expense to a low-bracket taxpayer. The prepayment may reduce the amount of expense by the amount of after-tax interest earned on the prepayment by the low-bracket taxpayer. In effect, the high-bracket taxpayer has used the low bracket taxpayer to earn interest at the low-bracket taxpayer's marginal rate. Similar results may be realized by deferring payments from a low-bracket taxpayer to a high-bracket taxpayer. See Gunn, *Matching of Costs and Revenues as a Goal of Tax Accounting*, 4 VA. TAX REV. 1 (1984).

112. See *supra* note 109 and accompanying text; I.R.C. § 267 (West Supp. 1987) (sales among related parties); *id.* § 482 (transfers among related business organizations); *id.* § 707(b) (sales between partnerships and partners); *id.* § 1239 (sale of depreciable property among related parties).

113. See I.R.C. §§ 446-483 (West Supp. 1987). These and other accounting provisions concern the timing of items of income and expense—an important issue under any rate structure. See *infra* notes 125-36 and accompanying text. Although most accounting provisions would retain their present form even under a proportionate tax, a few could be eliminated or simplified under a proportionate tax. For example, a taxpayer who takes an item into income in year one, only to find that she must return the item in year two, may take advantage of I.R.C. § 1341. Under that section, the taxpayer is allowed either (1) to treat the return of the item as an expense in year two, or (2) to recompute her taxes in year one without taking the item into income. I.R.C. § 1341 (1982). The two alternatives differ only to the extent that the taxpayer is in different marginal rates during the two years.

The progressive tax has had a somewhat greater influence on the development of case law. Certain accounting-related judicial doctrines and a substantial number of cases can be attributed to the graduated rate structure. See, e.g., *North Am. Oil Consol. v. Burnet*, 286 U.S. 417 (1932) (disputed funds taxable at high marginal rates that prevailed in year funds were received, rather than

Complexity associated with progressive rates therefore centers around three major areas: intra-family transfers, tax arbitrage among unrelated parties, and, to a lesser degree, determination of the appropriate accounting period in which to recognize items of income or expense.

More accurately, these complexities are due to the implementation of progressivity through a graduated rate structure, rather than to the principle of progressivity itself. A progressive tax does not require a graduated rate structure. For instance, the progressive tax discussed in Part III of this Article consists of generally constant or proportionate marginal rates combined with a cash transfer or demogrant. This tax, like a proportionate tax, makes the identity of the taxpayer irrelevant.<sup>114</sup>

In practice, of course, the progressive tax is and has always been implemented through a graduated marginal rate structure. It is useful, therefore, to examine the complexity-related costs of such a rate structure. We consider here two possible social costs arising out of such complexity: taxpayer time spent in tax planning and return preparation, and the expense of purchasing professional tax preparation and planning.

### 1. *Individual Tax Planning and Return Preparation Costs*

Most taxpayers devote significant amounts of time to the tax law only when preparing and filing their annual returns. In preparing their tax returns, individuals may encounter difficulties in three areas: determining the definition and amount of business or other deductible expenses; accounting for various sources of income; and computing separately items of capital loss.<sup>115</sup> These accounting problems undoubtedly frustrate taxpayers, lengthen the filing process and encourage some taxpayers to seek professional assistance. These determinations do not, however, bear any necessary relationship to the progressive rate structure.

Most taxpayers will encounter the progressive rate structure only once when filing their returns—while using the tax table to compute the amount of tax due after taxable income is determined. Few taxpayers are apt to be confused by the tax table; and, in any event, confusion on this matter would be unrelated to progressivity. Even under a proportionate tax such as a state sales tax, most taxpayers elect to use a tax table, rather

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at lower marginal rates that prevailed in year in which claim to funds originated or the year in which litigation over funds ceased); *Alice Phelan Sullivan Corp. v. United States*, 381 F.2d 399 (Ct. Cl. 1967) (recovery of previously deducted item taxed at marginal rates that prevailed in year of recovery). See generally 1 B. BITTKER, *supra* note 10, ¶ 5; 4 B. BITTKER, *supra* note 10, ¶ 105.

114. Under both a proportionate tax and the tax discussed *infra*, the determination of the proper accounting period may affect the present value of tax liability and therefore be of considerable importance to the taxpayer. For a discussion of deferral, see *infra* text accompanying notes 135-45.

115. See I.R.S. Form 1040, lines 7-21, 25 (1986); *id.*, Schedule A, lines 20-23; *id.*, Schedule D.

than a calculator or mathematical algorithm, to determine their tax liability.

The relative insignificance of progressivity-related determinations in taxpayer planning and return preparation is demonstrated by the results of tax compliance surveys. This literature also suggests that taxpayer record keeping and return preparation, as opposed to professional tax advice, constitutes by far the largest segment of the economic tax compliance costs.

In a recent comprehensive study, 2000 randomly selected Minnesota residents were surveyed immediately after the deadline for tax returns for the 1982 tax year.<sup>116</sup> Respondents were asked to provide a detailed breakdown of the total time spent in tax planning and return preparation. The reported hours were multiplied by the respondent's after-tax wage rate and added to the costs of professional tax planning and return preparation to determine individual compliance-related costs. The individual responses were then weighted to reflect national demographics. The authors of the survey, economists Slemrod and Sorum, concluded that annual taxpayer compliance costs of the federal and state income taxes were between \$17 and \$27 billion, over 85% of which was attributable to the costs of individual, as opposed to professional, tax planning and return preparation.<sup>117</sup>

The survey did not attempt to isolate the portion of individual time spent on, and therefore attributable to, progressivity-related determinations. The survey did, however, provide a rough breakdown of individual time expenditure. Over three-fifths of all time was spent on record keeping.<sup>118</sup> Presumably, this consisted of time spent collecting statements of wage and interest income, and business expenses—activities wholly unrelated to the rate structure. Approximately one-half the remaining time was spent filling out the return.<sup>119</sup> Tax research and time spent with tax advisors—the only activities likely to have any relation to progressivity—accounted for only about fifteen percent of the total time.<sup>120</sup>

Unfortunately, this survey suffers from a number of methodological problems. First, the percentage of respondents was rather low, and there was no check on nonrespondents to search for response bias.<sup>121</sup> Second,

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116. Slemrod & Sorum, *The Compliance Cost of the U.S. Individual Income Tax System*, 37 NAT'L TAX J. 461 (1984).

117. The amount spent on professional tax assistance was estimated at \$3 to \$3.4 billion. *Id.*

118. The weighted average number of hours spent was 21.7 hours, 13.8 of which was devoted to record keeping. *Id.* at 467.

119. Return preparation occupied 4.4 of the 8.1 hours devoted to non-record-keeping tax preparation. *Id.*

120. *Id.*

121. The overall response rate was 32.6%. *Id.* at 463. The impact of the response bias is

the survey lacked a straightforward way of valuing the time spent on tax preparation and filing.<sup>122</sup> Finally, the survey, by its nature, measured taxpayer recollection rather than observed behavior. The respondents may not have been able to provide an accurate breakdown of past expenditures of time. These and other methodological flaws cast doubt on the actual dollar figures derived.<sup>123</sup> Nevertheless, these results are roughly consistent with other studies.<sup>124</sup>

We believe the broad results of these studies—that compliance costs result primarily from individual taxpayers' attempts to cope with record-keeping and return-preparation requirements—are accurate. The empirical literature confirms our impression that tax lawyers who claim progressivity is a major cause of complexity have projected their vision of the tax laws onto the average taxpayer. Reforming certain deductions that require record keeping, or simplifying tax returns and instructions, would do far more to reduce compliance costs than would changing to a flat tax rate.

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difficult to estimate. The survey was conducted through a written four-page questionnaire. It is possible that only individuals who found filing their tax return difficult and time consuming would bother to fill out the questionnaire. On the other hand, it is possible that only individuals who found filing relatively simple would have the patience to complete the questionnaire.

122. The survey treated time spent completing a tax return as identical to time spent at work. Respondents were asked to provide their marginal wage rate and the rate at which they would agree to work additional hours. The value of each taxpayer's time was set at the larger of those two figures, less income taxes. Taxes were estimated on the basis of demographic data. Unfortunately, slightly over half of the respondents failed to provide accurate information on their wage rate. Responses to the wage-rate question included "time-and-a-half," "retired," or "variable." The wage rate of such respondents was estimated through regression analysis. *Id.* at 465.

123. One additional methodological problem is that the survey was sent only to Minnesota residents, whose compliance costs may differ from costs incurred by residents of other states. Another problem is that for certain classes, the number of absolute respondents, as well as the response rate, was quite low. The survey received less than 50 responses from households with gross incomes of less than \$10,000 a year. *Id.* at 464. The authors concluded that their figures were more likely to overestimate than underestimate actual return preparation costs. *Id.* at 473.

124. A number of compliance studies have documented the surprisingly large amount of time that taxpayers spend on record keeping, as well as the time requirements and relative difficulty of reading tax return instructions and completing tax return forms. In one survey, the most difficult tax problem was described as "getting data together so as to itemize deductions"; completing the return and figuring the tax due was described as the second most difficult problem. TAXATION: A REPORT OF THE COMMISSION ON FEDERAL PAPERWORK 10 (1977) (citing UNIVERSITY OF MICHIGAN, A STUDY OF PUBLIC ATTITUDES TOWARD A SIMPLIFICATION OF THE INCOME TAX FORM (1966)). Another study found that a college-level reading ability was required for comprehension of 90% of the instructions for the 1975 Federal Income Tax Short Form 1040A. *Id.* at 20 (citing A. GAETJEN, READABILITY STUDY OF THE EMPLOYERS' TAX GUIDE, 1975 REVISION, AND THE 1975 FEDERAL INCOME TAX SHORT FORM 1040A (COMM'N ON FED. PAPERWORK 1976)). The estimate by Slemrod and Sorum that aggregate taxpayer compliance costs comprise between 5% and 7% of revenue raised falls in the middle of the other studies, which, depending on the methodology used and the definition of compliance costs adopted, estimate such costs at between 2.4% and 11.5% of revenue collected. Slemrod & Sorum, *supra* note 116, at 462-63 (citing and discussing other studies).

## 2. *Costs of Professional Advice*

Criticism of the complex nature of the progressive tax structure may stem from a belief that such complexity greatly increases the need for professional tax advice and planning. The survey evidence indicates that such professional services represent a relatively small portion of total tax compliance costs. They nevertheless amount to billions of dollars per year.<sup>125</sup> Professional services are thus a significant, though indirect, cost of the tax system.

Blum and Kalven seem to believe that progressivity is responsible for much of the cost of these services: "It is remarkable how much of the day to day work of the lawyer in the income tax field derives from the simple fact that the tax is progressive. Perhaps the majority of his problems are either caused or aggravated by that fact."<sup>126</sup> This assertion might be tested through a carefully designed cross-section study of lawyers' and accountants' time. Such a study, however, apparently has never been attempted or even suggested.

Absent empirical data, comments on the relative cost of progressivity-related tax planning are necessarily sketchy. However, the assertion that tax lawyers spend most of their day on progressivity-related issues is inconsistent with our experience and intuition that such issues occupy only a small portion of a tax lawyer's time.

Blum and Kalven's assertion is also controverted by a careful analysis of the current tax structure. We noted above that a graduated rate structure fosters complexity primarily in three areas: intrafamily transfers, accounting periods, and some enterprise taxation.<sup>127</sup> A much more significant source of complexity, however, is the montage of situation-specific definitional, preferential, and timing-related provisions in the tax law.

Income usually is defined as wealth accrued during an accounting period.<sup>128</sup> Often, however, wealth is accrued in noncash form; employer-provided meals are one example. Taxation of such noncash compensa-

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125. See *supra* note 117 and accompanying text.

126. Blum & Kalven, *supra* note 3, at 431.

127. See *supra* notes 102-13 and accompanying text.

128. H. SIMONS, *supra* note 9, at 49-50; Haig, *supra* note 9, at 1, 7. A number of scholars have urged that the tax base should be—and to some extent is—limited to personal consumption. See Bradford, *The Case for a Personal Consumption Tax*, in WHAT SHOULD BE TAXED: INCOME OR EXPENDITURE? 75 (J. Pechman ed. 1980); Andrews, *A Consumption-Type or Cash Flow Personal Income Tax*, 87 HARV. L. REV. 1113 (1974). James Strnad has argued that, under certain circumstances, the income tax base and the consumption tax base are one and the same. Strnad, *Taxation of Income from Capital: A Theoretical Reappraisal*, 37 STAN. L. REV. 1023 (1985). But see Kaplow & Warren, *An Income Tax by Any Other Name—A Reply to Professor Strnad*, 38 STAN. L. REV. 399 (1986); Warren, *Would a Consumption Tax Be Fairer Than an Income Tax?*, 89 YALE L.J. 1081 (1980). The analysis of progressivity in this Article, while primarily directed at an income tax base, should apply as well to a consumption tax base.

tion raises difficult conceptual and administrative issues, which are resolved through specific and elaborate provisions governing the taxation of fringe benefits.<sup>129</sup> Similar conceptual and definitional issues are raised not only by the distinctions drawn between nondeductible personal expenses and deductible business expenses,<sup>130</sup> and between capital and ordinary gain and loss,<sup>131</sup> but also by the regime governing foreign taxpayers operating in the United States and U.S. taxpayers operating in foreign jurisdictions.<sup>132</sup>

Further complexity is generated by the use of the tax code to address various social concerns.<sup>133</sup> There are literally hundreds of preferences in the tax laws, ranging from provisions exempting ministers from taxation on housing subsidies to those that permit the purchase of farmland through the issuance of tax-exempt bonds.<sup>134</sup>

Finally, the number of progressivity-related issues appears small by

129. Taxation of non-cash compensation is now almost entirely statutory. See I.R.C. § 83(a) (West Supp. 1987) (property transferred in connection with performance of services); *id.* § 101 (life insurance proceeds and employee death benefits); *id.* § 105 (amounts received pursuant to accident and health plans); *id.* § 106 (employer's contributions to accident and health plans); *id.* § 119 (meals and lodging provided for convenience of employer); *id.* § 132 (exclusion of fringe benefits that qualify as a no-additional-cost service, qualified employee discount, working condition fringe, or de minimis fringe; also special rules pertaining to other fringe benefits).

130. See *id.* § 183 (characterization of activities as for-profit or not-for-profit; tax treatment of losses incurred in not-for-profit activities); *id.* § 280A (deductibility of expenses incurred in connection with homes held for personal and business use). The distinction between business and personal expenses is difficult to articulate and has produced an enormous body of case law. See 1 B. BITTKER, *supra* note 10, ¶¶ 20-26; M. CHIRELSTEIN, *FEDERAL INCOME TAXATION* 87-102 (4th ed. 1985).

131. I.R.C. §§ 1201-1256 (West Supp. 1987). Some portion of the rules governing partnerships and corporations may be attributed to the special treatment of capital gains and losses. The distinction between capital and ordinary gain and loss has generated a tremendous amount of litigation. See 2 B. BITTKER, *supra* note 10, ¶¶ 50-55.

The distinction remains relevant even under the new regime. Under current law, losses incurred by noncorporate taxpayers from the sale or exchange of capital assets are allowed only to the extent of the gains from such sales or exchanges plus the lesser of (i) the excess of the losses over the gains, or (ii) \$3000. I.R.C. § 1211(b) (West Supp. 1987). Gains from the sale or exchange of capital assets are treated as ordinary income with one exception: as noted immediately above, such gains may be useful to offset capital losses that would otherwise be subject to the \$3000 annual limitation. *Id.* See generally *id.* §§ 1200-1254 (rules governing capital gains and losses).

132. I.R.C. §§ 861-999 (West Supp. 1987).

133. The distinction between provisions that simply define and operationalize the tax base and provisions that address social concerns is controversial and difficult to articulate. See B. BITTKER, C. GALVIN, R. MUSGRAVE & J. PECHMAN, *A COMPREHENSIVE TAX BASE? A DEBATE* (1968). At least in extreme cases, however, identification of certain provisions as tax preferences seems warranted. For example, almost everyone would concede that I.R.C. § 107 (1982), the ministers' housing allowance provision, constitutes a tax preference.

134. I.R.C. § 107 (1982) (rental value of parsonages); *id.* § 147(c)(2) (West Supp. 1987) (tax exemption for local government industrial development bonds used to purchase qualifying farmland). See also *id.* § 117 (excluding "qualified scholarships"). The Senate Finance Committee regularly publishes a "tax expenditure budget," which lists preferences and estimates their cost to the fisc. The 1984 Tax Expenditure Budget lists nearly a hundred subsidies by industry and category; many listed subsidies encompass four or five separate statutory provisions. SENATE



comparison to the number of issues surrounding the determination of when particular items of income and expense are recognized for tax purposes. Taxpayers who are able to delay recognition of income and accelerate recognition of expense are able to defer payment of tax. Because of the time value of money, deferral has a high value to the taxpayer and a high cost to the fisc. At a discount rate of 6%, \$100 tax due in twenty years has a present cost of about \$31; in other words, a taxpayer who is able to defer \$100 tax for twenty years can fund the eventual payment by depositing \$31 in an interest-bearing account that will provide an after-tax yield of 6%.<sup>135</sup> The graduated rate structure may in some cases increase or decrease the advantage of deferral: The taxpayer may be in a higher or lower bracket in twenty years.<sup>136</sup> But deferral is valuable independent of the rate structure, and in the vast majority of cases the effects of deferral far outweigh the effects of any variation in the marginal rate.

Perhaps the majority of difficult tax issues center around deferral. Deferral-related issues have given rise to complex rules governing the treatment of depreciation and amortization,<sup>137</sup> depletion;<sup>138</sup> long-term contracts and installment sales;<sup>139</sup> accounting methods;<sup>140</sup> insurance products and annuities;<sup>141</sup> nonenterprise tax-free exchanges;<sup>142</sup> and transfers of property to, from, and among corporations,<sup>143</sup> partnerships,<sup>144</sup> and trusts.<sup>145</sup>

### C. Progressivity and the Misdeployment of Capital

That it reduces work effort and increases complexity are the two most common arguments directed against the progressive tax system. In addition, some critics charge that progressivity adversely affects the

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COMM. ON FINANCE, 98TH CONG., 1ST SESS., FISCAL YEAR 1984 FINANCE COMM. REPORT UNDER THE CONGRESSIONAL BUDGET ACT (1984).

As we noted above, there is no logical relationship between the number of tax preferences and the effective tax burden borne by differing income classes. See *supra* text accompanying note 7.

135. The formula for determining the present value of a future sum is  $PV = S(1 + r)^{-n}$ , where  $PV$  is the present value,  $S$  is the future sum,  $r$  is the interest rate, and  $n$  is the number of years in which payment is made or received. The present value of a \$100 payment received in 20 years at a discount rate of 6% is \$31.18. See L. LIPKIN, I. FEINSTEIN & L. DERRICK, ACCOUNTANT'S HANDBOOK OF FORMULAS AND TABLES 10 (2d ed. 1973).

136. See *supra* note 113 and accompanying text.

137. I.R.C. §§ 167, 168 (West Supp. 1987).

138. *Id.* §§ 613-617.

139. *Id.* §§ 453, 453A, 453B, 483.

140. *Id.* §§ 446, 447, 455-468A.

141. *Id.* §§ 72, 101.

142. *Id.* §§ 1031-1042.

143. *Id.* §§ 301-306, 312, 316, 317, 331-337, 351-368.

144. *Id.* §§ 704, 706, 709, 721, 731, 734, 736, 743, 752, 754, 755.

145. *Id.* §§ 643-667.

deployment of capital by encouraging income-shifting investments and by increasing tax shelter activities.

### 1. *Investments That Shift Income*

We noted earlier that progressivity encourages taxpayers in high brackets to shift income to low-bracket family members.<sup>146</sup> To a lesser degree, progressivity also encourages the use of certain forms of business enterprise and the shifting of income from one period to the next. The presence of these kinds of tax-motivated transactions is often cited as one of the defects of a progressive tax. Blum and Kalven, for example, support their other arguments against a graduated tax with the assertion that it "invites a distorting attention to the tax aspects of any economic transaction."<sup>147</sup> However, Blum and Kalven do not link tax-motivated transactions to specific harms.

By asserting that progressivity is distortionary, Blum and Kalven might be arguing that a graduated tax generates the additional transaction costs associated with tax planning that were discussed above. Alternatively, Blum and Kalven might be arguing that progressivity leads to a misdeployment of capital. This argument would be similar to those voiced against certain other features of the tax law. For example, critics of certain capital recovery rules have argued that such rules distort the balance of investment in short-lived as opposed to long-lived assets,<sup>148</sup> and critics of the tax preference given to home ownership have argued that such preferences lead to overinvestment in housing stock.<sup>149</sup>

In fact, there appear to be few costs of capital deployment that can be attributed to progressivity-related transactions. Most tax planning associated with progressivity consists of shifting capital ownership from

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146. See *supra* note 109 and accompanying text.

147. Blum & Kalven, *supra* note 3, at 435.

148. See, e.g., Auerbach, *The New Economics of Accelerated Depreciation*, 23 B.C.L. REV. 1327, 1346-49 (1982). A form of capital recovery generally thought to be nondistortionary is described in Samuelson, *Tax Deductibility of Economic Depreciation to Insure Invariant Valuations*, 72 J. POL. ECON. 604 (1964); see also M. CHIRELSTEIN, *supra* note 130, at 127-28 (simplified explanation of "Samuelsonian" depreciation).

149. Taxpayers who purchase and occupy residential housing receive imputed income in the form of free rent. This form of income is not subject to tax. Many expenses of home ownership, however, are deductible. See I.R.C. § 163 (West Supp. 1987) (interest expense attributable to qualified residential indebtedness deductible); *id.* § 164 (property tax on home ownership deductible). Moreover, gain from certain sales of principal residences is deferred or excluded from income. *Id.* § 121 (1982) (individuals age 55 and over allowed to exclude first \$125,000 gain on sale of principal residence); *id.* § 1034 (West Supp. 1987) (deferral of gain on sale of principal residence by taxpayers who purchase new principal residence within specified time period). The combination of nontaxation of imputed income, deductibility of current expenses, and preferential treatment of sale proceeds is widely thought to distort investment decisions. See, e.g., Hellmuth, *Homeowner Preferences*, in COMPREHENSIVE INCOME TAXATION 163 (J. Pechman ed. 1977); Laidler, *Income Tax Incentives for Owner-Occupied Housing*, in THE TAXATION OF INCOME FROM CAPITAL 50 (A. Harberger & M. Bailey eds. 1969).

high-bracket to low-bracket members of the same family. Such tax planning rarely changes the form of capital investment, or even the party in control of that investment. Parents who use trusts to transfer capital income to their children, for example, almost always retain control over the actual investments.<sup>150</sup> Similarly, parents who organize and donate interests in family partnerships generally exercise control over such closely-held enterprises.<sup>151</sup> Thus, while the form of capital ownership changes, the actual deployment of capital does not.

## 2. *Increased Tax Shelter Activity*

A number of commentators have asserted that a progressive tax encourages persons to take advantage of tax shelters.<sup>152</sup> Charles Galvin, for example, writes:

Progressivity thwarts the maximum productivity of goods and services of which our society is capable. The present system tends to prostitute the talents of our most capable citizens. A skilled neurosurgeon cannot devote all his skill to his specialty; he is compelled to deflect his energies and time of concentration to investments in which he can shelter some of his professional income; the talented executive, tied to a particular company with tax-sheltered, qualified or restricted stock options, is deterred from going into the open market where his talents might be used more productively.<sup>153</sup>

The tax shelters referred to by Galvin and others seldom directly minimize the effect of the progressive rate structure; that is, most shelters do not enable taxpayers to shift income or engage in rate arbitrage.<sup>154</sup> But—it is argued—the motivation for investing in tax shelters is attribu-

150. The "grantor trust" rules generally permit donors to exercise managerial authority over trust property even while income from such property is taxed to the donee. See I.R.C. §§ 672-678 (West Supp. 1987).

151. The amount of control a donor may retain without paying tax on income attributable to the donated interest is limited by administrative regulations and case law. *Commissioner v. Culbertson*, 337 U.S. 733 (1949); Treas. Reg. § 1.704-1(e) (as amended in 1986); see 1 W. MCKEE, W. NELSON & R. WHITMIRE, *FEDERAL TAXATION OF PARTNERSHIPS AND PARTNERS* ¶¶ 14.01-.06 (1977 & Supp. 1987).

Ultimately, of course, control does pass from parent to child, or donor to donee. But that change is generally triggered by nontax factors such as the death of the donor or majority of the donee. While the change in control may result in a different deployment of capital, there is no reason to believe that the new deployment will be less efficient. The child who takes control of the family business is as likely to rejuvenate the enterprise as she is to run it into the ground.

152. See, e.g., C. GALVIN & B. BITTKER, *supra* note 3, at 18; R. HALL & A. RABUSHKA, *supra* note 57, at 15-16.

153. C. GALVIN & B. BITTKER, *supra* note 3, at 18.

154. A limited form of rate arbitrage is found in many partnerships, which allocate valuable deductions to high bracket taxpayers. The majority of tax shelters, including most tax shelters operated as partnerships, are built around preferential provisions (such as those governing rehabilitation of historic structures, investment in capital stock, and the like) or time-value-of-money-related arbitrage.

table to the high marginal tax rates that are a product of the progressive rate structure.

This argument suffers from several defects. First, the assertion that high marginal rates encourage tax-motivated transactions carries normative significance only insofar as "tax-motivated" transactions are thought to be undesirable. Generally speaking, however, tax-motivated transactions are those that society has explicitly decided to favor with tax incentives, such as investments in low-income housing or donations to nonprofit organizations. The assertion that progressivity is undesirable because it encourages this kind of tax-motivated investment must be premised in large part on the belief that the use of the tax law to further non-tax goals is inappropriate.<sup>155</sup>

Second, the relationship between progressivity and tax shelter investments is unclear.<sup>156</sup> During the last twenty years, the top marginal rates have declined dramatically.<sup>157</sup> We might therefore have expected a concomitant decrease in tax shelter activity.<sup>158</sup> By most counts, however, the number of tax shelters has increased sharply.<sup>159</sup>

Finally, even opponents of progressivity admit that high marginal rates, rather than progressivity, foster investments in tax shelters. Although switching from the present rate structure to a proportional tax would lower marginal rates for wealthy individuals, who account for a disproportionate amount of total investment, reducing marginal rates by broadening the tax base would be more effective in reducing tax shelter investments because it would lower marginal rates for lower and middle income taxpayers as well. More important, base broadening would directly reduce the number of tax shelters by eliminating the deductions and credits that make such shelters possible. Indeed, this is the approach taken in the Tax Reform Act of 1986, in which, among other reforms,

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155. For certain tax shelters, adopting a graduated, rather than a proportionate, rate structure may result in unintended windfall gains to high-income taxpayers. If, for example, a sufficient quantity of tax-exempt bonds is issued so that the interest rate on those bonds is set to attract taxpayers not in the highest marginal bracket, then taxpayers who are in the highest bracket and who purchased those bonds will receive an unintended windfall. See M. CHIRELSTEIN, *supra* note 130, at 334-40.

156. A simple theoretical model devised by Cordes and Galper predicts that an across-the-board reduction in marginal rates would reduce the number of tax shelters, but that a reduction in just the top-bracket marginal rates would reduce the number of tax shelters only under certain limited conditions. Cordes & Galper, *Tax Shelter Activity: Lessons From Twenty Years of Evidence*, 38 NAT'L TAX J. 305, 315-16 (1985).

157. Marginal rates ranged from 0% to 91% in 1953; from 0% to 70% in 1973; and from 0% to 50% in 1983; the top current marginal rate is 33%. I.R.C. § 1 (1953); *id.* (1973); *id.* (1982); *id.* (West Supp. 1987).

158. See *supra* note 156.

159. See, e.g., Cordes & Galper, *supra* note 156, at 316-17 (increase in tax shelter activity inferred from examination of partnership statistics).

the capital gains preference was eliminated<sup>160</sup> and the ability of taxpayers to use passive losses to offset other income was reduced.<sup>161</sup>

#### D. Effects of Progressivity on Tax Compliance

Opponents of progressivity often assume that the graduated rate structure decreases the overall rate at which taxpayers voluntarily comply with the tax laws, presumably because taxpayers in high marginal brackets have greater incentive to cheat.<sup>162</sup> In fact, the sponsor of one flat tax proposal has claimed that its enactment would "bring down the underground economy."<sup>163</sup>

An increasingly sophisticated body of literature has explored the determinants of taxpayer compliance. Plausible models of taxpayer behavior developed in this literature suggest that the assumed relationship between high marginal rates and increased tax evasion may be incorrect. One recent model looks at taxpayer compliance as a two-person game involving the taxpayer and the Internal Revenue Service.<sup>164</sup> The model assumes that an increase in tax rates increases the payoff of tax evasion to the taxpayer. However, high marginal rates also increase the payoff of enforcement to the Internal Revenue Service. The model predicts that if each party adopts the strategy that is optimal in light of its opponent's strategy, an increase in marginal rates will lead to a *reduced* level of tax evasion.<sup>165</sup> The effects of the payoff to the Internal Revenue Service dominate the effects of the payoff to the taxpayer.

160. Tax Reform Act of 1986, Pub. L. No. 99-514, § 301(a), 100 Stat. 2085, 2216 (1986) (repealing I.R.C. § 1202).

161. *Id.*, 100 Stat. at 2233 (adding I.R.C. § 469).

162. See, e.g., R. HALL & A. RABUSHKA, *supra* note 57, at 3, 28-29; Vickrey, *supra* note 3, at 460; see also authorities cited in Graetz & Wilde, *The Economics of Tax Compliance: Fact and Fantasy*, 38 NAT'L TAX J. 355, 362-63 (1985).

163. *Major Tax Reform Options: Hearings Before the Senate Comm. on Finance*, 98th Cong., 2d Sess., pt. 2, at 198 (1984) (testimony of Congressman Jack Kemp); see also Bernick, *Merits of Flat Tax Debated*, 16 TAX NOTES 478 (1982) (Hall and Rabushka speculated that enactment of proposal would "flush out income now hidden in the underground economy").

164. Graetz, Reinganum & Wilde, *The Tax Compliance Game: Toward an Interactive Theory of Law Enforcement*, 2 J.L. ECON. & ORG. 1 (1986).

165. The point at which each party has adopted an optimal strategy in light of its opponent's strategy is known as a Nash equilibrium. Under a Nash equilibrium, neither party may improve its position through a unilateral change in strategy. The model predicts that a rise in the level of Internal Revenue Service enforcement generated by high marginal rates would increase the costs of tax collection. *Id.* at 28. The study does not estimate the magnitude of these costs.

The model makes several important simplifying assumptions. First, the model assumes the Internal Revenue Service has unlimited discretion to modify its budget in order to maximize net revenues. Second, the model does not allow for partial noncompliance. Third, the model assumes the Internal Revenue Service can set a fine for evasion at a level that, when added to taxes otherwise due, equals (but may not exceed) the taxpayer's entire income. *Id.* at 24-27 (thoughtfully discussing these and other simplifying assumptions). Changes in these assumptions would not affect the central insight of the article, which is that the study and prediction of tax compliance must consider both taxpayer and Internal Revenue Service incentives.

A second compliance model focuses solely on the taxpayer and challenges the assumption that high tax rates increase tax evasion without regard to Internal Revenue Service enforcement action.<sup>166</sup> The intuition underlying this model can be understood by imagining a taxpayer who would face a rate of 30% under a proportionate tax but who would be in the 40% bracket under a progressive tax. The taxpayer is faced with the decision of whether or not to report \$100 of income; if the taxpayer decides not to report the income and is caught, she must pay the amount of tax due plus a penalty of 50%. The expected return from each dollar "gambled" under either tax bracket is proportionately identical. Under the progressive tax, the taxpayer must decide between a tax savings of \$40 and a potential cost of \$60; under the proportionate tax, the taxpayer must decide between a tax savings of \$30 and a potential cost of \$45.<sup>167</sup> In all cases in which the penalty is proportionate to the amount of tax evaded, an increase in marginal rates will increase the amount at stake, but will not change the expected payoff per dollar at risk.

Each of the models described above focuses primarily on the monetary costs and benefits of noncompliance. It seems likely, however, that compliance also will be based on moral and social attitudes, on the transaction costs associated with the audit process, and on the possibility of nonmonetary criminal sanctions.<sup>168</sup> The moral and social costs of dishonesty and the transaction costs of enduring an audit may be a more important deterrent to noncompliance than monetary penalties.<sup>169</sup>

The determination of compliance under a more elaborate model thus might depend in part on the ratio of moral, social, and transaction

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166. Early noninteractive economic models of tax evasion were developed in Allingham & Sandmo, *Income Tax Evasion: A Theoretical Analysis*, 1 J. PUB. ECON. 323 (1972), and in Srinivasan, *Tax Evasion: A Model*, 2 J. PUB. ECON. 339 (1973). Recent refinements of these models are described in Skinner & Slemrod, *An Economic Perspective on Tax Evasion*, 38 NAT'L TAX J. 345 (1985), and Spicer, *Civilization at a Discount: The Problem of Tax Evasion*, 39 NAT'L TAX J. 13 (1986).

167. Under current law, the most severe civil penalty is 75% of the amount of tax due plus 50% of the related interest. I.R.C. § 6653(b) (West Supp. 1987).

168. The importance of nonmonetary factors is emphasized in recent articles by Skinner and Slemrod, and by Spicer. See Skinner & Slemrod, *supra* note 166, at 350-51; Spicer, *supra* note 166.

169. In fact, the noninteractive economic model does not seem adequately to account for the relatively high level of tax compliance. The model predicts evasion whenever the expected payoff from evasion is positive. The basic model may be formally written as  $\Sigma U = (1 - p) U(y + x) + pU(y - Fx)$ , where  $\Sigma U$  is the expected utility,  $U$  is the utility function,  $p$  is the probability of audit and detection,  $y$  is the legal after-tax income,  $x$  is the amount of undeclared taxes, and  $F$  is the penalty rate on the undeclared taxes plus one. Skinner & Slemrod, *supra* note 166, at 347. At a detection rate equal to the 2% average audit rate, and a constant marginal utility of money, the model predicts evasion whenever the penalty rate is less than 5000% of the tax due. The fact that most taxpayers comply with the tax laws notwithstanding much lower penalty levels may be partially attributable to taxpayer misperception of audit rate, taxpayer risk aversion, and the presence of nonmonetary criminal penalties. It seems reasonable, however, to attribute some "unexplained" compliance behavior to the nonmonetary factors described in the text.

costs to a person's income. If moral, social, and transaction costs are fixed, or increase at a slower rate than income, then high tax rates might be expected to increase tax evasion. This is because although the dollars saved from avoidance and the expected monetary penalties if caught each increase proportionately with the tax burden, the indirect costs of evasion remain constant or increase more slowly. As tax rates increase, the indirect costs will become a smaller and smaller disincentive to tax evasion. The existence of fixed or slowly increasing indirect costs may explain the belief that low rates make cheating less attractive.

On the other hand, if tax compliance is determined by the interaction of taxpayer and Internal Revenue Service strategies, the presence of fixed or slowly increasing indirect costs may not affect compliance levels. In such cases, the greater incentive to cheat may be offset by the prospect of greater enforcement.<sup>170</sup> Moreover, even if high rates are positively correlated with tax evasion in the aggregate,<sup>171</sup> it is not clear that switching to a proportionate tax, which generally would decrease the tax burden on the wealthy and increase the tax burden on the poor, would reduce evasion.

A second set of factors not explicitly considered by most current models of taxpayer behavior is the way the report/non-report gamble is framed. Recent literature on risk taking concludes that individuals are more willing to take risks to preserve present wealth than to gain new wealth.<sup>172</sup> This suggests that taxpayers who owe money to the Treasury will be more likely to misreport income on their tax returns than will taxpayers who expect refund checks. An increase in the amount of withholding, which transforms the annual reporting decision from one of retaining wealth to one of obtaining a refund, may increase taxpayer risk aversion and improve compliance.<sup>173</sup>

Finally, current compliance models do not consider the survey literature, including the massive compliance audits conducted by the Internal Revenue Service, which suggests that tax compliance varies dramatically with the level of third-party reporting.<sup>174</sup> Taxpayers accurately disclose income from transactions that third parties report to the Internal Reve-

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170. In the Graetz, Reinganum and Wilde model, taxpayer audit costs generally do not affect compliance levels. Graetz, Reinganum & Wilde, *supra* note 164, at 23.

171. The author of one empirical study has reported a positive correlation between high tax rates and tax evasion. Clotfelter, *Tax Evasion and Tax Rates: An Analysis of Individual Returns*, 65 REV. ECON. STAT. 363 (1983). However, the data source used in that study has been criticized in a recent article by Graetz and Wilde. Graetz & Wilde, *supra* note 162, at 360. Graetz and Wilde also point out that low marginal tax rates have not prevented taxpayers from misreporting a substantial portion of long-term capital gain income. *Id.*

172. See, e.g., Kahneman & Tversky, *The Psychology of Preferences*, SCI. AM., Jan. 1982, at 160.

173. A similar point is made in Spicer, *supra* note 166, at 18.

174. See Henry, *Noncompliance with U.S. Tax Law—Evidence on Size, Growth, and Composition*, 37 TAX LAW. 1, 4-5 (1983).

nue Service; disclosure of income not subject to third-party reporting is spotty at best. The Internal Revenue Service estimates that taxpayers report more than 90% of legal-source wage income, but less than 50% of income from farms and small proprietorships.<sup>175</sup>

The transaction-based analysis described above suggests that if there is a positive correlation between tax rates and tax evasion, then compliance would be maximized by imposing low marginal rates on taxpayers who are least subject to third-party reporting and therefore most likely to cheat. (Of course, reducing rates on taxpayers most likely to underreport is likely to be thought normatively undesirable.) Here again, the effect of a switch to a more proportionate tax would be ambiguous, since all income classes engage in some transactions not subject to third-party reporting. The wealthy and middle class receive hard-to-trace income from the sale of property, from proprietorships and from farms; the poor often receive unreported cash as an important source of wage income.<sup>176</sup>

The assertion that progressivity contributes to tax evasion thus appears to be weak. Current models of taxpayer behavior suggest that the assumed link between high marginal rates and noncompliance may be incorrect. Under one model, high marginal rates do not change the desirability of tax evasion; under another model, any change in the desirability of tax evasion is offset by changes in Internal Revenue Service behavior. Moreover, even if high marginal rates do contribute to tax evasion, the link between the tax rate structure and tax evasion is unclear since a proportionate tax would raise rates for some taxpayers and lower rates for others. Efforts to better detect evasion and to enforce the Code hold far more promise of improving taxpayer compliance than does a flat tax.

#### *E. Reconsidering the Prima Facie Case Against Progressivity*

Critics have levied a plethora of charges against the progressive rate structure. Progressivity is claimed to promote reduced work effort, increased complexity, misdeployment of capital, and reduced compliance. In each of these areas, however, we found that the purported costs of progressivity are overstated and that more focused approaches offer better methods of improving the fairness and efficiency of the tax code than does the adoption of a flat tax. While it must be conceded that progressivity imposes some efficiency costs and tends to increase transac-

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175. A 1976 Taxpayer Compliance Management Program audit estimated that 99% of legal source wage income, 81% of proprietorship income, and 49% of farm income was reported. However, this estimate of compliance ratios was revised downward in 1979 and 1982. The 1982 estimate showed 350% greater nonreported income than the original 1976 estimate. See Henry, *supra* note 174, at 44-50, 79.

176. See Ansberry, *Laid-Off Steelworkers Find That Tax Evasion Helps Make Ends Meet*, Wall St. J., Oct. 1, 1986, at 1, col. 1.



tion costs attributable to professional tax planning, the magnitude of these costs is less than generally asserted and much less than other costs inherent in the present tax law.

In any event, costs attributable to progressivity must be balanced against whatever benefits are derived from the redistribution of billions of dollars per year. In the remainder of this Article we will consider how one might strike this balance.

### III

#### THE COSTS AND BENEFITS OF PROGRESSIVITY: A WELFARIST EVALUATION

A progressive income tax imposes certain efficiency costs and redistributes wealth from high-income to low-income individuals. Under a welfarist approach, the changes brought about by a tax structure are judged according to their effect on the welfare of individuals. To make this judgment, it is necessary to clarify the relationship between income, leisure, and individual utility. It is also necessary to specify the way in which the welfare of individuals determines social welfare.

In the past, scholars have not had a reliable method for assessing the level of social welfare associated with any particular rate structure. Moreover, the dependence of any such calculation upon speculative and unverifiable assumptions as to the relationship between income and individual welfare has cast a large shadow over the welfarist enterprise.

The development of a branch of public economics known as optimal taxation resolves the first difficulty and reduces the significance of the second.<sup>177</sup> Optimal tax models can be used to evaluate tax structures under varying assumptions regarding individual and social welfare. These models also account for the impact of the income tax on the labor supply. The capacity of the models to calculate optimal rates under a wide range of assumptions makes it possible to search for robust results—that is, results that remain constant over such a wide range of assumptions.

The optimal tax model described below produces two results of particular interest. First, under a broad spectrum of assumptions, the optimal tax structure is progressive, although not confiscatory. Second, a progressive tax is best implemented through demogrants combined with constant or even declining marginal rates, rather than through constantly rising marginal rates.

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177. The field of optimal taxation has been almost entirely ignored in the legal literature on progressivity. Legal scholars may have been exposed to the subject, however, by two brief articles by economists recently published in the *National Tax Journal*. See Hettich & Winer, *Blueprints and Pathways: The Shifting Foundations of Tax Reform*, 38 *NAT'L TAX J.* 423 (1985); Slemrod, *Do We Know How Progressive the Income Tax System Should Be?*, 36 *NAT'L TAX J.* 361 (1983).

### A. *The Mirrlees Optimal Taxation Model*

Much of the recent work in optimal income taxation can be traced to James Mirrlees' seminal 1971 article, *An Exploration in the Theory of Optimum Income Taxation*.<sup>178</sup> In that article, Mirrlees considers the following question: If all income is derived from labor, what income tax rate structure maximizes social welfare, given plausible assumptions regarding the utility of income and leisure to individuals?<sup>179</sup>

Answering that question requires the construction of a complex mathematical model. Mirrlees' specific results and analysis have been criticized in the economic literature and are subject to independent criticism here. However, the basic model he uses to calculate the optimal rate structure, referred to here as the "Mirrlees model," has been adopted by optimal tax scholars.<sup>180</sup>

The Mirrlees model requires the specification of both an individual utility function and a social welfare function.<sup>181</sup> An individual utility function specifies the factors that determine an individual's utility or welfare.<sup>182</sup> A social welfare function specifies the factors that determine the welfare of society.<sup>183</sup> Under the Mirrlees model, the goal of the government is to choose a tax rate that maximizes the welfare of society as defined by a social welfare function.<sup>184</sup>

#### 1. *Assessing Individual Welfare*

The factors that determine a person's welfare are complex and many such factors—good looks, a sunny disposition, or a satisfying family life—could not feasibly be incorporated into a tax structure. Mirrlees therefore assumes a simple utility function in which an individual's welfare depends only on the amounts of consumption and leisure she enjoys. While the measurement of these factors is not without difficulty, income can be used as a rough measure of consumption, and hours worked can provide an estimate of the amount of time a person has remaining for leisure. The individual utility function adopted by Mirrlees may be writ-

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178. Mirrlees, *An Exploration in the Theory of Optimum Income Taxation*, 38 REV. ECON. STUD. 175 (1971) [hereinafter *Optimum Income Taxation*]; see also Mirrlees, *Labour Supply Behaviour and Optimal Taxes*, in FISCAL POLICY AND LABOUR SUPPLY 7 (Institute for Fiscal Studies 1977); Mirrlees, *The Theory of Optimal Taxation*, in HANDBOOK OF MATHEMATICAL ECONOMICS 1197 (K. Arrow & M. Intriligator eds. 1986); Mirrlees, *Optimal Tax Theory: A Synthesis*, 6 J. PUB. ECON. 327 (1976).

179. Mirrlees, *Optimum Income Taxation*, *supra* note 178, at 175.

180. See, e.g., A. ATKINSON & J. STIGLITZ, *supra* note 12, at 412-22.

181. Mirrlees, *Optimum Income Taxation*, *supra* note 178, at 176-78.

182. *Id.* at 176.

183. *Id.* For a general discussion of social welfare functions, see D. MUELLER, PUBLIC CHOICE 184-206 (1979); Y. NG, *supra* note 54, at 1-17; A. SEN, COLLECTIVE CHOICE AND SOCIAL WELFARE 47-55 (1970).

184. Mirrlees, *Optimum Income Taxation*, *supra* note 178, at 178.

ten as  $U = C + L$ , where  $U$  is utility,  $C$  is consumption, and  $L$  is leisure.<sup>185</sup>

Optimal tax models make two important additional assumptions regarding individual utility. First, they assume that consumption and leisure have declining marginal utility. Second, they assume that individuals have identical utility functions.<sup>186</sup>

The assumption that the value of an additional dollar to an individual declines as the number of dollars he owns increases ("declining marginal utility") is common in economic analysis.<sup>187</sup> The assumption of identical utility functions is more problematic because individuals obviously do not have the same tastes. Some people value money greatly, enjoying free time only if skiing, dining in expensive restaurants, or touring abroad, while others like nothing more than an afternoon of chess in the public park. Nevertheless, for purposes of determining tax policy, recommendations based on an assumption of identical utility functions may be unavoidable. Politically and administratively feasible tax policy is likely to center on the effect redistribution will have on different income classes. In the absence of evidence to the contrary, it seems reasonable to assume that individuals with particularly strong desires for consumption are distributed in a roughly random way throughout the population. The tax policy recommendations in such a case should not differ greatly from those that would be made if individuals had identical tastes.

Under a utilitarian ethic and in the absence of incentive effects, the assumption that consumption has declining marginal utility and that people have identical utility functions would lead to complete equality of consumption. All incomes above the mean would be taxed at a 100% rate, and all individuals with incomes below the mean would receive grants to bring their income to that level. Put differently, the optimal utilitarian tax structure would consist of a 100% marginal rate on all income and a uniform cash grant, thus ensuring equal consumption for all individuals.<sup>188</sup>

To understand why such a rate structure would be optimal under a utilitarian ethic, consider a society that consists of one individual with an

185. It is also generally assumed that  $C$  and  $L$  are each greater than or equal to zero (implying that consumption and leisure are never negative) and that  $U$  is strictly concave (implying that consumption and leisure have diminishing marginal utility). Mirrlees, *Optimum Income Taxation*, *supra* note 178, at 176.

186. *Id.*

187. See, e.g., L. ATKINSON, *ECONOMICS* 426-28 (1982); A. BRAFF, *MICROECONOMIC ANALYSIS* 20-21 (1969); S. CALL & W. HOLAHAN, *MICROECONOMICS* 32-42 (1980); P. HARDWICK, B. KHAN & J. LANGMEAD, *AN INTRODUCTION TO MODERN ECONOMICS* 53-56 (1982).

188. See Edgeworth, *The Pure Theory of Progressive Taxation*, in *ECONOMIC JUSTICE* 371, 373-74 (E. Phelps ed. 1973).

income of \$30 and a second individual with an income of \$50. Since both individuals experience declining marginal utility of income and have identical utility functions, the last ten dollars earned by the higher income individual would produce greater utility in the hands of the lower income individual. Utility is maximized and aggregate sacrifice from taxation is minimized where consumption is equal because additional consumption is always worth less to a person with more of it. The problem, of course, is that the 100% marginal rates needed to equalize incomes would destroy incentives to produce and thus lower utility for everyone.<sup>189</sup>

## 2. *Choosing a Measure of Social Welfare*

Just as an individual utility function identifies the factors that determine the welfare of an individual, a social welfare function specifies the factors that determine the welfare of a society. The concept of "welfare," however, has a different meaning for a society than for an individual. An individual utility function attempts to measure *objectively* the well-being of each individual. While it is impossible to make a precise assessment of the way in which consumption and leisure affect individual welfare, an individual utility function is value-free in the sense that it attempts to measure what *does* increase an individual's utility rather than what *should* increase utility. A social welfare function, on the other hand, reflects an explicit normative theory of the nature of a good society.

The arguments of a social welfare function may be any factors that might determine the welfare of a society. Under one ethic, social welfare might be determined by the degree to which its members follow a particular set of religious beliefs, while under another ethic social welfare might be determined by the size of the gross national product. The components of social welfare are varied and may include such factors as the amount of individual liberty, the level of democracy, and the way society's rewards are allocated. These factors often are combined with a concern for the well-being of the individuals in the society. Mixed ethics may require a social welfare function whose arguments include all these factors.<sup>190</sup>

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189. *Id.* at 374-76. Edgeworth was also concerned that such a redistributive tax structure might threaten liberty and lead to other social ills, such as overpopulation. *Id.*

190. The most general form of a social welfare function can be written as  $W = w(x_1, x_2, \dots, x_i)$ , where the arguments  $x_i$  of the function are any arbitrary factors—consumption, population size, behavior in conformity with a particular set of religious beliefs—that are believed to affect social welfare. The idea of social welfare as a function of arbitrarily chosen factors was introduced by Bergson and further developed by Samuelson; such functions are known as Bergson-Samuelson social welfare functions. See Burk (now Bergson), *A Reformulation of Certain Aspects of Welfare Economics*, 52 Q.J. ECON. 310 (1938) (stating value judgments required for deriving the conditions of maximum economic welfare); P. SAMUELSON, FOUNDATIONS OF ECONOMIC ANALYSIS 203-53 (1947).

Optimal tax models focus on welfarist theories of distributive justice—that is, ethics under which the welfare of a society is determined solely by the well-being of its members. Under welfarist social welfare functions, social well-being always is positively correlated with improvements in the well-being of any individual in the society. Other features of a society, such as individual liberty and democracy, may be valued under welfarist ethics because of the impact they have on the well-being of individuals, but they are not accorded independent value.<sup>191</sup>

Welfarist theories of distributive justice are of three types: utilitarian theories, weighted utility theories, and leximin theories.<sup>192</sup> Utilitarianism is the least egalitarian of these theories. It accords the utility of each person equal weight, so that social welfare is measured by the unweighted sum of the welfare of the individuals in the society.<sup>193</sup> Proponents of utilitarianism desire to maximize welfare, but do not focus on its distribution.

Weighted utility theories are more egalitarian, weighting the welfare of less well off individuals more heavily than the welfare of those who are better off.<sup>194</sup> One common weighting system assumes that social welfare varies with the *product* of the utilities of the individuals in the society. Adherents of weighted utility theories would accept a reduction in the total amount of welfare in a society in exchange for improving the welfare of society's less well off members.

The most extreme weighting of individual utilities occurs under the "Rawlsian" leximin.<sup>195</sup> Under the leximin, the well-being of the least well off person in society determines that society's social welfare.<sup>196</sup> Any

191. See Y. NG, *supra* note 54, at 21-22 (arguing that many values are merely elaborations of "basic" values which alone can be used to define welfare).

192. See *supra* text accompanying notes 49-51.

193. A utilitarian social welfare function can be written as  $W = w(u_1, u_2, \dots, u_i)$ , or  $W = w(\sum u_i)$ , where  $u_i$  is the welfare of the  $i$ th member of society.

194. A weighted utility social welfare function can be written as  $W = w(a_1u_1, a_2u_2, \dots, a_iu_i)$ , where  $a_i$  is the weight given to the utility enjoyed by a person with a utility level of  $u_i$  and where  $a_i$  decreases as  $u_i$  increases.

195. See J. RAWLS, *supra* note 29. The leximin is associated with Rawls because of his "difference principle," which states that social and economic inequalities are justified only if the inequalities increase the well-being of the least advantaged members of the society. *Id.* at 75. Rawls' theory of distributive justice is far more complex than suggested by the leximin. Improvement in the level of economic goods is subordinate, for example, to the maximization of the level of basic liberties enjoyed by all citizens. *Id.* at 60-65. Nevertheless, the leximin is consistent with Rawls' theory as it relates to the distribution of material goods.

Rawls suggests, without much analysis, that his principles of distributive justice are consistent with a rate structure that is flat above a certain exemption amount. *Id.* at 274-80. O'Kelley, *supra* note 3, at 727-55, also concludes that a modified Rawlsian analysis leads to a flat tax with an exemption. Optimal tax models that have considered a leximin, however, have found it inconsistent with a proportionate tax. See *infra* text accompanying notes 206 & 220-23.

196. A leximin social welfare function can be written as follows: Let  $i(x)$  be the  $i$ th worst-off individual of the individuals in social state  $x$ . Under the leximin, social state  $x$  is preferred to social

reduction in the well-being of someone other than the worst off member of a society is justified if it improves the well-being of the worst-off member. The leximin generally is considered the most egalitarian of the welfarist theories of distributive justice.<sup>197</sup>

### 3. *Integrating Individual Utility and Social Welfare*

The mathematical techniques used to derive an optimal rate structure in light of particular social welfare and individual utility functions are complex and of little interest to the nonspecialist. A simplified explanation of the methodology is useful, however, in evaluating the findings of optimal tax models.

Imagine a society of individuals whose well-being depends only on the amount of consumption and leisure they enjoy. Each individual wants to maximize her well-being and so works until the utility of the additional consumption she could enjoy from more earnings is exceeded by the loss in utility from the reduction in leisure that would be necessary to enable her to work more. Thus, the amount an individual works depends on the relative value of consumption and leisure to that individual and on the amount of consumption the individual can enjoy by working an additional hour.

The tax structure influences an individual's work effort by reducing the amount of consumption an individual is able to earn by sacrificing an hour of leisure. If the tax structure provides for lump-sum payments or demogrants to individuals, it will also reduce work effort by increasing the individual's nonlabor income, thus reducing her need for the income that could be earned by working. These influences are the substitution and income effects discussed above.<sup>198</sup>

The government will find it difficult to select the combination of taxes and transfers that maximizes welfare because individuals may change their work effort as the government changes the rate structure. Suppose, for example, that the government decides to tax individuals with high incomes at steep rates in order to fund grants to the poor. The

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state  $y$  if and only if there is some  $r$ :  $1 \leq r \leq n$ , such that  $U_r(x) > U_r(y)$ , and  $U_i(x) = U_i(y)$ , for all  $i < r$ . See A. SEN, *supra* note 40, at 234.

197. Under some measures of equality a weighted utility social welfare function may be more egalitarian than the leximin. Consider the following two distributions of 100 units of utility: (8,9,10,73) and (7,31,31,31). The former distribution would be preferred under the leximin, but the latter is intuitively more egalitarian and is evaluated as more equal by such measures of inequality as the Gini coefficient and the variance of the logarithms of income.

A more egalitarian social welfare function is possible, but it would not be welfarist. Take, for example, a theory of distributive justice that judges the goodness of a social state according to the amount of equality in the state as indicated by the Gini coefficient of the distribution of income. Such a social welfare function would not be welfarist because it would endorse additional equality even if, because of incentive effects, everyone would be better off with a less equal distribution.

198. See *supra* text accompanying notes 62-65.

government might discover that the tax so reduces work effort that the grants are not feasible. While trial-and-error might eventually lead to a tax structure in which revenues balance expenditures, the results would probably not be optimal.

Optimal tax models provide a means of calculating a tax structure in which revenues equal expenditures and in which social welfare is maximized under the chosen theory of distributive justice. Unfortunately, the complex nature of the optimization problem has limited the ability of optimal income tax researchers to derive important analytical results.<sup>199</sup> It is impossible to show analytically, for example, whether average and marginal tax rates should rise, fall, or remain constant over the range of income.<sup>200</sup> Therefore, the researchers' goal is to calculate the optimal rate structure under various specifications of the distribution of abilities and the determinants of individual utility.

The methodology of optimal taxation can be illustrated by a simple model that calculates the optimal rate structure under two different welfarist ethics in a society of three individuals. For purposes of this model, we will restrict the government's choice to a linear progressive tax structure consisting of a constant marginal tax coupled with a demogrant. We will not, however, alter the core assumptions and methodology of the Mirrlees model.

Imagine a society of three individuals named Alice, Betty, and Cindy. Assume each individual has an identical utility function in which her utility is determined solely by the level of consumption and leisure she enjoys. Further assume that the marginal utility of an additional unit of either income or leisure is inversely proportional to the amount already owned.<sup>201</sup> This can be represented by letting the utility that an

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199. The two most significant analytical results are of little practical value in the determination of a rate structure. The first is the rather trivial conclusion that the marginal rate on income should be between 0% and 100%. Mirrlees, *Optimum Income Taxation*, *supra* note 178, at 184-86. The second is the rather surprising result that for a bounded income distribution the marginal rate of tax on the lowest and highest income should be zero. See Sadka, *On Income Distribution, Incentive Effects and Optimal Income Taxation*, 43 REV. ECON. STUD. 261, 266 (1976); Seade, *On the Shape of Optimal Tax Schedules*, 7 J. PUB. ECON. 203 (1977).

The intuition behind the conclusion that the tax on the highest earner should be zero is as follows: Imagine a tax structure where the highest earner faces a positive marginal rate and earns an income of  $Z$  dollars. Now imagine that the rate structure is modified so that the highest earner pays no tax on any amount he earns *greater* than  $Z$  dollars. Since the individual's after-tax wage rate is increased, he will choose to work more hours and will enjoy a higher level of welfare. No one else in the society will suffer a welfare loss because tax revenues from the highest wage earner are unchanged. Indeed, if the change induces high earners *other* than the highest wage earner to work additional hours because of the prospect of earning untaxed income once their income qualifies for the zero marginal rate, tax revenues will be increased.

200. Mirrlees, *Optimum Income Taxation*, *supra* note 178, at 184-86.

201. Under such a utility function, the utility gained from an additional dollar of income is ten times as great to a person who has \$10,000 than to a person who has \$100,000. Similarly, additional

individual enjoys from an amount of consumption or leisure be equal to the logarithm of that amount. If consumption and leisure have equal weight in determining utility, an individual's level of welfare is the sum of the logarithms of the amounts of consumption and leisure she enjoys. This relationship can be expressed as

$$U = \ln(C) + \ln(L)$$

where  $U$  = utility,  $C$  = consumption, and  $L$  = leisure.<sup>202</sup>

Each individual's pre-tax income is equal to her working hours multiplied by her hourly wage. Each individual's leisure is equal to the total number of hours available to her (24 in this example) less the number of hours she works. These two relationships can be expressed as

$$z = nh$$

where  $z$  = pre-tax income,  $n$  = pre-tax hourly wages and  $h$  = hours worked, and

$$L = 24 - h.$$

Suppose that Alice, Betty, and Cindy have pre-tax hourly wages of \$10, \$20, and \$40 respectively. Each will choose to work the number of hours that maximizes the sum of the value of her consumption plus the value of her leisure. More formally, each individual will choose to work a number of hours  $h$  to maximize the function

$$U = \ln(nh) + \ln(24 - h).$$

It turns out that for Alice, Betty, and Cindy the utility-maximizing choice is to work twelve hours. Indeed, for any wage level greater than zero, the utility maximizing choice is to work this amount.<sup>203</sup> Table 1 illustrates the situation that would exist in a no-tax world.

Now consider the role of the government in setting a rate structure. In our model, the government is able to redistribute income through a linear progressive tax consisting of a uniform payment, or demogrant, financed by a constant marginal tax rate. Such a structure effects redistribution because the demogrant will be greater than the amount of tax collected for a low-income individual and less than the amount of tax collected for a high-income individual. If, for example, a rate structure

leisure to a person who currently enjoys 10 hours of leisure is worth twice as much as additional leisure to a person who already enjoys 20 hours.

202. It is further assumed that consumption and leisure cannot be negative so that  $C \geq 0$  and  $L \geq 0$ .

203. The first order conditions are  $dU/dh = 24n - 2hn = 0$ . Solving for  $h$ , we find that  $h = 12$  for all  $n > 0$ . An individual's choice to work one-half of all available hours in a no-tax world results from the equal weight given to consumption and utility in the individual utility function. This allocation of weights is arbitrary. If the individual utility function is rewritten in the form  $U = a(\ln C) + \ln L$ , the relative weight an individual gives to consumption and leisure can be varied by changing the value of the variable  $a$ . If, for example, one believes that individuals would work eight hours per day in a no-tax world,  $a$  would have a value of one-half. The decision to use a value of  $a = 1$  was made for explanatory simplicity.



TABLE 1  
NO-TAX WORLD

Name	Wage	Hours Worked	Pre-Tax Income	Net Tax	Consumption	Leisure	Utility*
Alice	\$10	12	\$120	\$0	\$120	12	7.272
Betty	\$20	12	\$240	\$0	\$240	12	7.966
Cindy	\$40	12	\$480	\$0	\$480	12	8.659
Totals		36	\$840	\$0	\$840	36	23.897

\*Utility equals the sum of the logarithms of consumption and leisure.

were adopted with a 20% marginal rate and demogrant of \$5,000, an individual with an income of \$10,000 would pay a \$2,000 tax and receive a \$5,000 demogrant for a net gain of \$3,000. An individual with an income of \$100,000, on the other hand, would pay a tax of \$20,000 and receive a demogrant of \$5,000 for a net reduction in income of \$15,000.

After application of the linear progressive tax, each individual's consumption will equal her earned income minus the tax on that income and plus the demogrant. This can be expressed as:

$$C = nh(1 - r) + G$$

where  $r$  is the marginal tax rate and  $G$  is the demogrant.

Thus, after the implementation of an income tax, an individual will choose to work a number of hours  $h$  to maximize the function

$$U = \ln(nh(1 - r) + G) + \ln(24 - h).$$

In the present example, aggregate income in the no-tax world is \$840 and the government might expect that a 20% tax on earned income would raise \$168 and finance a demogrant of \$56 per person. The government will discover, however, that because of the reduction in work effort caused by the tax, such a rate structure would raise only \$147 of revenue, \$21 short of the amount needed to finance the demogrant.<sup>204</sup>

In order to enact a tax structure that is both feasible and utility-maximizing, the government must determine the unique revenue-neutral demogrant associated with each tax rate and then calculate the marginal rate and demogrant combination that maximizes aggregate utility. In the case of the 20% marginal rate discussed in the last paragraph, for example, the revenue-neutral demogrant is \$49.78, which produces an aggre-

204. An individual will maximize the function

$$U = \ln(nh(1 - r) + G) + \ln(24 - h)$$

by choosing to work that number of hours,  $h$ , such that  $h = 12 - (G/(2n(1-r)))$ . For a tax rate of 20% and a demogrant of 56, the revenues raised from the 20% marginal rate on individuals with hourly wages of \$10, \$20, and \$40 are \$17, \$41, and \$89 respectively. Thus, when both the demogrant and the marginal tax rate are considered, the net burden of the tax structure on the three individuals is -\$39, -\$15, and +\$33 for a deficit of \$21.

gate utility of 24.058.<sup>205</sup> This represents an increase in total utility as compared to the no-tax world; it is not, however, the utility maximizing tax rate. Instead, utility is maximized by a tax rate of approximately 31% and a demogrant of \$70.88. Table 2 illustrates the effects of such a tax structure.

TABLE 2  
UTILITARIAN TAX STRUCTURE  
 Tax Rate: 31%. Demogrant \$70.88

Name	Wage	Hours Worked	Pre-Tax Income	Net Tax	Consumption	Leisure	Utility*
Alice	\$10	6.86	\$ 68.64	-\$49.60	\$118.24	17.14	7.614
Betty	\$20	9.43	\$188.64	-\$12.40	\$201.04	14.57	7.982
Cindy	\$40	10.72	\$428.64	\$62.00	\$366.64	13.28	8.491
Totals		27.01	\$685.92	\$0	\$685.92	44.99	24.087

\*Utility equals the sum of the logarithms of consumption and leisure.

As compared to the no-tax world, the utility-maximizing tax reduces total work effort by about 25% and total production by about 18%.<sup>206</sup> The utility of the best paid individual declines, but total utility is higher because the utility of the two less well paid individuals increases. Note that better paid individuals still enjoy a higher level of welfare and work longer hours than those who are less well paid.

The method of determining the optimal tax rate would be essentially the same if the government were to adopt a leximin rather than a utilitarian theory of distributive justice. However, under the leximin the government would enact the tax rate and demogrant that maximizes the utility of the least well-off individual, rather than the tax rate that maximizes total welfare. This turns out to be a marginal tax rate of 58% and a demogrant of \$96.67. Table 3 shows the distribution of consumption, leisure, and utility under such a tax structure.

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205. In the three-taxpayer society examined here, the revenue neutral grant for any given marginal rate  $r$  is

$$G = \frac{24r(1 - r)(n_1 + n_2 + n_3)}{3(2 - r)}$$

More generally, for a linear progressive tax structure with  $t$  individuals, the revenue neutral grant will be

$$G = \frac{\sum 24r(1 - r)n_i}{t(2 - r)}$$

where  $n_i$  is the wage of the  $i$ th individual.

206. The decline in productivity is less than the decline in hours worked because much of the reduction in work effort can be attributed to the least productive individual.

TABLE 3  
LEXIMIN TAX STRUCTURE

Tax Rate: 58%. Demogrant \$96.07

Name	Wage	Hours Worked	Pre-Tax Income	Net Tax	Consumption	Leisure	Utility*
Alice	\$10	0.56	\$ 5.63	-\$ 92.80	\$ 98.45	23.44	7.744
Betty	\$20	6.28	\$125.63	-\$ 23.20	\$148.83	17.72	7.877
Cindy	\$40	9.14	\$365.63	\$116.00	\$249.63	14.86	8.219
Totals		15.98	\$496.89	\$0	\$469.89	56.02	23.840

\*Utility equals the sum of the logarithms of consumption and leisure.

The leximin requires a tax structure with a substantially higher tax rate and a larger demogrant than a utilitarian tax structure. The welfare of the lowest paid individual is improved, but total utility is significantly less than under a utilitarian tax system. The high rates and large demogrants reduce the work effort of all individuals, but have the most dramatic impact on the lowest paid. Total hours worked are about 40% less than in the utilitarian case, and total consumption about 28% less. As in the utilitarian case, however, better paid persons enjoy a greater utility level and work harder than lower paid persons.

What can we conclude from our analysis of the optimal linear tax in a three-person world? First, a progressive rate structure is optimal under both utilitarianism, the least egalitarian welfarist theory, and under the leximin, the most egalitarian theory. Second, the level of progressivity depends on which welfarist ethic is adopted. A leximin dictates a much higher marginal rate and a larger demogrant than does a utilitarian ethic. Third, a progressive rate structure decreases total work effort. Fourth, under both utilitarian and leximin ethics, higher-paid individuals work more hours and enjoy a higher level of welfare than do lower-paid individuals. As we will see, these conclusions are consistent with the more complex model developed by Mirrlees.

#### 4. *The Results of the Mirrlees Optimal Tax Model*

The Mirrlees model differs from the simple model described in the preceding section in two important respects. First, it examines a society with a continuous distribution of taxpayers of differing wage levels rather than with just three taxpayers. Second, it permits the government to adopt a tax structure with variable marginal rates rather than limiting the government to a linear structure. Under the Mirrlees model, the government can adopt a tax structure with a demogrant and continuously variable marginal rates rather than a demogrant coupled with a flat rate.

The Mirrlees model calculates the optimal tax structure under both

a utilitarian theory of distributive justice like that examined in our simple model, and under a more egalitarian ethic that requires the government to maximize the product of individual utilities. The model also calculates the optimal income tax structure under different assumptions regarding the amount of revenue required by the government for purposes other than redistribution. Finally, the model considers two assumptions regarding the distribution of earning ability.<sup>207</sup>

Like our three-taxpayer model, the Mirrlees model adopts a logarithmic utility function under which the value of an additional unit of consumption is inversely related to the amount already enjoyed. Given this fairly rapid decline in the marginal utility of consumption, Mirrlees expected high rates on the wealthy to be optimal.<sup>208</sup> In fact, his model finds the optimal level of progressivity to be modest. In the utilitarian case, assuming 7% of gross income is required for government purposes other than redistribution, the top marginal rate is 26%.<sup>209</sup> The demogrant is also fairly small, about one-sixth of the median income.<sup>210</sup>

Even more surprising, the highest marginal rate falls on individuals with incomes in the *bottom* 10% of the population and the marginal tax rate thereafter declines. As a result, an individual with an income in the top 1% pays a marginal rate of approximately 17%—about 40% less than the top rate.<sup>211</sup> The falling marginal rates do not, however, prevent the tax structure calculated by the Mirrlees model from being progressive. As Table 4 shows, because of the demogrant the rich pay a higher average tax rate than do the poor, so that the after-tax distribution of income is more equal than the pre-tax distribution.<sup>212</sup> Nevertheless, the level of redistribution is not high.<sup>213</sup>

Mirrlees also finds relatively modest levels of redistribution where

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207. Mirrlees, *Optimum Income Taxation*, *supra* note 178, at 200-07.

208. *See id.* at 207.

209. *Id.* at 202 (Table II).

210. The grant to a person who does not work ( $x_0$ ) is 0.03 units of consumption. Mean consumption is 0.17 units. *Id.* at 202 (Table I). Applying these results to the United States income distribution in 1982, where the mean income for a family of four was \$30,924, the demogrant would have been \$5,457, far less than the relevant poverty level of \$9,862. BUREAU OF THE CENSUS, STATISTICAL ABSTRACT OF THE UNITED STATES 429, 448 (105th ed. 1985).

211. Mirrlees, *Optimum Income Taxation*, *supra* note 178, at 202 (Table II).

212. Various measures have been used to determine the degree of inequality in the distribution of income. In most but not all cases, these measures lead to the same ranking of alternative distributions with respect to their degree of inequality. *See* Hemming & Keen, *Single-Crossing Conditions in Comparisons of Tax Progressivity*, 20 J. PUB. ECON. 373 (1983); *see generally* A. ATKINSON, *supra* note 9, at 53-59; J. MEADE, *supra* note 39, at 112-30.

Table 4 is estimated from figures in Mirrlees, *Optimum Income Taxation*, *supra* note 178, at 202 (Tables I and II).

213. If the amount of revenue required by the government increases, the optimal level of redistribution is slightly reduced, although the main effect is to increase the tax burden on all income classes. *See* Mirrlees, *Optimum Income Taxation*, *supra* note 178, at 202-04 (compare Case 1 with Case 2, and Case 3 with Case 5).

TABLE 4  
MIRRLEES MODEL  
OPTIMAL TAX STRUCTURE: UTILITARIAN

Elasticity of Substitution = 1.0  
 Government Expenditures = 7% of goods produced.  
 Demogrant = 0.03 units. Mean income = 0.17 units.

Income Level	Consumption		Average Tax Rate	Marginal Tax Rate	Income as % of Mean	
	Pre-Tax	Post-Tax			Pre-Tax	Post-Tax
10%	0.09	0.10	—	24%	50%	59%
50%	0.17	0.16	6%	22%	94%	94%
90%	0.29	0.25	14%	19%	161%	147%
99%	0.45	0.38	16%	17%	250%	224%

the government attempts to maximize the product of individual utility levels. This result is surprising because the government's goal is quite egalitarian. If utility from consumption alone is considered under such a weighted social welfare function, the value of an additional unit of consumption varies inversely with the *square* of the consumption level of the recipient. Thus, the social value of an additional dollar to an individual with an income of \$20,000 is 100 times as great as the social value of an additional dollar to a person with an income of \$200,000. A transfer of a dollar from the richer individual to the poorer would improve social welfare so long as the poorer individual gains more than a penny for each dollar lost by the richer individual. When utility from leisure is considered, the additional weight given to increases in the consumption of the poor is less. Nevertheless, the social value of additional income to a poor person will be many times greater than the social value of that income to a wealthy person.<sup>214</sup>

Even when the government wishes to maximize the product of individual utilities, the Mirrlees model produces an optimal top marginal rate of 34% and a demogrant of just 30% of the median income. These represent only modest increases from the levels produced under a utilitarian ethic. Again, the top marginal rate falls on individuals with incomes in the bottom 10% of the population and declines steadily thereafter, so that a person in the top 1% of the population again faces a marginal rate about 40% lower than the highest marginal rate.<sup>215</sup>

214. The inclusion of utility derived from leisure makes the overall distribution of utility more equal because individuals enjoying disproportionately large amounts of consumption are unlikely also to enjoy disproportionately large amounts of leisure. The reduction in inequality from the consideration of the utility of leisure reduces the social gains from redistribution under any social welfare function that assigns additional weight to the utility of the less well off.

215. These figures are for the case in which the government revenue requirement is 2% of gross income. See Mirrlees, *Optimum Income Taxation*, *supra* note 178, at 203 (Tables VII and VIII).

The optimal tax literature provides little explanation for these striking results. Our analysis suggests that the relatively moderate level of progressivity is caused by a confluence of two opposing forces. The assumption of rapidly declining marginal utility of money drives the tax toward steep progressivity. On the other hand, the efficiency costs of progressivity become extremely great at high tax rates. As discussed below, these efficiency costs are exaggerated by the Mirrlees model's unrealistic assumptions regarding the willingness of individuals to substitute leisure for consumption.<sup>216</sup>

The shape of the optimal rate structure—a demogrant plus slowly falling marginal rates—can be explained if we assume that for a given level of redistribution, the marginal rates taxpayers face generally will be lower and the efficiency loss will be smaller under a tax structure with a larger demogrant and declining marginal rates than under a structure with a smaller demogrant and rising marginal rates.<sup>217</sup> Moreover, under a tax structure with falling marginal rates, some individuals may work additional hours in order to reach tax brackets with lower marginal rates.

### B. *Modifying the Mirrlees Model*

The development of a method of determining the optimal rate structure in light of a social welfare function and an individual utility function is a remarkable achievement in public economics. Mirrlees also asks the right question: What tax structure is best, given certain normative values and certain assumptions regarding the effect of taxes on behavior? His focus on this issue may be as important a contribution as his model.

The finding that the optimal tax structure consists of a fairly modest guaranteed consumption level plus relatively low marginal rates that peak in the bottom 10% of the population has led Mirrlees to conclude that the income tax alone is a much less effective method of mitigating inequality than is generally believed, and that the optimal rate structure may consist of a demogrant plus a constant marginal rate.<sup>218</sup>

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When government revenue requirements are 12% of gross income, the top rate rises to 39%, again in the bottom decile of the population, and the demogrant decreases to about 27% of the median income. *Id.* at 204 (Tables IX and X).

The Mirrlees model finds high marginal rates to be optimal only if both an egalitarian social welfare function and an unrealistically wide dispersion of abilities are assumed. *See id.* at 204 (Tables XI and XII) (spread of abilities with a standard deviation 2 1/2 times greater than best estimate). The adoption of a wider distribution of abilities also has a marked impact on our three-taxpayer model. For example, a change in the hourly wage distribution from \$10, \$20, and \$40 to \$7, \$20, and \$43, respectively, changes the optimal utilitarian tax structure from a marginal rate of 0.31 and a demogrant of \$70.88 to an optimal marginal rate of 0.40 and a demogrant of \$84.

216. *See infra* text accompanying notes 230-41.

217. *See* Diamond, *Negative Taxes and the Poverty Problem—A Review Article*, 21 NAT'L TAX J. 288 (1968).

218. Mirrlees also states that if the income tax is relatively ineffective in reducing inequality,

The merit of these conclusions depends, of course, on the validity of the optimal tax model. Mirrlees' model requires numerous simplifying assumptions with respect to individual and social welfare and with respect to the structure of the economy. We will examine four of those assumptions that have particular importance to tax policy: the choice of a social welfare function, the treatment of general equilibrium effects, the role of envy and jealousy, and the trade-off between labor and leisure.<sup>219</sup> We find that altering Mirrlees' assumptions regarding the social welfare function, the effect of taxes on pre-tax wages, and the impact of envy and jealousy do not alter the implications of his work for policymaking. On the other hand, we conclude that a more realistic assumption as to the trade-off between consumption and leisure substantially changes Mirrlees' results regarding the appropriate level of redistribution (greatly increasing the optimal marginal rates and demogrant) while leaving his findings about the optimal shape of the tax structure essentially unchanged.

### 1. *The Choice of a Social Welfare Function*

Mirrlees' results can be explained by his choice of a utilitarian or weighted utility social welfare function rather than the leximin. Under the leximin, much higher marginal rates are optimal.<sup>220</sup> One study found, for example, that the leximin implies an optimal marginal rate for a linear progressive tax of about 69% and a guaranteed minimum income equal to about 38% of the median income.<sup>221</sup> In our own three-taxpayer

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efforts should be made to devise redistributive taxes based on ability to earn rather than on actual earnings. Mirrlees, *Optimum Income Taxation*, *supra* note 178, at 208. If it were possible to measure ability to earn and constitutionally permissible to impose such a tax, redistribution could be obtained without any adverse incentive effects by levying lump-sum taxes on individuals with high earning potential. For each of his cases, Mirrlees calculated the optimal tax structure obtainable through such methods, assuming accurate information about each person's earning potential were available. In each case, the level of redistribution is much greater than under an income tax. *Id.* at 202-04.

Mirrlees suggests that measures such as I.Q. scores or hourly wages might be used as indicators of earning ability. The problem, as Mirrlees recognizes, is that even if such measures accurately reflect earning ability, their use in determining tax rates would create an incentive for individuals to conceal their abilities. *Id.* at 208.

219. Optimal tax models adopt other simplifying assumptions that will not be discussed in this Article. For example, optimal tax models generally do not consider the impact of progressive taxation on risk taking, savings, or emigration, and the models typically ignore differences in family size. *See, e.g., id.* at 175-76. In addition, optimal tax models have considered only a small number of different specifications of the individual utility function.

220. *See* A. ATKINSON, SOCIAL JUSTICE AND PUBLIC POLICY 307 (1983) (Table 4); Helpman & Sadka, *The Optimal Income Tax: Some Comparative Statics Results*, 9 J. PUB. ECON. 383 (1978); Stern, *On the Specification of Models of Optimum Income Taxation*, 6 J. PUB. ECON. 123, 144-45 (1976) (Table 4a); Tuomala, *On the Optimal Income Taxation: Some Further Numerical Results*, 23 J. PUB. ECON. 351, 359-61 (1984) (Table 3) (using elasticity of substitution of 0.5).

221. Stern, *supra* note 220, at 145 (Table 4a). Stern's calculations were for a linear progressive

model, the adoption of a leximin increased the optimal tax rate from 31% to 58%.<sup>222</sup> In contrast, the choice of a more egalitarian social welfare function makes little difference in the *shape* of the optimal rate structure. Optimal marginal rates still peak at a relatively low level of income and decline steadily thereafter.<sup>223</sup>

Although the adoption of a leximin leads to high optimal marginal rates, we believe this finding is unlikely to have a large impact on policymaking because the extreme egalitarianism of the leximin is unlikely to be widely endorsed.

## 2. *General Equilibrium Effects*

The Mirrlees model is based on a partial equilibrium theory. Wage rates are determined exogenously; the tax structure is assumed to have no impact on pre-tax wages. The failure of the income tax to change the relative pre-tax wages of the rich and poor follows from Mirrlees' assumption that labor supplied by unskilled individuals is a perfect substitute for labor supplied by the highly skilled; the talented produce more labor per hour than the less talented but do not engage in a different type of labor.

Using an endogenously determined pre-tax wage rate adds enormous complexity to optimal tax models. To compensate for this additional complexity, optimal tax models that consider general equilibrium effects on the wage rate typically assume only two types of labor, skilled and unskilled.<sup>224</sup> Such models obviously fail to capture the richness of the actual labor market, where workers are far from perfect substitutes, even within income groups. Moreover, the added complexity generated by assuming more than one type of labor often requires the further simplification of the models in other respects, such as limiting the analysis to linear tax structures.

The results of studies in which the pre-tax wage is endogenously determined are varied. Where realistic assumptions regarding the labor supply and production functions have been adopted, Mirrlees' results essentially have been confirmed.<sup>225</sup> Where certain extreme assumptions are adopted, an increase in progressivity can be shown to *decrease* the

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tax and used Mirrlees' assumptions with respect to the distribution of abilities and the elasticity of substitution between leisure and consumption.

222. See *supra* Tables 2 and 3 and accompanying text.

223. See Tuomala, *supra* note 220.

224. See, e.g., Allen, *Optimal Linear Income Taxation with General Equilibrium Effects on Wages*, 17 J. PUB. ECON. 135, 137 (1982).

225. See, e.g., Feldstein, *On the Optimal Progressivity of the Income Tax*, 2 J. PUB. ECON. 357, 374 (1973) (examining how the general equilibrium effect of a tax on the wage rate influences estimates of optimal tax progressivity).



after-tax income of the poor relative to the rich.<sup>226</sup> The best conclusion we can draw from current research is that the inclusion of general equilibrium effects is likely to reduce the redistributive effects of progressive taxation somewhat but is unlikely to alter the basic results of the Mirrlees model.

### 3. *Envy and Sympathy: Interdependent Utility Functions*

Mirrlees assumes that an individual's utility level depends only upon her own level of consumption and leisure. The amount enjoyed by others is irrelevant. It seems more reasonable to assume that utility functions are interdependent, that an individual's happiness depends both upon her own consumption and leisure and upon the consumption and leisure enjoyed by others.

Individuals appear to react quite differently to the relative well-being of others. Some people may be entirely selfish, feeling envious of those who are better off and feeling pleasure at having more than those who are worse off. Other people may be unconcerned with their own relative status, but sympathetic to the plight of less well off members of society. Looking at the aggregate population, however, the most plausible assumption seems to be that people generally feel some degree of envy toward those better off and some amount of sympathy toward those worse off, or at least toward those at the very bottom of the economic ladder.

The impact of envy and sympathy is difficult to intuit, and thus little weight can be given to the numerical results of models that attempt to ascribe a quantitative dimension to those factors. The direction in which those factors move the tax structure, however, is readily apparent: The inclusion of envy and sympathy would increase the progressivity of the tax structure.<sup>227</sup>

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226. See, e.g., Allen, *supra* note 224, at 142-43 (assumes labor supply elasticities are negative and different types of labor are complements rather than substitutes); Allingham, *Inequality and Progressive Taxation*, 11 J. PUB. ECON. 273 (1979) (comparing a 20% flat tax to a 50% progressive tax with the same revenue yield; finds progressive tax more equitable); Carruth, *On the Role of the Production and Consumption Assumptions for Optimal Taxation*, 17 J. PUB. ECON. 145 (1982) (discussing and approving the Allen analysis).

227. If envy and jealousy are considered, the Pareto principle does not necessarily support a policy that would increase the wealth of the rich while leaving the wealth of the poor unchanged. Y. NG, *supra* note 54, at 31-32.

Some scholars argue that the existence of interpersonal utility functions may mean redistribution can improve the welfare of the rich as well as the poor. The argument is that the rich are better off because the utility they derive from the improvement of the welfare of the poor exceeds the loss of utility they suffer from the reduction of their own consumption. Because, under this view, redistribution can be justified by the Pareto principle, this theory is often called "Pareto optimal redistribution." See Hochman & Rodgers, *Pareto Optimal Redistribution*, 59 AM. ECON. REV. 542 (1969); Thurow, *The Income Distribution as a Pure Public Good*, 85 Q.J. ECON. 327 (1971).

Under Pareto optimal redistribution, a compulsory tax system is required only because of the

The expected impact of interdependent utility functions has been confirmed by optimal tax simulations. Marginal tax rates and the overall amount of redistribution increase when envy and sympathy are considered.<sup>228</sup> Where envy and sympathy are weighted heavily, extremely high rates are generated even under a utilitarian ethic.<sup>229</sup>

#### 4. *The Overestimation of the Substitutability of Consumption and Leisure*

The capacity of an income tax to redistribute income effectively depends on whether the imposition of the tax causes people to reduce their work effort significantly. If high-income individuals respond to an income tax by sharply curtailing the number of hours they work, the tax will not only reduce the welfare of those individuals, it will also raise little money for redistribution. In extreme cases, more revenue for redistribution may be raised by a lower rate than by a higher rate. In contrast, if the amount of labor individuals provide is only modestly responsive to taxation, steep marginal rates can provide substantial tax revenues for redistribution without significantly reducing work output.

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freerider problem. Each wealthy individual is willing to contribute if others join in, but is unwilling to contribute alone. If wealthy individuals could reach agreements without transaction costs, they would contract among themselves to transfer income to the poor and government action would be unnecessary. Because the transaction costs of reaching agreement are high, compulsory taxation is required.

Advocates of Pareto optimal redistribution hope to justify redistribution without reliance on interpersonal utility comparisons. If all individuals are made better off by redistribution, there is no need to deal with the thorny problem of weighing the utility gains of one person against the losses of another.

The problem with Pareto optimal redistribution is that no compulsory system of redistribution is likely to make all individuals better off; some individuals are certain to be unconcerned with the plight of the poor. So long as even one person would prefer an increase in her own consumption to an improvement in the welfare of the less fortunate, interpersonal utility comparisons must be made and redistribution cannot be justified on purely Paretian grounds. See Canterbury & Tuckman, *Reflections upon the Income Distribution as a Pure Public Good*, 87 Q.J. ECON. 304 (1973); Pasour, *Pareto Optimality as a Guide to Income Redistribution*, 36 PUB. CHOICE 75 (1981); von Furstenberg & Mueller, *The Pareto Optimal Approach to Income Redistribution: A Fiscal Application*, 61 AM. ECON. REV. 628 (1971).

The use of interdependent utility comparisons in the optimal tax field is quite different. In optimal tax models, envy and sympathy are not used to avoid interpersonal utility comparisons, but are simply added to the specification of the utility function; an individual's utility is determined both by his absolute level of consumption and leisure and by the amount of consumption and leisure enjoyed by others. If a person is envious of those who are better off and sympathetic toward those worse off, then the utility of each individual, all else being equal, is improved by a reduction in the level of inequality in the society.

Nevertheless, including envy and sympathy in the utility function does not mean that each person prefers a highly redistributive tax structure, since the utility an individual gains from reduced inequality may be outweighed by the loss in utility she suffers from reduced consumption.

228. See Boskin & Sheshinski, *Optimal Redistributive Taxation When Individual Welfare Depends Upon Relative Income*, 92 Q.J. ECON. 589 (1978); Oswald, *Altruism, Jealousy and the Theory of Optimal Non-Linear Taxation*, 20 J. PUB. ECON. 77 (1983).

229. See Boskin & Sheshinski, *supra* note 228, at 597-99.

The imposition of an income tax reduces the amount of additional consumption an individual will earn from an extra hour of work. If other variables remain constant, an individual will respond by working less and enjoying more leisure.<sup>230</sup> The key question is: How much less will the individual choose to work?

The answer depends in large part on the substitutability of leisure and consumption. If an individual is almost as well off with a bit more leisure and a bit less consumption, then the individual will work less and enjoy more free time when his effective wage rate is reduced by an income tax. On the other hand, if an individual finds additional leisure a poor replacement for reduced consumption, then his work effort will not be reduced significantly by the tax.

The ability of an individual to maintain the same level of well-being with a different mix of consumption and leisure will depend on the elasticity of substitution between consumption and leisure.<sup>231</sup> A low elasticity of substitution 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. Conversely, 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.

The original Mirrlees model and most other optimal tax models, including our own three-taxpayer model, adopt a utility function that defines individual well-being as the product of individual consumption and leisure or, equivalently, the sum of their logarithms. Thus, a person enjoying 6 units of consumption and 6 units of leisure would have the same level of well-being as a person enjoying 3 units of consumption and 12 units of leisure. This multiplicative utility function implies a constant elasticity of substitution of 1.0 between leisure and consumption; for small changes, an individual's well-being is unchanged if her enjoyment of one good is decreased so long as her enjoyment of the other good is increased by the same percentage. Thus an individual's well-being is unchanged if her consumption is decreased by one percent so long as her leisure is increased by one percent.<sup>232</sup>

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230. In this analysis we assume no income effects—that is, the income lost because of the marginal tax is offset by a lump-sum grant. Under a purely redistributive tax, the grant will exceed the tax collected for some people and will be less than the tax collected for others. In the aggregate, however, the amount of the lump-sum grants will be equal to the income tax collected.

231. The elasticity of substitution between consumption and leisure should not be confused with the previously discussed compensated elasticity of the labor supply with respect to the wage rate. *See supra* text accompanying note 66. The former measures the degree to which an individual will alter his mix of consumption and leisure in response to a change in the relative prices of those commodities, while the latter measures the amount an individual will adjust his work hours to changes in the wage rate.

232. More precisely, for infinitesimal changes an individual is equally well off with an increase

The fact that most optimal tax models adopt a utility function with a constant elasticity of substitution of 1.0 is due to the computational advantages of such a function rather than any evidence that it accurately reflects the way in which consumption and leisure shape individual utility.<sup>233</sup> Indeed, Mirrlees makes no attempt to justify his choice of a unitary elasticity of substitution between consumption and leisure. An examination of econometric estimates of labor supply responsiveness suggests that an elasticity of 1.0 does not reflect accurately the tradeoffs individuals make between consumption and leisure.

Econometric models of the labor supply focus on the impact that changes in the wage rate have on work effort. Although typically the results of these studies are stated in terms of the compensated and uncompensated elasticity of labor with respect to the wage rate, at times the elasticity of substitution between consumption and leisure is also calculated and, even when it is not, it often can be estimated on the basis of the other findings.<sup>234</sup> As discussed earlier, most studies find that the compensated elasticity of the labor supply with respect to the wage rate lies between 0.1 and 0.2.<sup>235</sup> These results imply an elasticity of substitution between consumption and leisure of approximately 0.5.<sup>236</sup> Looking at the whole range of econometric studies of the labor supply, the most plausible conclusion is that the elasticity of substitution between con-

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in one good and an equal percentage decrease in the other good. For larger changes, the rule that a reduction in the level of enjoyment of one good can be offset by an approximately equal percentage increase in the other is no longer accurate. As noted in the text, a 50% reduction in the amount of consumption from 6 units to 3 units must be balanced by a 100% increase, from 6 units to 12 units, in the amount of leisure.

233. Computational advantages also dictate other aspects of Mirrlees' individual utility function. Mirrlees assumes a Cobb-Douglas utility function in which individual utility is the sum of the logarithms of the levels of consumption and leisure. Mirrlees, *Optimum Income Taxation*, *supra* note 178, at 180. This utility function is mathematically tractable but may overvalue additional leisure enjoyed by an underemployed person. Consider, for example, an individual who earns \$20,000 per year, works 40 hours per week and, after considering time for commuting, sleeping, and performing household chores, enjoys 30 hours of leisure per week. If that individual's utility is the sum of the logarithms of the levels of consumption and leisure, then she would be equally well off if unemployed with 70 hours of leisure per week and an annual income of \$8,591. It seems unlikely, however, that many individuals would accept an income barely above the poverty levels in return for the additional leisure that accompanies unemployment.

234. See Stern, *supra* note 220, at 135-39.

235. See *id.* at 138 (Table 2); *supra* text accompanying notes 66-92.

236. For the central values used by Stern of a compensated elasticity of labor with respect to the wage rate of 0.12 and an uncompensated elasticity of  $-0.15$ , the elasticity of substitution between consumption and leisure is 0.4077. The highest value Stern calculated for the elasticity of substitution was in the case of a compensated elasticity of labor of 0.22 and an uncompensated elasticity of  $-0.05$ . In that case the elasticity of substitution between consumption and leisure was 0.7468. See *id.* at 138 (Table 2, col. a).

Even the substantially higher compensated elasticities of labor calculated by some labor supply studies imply elasticities of substitution between consumption and leisure of less than one since the uncompensated elasticity is still found to be negative. See *id.* at 139 (backward-sloping supply curve implies elasticity of substitution of less than one).

sumption and leisure lies between 0.3 and 0.8 and almost certainly is less than the elasticity of 1.0 used in the Mirrlees model.

Using an elasticity of substitution of 0.5 in optimal tax models results in optimal marginal rates and a demogrant that are much higher than those calculated by Mirrlees. In the utilitarian case, with government revenues set at 10% of gross income, the adoption of an elasticity of 0.5 almost doubles the optimal marginal rates throughout the income range and almost triples the size of demogrant.<sup>237</sup> The level of redistribution also becomes large in an absolute sense, with the guaranteed consumption level equaling about 40% of mean income and with a negative net tax burden for individuals with gross incomes less than 80% of the mean.<sup>238</sup> Since the current mean income for a family of four is approximately \$31,000, this redistribution corresponds to a tax structure with a guaranteed income of about \$12,400 and a negative net tax for families with incomes under about \$24,000.<sup>239</sup>

Similar increases in the optimal level of taxation are seen in the case of more egalitarian social welfare functions when a more realistic specification of the tradeoff between consumption and leisure is assumed. For example, when social welfare is the multiplicative product of individual welfare, optimal marginal rates range as high as 68% and the demogrant is about 58% of average income.<sup>240</sup>

Although the assumption of a lower elasticity of substitution significantly changes the optimal level of redistribution, it does not alter the shape of the optimal rate structure. As in the unitary elasticity case, the top marginal rate is levied on individuals in the bottom 10% of the population in income and the rate declines slowly as income increases.<sup>241</sup> Mirrlees' findings with respect to the shape of the rate structure appear quite robust.

In sum, adopting a realistic value for the tradeoff between consumption and leisure leads to the conclusion that even under an ethical theory like utilitarianism, which assigns no additional weight to the welfare of less well off individuals, a substantial degree of redistribution is justified. However, the optimal shape of the tax structure—a substantial demogrant followed by flat or even slightly declining marginal rates—is very different from the steadily rising marginal rates associated with traditional progressive taxation.

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237. See Tuomala, *supra* note 220, at 359 (Table 1).

238. *Id.*

239. Mean money income for a family of four in 1982 was \$30,924. BUREAU OF THE CENSUS, *supra* note 210, at 448. The weighted average poverty level based on money income for a family of four in 1982 was \$9,862. *Id.* at 429.

240. Tuomala, *supra* note 220, at 360 (Table 2).

241. *Id.* at 359-61 (Tables 1-3).

## CONCLUSION

Traditional legal analysis of progressive taxation is flawed because it is not grounded in a theory of distributive justice. Instead, traditional analysis places the burden of proof on advocates of progressive taxation to justify their position and then attacks those justifications. To the extent that supporters of proportional taxation do offer a positive case for their position, the argument is based almost exclusively on efficiency grounds; proportionate taxation is said to lead to more work effort, less complexity, better compliance, and reduced investment in uneconomic tax shelters.

It is unlikely, however, that eliminating progressivity would produce these anticipated benefits. Only a small portion of the complexity in the tax code is progressivity-related, and there is little evidence that compliance would be improved or tax-motivated investments significantly reduced by adopting a proportional tax. A somewhat stronger case can be made based on the negative impact of progressive taxation on work effort. A progressive tax will tend to have higher marginal rates than a proportional tax, and will therefore cause a greater distortion in the tradeoff between consumption and leisure.

Arguments that the progressive tax should be eliminated on efficiency grounds also are incomplete, since they fail to explain why efficiency gains are desirable. If efficiency is the only objective, a lump-sum tax such as a head tax should be adopted. The rejection of lump-sum taxation by critics of progressivity suggests that fairness as well as efficiency grounds underlie their support for proportional taxation. But critics of progressivity have not claimed that proportional taxation is supported by an appropriate balance of fairness and efficiency. Indeed, traditional legal scholarship offers no theory of distributive justice to justify a proportionate tax.

Optimal tax models, on the other hand, have the great virtue of simultaneously considering normative goals regarding just distribution and the incentive effects of a tax structure designed to further those goals. The rate structures produced by these models vary according to the assumptions made about the determinants of individual utility, the distribution of abilities, and the structure of the economic system. The rate structures produced are also highly dependent on the choice of the social welfare function.

Our analysis nevertheless suggests that under any welfarist social welfare function, and under reasonable assumptions regarding the components of individual utility and the nature of the economy, the optimal tax structure would redistribute income from the rich to the poor, although by means of a demogrant rather than by graduated marginal rates. Although the optimal tax literature does not answer the question

of what the exact rate structure should be, it strongly suggests that if a goal of the tax system is to maximize individual welfare, the rate structure should be progressive.

Much additional work needs to be done on the ramifications of the optimal tax model. The social effects of a combination of substantial demogrants and uniform marginal rates raise important and interesting questions. Still more work is needed on the implications of nonwelfarist theories of distributive justice for a tax structure. Based on what we know now, however, the case for progressive taxation appears to be far less uneasy than has been claimed.

