# Income Taxation and Relative Income Concerns: Equity Implications

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## Abstract

If people are envious of others' income relative to their own, working excessively to compete is a possibility. The government can disincentivize this behavior by raising income taxes. While this policy will benefit the most envious and harm the least, it is underappreciated that heterogeneity in enviousness may not be random, but instead systematically related to normatively significant characteristics such as gender or race. This paper utilizes relative-income, social science, and business literature to showcase the possibility of this systematic heterogeneity. An envy correction may then have a disparate equity impact – even if the tax was optimally implemented.

**Keywords:** Corrective taxation; Equity; Optimal income tax theory; Relative income; Status

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# INTRODUCTION

If individuals are concerned about their income position relative to others[1] – they are envious – then each dollar a person makes (while making themselves better off) renders others in society worse off by causing a loss in those people's relative position. In theory, the government can address this problem by discouraging work through an adjustment to the income tax schedule: raising taxes to perfectly correct for the degree of envy at each income level.[2] As people differ in the amount of envy they experience, this tax hike will disproportionately benefit the more envious, at the relative expense of less or non-envious people, for reasons this paper will explain.[3]

While it is unsurprising that the policy has winners and losers, this paper focuses on the interesting and underappreciated possibility that heterogeneity in enviousness is not random, but instead systematically related to characteristics—like gender or race. If this is so, then calls to raise taxes to address relative income concerns may benefit or disadvantage particular groups that many are concerned with on independent normative grounds. And unlike much of the existing literature on race, gender, and tax (including disparate impact literature), which focuses on existing tax provisions,[4] I emphasize the presence of this issue even if the tax schedule is "optimally" adjusted.

More concretely, in an extreme case, suppose men were envious of others' incomes but that women are not envious. If the government applies a single envy correction to both genders, there can be (what some might perceive to be) an equity problem even if the correction balances the tradeoffs of revenue raising, work disincentives, and distribution between income levels. This is because while both genders would face an extra tax, only men would benefit from all the people they were envious of being brought down with them. Women receive none of the benefits of others' reduced incomes because they were not envious of others in the first place.

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[1] This is increasingly salient in this era of economic inequality. E.g. Walasek and Brown (2015), Wang et. al. (2023).

[2] E.g. Frank (1985), Ireland (2001), Layard (2005), Piketty and Saez (2013) (modeling where "a decrease in a person's income increases others' utility").

[3] Compare e.g. Oswald (1983) (heterogeneity in degree of altruism and envy; and pointing out that the altruistic are harmed where the envious predominates) with e.g. Layard (2005) (use of model with homogenous envy preferences).

[4] For race and tax, see e.g. Dorothy Brown (2021)'s book on "The Whiteness of Wealth: How the Tax System Impoverishes Black Americans--and How We Can Fix It" and her prior work, Martin and Beck (2016) (property tax caps benefit white home owners who disproportionately own expensive homes), Atuahene (2018) (racial differences in property tax assessments), Rusk (2001) (Brookings institute piece, on the "segregation tax", disparate impact for black homeowners). For gender and tax, see e.g. Alstott (1996) ("tax policy and feminism"), McCaffery (1997) ("taxing women"), Shurtz (1997) ("Gender Equity and Tax Policy: The Theory of 'Taxing Men"). See also the Critical tax theory approach generally, Infanti and Crawford (2022, 81).

The idea of adjusting the income tax schedule to address problems such as envy has been analyzed under the optimal (or ideal) income taxation framework. Analysts of this framework focus on revenue-raising, efficiency, and distributive effects, particularly trade-offs between the latter two. The approach allows the analyst to plug in various views on how progressive a tax should be, how much revenue it should raise, empirical matters, etc. and generate an optimal income tax schedule. They can then ask how the schedule should ideally be adjusted in light of *additional* considerations. One such consideration is the corrective goal. For example, some favor greater redistribution at a higher efficiency cost, as the resulting fall in societal production reduces currently excessive pollution. *This paper*'s focus on income envy addresses another corrective goal: the idea that some disincentives to work from higher taxes are desirable because of the negative externality each person imposes on others when making more money – a consequence of the additional envy the income creates in others.

As developed in Part I, the idea that envy exists and is something that social policy should correct for is a controversial position, but one this paper takes as a given to consider the implications of following this idea to its logical conclusion. In particular, it highlights the issue of systematic heterogeneity – an issue unaddressed in previous analyses of income envy and taxation. Systematic heterogeneity is worthy of consideration in light of empirical findings in the relative-income[5], business, and social science literatures. This heterogeneity raises a concern about adjusting individuals' income tax rates, even if they are "optimally" implemented. As with the existing disparate impact literature, I ultimately emphasize the need for empirical studies to determine the actual equity impact of tax policy. Optimal tax theorists may also be interested in further addressing systematic heterogeneity in their analysis.

This paper does not argue that the findings of the various studies cited are actually correct.[6] Nor is it affirmatively defending the claim that the resulting disparate impact of "optimal" corrections is problematic, although some will probably regard it to be so. And the paper is not proposing specific solutions such as gender-based taxes, which would hypothetically resolve the example provided above. Rather, concepts such as envy and status-seeking evoke a large body of literature on individual differences in such matters. And taking the literature as true allows for an exploration of systematic heterogeneity that is otherwise difficult under assumptions of revealed preference.[7]

Part I provides a brief background on the subjects of optimal income tax theory, corrective taxation, the existing disparate impact literature, and relative-income.

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[5] This literature generally uses surveys to attempt to gauge a person's "subjective well-being", an approach at times known as "happiness economics." Diener, Lucas, and Oishi (2018)

[6] In fact, some of the implications of this corrective tax appear prima facie questionable.

[7] Nikolova and Graham (2020).

Part II discusses the optimal envy correction to the income tax schedule, as the optimal income tax literature would suggest, for both the situation where people are equally envious of each other's incomes, and the situation where two groups differ in the degree of envy they have towards individuals' incomes.

Part III identifies some underappreciated implications of the correction by applying the theory's rate setting approach to gender, racial, and political categories. This paper shows, for example, how high-income women may be harmed relative to high-income men. The impact on minorities is more ambiguous; envy correction may benefit some minorities while harming others. Yet relative income concerns are only one part of a person's broader preferences. After all, while the analysis suggests that liberals may be harmed relative to conservatives, it is liberals who prefer more taxes. This may be due to the presence of additional preferences such as "inequality aversion", which may be systematically stronger for liberals. This and other interactions ultimately showcase the need for more refined data if one wishes to assess the empirical significance, if any, of the disparate impact this paper identifies.

# I. Background

## A. Optimal income taxation

Literature on optimal income taxation literature offers a theoretical approach that attempts to model the taxes and transfers needed to maximize some social welfare function, subject to a government budgetary constraint and information asymmetry.[8] With labor taxation, the asymmetry comes from a lack of information regarding an individual's capacity to earn. Taxes disincentivize work, reducing "efficiency", but can be redistributed to lower income people, increasing "equity". This trade-off is emphasized in much of the literature.

Two key traditional assumptions of optimal labor income tax models involve (1) homogenous consumption preferences (between a good and 'leisure'), with the population (2) differing only in earning capacity. Other implicit assumptions include, notably, that each individual's preferences are independent of others' activities, including the income they earn and how much they consume.

The many unrealistic simplifying assumptions are relaxed, mostly in isolation, in many papers. There is literature analyzing heterogeneous consumption (good vs leisure) preferences in individuals,[9] work externalities,[10] migration,[11] and preferences affected by others (which this

[8] See e.g. Piketty and Saez (2013).
[9] E.g. Blomquist and Christiansen (2008).
[10] E.g. Lockwood, Nathanson, and Weyl (2017), Rothschild and Scheuer (2016).
[11] E.g. Mirrlees (1982).

paper focuses on).[12] And the fact that governments are not completely blind but can instead distinguish people based on characteristics correlated with earning capacity has led to the idea of "tagging" or taxing people differently based on these features (e.g. higher income taxes on men, tall people).[13]

The controversies surrounding tagging (and the fact that governments generally do not do it[14]) have led to suggestions of horizontal equity considerations in taxation: the idea of treating like-situated persons alike in the tax system.[15] The issues surrounding tagging have also been used to attack the standard approach of utilitarianism and conventional social welfare functions.[16] Without taking a position on utilitarianism etc., this paper takes the standard approach in its treatment of envy as being fair game for social policy correction. Though I note that the distributional complexities and potential harm discussed by this paper also arise in part from the utilitarian basis of the model.

## B. Corrective taxation (of commodity purchases and income)

The specific models this paper discusses involve corrective labor income taxation: a corrective tax levied on taxpayers' income. In general, corrective taxes are designed to price-in costs that a decision-maker fails to fully account for when making decisions. The traditional focus has been costs incurred by others from a given activity: an "externality." The paradigmatic case is taxes on pollution.[17] More recently, there has also been interest in internalities, "costs that are borne by the individual … themselves in the future but are ignored at the point of" decision-making.[18] This includes "sin" taxes such as taxes on the price of alcohol and sugar.[19]

While real world corrective taxes tend to be commodity taxes, a corrective tax on income is a more theoretical variant (or at least a more theoretical justification for higher taxes).[20] In this analysis, income is treated either as the activity that directly causes the externality, or more often,

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[12] E.g. Oswald (1983).
[13] See Piketty and Saez (2013) discussing models since Akerlof (1978). For an example of gender-based tagging, see Cremer, Gahvari, and Lozachmeur (2010).
[14] But see e.g. the head of household filing status in the US, which is mainly claimed by women (76%). National Women's Law Center (2017)
[15] Piketty and Saez (2013). Horizontal equity is separately controversial. E.g. Kaplow (1989) (critiquing), Lindsay (2016) (defending).
[16] E.g. Weinzierl (2012), Kaplow (2008) ("Some have reacted to prior drafts and presentations of this paper by suggesting that explicit analysis of optimal policy with heterogeneity bolsters the case against utilitarianism and perhaps welfare economics more broadly."). For a more detailed discussion of alternatives to the utilitarian approach and a defense of utilitarianism, see Kaplow (2022).
[17] Baumol (1972).
[18] Griffith, O'Connell, and Smith (2018, 1).
[19] Conlon, Rao, and Wang (2021). Though the government subsidization of healthcare and the negative impact on friends from one dying presumably also makes this an externality.
[20] But see Yan, Feng, and Ng (2021) (arguing that existing high taxes correct for environmental degradation and conspicuous consumption).

a proxy for some other activity that causes the externality. Income has been treated as a proxy for the social harm of jobs[21] and for consumption with negative externalities.[22] A tax for envy likely reflects both the direct and the proxy justifications for a corrective income tax.

Unlike optimal taxation's equity-efficiency trade-off, corrective taxation would be efficient in a model of homogeneous individuals. This is because such taxes are supposed to resolve deviations between the private and social costs of the world without such a tax, deviations that render the "no tax" world's work-effort or consumption levels inefficient. However, real-world individuals are heterogenous, and there has been significant interest in the distributional and efficiency effects of corrective commodity taxes. including energy taxes[23] and sin taxes.[24] For sin taxes, differences in people's responsiveness within each income group calls into question the efficiency of the tax,[25] or whether "additional taxes are simply a transfer from these [non-responsive] households."[26]

This paper's analysis is similarly concerned with the potential for differing distributional impact and deadweight losses to cut across income groups, affecting only a subset of each income group.

## C. Disparate impact literature

The economists' discussion of within-income heterogeneity in the corrective tax context reflects the recent economist trend towards discussing the (mainly gender) differences in tax provision impact, both theoretically[27] and empirically[28]. However, for policymakers and legal academics, discussions of tax law's disparate impact along gender and racial lines have been long standing.

For legal analysis on gender lines, there have been law review articles on "Tax Policy and Feminism"[29], and an entire book on "Taxing Women".[30] This includes a discussion of explicit

[21] Lockwood et al. (2017).
[22] Yan et al. (2021) (environmental degradation and conspicuous consumption).
[23] Pizer and Sexton (2019).
[24] Conlon et al. (2021), Ayyagari et al. (2009).
[25] E.g. Ayyagari et al. (2009, abstract) (finding a heavy drinker group most likely to impose negative externalities but the least responsive to price changes, and a highly responsive group unlikely to cause negative externalities that is needlessly suffering deadweight loss). Conlon, Rao, and Wang (2021) (identifying 8 different household clusters by purchasing patterns). There is also heterogeneity in energy taxes response. Pizer and Sexton (2019).
[26] Conlon et al. (2021, 16) (expressing particular concern as this group is "more likely to be from the lowest levels of income and educational attainment, as well as older (Age: 55-64).").
[27] E.g. Alesina et al. (2011), Meier and Rainer (2015).
[28] E.g. Grown and Valodia (2010), Richards-Melamdir (2021), Delgado Celho et al. (2022)
[29] Alstott (1996). See also Kornhauser (1997) ("What do women want: "feminism and the progressive income tax"), Shurtz (2019) ("Tax, Class, Women, and Elder Care").
[30] McCaffery (1997)

and implicit biases in the tax system,[31] from allocations of deductions and taxes on goods[32] to the implicit discouragement of secondary earners with joint filings.[33]

There is a similar discussion of racial issues in the tax system, from "A Black Critique of the Internal Revenue Code"[34] to Dorothy Brown's recent book on "The Whiteness of Wealth"[35] (and her prior work), to the wealth of literature on race, housing, and property taxes,[36] to some work on the EITC.[37] This includes an approach known as critical tax theory, a field that expressly addresses the "impact tax laws have on historically disempowered groups"[38], focusing on race, gender, and intersectional analysis. Though the idea remains controversial in US tax scholarship.[39]

To achieve the discussion of systematic differential impact, these literatures take myriad approaches. Some analyze explicit discrimination, e.g. property valuations.[40] Others criticize the tax system's design around an expectation of what ought to be, as in with the implicit favoring of single-earner families over double income.[41] A third strand discusses the comparative wealth of the groups in the face of policies that benefit the rich or poor (e.g. analyzing policies that benefit the rich when black people and women tend to be of lower wealth and income).[42] There are even discussions of cultural differences, e.g. minorities preferring international cash remittances and informal family care instead of charity giving.[43]

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[31] E.g. Stotsky (1997)
[32] Id. (higher taxes on alcohol and tobacco as a potential implicit bias to men). See also Jacobsen (2018) (discussing studies dating back to the 1990s on women paying more in commodity taxes).
[33] E.g. Brown (1997) (discussing the literature's emphasis of married women as marginal wage earners), Stotsky (1997), Pignataro (2015)
[34] Moran and Whitford (1996)
[35] Brown (2021)
[36] e.g. Rusk (2001) (calling home value differences a "segregation tax"), Martin and Beck (2016) (property tax caps benefit white home owners who disproportionately own expensive homes), Atuahene (2018) (racial differences in property tax assessments), Brown (2018) ("Homeownership in Black and White: The Role of Tax Policy in Increasing Housing Inequity"), Thomas (2021) ("The Racial Wealth Gap and the Tax Benefits of Homeownership"), Xu (2023) ("Awarding Racial Segregation: The Low-Income Housing Tax Credit as a New Racially Restrictive Covenant").
[37] E.g. Compare Hardy, Hokayem, and Ziliak (2022) (beneficiaries of EITC are black people) with Brown (2007) (vast majority of EITC recipients are working class whites and it should be sold that way).
[38] Crawford (2009) (book collects a myriad of articles describing differing impact on various groups).
[39] E.g. Martinez (2017), Infanti and Crawford (2022)
[40] E.g. Atuahene (2018) (racial differences in property tax assessments), Jacobsen (2018) (taxation of women's hygiene products)
[41] E.g. Brown (1997)
[42] E.g. Strand and Mirkay (2020) (wealth and income differences and the shift to decreased progressivity), Martin and Beck (2016) (caps and distribution of expensive home)
[43] e.g. Martinez (2017) (critical tax scholarship criticizing the US charitable deduction for not including remittances, which comparatively harms Latinos). Uy (2009, 132) ("Asian families are also more likely to have nonworking relatives living with the nuclear family.").

This paper's analysis most resembles the ought-to-be and cultural differences analysis of the existing differential impact literature. Rather than focusing on the existing income distribution differences with race and gender, I emphasize within-income heterogeneity. Instead of discussing implicit biases (or even discrimination) within the current system, I discuss a corrective tax that is optimally implemented. Finally, by taking the relative-income and social science literature seriously, my analysis generalizes cultural differences in behavior into preference or welfare differences from the same behavior. Without arguing for the correctness of the literature's actual insights, this approach generates distinct results that should be considered.

## D. Literature on relative income

The relative income literature is a part of an economic approach that utilizes the empirical subjective well-being" ("SWB") measure within psychology[44] to answer questions of interest to economists. The core of this approach involves taking self-reported data (usually surveys) on questions reflecting the three dimensions of SWB[45] and, in effect, using it as a directly measurable proxy for utility.[46] This controversial approach to utility contrasts the prevailing one of "backward induction of utility based on people's choices and revealed preferences, derived under restrictive assumptions about human behavior."[47] Though the use of surveys may introduce its own biases,[48] SWB (unlike backwards induction) allows for direct comparisons between people. This paper thus takes the approach as given to conduct its analysis of systematic heterogeneity, without commenting on the correctness of the SWB approach.

Findings in the SWB psychology literature most relevant to this paper include: the diminishing connection between absolute income and SWB (and marginal income's low impact at high incomes),[49] as well as the high impact of income relative to others on SWB.[50] Such issues relate to the Easterlin Paradox, a finding that richer countries do not have much greater SWB than

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[44] Diener, Oishi, and Tay (2018). The measure is often referred to as "happiness."

[45] Primarily SWB's hedonic and evaluative dimensions, occasionally also eudaimonic. See e.g. Nikolova and Graham (2020) (also discussing happiness economics findings generally). Hedonic refers to people's positive and negative emotions. Evaluative refers to a "a judgment about one's overall life circumstances and requires reflecting on life as a whole." Nikolova and Graham (2020, 5). Eudaimonia relates to the subjective meaning and purpose of life and is much less studied or measured. Nikolova and Graham (2020).

[46] Nikolova and Graham (2020).

[47] Nikolova and Graham (2020, 3).

[48] Nikolova and Graham (2020) (citing Stone and Krueger (2018) for a detailed discussions into the potential methodological problems of SWB surveys, and the resolution of most such issues through techniques). Note, Cross-cultural comparisons on SWB may also face caveats such as differences in the connotations of terms and reporting tendencies. Diener, Lucas, and Oishi (2018).

[49] Diener, Oishi, and Tay (2018). Note, while Kahneman and Deaton (2010)'s famous 75,000 USD cap on SWB increases from absolute income was disproven by Killingsworth, Kahneman, and Meller's (2023) new analysis, the magnitude of increases remain quite small, p. 4.

[50] E.g. Goerke and Pannenberg (2015, abstract) ("using novel German data on self-reported comparison intensity and perceived relative income for seven reference groups" to "find negative correlations between comparison intensity and SWB…"). See also Nikolova and Graham (2020).

poorer ones, the result and implications of which continue to be debated.[51] Yet though this paper focuses on envy, SWB psychology also describes other preferences such as "inequality aversion"[52], which may interact with a person's envy preferences in the real world (it is perhaps more salient for liberals, see section III.C).

The findings on relative income and SWB provide support for the optimal tax models this paper discusses,[53] while cultural, gender, and political differences with respect to many of the results support my analysis of heterogeneity.[54] Yet with this literature comes two big questions, the magnitude of the absolute and relative income effects, as well as the reference groups one compares to.

The diminishing SWB returns on absolute income have been well-documented and some have further suggested the existence of a satiation point on income, beyond which SWB is flat or may even decline.[55] The satiation point represents a point where "needs", satisfied by increases in absolute-income, "are largely met" and "desire-based accounts" such as relative-income play a greater role.[56] This echoes studies on relative-income that have shown its effects to be as strong as or stronger than absolute-income.[57] With relative-income effects serving as the negative externality the tax corrects for, their magnitude reflects the potential for SWB gains even after paying the corrective tax (before any revenue neutralizing adjustment for the taxpayer).[58]

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[51] Diener, Oishi, and Tay (2018). For example, Easterlin argues in the long-run there is no significant relation between income and happiness, at least amongst high income countries, because one shifts one's comparison groups up along with one's income. Easterlin and O'Connor (2020). An additional potential contributor to the Easterlin paradox is the potential for people to adapt to income changes and move to some SWB baseline (referred to as "habituation" or "adaptation"), Nikolova and Graham (2020).

[52] This effect, where societal income inequality contributes negatively to SWB, contrasts the "tunnel" effect where inequality actually increases SWB due to positive expectations of the future. E.g. Becchetti, Colcerasa, and Pisani (2022) (discussing dominance of tunnel effect at lower inequality levels over inequality aversion, but not at higher inequality levels), Wang, Pan, and Luo (2015). Inequality aversion may appear similar to envy for high income earners, though behaving differently for low income earners.

[53] Habituation, see footnote 51, is a further source of indirect support, as adapting to changes in absolute income may make relative income more salient.

[54] Diener, Lucas, and Oishi (2018).

[55] Diener, Oishi, and Tay (2018), Jebb et al. (2018) (finding SWB declines beyond the satiation point in some countries). But see Killingsworth et al. (2023) (heterogeneity in responses to income increases though small magnitude of effects overall).

[56] Jebb et al. (2018).

[57] For example, Layard, Mayraz, and Nickell (2010)'s regression using German panel data gets a 0.00324 point increase on the 10 point life satisfaction scale from a 1% increase in own absolute income but a 0.00331 point decrease from a 1% increase in average household income, after applying fixed effects. The regression also included log lagged incomes (1, 2, and 3 years), each of which had much smaller effects, with the highest being -0.00057 from a 1% increase in the 3 year lagged income. Id. See also Jebb et al. (2018), Reyes-García et al. (2016, 787) ("[C]ontrary to what has been found in previous work in the developing world, the [adaptation and social comparison] effects might be larger than the effects of absolute income.").

[58] See further discussion *infra* section II. In fact, a satiation point beyond which SWB declines may even suggest the need for 100% marginal taxes or, alternatively, binding regulation. See Oswald (1983) (pointing this out where people are sufficiently envious).

Yet relative income requires a comparator, and while many models or studies assume that a person compares with the entire nation (national average income) or differing income brackets within the nation,[59] a person's real-life reference group is more complex. A real person's reference group might either be larger or smaller than the nation.[60] Of the people in the surrounding area (Luttmer (2005) analyzes Public Use Microdata Areas of 100,000 people), only the income of people sharing certain common traits such as college education may be relevant in reducing SWB.[61] And people may in fact be altruistic regarding some of those around them (close neighbors) while being envious of others.[62] This close neighbors dynamic may even extend to entire census block groups, as one study found that "Americans tend to [have highest SWB] when they live in a high-income [census block] in a low-income [county]."[63]

These complex reference groups mitigate some of the facially skepticism-inducing aspects of the relative-income logic. After all, while the basic relative-income logic suggests that the wealthy would want to move to poorer neighborhoods (all else being equal) to feel superior, these same wealthy people might not see the poor as adequate comparators and may instead be saddened by the material conditions faced by those around them.[64]

However, the concept of relative-income is slippery in its connections to status, conspicuous consumption, and other conspicuous activities such as leisure. So this paper will note and mostly set aside a few issues that come with the focus on relative-income. While models assume that relative income is either directly relevant or reflects conspicuous consumption, studies do not generally address whether knowledge of the income directly affects SWB, or whether there are intermediate factors such as the presence of visible luxury goods.[65] Yet the particular mechanism likely impacts the effectiveness of any tax.

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[59] E.g. Aronsson and Johansson-Stenman (2018) (modeling with both average national income as the reference group as well as with each person comparing themselves upwards with a higher income group within the country). Though Frank's (1985) discussions of union contracts reflects more nuanced reference groups (the group being the union workers).

[60] E.g. Knight and Gunatilaka (2010) (rural Chinese people using the village as comparator instead of the country), Becchetti et al. (2013) (using incomes in nearby *countries* as comparators), Goerke and Pannenberg (2015, abstract) (finding negative correlations with "colleagues, people in the same occupation and friends, but not for other reference groups, such as neighbors").

[61] Luttmer (2005) (negative impact on SWB relative to income increases of college-educated people in the same Public Use Microdata Area of 100,000 people, but not non-college for college graduates).

[62] Kingdon and Knight (2007) (SWB *increasing* as close neighbors' incomes increase).

[63] Firebaugh and Schroeder (2009). Though there may also be other practical benefits to living in a nice neighborhood that is dominating the relative-income effect.

[64] Of course, some people such as digital nomads do move to poorer countries to experience a superior lifestyle.

[65] While Goerke and Pannenberg (2015) and Layard, Mayraz, and Nickell (2010) discuss perceived income, it is unclear what leads to perceived income. Instead, Perez-Truglia (2013) found that improved household ranking of observable consumption (but not unobservable consumption) within the reference group increases wellbeing. Winkelmann (2012, abstract) gets at this result with the specific good of luxury cars, finding that the "prevalence of luxury cars in the municipality of residence has a negative impact on own income satisfaction."

First, suppose relative-income concerns go beyond (conspicuous) consumption to capture work prestige[66], conspicuous busyness,[67] or conspicuous education[68] – sources of non-consumption status-seeking. If so, the distributional and efficiency impact may become more intricate. After all, both the worker's elasticity to higher taxes, as well as the degree to which such status can be reduced as a result of taxation is called into question. Aside from the comments in the proceeding footnotes, this paper will set aside this issue.

Next, suppose relative-income mainly reflects conspicuous consumption, it is unclear whether increases in conspicuous consumption actually makes individuals themselves happier in the SWB sense. Most conspicuous consumption studies demonstrate a positive impact on SWB.[69] Yet at least one study on poor Indian families demonstrated a negative one.[70] Zhang and Merunka (2015) attempt to reconcile the mixed results by finding some evidence that a self-signaling motivation for conspicuous consumption raises SWB while an other-signaling motivation decreases it.[71] The potentially complex motivations for conspicuous consumption may complicate a person's response to the envy correction. This issue is particularly relevant for the discussion of ethnic minorities in III.B, where the literature suggests a myriad of consumption rationales, but will otherwise be disregarded by the paper.

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[66] Job prestige is a source of status that may either complement or substitute relative income. Valentino (2019) (PhD dissertation) examined variations in respondents' ratings of job prestige in the US and suggests four different logics, "cultural capitalist", "traditionalist", "blue collar", and "inverted." Income is positively correlated to prestige in only the first two categories. Valentino finds participants of the "cultural capitalist" logic as being the most educated and wealthy, as well as the most women and white people-heavy. In contrast, "blue collar" logic is the least-educated, most male-heavy. So an envy correction that attempts to adjust for job prestige faces both a systematic heterogeneity equity issue, and an efficiency issue in whether one can directly or indirectly reduce job prestige as a result of the tax.

[67] Bellezza, Paharia, and Keinan (2017) describes what they call the "conspicuous consumption of time": a busyness that generates positive status inferences through the "perceptions that a busy person possesses desired human capital characteristics..." Yet this too is culturally dependent, as while Bellezza et al. (2017) found that Americans rated a person with a "working busy lifestyle" as being greater in status than a person with a "nonworking leisurely lifestyle", Italians did the opposite. See also Okulicz-Kozaryn (2011, abstract) ("Americans may be happier working more because they believe more than Europeans do that hard work is associated with success."). While the envy correction likely has better luck reducing work hours than job prestige, the systematic heterogeneity issue remains present.

[68] The wealthy have increasingly invested into elite education and human capital as a part of their 21st century consumption instead of luxury goods, Currid-Halkett (2018). The relative education level of the reference group itself may negatively impact SWB, Nikolaev (2016) (though the more highly educated are less impacted by the comparison). It is again unclear whether one can directly or indirectly reduce school prestige as a result of the tax.

[69] E.g. Perez-Truglia (2013), Hudders and Pandelaere (2012) (materialistic consumers consuming more luxury goods and obtaining increased satisfaction, at least in the short run), DeLeire and Kalil (2010) (if leisure consumption is interpreted as status).

[70] Linssen, van Kempen, and Kraaykamp (2011).

[71] Zhang and Merunka (2015) find a p-value <= 0.1. See also Diener, Lucas, and Oishi (2018), finding that materialism and "being a maximizer" are both correlated with unhappiness. Note, this paper disregards the utility misprediction hypothesis," which suggests that "individuals make systematic errors in estimating the well-being implied from their choices." Becchetti and Conzo (2018, abstract).

Finally, relative income is not the only source of status and there are other visible conspicuous activities such as leisure or health. Having free time and looking healthy may well be salient, and a few papers have argued that people will substitute into them from earning wages.[72] This paper is not the place to comprehensively address such arguments, though I will note that many forms of leisure and health – including being a stay-at-home person, having good teeth, or early retirement – are implicitly income dependent.[73] Instead, I will take the standard assumption that leisure hours are not conspicuous.

With the taxation and relative income literature in mind, this paper will now outline the rate setting process for the envy correction, and its implications for gender, race, and political groups.

# II. Adjusting income taxes to correct for relative income concerns

Optimal taxation literature has modeled relative-income concerns, conceptualized variously as envy[74] or a taste for status through conspicuous consumption,[75] in a myriad of manners. Models vary from those seeing relative-income concerns as a zero-sum game in which only rank position matters (the satiation point studies support this, but not Killingsworth et al. (2023)) to those in which status-seeking can bring a positive impact.[76] With each person's consumption exerting a negative externality on others, such models often lead to the conclusion of a corrective income tax[77] on relative-income concerns.

Putting aside the practical difficulties of obtaining people's degrees of altruism and envy at each income level,[78] an optimally-set envy correction itself has the potential to generate (what some may perceive to be) equity concerns. Understanding this disparate distributional impact along gender, ethnic (and political) lines requires understanding the corrective justification for raising income taxes under such a model. This Part begins with the standard case in which preferences,

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[72] Aronsson and Johansson-Stenman (2013) (conspicuous leisure as substitute), Mujcic and Frijters (2015) (health as substitute to wages).
[73] Having a stay-at-home-person requires income. The free time of early retirement differs from the free time of unemployed homelessness. Health and dental insurance is expensive, particularly in the US.
[74] E.g. Layard (1980), Oswald (1983).
[75] E.g. Frank (1985), Ireland (2001), Layard (2005).
[76] Compare E.g. Oswald (1983) (relative income concern as comparison with national average income as the reference group), one comparison approach modeled by Aronsson and Johansson-Stenman (2018), with Weisbach (2007) (describing Ireland (2001)). Variants further include models with concerns for habituation, See e.g. Layard (2005), Guo and Krause (2011), or the potential for insufficient savings, Weisbach (2007) (describing Frank's arguments in various papers).
[77] Or consumption tax.
[78] Weisbach (2007). While Weisbach makes the further critique that models such as Oswald's represent a preference to make others worse off, there is in fact a widespread feeling termed *Schadenfreude* that refers to positive feelings from others' misfortune. Combs et al. (2009).

including with regard to the degree of envy, are (often implicitly) assumed to be homogeneous. Then it considers the abstract possibility of heterogeneous preferences regarding the degree of envy. Part III will then consider the implications of this possibility where the heterogeneity is systematic along gender, ethnic, and political lines.

## A. The standard case: Homogeneous work ability and envy preferences

Beginning with the homogeneous case where no one is envious: suppose the world contains only one type of person such that every person in the world is non-envious ("neutral") and otherwise has the same preferences for consumption or leisure as well as the same work effort and earning capacity. In this world, marginal income taxes, which disincentivizes work effort (a "distortion"), are unnecessary to fund the appropriate public goods (if any). Instead, the government can use a uniform lump-sum tax to fund the goods with no loss of "efficiency".

Now suppose that each member of the group is instead equally envious of others' incomes. The people of this world become (1) less happy when the people around them do better, and, the other side of the same coin, (2) happier when those around them do worse, holding their own work and income situations constant. Because there is only one type of person with the homogeneity assumption, everyone is equally envious of one another, and each person's extra dollar of income exerts a negative externality that makes others worse off.

In this model, the initial work effort without marginal income taxes is socially excessive. The individuals do not account for the fact that their income (consumption) makes others unhappy, so the private benefits encourage each individual to seek income.[79] As relative income may ultimately be zero-sum,[80] work effort becomes (at least partially) a prisoner's dilemma. Individuals cannot coordinate to work less collectively, and the result leads to excessive work and insufficient leisure on all parties: they are all overworked but have nothing to show for it because everyone else also has high income from being overworked.

One solution to solving this collective action problem is regulation on work hours set at the optimum level of work-leisure combination.[81] Though each person loses some (unimportant-for-

[79] E.g. Frank (1985, 103) ("When individuals are spoken of below as making consumption decisions noncooperatively, this will mean that they make the Nash-Cournot assumption that their own spending behaviour does not perceptibly alter the spending behaviour of others.").
[80] E.g. Layard (2005, 155) ("Relative consumption, or indeed relative status or relative position of any kind, is in fixed supply. There is no point in people devoting energy to acquiring it. It is simply inefficient.").
[81] Frank (1985) (suggesting that union contracts are a form of "cooperative consumption agreement" that resolves the problem of individual workers "sell[ing] various aspects of their services too cheaply" even without incorporating "monopsony power" and further discussing other regulation).

its-own-sake) cash from overtime, they each get to enjoy the extra hours of leisure, and they are prevented from trying to one up each other by earning more money. Everyone is better off.[82]

This paper is interested in the alternative solution of introducing marginal income taxes (in addition to the lump-sum tax) to achieve the same welfare maximizing level of work-leisure combination. While normally "distortive" in reducing the private benefits of work, here the corrective tax is efficient in merely reducing private benefits to equal the social benefit of work, causing individuals to substitute into more leisure.

In contrast to the regulation case, each person now pays extra taxes to the government, so it is ambiguous whether each person (rather than society) is better off under the tax.[83] While it is possible that each person will be better off even after paying taxes (if they have a high degree of envy but care little about income for its own sake),[84] this paper will instead take the standard corrective tax modeling literature assumption of government compensation for the tax burden.[85] In this section's model of a lump-sum tax and a marginal income tax, the income tax revenues can be used to reduce the lump-sum tax, compensating the people and rendering them strictly better-off than before the envy correction.

## B. Heterogeneous envy preferences

Introducing heterogeneity such as less envious, neutral, or altruistic[86] people alters the account:

Suppose the world consists of two groups of people identical in their earning capacity and consumption preferences but differing only in that one group is envious of others' income while the other group is unenvious ("neutral"). The "initial" (no corrective tax) prisoner's dilemma on work effort is only partial as the neutral people's work effort is not impacted by others'

[82] Specifically, there are three sources of individual welfare changes: individuals gain from (a) the reduction in everyone else's income, and (b) the additional hours they spend on leisure, in exchange for (c) the absolute income loss from the reduction in work hours. Because the no regulation work level was excessive, the sum of (a) and (b) is larger than (c).

[83] The additional source of individual welfare change, the loss in absolute income from paying taxes, can be denoted (d). It's not clear (a) + (b) is larger than (c) + (d).

[84] In this situation, (a) envy, would have a high magnitude while (c) and (d), reductions in absolute income, would be low magnitude. Perhaps dropping down from a Ferrari to a Mercades matters less when it happens to everyone else too.

[85] E.g. Griffith, O'Connell, and Smith (2018, 5) (discussing first the "purely corrective" case as " it typically makes sense to focus on designing the tax to correct for the targeted internality and to use adjustments in other parts of the system (e.g. income tax and benefits) to offset any negative redistributive consequences").

[86] "Less envious" people have a lower degree of envy regarding others' incomes than the "envious" group. Neutral people do not care about the income of other people. Altruistic people are better off where other people have high incomes.

incomes.[87] And any hypothetical coordination amongst the envious may serve only to reduce their own work effort, not the neutral people's.

With two groups, setting the corrective marginal income tax rate requires a compromise, it being based on the overall degree of negative externality generated by each extra dollar a person (envious or neutral) makes. Here, the income tax rate would be lower than what the envious group would prefer to maximize their group's welfare (or the amount set if the population was solely populated by the envious), but higher than the zero rate preferred by the neutral group (see section II.A).

For the envious, the situation is similar to the homogeneous one. Each envious person loses out from the higher income taxes but benefits from other people (envious or neutral) being dragged down.[88] Due to the compromise, the rate is lower than what the envious people would prefer, but society is doing better than if there was no tax. With the simplifying government loss compensation assumption—or with regulation—the envious people are strictly better off as they get their tax payments back.

On the other hand, the neutral people are strictly worse-off. They lose out equally from the marginal income taxes and reduced absolute income but receive nothing from the reduced levels of envy. This is the case even if the government compensates for tax payments. After all, the introduction of income taxes forced the neutral person to work less (alter their work-leisure mix) when they weren't overworking in the first place![89]

Where the 2nd group of people are merely less envious than the 1st group (but still envious), the tax's impact on the 2nd group will depend on the difference in the degree of envy experienced by the two groups. And it can be positive or negative.

This is because in a world populated solely by this "less envious" group, marginal income taxes are still efficient (unlike the neutral-only case). The corrective income tax rate would merely be lower than if the group had the envy levels of the 1st group. However rate setting in a world with 2 groups is again a compromise, and the efficient rate will be lower than the rate preferred by the more envious 1st group, but higher than the rate preferred by the less envious 2nd group.

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[87] The addition of non-status seekers also alters the nature of the status game: the situation is no longer zero-sum. Here, the ability to identify the envious through tagging may complicate the issue significantly as a welfarist approach may involve, all else equal, generating a distribution that places the envious on top and the altruistic at the bottom. The nuances may be model specific. However, it further problematizes the distributional differences discussed *infra* III.

[88] They also get benefits from increased leisure hours.

[89] The shift in the labor-leisure mix is individual welfare reducing for neutral people. The efficient tax in a world solely populated by homogeneously skilled neutral people is the lump sum tax discussed at the start of II.A.

With government compensation of payments, the 2nd group gains until the rate reaches the level they prefer, but then starts to lose as the compromise rate overshoots that level. If the degrees of envy in the two groups are similar, the compromise may only overshoot slightly, rendering the 2nd group is better off under the envy correction (though worse than under their preferred rate). Where the degrees of envy differ significantly, there may be substantial overshooting such that the 2nd group loses all their gains and ends up worse off under the envy correction.

More realistically, where there is a wild mix in people's degrees of envy, the envy correction means that the more envious people will benefit to varying degrees; some people will be indifferent between having the tax or not; others, including neutral and nearly neutral people, will be harmed.

The above discussion assumed that people had the same earning ability, differing only in their degree of envy regarding others' incomes. A true optimal income tax approach overlays this envy heterogeneity issue on top of a population that also differs in their earning ability. The approach then incorporates both corrective tax considerations and income redistribution to generate an "optimal" tax schedule. While one can review optimal income tax papers on relative income for further nuances,[90] the results are qualitatively similar, with the income schedule being more redistributive (higher rates on the top end) where the population is predominantly envious and less redistributive where they are not.[91]

Note the assumption that the reference group is the entire population, and that the envy mechanism acts between the envious and neutral sub-groups. This creates a cross-subsidization dynamic and is plausible if people are directly jealous of the income of others. It's more questionable under the conspicuous consumption justification, however. This is because neutral people are not purchasing for the purposes of signaling to others. Where the signals do not reach between the sub-groups, there will be no cross-subsidization dynamics and the tax will solely be set to address the behavior of the envious, subject to the losses taken by all others. This may be plausible particularly in the gender dynamics discussed *infra* III.A.1.

Of course, an optimally-set envy correction would have accounted for the fact that less envious or neutral people may lose out, so a higher rate result (or more redistributive schedule) must mean that the gains to the envious exceed the losses to the less envious. While optimal tax theory

[90] E.g. Oswald (1983), Ireland (2001), Aronsson and Johansson-Stenman (2018). See also, Weisbach (2007) (discussing nuances of Oswald and Ireland's approaches). Note that the envy correction may alter the shape of the tax schedule, in addition to changing the rates. See e.g. Weisbach (2007). The shape of the tax schedule will likely further complicate the distributional analysis below but is not crucial for the demonstration of differential impact so will not be emphasized.

[91] Oswald (1983, 83) ("When most people are altruistic the government should set low marginal tax rates to encourage individuals to consume non-numeraire goods [numeraire is set to leisure], because this makes most people happier (in the knowledge that the average standard of living is high.). When most people resent others' consumption levels the argument works in reverse and the government should then set large marginal tax rates.").

does not suggest that higher rates are inevitable,[92] social theorists have long been concerned with comparison and conspicuous consumption.[93] The efficiency of this higher rate also appears to be the implicit assumption of economists who suggest it. This paper will proceed to assume that the higher rate is in fact efficient and discuss the differing distributional impact: the winners and losers.

# III. Heterogeneous relative-income preferences and disparate distributional impact

Optimal tax literature tends to assume either homogeneity of preferences or *randomly distributed* heterogeneity of preferences in the population.[94] This often leads to a discussion of distributional implications for those of varying labor abilities or consumption preferences. However, the relative-income and social science literature suggests *systematic differences* along gender, ethnic, and political lines[95] in both explicit preferences for conspicuous consumption as well as implicit SWB impact from relative-income. The fact that a status-based corrective income tax operates based on a relative-income (or conspicuous consumption) rationale suggests that such differences may lead to systematically differing tax impacts.

For the gender category, the disparate impact analysis is straightforward, with an outcome that some may regard as problematic (but which this paper takes no stand). For minorities, the analysis is less analytically straightforward. Finally, the political category showcases the fact that "relative-income" considerations are only one part of a person's broader set of preferences. The possible interactions between the categories also showcase the need for better data to begin any assessment of empirical significance.

The discussion of each category will begin with the equity analysis, before introducing the efficiency issues and other potential nuances where relevant. To simplify the analysis, this paper will generally make the standard corrective taxation assumption of no redistribution and that people at each income level will be compensated for their tax payments.[96]

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[92] E.g. in Oswald (1983).
[93] Garrard (2012) (citing e.g., Rousseau, Veblen).
[94] E.g. Blomquist and Christiansen (2008) (heterogeneous preferences), Weisbach (2007) (describing the homogeneous preferences in older models). But see Kaplow (2008) (discussing use of differing income schedules where heterogeneity is observable), and the tagging controversy generally.
[95] Systematic differences between groups such as gender and race are most directly recognized in critical tax theory, but have been increasingly recognized in mainstream policy analysis. Infanti and Crawford (2022).
[96] Where tax revenues are instead distributed to the lowest income groups, the high-income envious people may still gain if they are sufficiently envious but care little about absolute income. The impact on various groups of low-income people depend significantly on the assumptions, however. It is possible that only absolute income matters at the low end, in which case all low-income people may benefit equally. Reyes-García et al. (2016) (mentioning the "commonality in the economics of happiness literature is that absolute income matters more for the subjective

## A. Gender differences: Women may be harmed

At every absolute income level, an optimally-set envy correction will benefit men, while ambiguously impacting but potentially harming women. The benefits to men is true to the extent that men have greater tastes for status and hierarchy than women. This unhappiness from increases in others' incomes is the negative externality that the model seeks to correct.

Psychology studies have suggested that the SWB of men is far more greatly impacted by relative-income than is the SWB of women,[97] with one exception being a study on migrants to Europe.[98] In fact, two studies, Mayraz, Wagner, and Schupp (2009)[99] and Ifcher et al. (2020)[100] found no relative-income effects on women's SWB.

The situation is similar for explicit status preferences. Mujcic and Frijters (2012, 59) found, in a survey of hypothetical societies that an Australian student would want to live in, that "income rank plays no part in determining choices, and absolute income is of sole importance" for non-migrant female Australian students of average wealth.[101] In contrast, US affluent men are "far more likely than women to express a powerful desire for social status" in interviews.[102] US Men also scored higher in conspicuous consumption and materialism than women.[103] This is despite

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wellbeing of people at low income levels" but finding that relative income is significant even in low income countries).

Otherwise, it depends on the comparison group amongst other assumptions. For example, if average individual income declined from the overall changes and low-income envious people used it as their reference group, as analyzed in Oswald (1983), then they receive both a gain from the transfer and a gain from the decrease in envy. This renders them comparatively better off than low-income non-envious people who only got the transfer. But if the envious people more realistically compare to their peer income group, then the entire peer group moves up. These people receive increased envy, a loss, and low-income neutral people (who do not take this loss might be comparatively better off.

[97] Mayraz, Wagner, and Schupp (2009) (German-Socio Economic Panel Study finding that "relative income has significant predictive power for men," 7), Ifcher et al. (2020). In the Chinese context, see Asadullah, Xiao, and Yeoh (2018) (Chinese men, from the period of 2005-10 cared more about relative income than women). Cf. Liu and Wang (2017) (China, game experiment finding that men tended to compare upwards, while women compared downwards, thus making the middle group woman happier on average than the middle group man).

[98] Stranges, Vignoli, and Venturini (2021) (second generation women migrants to Europe cared more about relative income then men). While Guven and Sørensen (2012) found that US women cared more about relative income, they subsequently found that men cared more about dwelling perceptions than women, leaving the dynamic ambiguous.

[99] Mayraz, Wagner, and Schupp (2009) (finding neither magnitude nor statistical significance).

[100] Ifcher et al. (2020) (finding inequality aversion in women but not a relative-income effect).

[101] In contrast, Mujcic and Frijters (2012) found that "males in our sample care more about rank than females", potentially almost as much as absolute income levels.

[102] Thal (2020, 429).

[103] Segal and Podoshen (2012) (conspicuous consumption and materialism), O'Cass and McEwen (2004) (young American men engaging in more conspicuous consumption but not more status consumption than women). Note, O'Cass and McEwen contrast the visible aspect of conspicuous consumption (presumably the aspect exerting an externality for this paper's purposes) and the personal nature of status consumption. Additionally, male millennial consumers in Chile also possessed more conspicuous consumption motivations. Verdugo and Ponce (2020).

the fact that women are more heavily involved in fashion and make-up than men.[104] While it is unlikely that women are unenvious, they are probably significantly less envious than men.

Men's status preferences appear to be the paradigmatic case of preferences that an envy correction would seek to address. To account for the negative externality incurred by the more envious men, who are less happy when the incomes of everyone else are higher, the framework would suggest setting a higher marginal tax that shifts both genders towards leisure. Because one compromise rate applies to both genders, the rate would be set higher than is necessary to correct solely for women's status preferences, if any, but lower than the amount needed to correct solely for men.

With the corrective tax rate and government compensation for the tax payments, men are better off, though not as much as they would prefer. Men gain as the income of everyone else, both genders, go down. They also gain from the additional leisure time. But they lose from the reduction in absolute-income due to reduced work hours.[105] Men continue to receive gains from the combination of these three changes until the tax rate reaches the world-with-only-men rate, then start losing some of the gains as the rate overshoots it. The compromise rate is set below the world-with-only-men rate, so men will strictly gain from the corrective tax.

The impact on women will be ambiguous however, and depends on the difference in the degree of envy experienced by men and women (though men will always gain more under the tax than women). Because women are less envious than men, the compromise rate overshoots their preferred rate and women begin losing the gains they received from the corrective tax, if any. These losses can even exceed their gains if the compromise rate is sufficiently higher. Where women are unenvious, they are strictly worse off as they do not gain from the others' income reduction, but lose on the work-leisure substitution. To the extent that relative income concerns become increasingly important as absolute income increases, higher-income women, who apparently continue to be less status-seeking than higher-income men,[106] may be the worst off.

Depending on whether women's SWB is generally lower[107] or higher[108] relative to men's, an envy correction's distributional impact may raise equity concerns from some points of view. However, nuances suggested by the relative income studies also present efficiency-related

[104] Segal and Podoshen (2012).
[105] Government compensation means no loss of absolute income from the tax payments themselves. Yet given the findings on the magnitude of the relative-income effect generally, and the explicit and implicit importance of status to men specifically, they may even be better off without compensation if they are sufficiently envious but care little of absolute income.
[106] E.g. Thal (2020).
[107] See e.g. Tesch-Römer, Motel-Klingebiel, and Tomasik (2008).
[108] Tsui (2014) (finding that women reported higher SWB than men in Taiwan), Yang (2008) (Same with American women, though now declining and converging with men), Guven and Sørensen (2012) (American women slightly greater than men), Venetoklis (2019) (higher in various countries but finding that the effect disappeared in sub-group analysis with other factors).

questions. These come from each gender's (i) relationships with their reference groups as well as (ii) the gender differences in elasticities.

## 1. Efficiency extension: Reference groups

The above analysis makes the implicit assumption that the reference group for an individual is everyone else (or at least a gender-neutral metric such as average individual income). While standard in the literature, this simplifying assumption contrasts studies on reference groups. And relaxing this assumption reduces the efficiency of the corrective tax.

Relative-income studies are mixed regarding the most salient reference groups for each gender. One German study suggests that the most salient reference groups for each gender may be those of the same gender (followed by those of the same profession).[109] On the other hand, a British study suggests that women compare themselves to men in reporting SWB (reporting an increase in SWB when asked only to compare themselves with other women), but that men compare only with men (no change when men asked only to compare with men).[110]

For simplicity, suppose women compared only to other women and men compared only to other men. This is plausible, if conspicuous consumption was the envy mechanism, for products such as fashion but not houses. Unlike the previous analysis where each dollar women earn generates envy in both men and women, now, each dollar women earn generates only envy in women; each dollar men earn generates only envy in other men.

First the envy correction becomes less efficient because each dollar a person earns is only generating half the envy it used to generate (now affecting only men or women rather than both). Next, there are bigger social costs to overshooting the women's preferred rate. Previously, when the tax overshot the women's preferred rate, women started losing their previous gains from the changes but men kept benefiting from *women's* continued decrease in income (not just *men's own*). This was the element of cross-subsidization described in II.B. Now women still lose (parts of) their previous gains but men no longer receive the benefit from women's continued income decreases.

Remember, for the envy correction to be "optimal", either both men and women must still gain on net from the tax (and compensation), or the gains to men must exceed the losses to women. There are merely less gains, less efficiency, where the reference group for each gender is their own gender. Instead of cross-subsidization, excessive taxation of women now comes as the side

[109] Mayraz, Wagner, and Schupp (2009).
[110] Fumagalli and Fumagalli (2022).

effect of a tax that corrects for men's behavior. Despite this own-gender comparison, tagging to only correct for the behavior of men is politically untenable.[111]

The differences in men and women's reference groups is only a subset of the wild and complex reference groups experienced by groups in society. These more complex groups impact the efficiency of the envy correction.

## 2. Efficiency extension: Differing elasticities

The gender differences in status-seeking and conspicuous consumption further brings about a potential efficiency problem if the two groups have differing elasticities on labor supply,[112] an issue well described in sin tax literature.[113]

Women have previously been found to have higher labor supply elasticities, while men were considered near zero.[114] This reduces the corrective benefits at each rate of tax if the entire objective is to move those most active in conspicuous consumption, men, away from it. After all, the working hours of (the more envious) men may decrease little with the correction, while (the less envious) women's work effort may be distorted substantially.

Like differences in the degree of envy experienced by men and women, differences in elasticities may lead to a large gap in the two genders' preferred rates. Additional increases in taxes to get over the men's elasticity issue may then be a substantial overshooting past the women's rate that leads to losses on the women's side.

A further complication for the envy correction lies in the fact that elasticity differences may be partly caused by the distinct work dynamics of heterosexual households. Certain optimal taxation literature has explicitly analyzed the household dynamic through models with intra-household bargaining, primarily as a part of recommendations for gender-based taxation.[115] This dynamic has the potential to impact corrective income taxation also, as a study found that husbands' relative-income impacts their wives' labor participation.[116] Married women may thus have a different response to the tax as compared with single women.

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[111] C.f. e.g. Malo (2016) (Reuters article on backlash against one pharmacy for setting a "man tax" on male customers), Hinsliff (2003) (Guardian article discussing political concerns of backlash from shifting tax credit payee from husband to wife). Political issues stand despite the efficiency arguments for gender-based taxation. See e.g. Cremer, Gahvari, and Lozchmeur (2010), Alesina, Ichino, and Karabarbounis (2011), Meier and Rainer (2015).
[112] The percentage change in the number of hours supplied for each percentage change in the after tax hourly wage.
[113] See e.g. Conlon et al. (2021).
[114] Kumar and Liang (2016).
[115] E.g. Alesina et al. (2011), Meier and Rainer (2015).
[116] Park (2005a) (US data with same state same gender as reference group). See also Neumark and Postlewaite (1998) (wife has greater likelihood of participating in the labor force where sister's husband made more income than own husband).

While such household dynamics may be an additional overlay onto the analysis, it is luckily becoming less relevant due the increased labor participation of married women, decreased rates of marriages, etc. More generally, the decline of elasticities over time for both single and married women,[117] suggests a potential decrease in the comparative distortions (but also generally reduced efficiency for any corrective income tax approach).[118]

Ultimately the envy correction's potential negative effect on women reflects a broader trend in the taxation and gender literature, which recognizes that women have different preferences and that seemingly neutral treatment may either differentially impact women or contain implicit biases.[119]

## B. "Racial" and cultural differences in a multicultural society

Systematic "racial" or ethnicity differences may also be regarded as important by some. Yet the issue is analytically less straightforward due to potentially different rationales for conspicuous consumption and differences in practices by each minority group. A single envy correction may thus benefit some minorities while harming others. This section will first focus on "racial" differences (primarily with US literature), before discussing broader sub-cultural differences. There is a comparative dearth of literature regarding different racial groups' sensitivity to relative-income. Thus, much of this section will focus on conspicuous consumption literature.

### 1. "Racial" differences

I found only two articles that discuss relative income sensitivity and race. One study using the US General Social Survey suggested that white people cared comparatively more about relative income than black people do.[120] If this is the case, then an envy correction would benefit white people while ambiguously impacting black people. On the other hand, one study in South Africa found that relative income was more important to non-white people there than to whites.[121] The more voluminous conspicuous consumption literature brings differing insights however.

Black and Hispanic people generally engage in more conspicuous consumption as a share of income relative to white people in the US (and South Africa).[122] The reasons are less clear. Charles et al. (2009) attempts to de-emphasize "racial differences in utility preference

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[117] Kumar and Liang (2016).
[118] Note in contrast to the sin tax situation, where the commodity tax may cause increased transfers in the face of unresponsiveness, lower elasticities at the top marginal rates may benefit the redistributive objective of income tax if the funds are actually redistributed.
[119] E.g. Alstott (1996), Shurtz (1997) Grown and Valodia (2010).
[120] Pérez-Asenjo (2011)
[121] Ebrahim, Botha, and Snowball (2013)
[122] Charles, Hurst, and Roussanov (2009) (black people and Hispanics in the US), Podoshen, Andrzejewski, and Hunt (2014) (black people and hip-hop lovers, due to the culture of materialism in hip hop), Kaus (2013) (black and "coloured" people in South Africa), Ryabov (2016) (heterogeneity in American Hispanics).

parameters" from the results by explaining it as a form of status signaling based on one's own relative income as compared to the average income of one's own-race reference group.[123] Kaus (2013) attempted to but was unable to replicate Charles et al.'s finding for white people in the South African context, however.

Kaus (2013) instead suggests that methods of signaling are socially contingent, with white South Africans using less visible forms of it. Similarly, Podoshen et al. (2014) suggests that a driver of consumption differences is a shift in American Black culture towards materialism and conspicuous consumption, as reflected in hip hop. Differences in culture may further be reflected in the heterogeneity of conspicuous consumption behavior in American Hispanics. Ryabov (2016) found that Cuban Americans spent less on conspicuous consumption generally[124] as compared to other Hispanic groups (particularly Puerto Ricans) and spent even less when living in high socioeconomic status neighborhoods.[125] Other Hispanic groups, especially Puerto Ricans, would increase their propensity to conspicuously consume in such circumstances.[126] Importantly, Cuban Americans are widely regarded as the most successful Hispanic immigrant group in the US, with Puerto Ricans the least successful.[127]

This reveals the potentially differing motivations for conspicuous consumption. And for lower income minorities, compensatory consumption, the "acquisition and use of products in response to a deficit triggered by perceived needs and desires that cannot be fulfilled directly"[128] may be particularly salient. Here, an experimental study has shown that identification with, via taking on the perspective of, a low-social status group ("black people" or "janitors") increased the white participants' desires for high-status products.[129] Another has experimentally demonstrated that feelings of powerlessness generate additional desires for conspicuous consumption.[130] It is unclear whether compensatory conspicuous consumption actually increases SWB.[131]

If we take the conspicuous consumption studies at face value, then an envy correction would correct for the preferences of and thus benefit higher income racial minorities. After all, by virtue of their higher conspicuous consumption as a share of income at every income level, higher-

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[123] At each given level of absolute-income, ethnic minorities are higher relative-income within their own racial group (who have lower average absolute-income) and thus signal via consumption.
[124] Hispanics with tertiary education also had a lower propensity to consume, while "sociolinguistic assimilation into Anglo culture is strongly associated with the tendency of Hispanic consumers to allocate greater shares of their budget to conspicuous consumption." Ryabov (2016, 75).
[125] Though presumably living in a high socio-economic status neighborhood itself is not treated as a form of conspicuous consumption for the purposes of the study.
[126] Ryabov (2016).
[127] Ryabov (2016).
[128] Koles, Wells, and Tadjewski (2018, 97).
[129] Mazzocco et al. (2012).
[130] Rucker and Galinsky (2009) (with feelings of power generated in the university students through a recall task).
[131] See *supra* section I.D.

income Black and Hispanic people are more envious than higher-income White people.[132] The compromise rate will be set higher than the rate preferred by White people but lower than the rate preferred by Black and Hispanic people. Government compensation causes Black and Hispanic people to strictly benefit, while White people are ambiguously impacted due to the rate overshooting. To some, this may be distributionally desirable as ethnic minorities tend to report lower SWB than the majority.[133] However, the systemic issues and cultural differences involved should make one hesitate when discussing distributional effects as this approach facially recommends distributing away from minorities. This is especially the case when one of the two relative-income articles found suggested the opposite conclusion.

Reference groups further complicate the matter on efficiency grounds. While Charles et al. (2009) deem same-race reference groups as salient, ethnic group mixing in residential and professional lives may expand the orbits of comparison, enabling the cross-subsidization of minorities by the majority. However, if for example, minorities are using conspicuous consumption as a signal to counter stereotyping and avoid discrimination from the dominant group, then taxation may be less efficient and less justified.

Equally problematic is the in-group out-group problem: whether at least some members of the majority have their well-being reduced by the success of minority groups. Reminiscent of the altruism with close neighbors but envy with distant ones dynamic,[134] this would include not only the ostensible preference of racists but also reflect the declining preferences for redistribution where minority numbers are greater within an area.[135] There is a normative question of whether to consider such dislike, though presumably one should not consider racist preferences.

Such "racial" differences ultimately reflect broader differences in subcultures, positionalities, and lived experiences. Where a tax is imposed on a multicultural society, such differences bring about disparate impact. And an envy correction may well end up, for example, benefiting Turkish immigrants at the cost of harming Moroccan ones, or e.g. harming first generation immigrants but benefiting second generation ones.

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[132] The approach would also assume that minorities are happier with conspicuous consumption, which may not be the case.

[133] Barger, Donobo, and Wayment (2009) (though the relationship becomes attenuated when socioeconomic status is controlled for).

[134] Kingdon and Knight (2007).

[135] See O'Brien (2017) (more regressive tax systems where there is a greater presence of Latinos). See also Roch and Rushton (2008) (Opposition to a redistributive reference in Alabama predicted by a greater degree of segregation but not proportion of black people).

## 2. Other cultural dynamics

There are mixed findings regarding whether the SWB of immigrants are more strongly affected by relative-income or absolute-income,[136] and whether income relative to natives or other immigrants are more important.[137] Yet culture and socio-economic status may play a key role. A study showed that Moroccan immigrants to the Netherlands were happier despite their lower income levels and higher unemployment rates relative to Turkish immigrants as both absolute and relative-income affected their wellbeing.[138] In contrast, Turkish immigrants were less happy as only relative-income statistically significantly impacted the Turkish immigrants' SWB.[139] The authors suggested that Moroccans, who were of lower socio-economic status, used fellow migrant groups as their reference, whereas the collectivistic and higher status Turks tended to compare themselves upwards against the Dutch.[140]

Such differences are further complicated by levels of education, which may alter expectations and those one interacts with. Generational differences are also a factor. More highly educated immigrants as well as second-generation immigrants care more about relative-income than the less-educated and the first generation.[141] This is because second-generation immigrants move away from the dual reference frames of the first-generation, who remember their previous lives and remain connected to those in their previous country.[142] Yet the effects of education may not be completely clear, at least with the supposed conspicuous consumption mechanism. For example, with Hispanic communities in the US, more education is associated with less conspicuous consumption.[143] The differences in reference groups and relative-income concerns showcase the potentially complex distributional impact of any envy correction.

Conspicuous consumption patterns appear similarly culturally contingent. Compare the situation of Chinese North American consumers[144] with US Hispanic consumers, both of which conspicuously consume more than does the majority.[145] A study on the conspicuous

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[136] Stranges et al. (2021) (finding that immigrants to Europe are more strongly affected by absolute income though noting that there are papers concluding in both directions), Mujcic and Frijters (2012) (finding that immigrant Australian students have explicit preferences toward relative income).
[137] Compare Stranges et al. (2021) (finding that comparisons to natives are more important), with Gokdemir and Dumludag (2012) (suggesting for Moroccan immigrants to the Netherlands that comparisons with other migrants are more important).
[138] Gokdemir and Dumludag (2012).
[139] Gokdemir and Dumludag (2012).
[140] Gokdemir and Dumludag (2012). See also Dumludag, Gokdemir, and Giray (2016) (discussing, for Turkish immigrants, the importance of comparing with the Dutch).
[141] Stranges et al. (2021).
[142] Stranges et al. (2021).
[143] Ryabov (2016).
[144] Jinkins (2016) (model estimating that Chinese consumers tend to have a stronger "motive for conspicuous consumption" than US consumers), Podoshen, Li, and Zhang (2011).. See also Jin et al. (2015) (discussing rising Chinese conspicuous consumption practices).
[145] Though at least with 2nd generation Asian Americans, the rationale behind this conspicuous consumption may differ from the standard status explanation. While they do purchase conventional luxury goods that exert the

consumption of Taiwanese-Chinese Canadians in Toronto found that Chinese (rather than Canadian) identification is associated with increased conspicuous consumption.[146] In contrast, for Hispanics in the US, "[s]ocio-linguistic assimilation was positively associated with conspicuous consumption."[147]

Ultimately, while racial and cultural differences may be regarded to be important, the analysis is substantially less straightforward, with a wide array of groups potentially benefiting from or being harmed by the envy correction.

## C. Political differences: Relative income concerns as only one facet of preferences

Of course, relative-income considerations may only be a single part of the many factors affecting people's SWB and policy positions. This is demonstrated by the systematic heterogeneity between liberals and conservatives, with self-identified conservatives having comparatively greater tastes for status and hierarchy than self-identified (left-wing) political liberals.[148] A single, optimally set envy correction will benefit conservatives while ambiguously impacting self-identified liberals. Yet despite this, it is liberals who generally prefer higher taxes.

Psychology studies have shown that the SWB of conservatives are impacted to a greater extent by relative-income considerations than the SWB of liberals.[149] And marketing literature has shown that conservatives additionally conspicuously consume to a greater extent.[150] In particular, they consume products that allow for the maintenance of high status,[151] and prefer luxury goods which can better do so over luxury experiences.[152] This led two marketing studies

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externality, these Asian Americans may do so for their parents as "repayment" for their parents' sacrifices. Park (2005b). It is unclear whether the Asian Americans purchasers receive greater SWB from this practice, and whether their labor will be elastic in the face of an envy correction.

[146] Chen et al. (2005) (though the study is limited in only surveying first generation Taiwanese Canadian immigrants).

[147] Ryabov (2016, highlights).

[148] This is not to say that liberals do not consume conspicuously, given the popularity of Teslas. See e.g. Noel et al. (2019) (study on adoption of electric cars in Norway discussing the role of "Conspicuous diffusion" on "how status drives innovation in electric mobility."), McDonald (2017) (blog post suggesting that "conspicuous conservation" drives the adoption of Teslas). Though Elon Musk's current reputation may decrease this effect amongst liberals.

[149] Guven and Sørensen (2012, 454) ("[P]erceptions about relative income are more important for low income individuals, females, and conservatives. Perceived social class matters more for conservatives."). Cf. Ifcher et al. (2020) (game experiment measuring people's mood based relative points received has conservatives' mood declining with a negative shock but not liberals. Though this may instead be a form of last place aversion). See also Thal (2020) (increased status motivation in surveys associated with greater conservatism).

[150] E.g. Goenka and Thomas (2020).

[151] Kim, Park, and Dubois (2018).

[152] Shewani and Chan (2022). Shewani and Chan agree with the findings of Kim et. al. but suggest that an attempt to maintain and enhance inequality (as described by power distance beliefs) was the cause of the luxury purchases rather than status-maintenance per se.

to recommend that luxury brands target conservatives.[153] Conservative preferences for vertical differentiation, the signaling that they are "better than others" contrasts the liberal preference for differentiating horizontally and signaling that they are "unique from others."[154] This tendency to signal "authority and power" further contrasts liberals' preference for signaling "fairness and harm prevention" with "sustainable consumption."[155] Though one study did find that liberals had a greater desire for luxury goods than conservatives when their socio-economic status position (as measured by income or education) was low, high socio-economic status conservatives ultimately consumed the most.[156]

The compromise corrective tax rate will thus exceed the (less envious) liberals' preferred rate while being below the (more envious) conservatives' preferred one. Thus conservatives will strictly gain, but not as much as they would like, and liberals may either gain or lose due to the rate overshooting (but will always gain less under the tax than conservatives do). In the unlikely situation where liberals are unenvious, it will strictly harm them.[157]

This outcome appears seemingly facially implausible. After all, the more envious group (here conservatives) should all else equals prefer higher taxes than the less envious group (liberals). Yet all else is not equal. After all, liberals are generally more willing to pay taxes than conservatives,[158] regardless of whether the funds are being spent on something they agree with.[159] Liberals are also generally more pro-government than conservatives (even during a poll conducted while Trump was in office).[160]

More importantly, there is a different rationale for corrective taxation (higher taxes) that liberals may care more about than relative-income: "inequality aversion". Most SWB studies have found that citizens scored better in countries with more progressive taxation, with progressivity

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[153] Kim, Park, and Dubois (2018), Shewani and Chan (2022). Note, while Nerkar (2023) discusses the rise of politically oriented products and shopping platforms in a New York Times article, the products do not appear differentiated by their high end nature.
[154] Ordabayeva and Fernandes (2018).
[155] Ordabayeva and Fernandes (2014).
[156] Kim, Park, and Dubois, (2018). Liberals also consumed more when "status-advancement" was triggered as a goal, but only for real brands rather than hypothetical brands. Id. The authors suggest the possibility that such real brands are horizontally differentiating (and hypothesize the potential for liberalism to trigger luxury consumption under certain conditions). However, it is also possible that this finding reflects other factors such as the tendency for low-income minorities (who may be liberal) to conspicuously consume to a greater extent, or the fact that people conspicuously consume more when feeling powerless (and conservatives generally feel more agency), see *supra* section III.B.1..
[157] This is unlikely, though in an experiment Ifcher et al. (2020) did not find a statistically significant shift in liberals' SWB from negative relative shocks.
[158] Sussman and Olivola (2011) (preference to avoid taxes greater than non-tax costs, particularly in those who identify as conservative)
[159] Huet-Vaughn, Robbett, and Spitzer (2017) (unlike political moderates, political liberals' labor supply elasticity with respect to net of tax wages is identical whether taxes are used to pay for a favored or favored agency).
[160] Pew Research Center (2019)

connected to lower income inequality.[161] Reflecting stereotypical political preferences, two studies from the early 2000s found that liberals' SWB were impacted by inequality but not conservatives' SWB.[162] And the inequality aversion situation may be similar for women.[163]

Applying the logic of II.B, a compromise "inequality" correction rate should be set higher than the conservatives' preferred rate and redistributed to address the negative externalities received by liberals (and women). While the rate would be set lower than that preferred by liberals, conservatives may not want an "inequality" correction at all (due to their SWB being unimpacted by inequality), and may thus be strictly harmed like the neutral people in the envy correction context. Here, the reduction in conservative income benefits liberals in a cross-subsidization process that goes in the opposite direction from the status analysis. This is a factor that may contribute to explaining why liberals and conservatives behave the way they do on the issue of higher taxes.

## D. Interactions, distributional ambiguity, and the need for better data

While the above discussion has suggested the potential for the envy correction to harm women and liberals (with uncertainty on minorities), it is not necessarily the case that the tax would be most harmful to liberal (potentially white) women, while being most beneficial to conservative (potentially minority) men.[164] This is due to the potential for interactions between various categories. Individuals are multidimensional in nature, and their overall experiences may differ from the sum of the individuals' single-dimension parts. Crenshaw (1989) termed this "intersectionality."[165]

Few of the studies cited above tested for intersectional impacts between attributes such as liberal and women. However, one sees at least hints of potentially different results when reviewing the study of immigrants to Europe. While the study found no gender differences in the degree to which first-generation immigrants cared about income relative to natives, second-generation women cared more about income relative to natives than second-generation men.[166] Similarly,

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[161] Oishi, Kushlev, and Schimmack (2018) (utilizing US historical data to find that lower income inequality in years with more progressivity explained increased SWB.). See generally Diener, Lucas, and Oishi (2018) (discussing studies on inequality and happiness).

[162] Compare Napier and Jost (2008, abstract) (finding that "rising inequality has exacerbated the happiness gap between liberals and conservatives" in the US) and Alesina, Di Tella, and MacCulloch (2004) (only finding it for European liberals). Cf. Becchetti, Colcerasa, and Pisani (2022) (left-wing Europeans have a lower Gini index associated with peak SWB than right-wingers).

[163] See Ifcher et al. (2020) (game with SWB measurements), Fehr, Naef, and Schmidt (2006) (game but not SWB measurements), Cerda (2011) (Master's thesis) (same).

[164] Though Thal (2020)'s (survey linking stated status motivations to political views) finding that increased status motivations is greatly associated with increased conservatism in men, but has only half the effect in women, suggests that gender differences may dominate over political ones.

[165] Crenshaw (1989). See e.g. Cooper (2015) for a more recent discussion.

[166] Stranges et al. (2021).

while there are myriad associations between individual characteristics and SWB, some may interact and cancel each other out.[167]

Finally, the envy correction is only one rationale for higher taxes. When taxes are actually raised, all rationales are triggered simultaneously, and their effects will interact. This includes the "inequality aversion" rationale discussed in III.C, a rationale under which higher taxes instead distorts men and conservatives. Interactions may complicate the matter and one effect may ultimately dominate the other. Yet without further information on the magnitude of minorities' inequality aversion, minorities and the recipients of any redistribution may be the only unambiguous beneficiaries of the two corrections discussed.

However, this analytically shaky distributional result is the consequence of applying two often separately analyzed rationales, with attention to their distributional consequences. Never mind the myriad of caveats and intricacies discussed in the previous sections, including the question of whether conspicuous consumption actually improves the wellbeing of minorities.

Ultimately, the question of whether a corrective income tax on income envy is desirable on *equity* grounds requires further empirical analysis – not to mention the need to address a number of contentious normative issues that are beyond the scope of this investigation. This discussion merely serves to showcase the potential implications of considering gender, ethnicity, and political differences: a comparison enabled by taking the controversial relative-income literature as given.

# CONCLUSION

In this paper, I extended the relative-income concerns analysis of Frank, Layard, Oswald, etc. by introducing the issue of systematic heterogeneity along gender, ethnicity, and political lines. I did so using relative-income[168] and other social science literature (without taking an explicit position on whether the cited studies are actually correct). Accounting for such differences reveals underappreciated *equity*, and to a lesser extent *efficiency*, concerns for an envy correction on the income tax schedule.

The envy correction presents potential *equity* concerns when disparate impact along gender and racial lines are accounted for. The envy correction may straightforwardly benefit men while ambiguously impacting and potentially harming women. On the other hand, some minorities may benefit while other minorities are harmed under the tax. However, there is overall distributional ambiguity, as the discussion of inequality aversion showcases a similar dynamic, but one which

[167] Venetoklis (2019).
[168] Note the relative-income literature I used is from the same field that previous authors have used to justify their corrective tax analysis.

instead favors women (and liberals). This showcases a tax policy implication: only empirical studies can determine whether there are actually any disparate impact – which, if they exist, require further consideration to determine whether and how much they should matter.

The envy correction's *efficiency* is also reduced to a lesser extent by systematic preference differences. Relative income studies suggest the possibility that group members only compare intra-group, reducing the cross-subsidization element of the tax. Those more prone to status-seeking (such as men) may also have less elastic labor supplies. This reduces their responsiveness to the corrective tax. Here other policy levers may be necessary.

Considering systematic heterogeneity along gender and racial lines ultimately complicates tax policy recommendations at the theoretical level, in part by raising distributional issues some might consider significant. Yet these complications have the potential to significantly implicate the core goals of tax policy: Contributing to a more *equitable* and *efficient* society.

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