

Class vs. Identity: The Effect of Candidates' Race on the Inequality-Redistribution Nexus*

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Abstract

Despite what the economic theory of democracy predicts, redistribution does not respond always to rising inequality. In this paper we argue that *redistribution reacts to changes in inequality, as long as the economy is not overshadowed by non-economic issues during the elections*. To this end we estimate the race of candidates competing in *all elections* for U.S. state legislatures since 1980 and show that when there are few (many) racially differentiated electoral contests, redistribution is (not) sensitive to changes in inequality. That is, candidate heterogeneity crucially affects redistribution by raising the salience of identity-related issues compared to class-related ones.

Keywords: inequality, redistribution, taxation, racial heterogeneity, candidate differentiation, U.S. state legislatures.

JEL classifications: D63, D72, H20

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1 Introduction

Economic theory of democracy (Downs 1957) predicts that as income inequality rises, taxation and redistribution should increase (e.g., Meltzer and Richard 1981; Alesina and Rodrik 1994; Persson and Tabellini 1994). This is because in a representative democracy framework, candidates want to be elected, and, hence, they have to offer policies that somehow reflect the preferences of the majority of voters. When inequality rises –that is, when the voter with the median income becomes poorer relative to the one with average income– the majority of voters (voters whose income is below the average income) expects larger utility gains from a greater redistribution. As a result, the theory predicts that, in the context of elective politics with politicians that care about being (re)elected, an increase in income inequality should lead to greater redistribution. Notice that this theoretical prediction regarding the *positive* relationship between income inequality and redistribution relies only on the core assumption of rational choice theory: the assumption that all actors of the game pursue their interests in an individually rational manner. The intuition behind this idea is so strong and straightforward that Aristotle famously asserted that in a democracy the will of the poor is sovereign because they are in majority.

Yet, despite the fact that this theoretical prediction is intuitive, empirical evidence from the U.S. as well as from other advanced industrialized democracies does not validate it (e.g., Rodriguez 1999; Pecoraro 2014). While over the last couple of decades inequality has been increasing in most of the industrialized world (Piketty and Saez 2003; Atkinson et al. 2011), redistribution –especially in the U.S.– did not rise. In fact, if anything, it is declining (Figures 1.a and 1.b). As Rodriguez (1999) suggests, there seems to be *no link* between rising inequality and increased redistribution in the U.S. Moreover, recent empirical studies that extend their analysis beyond the U.S. (e.g., Karabarbounis 2011; Lupu and Pontusson 2011; Pecoraro 2014) suggest a very weak relationship between inequality and redistribution.¹ Hence, this seemingly intuitive theoretical prediction lacks adequate empirical support. In fact, it has given rise to the inequality-redistribution puzzle: If inequality is no longer a relevant determinant of redistributive outcomes, then what determines redistribution or public good provision?

[Insert Figures 1.a and 1.b about here]

This evident lack of empirical support for such a straightforward theoretical prediction has prompted

¹Karabarbounis (2011) and Lupu and Pontusson (2011) find some cross-country evidence that suggest the existence of a positive relationship between inequality and redistribution in a sample of OECD countries. Yet no such evidence exist when one explores this relationship using within-country observations.

many observers –especially in light of the recent presidential race in the US and the Brexit vote in the UK– to declare that the politics of class are no longer relevant: they have been replaced by a new type of politics, those of (ethnic, racial, religious, or cultural) identity. In the literature, many scholars have attempted to address this empirical puzzle. Most of them argue that there are other factors that may be more important in explaining demand for redistribution than income inequality. For example, Alesina et al. (1999) and Alesina and Glaeser (2004) have proposed a link between the degree of voters’ ethnic heterogeneity and demand over redistribution. Alesina et al. (2001) attribute the differences in redistributive outcomes between Europe and the U.S. to differences in overall ethnic heterogeneity of their respective populations, while Alesina et al. (1999) provide some clear within-country evidence (using data from U.S. urban counties and metropolitan areas) on the nature of this relationship.² In all these studies, the main argument is that, in societies where ethnic and racial heterogeneity is high, voters do not push for extended redistribution (and public good provision) even if inequality is high. That is, in a society where many ethnic and racial identities are present, voters might demand less redistribution out of the perceived fear that their resources and income will be redistributed to members of another ethnic or racial group with which they do not feel close enough. This theory can explain, indeed, why societies with high levels of inequality and ethnic fragmentation might redistribute less than societies with lower levels of fragmentation but does not aspire to justify the weak relationship between inequality and redistribution: *ceteris paribus*, an increase in inequality should lead to an increase in redistribution and public good provision.

More recent studies (e.g., Karabarbounis 2011) argue that relatively richer voters have greater influence in politics, and, hence, their interests are better represented. It may also be the case that relatively more wealthy citizens tend to participate more in the political process. There is ample of evidence (e.g., Rosenstone and Hansen 1993; McCarty et al. 2006) that in many advanced democracies poor citizens have lower turnout rates in elections. Other studies (e.g., Campante 2011) point to the role that special interest groups have via campaign spending or media control in determining redistributive outcomes, mainly in the direction of less redistribution and taxation irrespective of the recent trends in income inequality.³ The overwhelming consensus in the literature, summarized in Persson and Tabellini (2003) and Alesina and Glaeser (2004), appears to be that income inequality is not a significant determinant of

²Dahlberg et al. (2012) provide evidence on the relationship between ethnic heterogeneity and preferences for public good provision in Sweden while Padró i Miquel (2007) studies the effects of ethnic divisions on taxation policies and redistribution in non-democratic regimes.

³Prato (2016) shows that, in a Meltzer-Richard-Roemer framework with imperfect information about the state of the economy, subsidies to real estate ownership can produce an electorate that is systematically less favorable to redistributive taxation.

redistribution. Simply put, the politics of class have become irrelevant.

This paper begs to differ; using data from U.S. state-wide elections for local legislative offices (State House and State Senate), we present clear evidence that a *positive* relationship between income inequality (measured by the ratio of mean to median income) and redistribution (taxation) does, in fact, exist *regardless* of how ethnically (or racially) heterogeneous a society might be. That is, we show that income inequality is still a relevant –and perhaps the most important– determinant of redistributive outcomes. As a result, this paper is the first to bridge the gap between the prediction of economic theory of democracy –that as the median voter becomes *poorer* redistribution should *increase*– and the lack of empirical support in its favor. At the same time, we show that the effect of inequality on determining redistributive outcomes is conditioned on one key factor: *the salience of non-economic issues* (e.g., issues related to race and ethnicity) during the electoral campaign. We find that, when identity-related issues are less salient compared to class-related ones, then redistributive outcomes strongly depend on voters’ economic preferences and vice versa. Thus, our paper contributes to this long-standing literature by uncovering a new mechanism –one that operates in tandem with other mechanisms linking voters’ preferences for redistribution with changes in ethnic heterogeneity– that connects issues related to race and ethnic identity, and redistributive outcomes.

In order to do so, we focus on the process that generates policy outcomes in representative democracies, and we show the existence of an innate tension between the observed level of redistribution and the salience of non-economic matters, namely issues related to candidates’ immutable identity (e.g., ethnic, racial, religious, or cultural) characteristics.⁴ In representative democracies, voters vote for candidates and not directly for policies or levels of public good provision. That is, a candidate is essentially a bundle of policy proposals (with regard to issues such as redistribution, immigration, etc.) and non-economic immutable characteristics (such as race, ethnicity, religion, etc.). In other words, electoral competition might be taking place in dimensions beyond economic concerns. Since voters care about the entire bundle, one should not disregard the possible impact that these immutable characteristics can have on redistributive outcomes. When electoral competition takes place in more than one dimension, we know that policy outcomes do not necessarily have to reflect the preferences of the median voter in any given dimension, including the economy (Plott 1967; McKelvey and Wendell 1976). As a result, the sensitivity of candidates’ policy proposals to voters’ preferences for redistribution –which, in turn, depend on inequality– might be conditioned on the salience of non-economic issues such as race, ethnic identity, and religion relative to

⁴For example, Bursztyrn et al. (2016) provide experimental evidence on the importance of identity and the trade-off that voters face between economic and non-economic issues.

economic ones during the electoral campaign (e.g., Lindbeck and Weibull 1987; Roemer 1999; Krassa and Polborn 2012 and 2014; Bouton et al. 2014; Matakos and Xefteris 2016).

In attempting to provide an answer to the inequality-redistribution paradox, previous empirical literature studied the problem as a unidimensional one. Ethnic, racial, or identity heterogeneity was factored into voters' preferences and determined their *demand* for redistribution and public good provision (e.g., Alesina et al. 1999; Alesina and Giuliano 2010), and the only policy outcome voters cared about was the level of redistribution or public good provision. By explicitly focusing on how candidates' racial identity heterogeneity can raise the salience of non-economic matters, we turn our attention to the *supply* side of the problem instead.⁵ Consider, for example, the case where two competing candidates have identical *immutable* characteristics. In this case, the economic dimension is more relevant in determining voters' choices since identity issues like race are not salient. This should incentivize candidates to pander to the median voter on the economic dimension, and, hence, conditional on candidates being identical, we should expect that an increase in income inequality (that is, mean income rises relatively more than median) should lead to greater redistribution.

On the other hand, when candidates have *different immutable characteristics*, a move towards median-preferred redistributive policies does not deliver the same payoff to a candidate as in the case in which candidates are identical. This is because when candidates have the same immutable characteristics, the majority of poor voters will vote for the one who promises greater redistribution, even when the promises of the candidates do not differ that much. In contrast, when candidates differ in race or ethnicity, the reaction of poorer voters to the prospect greater redistribution need not be unanimous: Many of them may prefer to stick with the candidate with whom they share common characteristics even if she promises less generous redistribution. As a result, candidates who wish both to satisfy the voter with the median income (in order to be elected) and special interest groups or constituencies that might prefer less or more redistribution than the median voter (in order to be financed or due to honest ideological alignment with their interests), should face weaker incentives to supply policies that reflect the redistribution preferences of the voter with the median income when they compete against candidates with different immutable characteristics. The dimensionality of the problem is no longer singular. That is, an increase in income inequality should result, through this process, to an increase in redistribution when candidates are similar, while it should have a smaller effect on redistribution –if any effect at all– when candidates are differentiated. When the

⁵We chose to focus on race instead of, say, religion because: a) it is not always easy to observe and thus measure a candidate's religious affiliation, and b) candidates can *strategically misrepresent* the intensity and the importance of their religious identity, while this is harder, if not impossible, when it comes to their racial identity.

most salient issue in an electoral campaign is redistribution, candidates find it very difficult to ignore the voter with the median income, thus implying a stronger link between inequality and redistribution.

To measure the relative salience of issues related to race and ethnicity, we focus on electoral contests that took place between candidates of possibly different ethnic or racial backgrounds. Given the absence of a comprehensive database that includes demographic information on race and ethnicity for all candidates that contested state legislative elections in the U.S., we use, for the first time in the literature of redistributive politics, a name-matching technique with Bayesian updating based on demographic data provided by the US Census Bureau and compile a new data set that estimates the race of all candidates competing in state-wide local legislative elections from 1979 to 2012. We are, therefore, able to construct an index that captures the *explicit degree of salience* of issues related to race and ethnicity in the elections: The fraction of state-wide electoral contests that were contested among candidates of different ethnic or racial backgrounds, what we call *differentiated candidates* (following Krasa and Polborn 2012 and 2014), for a given state in a given election year. Besides this methodological novelty, our empirical methodology differs from past empirical literature in that it simultaneously introduces the following elements: a) We use various different indices of income inequality in the same empirical framework to control for the fact that redistribution might be driven by changes in relative inequality between different groups, b) we measure inequality using gross (before any deductions) annual earnings data, c) we use different measures of redistribution (e.g., social transfers and effective income tax rate), and d) we conduct our analysis at the sub-national level and exploit within-states variation in order to control for other important determinants of redistribution that past literature has emphasized and which might vary across different countries (e.g., institutions, culture, electoral rules, etc.).⁶

Our findings suggest that once we take into account the salience of non-economic matters (such as matters related to race and ethnicity), inequality has the expected effect (as in Meltzer and Richard 1981) on redistributive outcomes. For example, suppose we start from a point where the mean and the median income are the same (low inequality). We find that, in a given election year, when *fewer than a quarter* of all state-wide electoral contests were contested between differentiated candidates –implying that the electoral competition for the composition of the state’s legislature is characterized by low levels of racial or ethnic salience⁷– a *one-standard-deviation* increase in income inequality (measured as the ratio of mean-to-median income) is associated with an almost *65%* increase in the effective (state) tax rate.

⁶For an illustration, see Iversen and Soskice (2006), Alesina and Glaeser (2004), Alesina and La Ferrara (2002), and Alesina and Giuliano (2010).

⁷In U.S. states, it is the local legislature (State House and Senate) that has control over a given state’s tax and redistributive policies.

In fact, the effective state tax rate increases from 5.5 to 9 percentage points. That is, inequality is still a relevant, and perhaps the most important, determinant of redistributive outcomes. But when *greater than a quarter* of electoral contests (within a given state) are contested among candidates of different racial and ethnic background (differentiated candidates), then redistribution and taxation appear *not to respond* in changes in inequality. The salience of race rises, and non-economic issues dominate thus eliminating any effect on redistributive outcomes that inequality might have. Therefore, our analysis shows that the intuitive theoretical prediction regarding the positive relationship between inequality and redistribution is, in fact, in line with empirical evidence, once we take into account the existence of other, possibly more salient, dimensions of political competition.

In what follows, we provide a more detailed presentation of the mechanism that was briefly described above in Section 2. We then describe our data set especially, how we estimated the ethnic characteristics of all candidates running for U.S. state legislative elections since 1979, our econometric specification, and our main results in Section 3. Finally, we discuss the implications of our findings and possible extensions –along with some final remarks– in Section 4.

2 Theoretical background

In representative democracies' frameworks, voters may defend their interests only by electing candidates whose policy platforms align with theirs. It is, therefore, natural to expect that candidates who propose popular policies are more often elected to office, and, hence, implement policies that, to some degree, match society's preferences (Downs 1957). If we focus on the easily quantifiable policy issue of redistribution, the above suggest that the level of redistribution in a representative democracy society should reflect to a large extent the preferences for redistribution of the median voter. The larger the mean-to-median ratio, the more redistribution the median voter desires, and, thus, the larger the redistribution we should observe (Meltzer and Richard 1981).

Hypothesis 1 (Meltzer and Richard 1981) *The relationship between income inequality (measured by the mean-to-median ratio, \bar{y}/y^{50}) and redistribution is positive.*

Unlike direct democracy frameworks in which voters vote directly for a policy, in representative democracies voters vote for candidates who, in turn, decide on policies such as redistribution. Since candidates

care about winning elections and about promoting the goals of certain interest groups to which they belong or by which they are funded, they face the following problem: On the one hand, they wish to secure as many votes as possible, and, hence, they have incentives to promise policies that are appealing to the median voter. On the other hand, they also want to satisfy the interest groups and the constituencies that they represent (see, for example, Besley and Preston 2007). Because popular (that is, the median-preferred) policy platforms need not coincide with the ideal policies of the special interest groups, candidates' optimal behavior should be to locate somewhere in between what the interest groups that support them desire and what the society (that is, the median voter) wants. Note that this holds true particularly in the case of redistribution and taxation. A candidate essentially knows that by moving towards the median's most preferred policies she gains support from the voters and loses support from the special interest groups that she is supposed to represent.

So, what determines how strong the incentives must be for a candidate to ignore the requests of interest groups and instead satisfy the median voter? Both common wisdom and academic analyses (e.g., Citrin et al. 1990; Sparks and Watts 2010; Boudreau et al. 2014; Ahler et al. 2015) strongly suggest that voters decide which candidate to support not only by taking into account the candidates' policy proposals vis-a-vis redistribution (or social spending and taxation) *but also on the basis of candidates' identities*. That is, voters take into account candidates' immutable characteristics (such as race, ethnicity, or religion). It is, therefore, reasonable to expect that in electoral contests between two candidates with similar racial, ethnic, or religious identities, the positions of the candidates on the policy issues should be the only relevant factor in determining the electoral outcome. In such cases, candidates' incentives to pander to the median are very strong as identity plays no role, and voters vote only on the basis of the candidates' policy platforms. In contrast, when elections are contested by candidates with heterogeneous identities (we call these candidates and their contests *differentiated*), candidates' *non-policy characteristics* might have a large effect on the electoral outcome. In these *differentiated contests*, candidates' racial or ethnic characteristics might have a large effect on the electoral outcome, and, hence, candidates can now afford to pander more to special interests and to the constituencies that they represent.

It is exactly in these differentiated contests that the identity characteristics of the candidate become a salient issue as each candidate is *de facto* associated with a certain group of voters. As a result, her incentive to move toward the median voter's most preferred policy is mitigated; such a move now brings a relatively small benefit since in such elections voters will also vote on the basis of candidates' identity. That is, we should observe that the policy outcomes of elections between candidates of identical racial or

ethnic identities better represent the societies' preferences compared to the policy outcomes of elections between differentiated candidates. If we focus again on the issue of redistribution, the above suggests that rising inequality, an increase in the ratio between mean and median income, should lead to more redistribution (that is, higher taxation and social spending) when elections are between candidates of the same racial or ethnic backgrounds. In this case, both candidates have strong incentives to pander to the median voter who is becoming relatively poorer and demands more redistribution. But when elections are contested by differentiated candidates, inequality should have little (if any) explanatory power regarding redistribution and taxation. In such cases, candidates base their electoral success on their identity and not on proposing redistributive policies that attempt to pander to the median voter. As a result, conditional on a significant amount of electoral races being contested by differentiated candidates, we should expect to find that the effect of inequality on redistribution is negligible. Racially or ethnically differentiated candidates can now afford to pander to special interest groups as far as redistribution is concerned.⁸ This suggests that as the amount of minority candidates increases, inequality becomes an even less relevant determinant of taxation and redistribution. We have to stress, though, that our argument does not imply that when there are many minority candidates, redistribution is smaller; it merely suggests that in such contexts, redistribution is *less responsive* to changes in inequality.

We can summarize the developed idea using the following statement.

Hypothesis 2 (Conditional) *The effect of income inequality (measured by the mean-to-median ratio, \bar{y}/y^{50}) on redistribution is: (a) **positive** when a sufficiently large number of electoral races is contested by candidates of the same racial background (that is, matters related to race are **not** very salient), and (b) **weakens** and ceases to be significant when a large number of electoral contests is contested by racially differentiated candidates (that is, matters related to race are **very** salient).*

Notice that the above arguments are perfectly in line with recent findings of formal political economics' literature. Indeed, Krasa and Polborn (2010; 2012) analyze theoretical models in which two candidates with different fixed characteristics compete by making proposals regarding a number of policy issues, and they show that the degree of similarity of candidates' fixed characteristics is crucial in determining candidates' policy proposals. In particular, Krasa and Polborn (2014) interpret these fixed characteristics

⁸Note that this statement is unconditional on the overall level of ethnic or racial heterogeneity within a constituency. That is, we expect this statement to be true irrespective of the effect that overall heterogeneity might have on redistribution, in line with Alesina and Glaeser (2004). In the appendix (section 5.4) we present a formal argument that helps to fix ideas around this point.

as candidates' social identities, and show that the degree of identity-differentiation between candidates influences the candidates' choices as far as economic policy is concerned. Hence, our main hypothesis is grounded on widely-accepted views regarding the determinants of candidates' choices, and does not contradict other predominant determinants of redistribution (e.g. voters' ethnic heterogeneity).

3 Data and Econometric Specification

In order to test these hypotheses, we use data on redistribution and inequality from U.S. states using resources provided by the U.S. Census Bureau, the Bureau of Economic Analysis (BEA), and the Bureau of Labor Statistics (BLS). Since our electoral variables only vary during election (not calendar) years, our unit of analysis is the state-election year. Given that elections for state legislatures –in most states– take place every two years, our sample size comprises of 50 states and approximately 15 election years in the period under consideration (1980-2012). The reason we perform our analysis at the state level is twofold. First, it guarantees that we get sufficient within-year variation since there is only one yearly observation of realized redistribution (or taxation) at the federal level, but each state sets each own tax rate. Second, while the state tax rate is a non-negligible fraction of one's income (in our sample it is on average 5% of total income), and, moreover, it exhibits sufficient within-state variation over time, it is not high enough to trigger significant cross-state migration for tax purposes. Furthermore, focusing on the U.S. has two additional advantages: We can get data on the distribution of income and other economic variables, and we can get those data from 1980 until today via the Current Population Survey's (CPS) Annual Earnings Files that are stored at the NBER data base and are the most reliable source of such information. Finally, identity politics, especially with respect to race and ethnicity, have long been a defining characteristic of the political environment and competition in the U.S., both at the local and at the national level. As a result, we will investigate the validity of our hypotheses focusing exclusively on the U.S. at the sub-national level in the spirit of Alesina et al. (1999).⁹

⁹A number of previous studies that examined the interplay between class and (ethnic) identity politics focused on cross-country evidence (e.g., Alesina and Sacerdote 2005; Lupu and Pontusson 2011). Alesina et al. (1999) conducted the seminal analysis on the relationship between *voters' ethnic heterogeneity* and public good provision at the sub-national level, yet their mechanism, as we will show in the section that follows, is different than ours.

3.1 Baseline specification

Before exploring the full richness of our new data set, we first estimate a more basic specification in the spirit of Alesina et al. (1999) and Karabarounis (2011):

$$T_{s,t} = \beta_0 + \phi T_{s,t-1} + \beta_1 \left(\frac{\bar{y}}{y^{50}} \right)_{s,t} + \beta_2 ERF_{s,t} + \beta_3 ERF_{s,t} * \left(\frac{\bar{y}}{y^{50}} \right)_{s,t} + \mathbf{X}'_{s,t} \boldsymbol{\gamma} + \alpha_s + \lambda_t + \epsilon_{s,t} \quad (1)$$

where $T_{s,t}$ is the effective state tax rate in state s in election-year t , income inequality is measured as the ratio of mean (pre-tax and any deduction) income (\bar{y}) to the median one (y^{50}), and $ERF_{s,t}$ is the index of ethnic and racial fragmentation in state s in year t , constructed identically to the index of ethnic fragmentation used in Alesina et al. (1999). In other specifications, we also employ alternative popular measures of inequality, which we will describe in detail in the following section. Other controls include economic (e.g., the female labor force participation rate, unemployment rate, and log of State GDP per capita) and political (e.g., partisan control of the local legislature and political alignment of the governor) variables and state and election year fixed effects. In some specifications, we also use the lag of our dependent variable. Below, we describe in more detail how we operationalize the main variables used in our estimation.

Moreover, our empirical analysis looks carefully at the role that ethnic and racial heterogeneity might have on the demand for redistribution, as suggested by Alesina et al. (1999) and Alesina and Glaeser (2004). For this reason, our analysis takes into account the possibility that there might be an interaction between income inequality and non-economic determinants of redistribution, which were found to have an effect on redistributive outcomes and public good provision (Alesina et al. 1999). That is, according to this approach, it can be the case that a given increase in income inequality should lead to a relatively larger increase in the demand for redistribution when the society is more homogeneous (less fragmented) compared to the case where the society is more heterogeneous. In the latter instance, we should expect a smaller increase in the demand for redistribution. Hence, we have also interacted the index of ethnic and racial fragmentation with the measure of inequality that we employ, as in Karabarounis (2011), in order to control for Lind's (2007) conjecture that only in less heterogeneous and less fragmented societies does inequality increase redistribution.

3.1.1 Variable definitions and description

Dependent variable Following most of the literature, we measure redistributive outcomes using the effective state tax rate and the level of social spending at the state level. We compute the state *effective tax rate* in percentage terms as the ratio of the state’s *total* per capita tax receipts over (per capita) income at the state level. In addition to the *total* effective tax rate, we also compute the effective (individual, corporate, and total) *income* tax rate, and the effective *property* tax rate. As before, the denominator is the per capita total income at the state level and the numerator is the state’s *individual, corporate, property, and total* income tax receipts (per capita). We get our data for tax receipts (total and itemized) and income (per capita) at the state level from the U.S. Census Bureau and the BEA’s regional data base.

In addition to the effective state tax rate, we also measure redistributive outcomes using the *state social transfers rate* (in percentage terms) defined as the ratio of total (per capita) state social transfers over (per capita) income at the state level, using again data from the regional data base of the BEA for social transfers and income at the state level.¹⁰

Inequality To operationalize the measurement of income inequality, we use standard measures from the literature. While data on the Gini, Theil, and Atkinson indexes of income inequality are available at the state level, as most of the recent literature suggests (e.g., Rodriguez 1999; Lupu and Pontusson 2011; Pecoraro 2014) these measures do not capture changes in inequality that are politically relevant.¹¹ That is, they are not very informative on the relationship between median and mean incomes, which is what determines redistributive outcomes according to most models. For this reason, in addition to using some of the standard measures of inequality presented above, we focus our analysis on three measures that are, in our view, more relevant and robust determinants of redistribution, taxation, and social spending: a) the mean-to-median ratio of gross (pre-tax) individual earnings (\bar{y}/y^{50}); and b) the skewness of the distribution of gross individual earnings. In order to compute the mean (\bar{y}) and median (y^{50}) income at the state level, we use the data on *gross* –that is, before taxes and any deductions or transfers– annual earnings from the U.S. Census Bureau’s Current Population Survey (CPS) Annual Earning Files (AFS), which contain detailed information on annual earnings since 1979.¹²

Moreover, in addition to the above measures of income inequality, in *different specifications*, we replace

¹⁰Data for social transfers at the state level are available starting in 1997.

¹¹Despite this, we show in the appendix that our analysis is robust to using alternative measures of inequality.

¹²AFS data are stored at NBER and are publicly available online.

those previously mentioned measures of inequality with the *P90 to P50* ratio ($\frac{y^{90}}{y^{50}}$) or the ratio of the income of the 90th percentile of the income distribution (top decile) over median income; the *P50 to P10* ratio ($\frac{y^{50}}{y^{10}}$) or the ratio of median income over the income of the bottom decile; and the *P90 to P10* ratio ($\frac{y^{90}}{y^{10}}$), or the ratio between the income of the 90th percentile (top decile) over that of the 10th percentile (bottom decile). We do so because many scholars (e.g., Karabarbounis 2011; Lupu and Pontusson 2011) discuss the possibility that what matters most is the relative distance of the middle-class voters, or those who earn the median income, from the top and bottom deciles of the income distribution. Their main argument is that since the median voter is decisive with her preferences reflected by the democratic process, the middle class aligns with the rich elites (top decile) as the ratio of the median over top income is increasing. By contrast, the middle class aligns with the poor –and demands more redistribution when the ratio of their income over the bottom decile income is shrinking. That is, the closer the middle class feels to the poor, the more redistribution it prefers and vice versa. As a result, controlling for those measures of inequality will allow us to exclude this argument from being a possible explanatory factor.¹³

Racial (ethnic) heterogeneity Following Alesina et al. (1999), we compute the index of racial (ethnic) heterogeneity in a way analogous to their computation of the index of ethnic fractionalization. That is, we compute:

$$\text{Ethnic \& Racial Fragmentation}_{s,t} = \text{ERF}_{s,t} = 1 - \sum_i (r_{i,s,t})^2$$

where $r_{i,s,t}$ is the share of racial (or ethnic) group i in state s in year t . This index is the opposite of a Herfindahl-Hirschman index and takes values from zero to one, where zero means no heterogeneity (e.g., the whole population belongs to a single racial or ethnic group). A value of one, on the other hand, implies extreme heterogeneity (e.g., every single individual belongs to a separate racial or ethnic group). In order to compute the index, we follow previous literature to split the population in four distinct groups, using the categories provided by the U.S. Census Bureau: whites (non-hispanics), blacks (non-hispanics), Hispanics, and Asians and pacific islanders.¹⁴ In the data appendix, we provide detailed information on how we have constructed this variable using micro-data from CPS Annual Earnings Files. In Figure 2,

¹³We provide a detailed overview of how we constructed each of those measures in the data appendix.

¹⁴Up until the early 2000s, those four categories were the only ones asked in the Census Current Population Surveys. In years following 2001, survey respondents were given the option to self-identify using a much richer set of options (also allowing a person to choose more than one category). Yet for reasons of consistency throughout the whole sample, we restrict attention into those four categories, although the index does not vary dramatically if one is to incorporate a more (less) detailed break-down.

we present the variation of the main variables of interest (effective tax rate, mean-to-median ratio, ERF index) across states and over time.

[Insert Figure 2 about here]

Other variables We also employ a series of economic and political variables as controls in our estimation. In particular, we use the average real income per capita at the state level and the real gross state domestic product per capita (retrieved from the regional accounts data base of the BEA), the unemployment rate and the female labor force participation rate (from the regional accounts of the BLS), a binary variable indicating partisan or split control over both chambers of the state’s legislature (State House and Senate) taken from the National Conference of State Legislatures (NCSL), and, finally, a variable indicating the political affiliation of the sitting governor.

3.1.2 Results

Table 1 presents the results of the baseline specification. In the appendix (Table A.2) we re-estimate our baseline specification but, this time, our unit of analysis is the state-calendar year (not the election year, as in Table 1).¹⁵ Our estimates are consistent with previous findings: Inequality (measured in a variety of different ways) does not seem to be an important determinant of redistributive outcomes (and, in fact, it always fails to be statistically significant at any conventional level). However, we find some (weak) support for the hypothesis that racial and ethnic heterogeneity is negatively associated with redistribution, as previous studies have found (e.g., Alesina et al. 1999; Alesina and Glaeser 2004) –this is so, especially when we estimate equation (1) using calendar years. That is, the results of the standard approach – one that does not take into account the role that candidates’ racial identity might play– are consistent with previous findings in the literature: greater income inequality does not lead to more redistribution. Moreover, the introduction of a lagged dependent variable and other controls does not change the general picture. As a result, in the section that follows we introduce a measure of the degree of salience of issues related to race and identity: the share of electoral contests (in a given state during a given election) that were contested between candidates of different racial or ethnic backgrounds. Before presenting our results, we demonstrate in some detail how we have estimated candidates’ racial and ethnic identity.

¹⁵We do so, in order for our estimates to be directly comparable with previous studies (e.g., Alesina et al. 1999; Alesina and Glaeser 2004).

[Insert Table 1 about here]

3.2 Candidate differentiation

As shown in Table 1, our results do not differ substantially from previous findings in the U.S. context (e.g., Alesina et al. 1999). At first glance, inequality seems to play little role, if any, in determining redistributive outcomes while ethnic and racial heterogeneity seem to be negatively correlated with redistribution. Yet the specification of equation (1) completely ignores the mechanism that we have put forward in Section 2: Inequality is an important determinant of redistributive outcomes when economic matters are *relatively more salient* than matters of race and ethnic identity. Therefore, in the section that follows we do exactly this and construct an index that attempts to proxy the relative salience of issues related to race and identity during an electoral campaign. In order to do so, we use data on each individual candidate (winner and loser) who contested any election for a local legislative office at the state level since 1979, and we estimate the state-wide proportion of electoral contests that were contested between candidates of different racial backgrounds.¹⁶ We get information for each individual candidate from the State Legislative Election Returns (1967-2010) data set, compiled by the Inter-university Consortium for Political and Social Research (ICPSR 34297-v1) led by the University of Michigan (Klarner et al. 2013). We also supplemented this information using data from the U.S. Census Bureau. In the section that follows, we describe our estimation technique in detail.

3.2.1 Variable construction: A Bayesian approach

In order to measure the proportion of electoral contests between racially differentiated candidates for a given state and election year, one ideally needs to have data on the racial identity of all competing candidates. Such comprehensive data for state legislative offices are not readily available. There are numerous

¹⁶Here it is, perhaps, necessary to explain why we have chosen to aggregate this information at the state level instead of performing our analysis at the most disaggregated level possible: a state's electoral districts. There are important technical barriers that make such analysis impossible. First, note that the boundaries of a state's local electoral districts (that is, local congressional districts) are not constant over time and, most importantly, they do not coincide with the boundaries of the counties –which is the smallest reference unit for the US Census– simply because of gerrymandering: some counties contain multiple electoral districts and vice versa. But, even if one wanted to –painstakingly– identify which segments of counties belong in a particular electoral district, then it is absolutely necessary to work with micro-level Census data in order to identify exactly which voters in a given county belong to one or another electoral district. Simply put, data aggregated at the county level will not be sufficient to perform such an analysis. Unfortunately, the US Census Bureau embargoes the release of micro-level data with county identifiers for a certain period of years: the latest available micro-level data with full county identifiers are from 1960 and, hence, they cannot be used in our analysis. As a result, it is not possible for us to construct a complete set of socio-demographic and economic variables (such as measures of inequality that require the full distribution of incomes in a particular unit of analysis) that are necessary for our analysis.

candidates for state legislative offices, and with the exception of recent elections during which many candidates promote their campaigns on the internet, their personal data (such as their race, ethnicity, and religion) are difficult to retrieve from their own promotional materials. Indeed, certain characteristics of past elected candidates might be found in the local press, but information about non-elected candidates is scarce at best. Notice that in order to measure the proportion of differentiated electoral contests, information both about the winners and the losers is absolutely necessary.

So, how do we proceed? In order to create a reliable and econometrically admissible and consistent measure of candidate differentiation, we employ the estimation approach described below.

Step 1. We use the ICPSR State Legislative Election Returns data set (Klarner et al. 2013) which contains detailed information on all candidates that competed in elections for state legislative offices in all U.S. states from 1967 to 2010.¹⁷ This data set contains personal information for more than 150,000 candidates, including surnames, given names, state, electoral district, office they run for, election year, and other variables of interest. However, it does not include the race of each candidate.

Step 2. Next, we match the surname of each candidate with the racial distribution of U.S. citizens bearing this surname. For example, the racial distribution of U.S. citizens bearing the surname Smith is the following: 73.35% are white, 22.22% are black, and 4.43% belong to other racial groups. We have data for the 10,000 most popular surnames in the U.S. population from the U.S. Census Bureau. As a result, not every candidate is matched with a racial distribution: All told, about 120,000 of the candidates in the data set are assigned a racial distribution. Inspection of the data set shows that this matching is quite constant over time. The percentage of candidates matched with a racial distribution varies very little between the years. The same pattern is also observed at the state level.

Step 3. We update the racial distribution assigned to each candidate in order to take into account the state- and year-specific racial distribution obtained from the CPS, using a Bayesian approach. This is absolutely necessary since, if we only know that a candidate is named Smith, then we can correctly assign him a probability 73.35% that he is white. But if we additionally know that this candidate is from Maine, where white population represents the 94.4% of the total as opposed to 77.35% countrywide, then we should assign a larger probability of being white to that candidate. Since the racial distribution of the population of a state does not remain constant over time, we need to take into account state- and year-specific racial distributions that are available from 1979 on a yearly basis in order to improve our

¹⁷In order to match our data from CPS's Annual Earnings Files, we restrict attention to the period from 1979 on.

estimates. Consider that w^i is the probability that a candidate with surname i is white given the primary matching described in step 2. Then, following a Bayesian approach, the probability that a candidate with surname i is white, given that this candidate competes in an electoral race in state s and in year t is:

$$w_{s,t}^i = \frac{\frac{w^i}{w} \times w_{s,t}}{\frac{w^i}{w} \times w_{s,t} + \frac{1-w^i}{1-w} \times (1-w_{s,t})}$$

where w is the countrywide percentage of whites in the year corresponding to the year of the original racial distributions, and $w_{s,t}$ is the percentage of whites in state s and in year t .

To see the intuition behind this update, consider the example that follows. In a country at time t , we have: a) m men and f women, with $m < f$, and b) certain individuals are named Billie, a share b^m of them are men and a share b^f of the are women, with $b^m + b^f = 1$. Moreover, we denote by \hat{b} the probability that a randomly chosen individual is named Billie and by \hat{b}^m (\hat{b}^f) the probability that a randomly chosen man (woman) is named Billie. Notice that the latter are conditional probabilities and hence $\hat{b}^m = \frac{b^m \times \hat{b}}{m/(m+f)}$ and $\hat{b}^f = \frac{b^f \times \hat{b}}{f/(m+f)}$.

Now assume that we randomly choose a woman out of the original women sub-population, and we clone her (the cloning process creates identical individuals with identical names); and that we do this until the female sub-population becomes equal to the male sub-population. In other words, we create a new balanced population by randomly replicating individuals of the original female sub-population. What is the probability that, in this new balanced population, a randomly chosen Billie is a man? Surely it must be strictly smaller than b^m since the number of men named Billie did not increase, while the total number of individuals that bear this name did (in expected terms). In particular, when m takes arbitrarily large values and the percentage of Billies, \hat{b} , is non-degenerate, the probability that a randomly chosen Billie is a man converges to the following expression:

$$B^m = \frac{\hat{b}^m \times m}{\hat{b}^m \times m + \hat{b}^f \times m} = \frac{b^m/m}{b^m/m + b^f/f} = \frac{b^m/\tilde{m}}{b^m/\tilde{m} + b^f/(1-\tilde{m})},$$

where $\tilde{m} = \frac{m}{m+f}$ (B^f is defined symmetrically). Like above, we denote by \hat{B} the probability that a randomly chosen individual is named Billie and by \hat{B}^m (\hat{B}^f) the probability that a randomly chosen man (woman) is named Billie. Again, these are conditional probabilities, and, hence, we have $\hat{B}^m = \frac{B^m \times \hat{B}}{1/2}$ and $\hat{B}^f = \frac{B^f \times \hat{B}}{1/2}$.

Finally, consider that we randomly draw a sample of m_s men and a sample of f_s women out of the two symmetric sub-populations, with $m_s \neq f_s$, and that we place all randomly drawn individuals (and only them) in a certain district. Then, the probability that a Billie randomly drawn from that district is a man should converge to $B_s^m = \frac{\hat{B}^m \times m_s}{\hat{B}^m \times m_s + \hat{B}^f \times f_s} = \frac{B^m \times \tilde{m}_s}{B^m \times \tilde{m}_s + B^f \times (1 - \tilde{m}_s)}$, where $\tilde{m}_s = \frac{m_s}{m_s + f_s}$ (B_s^f is defined symmetrically). If we substitute B^m and B^f in these equalities with $\frac{b^m/\tilde{m}}{b^m/\tilde{m} + b^f/(1-\tilde{m})}$ and $\frac{b^f/(1-\tilde{m})}{b^m/\tilde{m} + b^f/(1-\tilde{m})}$ respectively, we get

$$B_s^m = \frac{\frac{b^m}{\tilde{m}} \times \tilde{m}_s}{\frac{b^m}{\tilde{m}} \times \tilde{m}_s + \frac{1-b^m}{1-\tilde{m}} \times (1-\tilde{m}_s)}.$$

We observe that: a) when the share of men in this district is equal to the original share of men ($\tilde{m}_s = \tilde{m}$), then $B_s^m = b^m$; b) when the share of men in this district is equal to the share of men in the balanced population ($\tilde{m}_s = \frac{1}{2}$), then $B_s^m = \frac{b^m/m}{b^m/m + b^f/f} = B^m$; c) when the share of men in this district converges to one ($\tilde{m}_s \rightarrow 1$), then $B_s^m = 1$; and d) when the share of men in this district converges to zero ($\tilde{m}_s \rightarrow 0$), then $B_s^m = 0$. All of these confirm that the formula takes into account all available information.

Step 4. After we assign each of the matched candidates an updated probability of them being white taking in account all relevant information, we construct a measure of candidate differentiation that is collinear to the actual one and, hence, is an econometrically admissible substitute. Specifically, the probability that the two candidates¹⁸ are racially differentiated in district d of state s and in election year t , is defined by:

$$P_{d,s,t} = w_{s,t}^i(1 - w_{s,t}^j) + w_{s,t}^j(1 - w_{s,t}^i).$$

Strictly speaking, this is not the probability of an electoral contest being differentiated, but the probability that a race is between a white and a non-white candidate. As a result, it underestimates the actual probability that a race is between candidates of different races, making our approach a conservative one. A more detailed measure would be more sensitive in fluctuations in the exact percentages of smaller

¹⁸In the initial sample about 20% of the contests involved the incumbent running unopposed. We have, thus, removed those cases from the sample we used to estimate our variable, since in those cases our variable has no meaning. We have also removed from our sample a very small amount of candidates that received less than one percent of the vote. Those are fringe candidates, and, hence, they should not have any effect in influencing the salience of issues during the electoral campaign. After removing a small fraction of entries from candidates that competed in MMDs (in multi-member districts the idea of pairing candidates competing against each other for one seat is quite problematic) as well, we were left only with electoral races the vast majority of which (99% of total) involves a two-candidate contest (in the vast majority of those cases a Democrat against a Republican). In the remaining few cases, where more than two candidates compete for a single seat, we focus on the top two ones (that is, those who received the largest vote share). Nevertheless, in the appendix, we repeat the estimation process without excluding those candidates and we show that our results are robust to such choices.

racial groups. This is quite problematic as such groups are treated differently throughout our sample period. For example, in the early 1990s a new category of racial identification (Asian/Pacific islander) was added to the previously existing three (black, white, other); in the mid-1990s an additional category was added (Native American).¹⁹ Hence, the safest and most inter-temporally homogeneous approach is to focus on a simple division between a candidate belonging to the majority group (white candidates) and to a minority one (all other candidates).

Step 5. Electoral contests for state legislatures take place at the district level. That is, in state s and in year t , we have as many electoral races as the electoral districts of that state s . If for a state s in election year t we have sufficient data to measure the probability of a differentiated (heterogeneous) contest in districts that belong to the set $N_{s,t}$ —the set of all electoral districts within a state that did not have a candidate running unopposed—then the share of differentiated (heterogeneous) contests should be approximated by:

$$P_{s,t} = \frac{\sum_{d \in N_{s,t}} P_{d,s,t}}{\#N_{s,t}}.$$

Notice that given the unbiased nature of the employed steps, $P_{s,t}$ should be very close to the actual share of differentiated contests in state s in election year t . Despite the fact that $P_{d,s,t}$ is only a rough estimate of the actual probability of a contest being differentiated (which should take either value zero or value one), the aggregation at the state level, that we have performed above, should restore accuracy and reduce noise, thus making our estimator an econometrically admissible substitute. Figure 3 summarizes the variation of our constructed variable across states and over time.

[Insert Figure 3 about here]

Step 6 (Robustness check). In order to test our estimation approach, we have chosen a random sample of 1,000 candidates from recent elections (post-2000) where data on a candidate’s race are available online and attempted to collect data regarding their race from their promotional materials and other publicly available sources. We have managed to find data for almost 700 of these candidates, and after performing a series of tests, we have found out that our approximation technique works remarkably well: it assigned the race “white” to 82.9% of the candidate population, while in our *true sample* (of 700

¹⁹The categories of races/ethnicities that a respondent could choose from, changed over time. In later years, and especially after the 2000s, the Census Bureau offered numerous options (including all possible combinations of mixed race categories). Given that respondents self-identify, a more analytical break-down could be problematic.

candidates) 83.2% of them were actually white. That is, there is *no difference* in statistical terms. The same holds true if one is to compute similar statistics by year, state, and district.

Since we want to measure the share of electoral contests that are contested between candidates of different racial backgrounds, or the share of *differentiated contests*, at the state level, we only require that our constructed variable $P_{s,t}$ aggregates information consistently at the state level. That is, even if the probability that an electoral contest is differentiated $P_{d,s,t}$ that we assign is not accurate, for our estimator to be an *econometrically admissible substitute* it suffices to aggregate this information consistently at the state level. In order to check this, we conduct the following test. We take all of the possible combinations that we can form of racially differentiated groups of n individuals that are randomly chosen from the group of those 700 candidates that we have sampled –and whose race and ethnicity is known to us. That is, we generate groups of n individuals, where $n = \{25, 50, 75, 100\}$, such that we have 0 white and n non-white candidates, then 1 white and $n - 1$ non-white candidates and so on, until we have a group with n white and 0 non-white candidates. For each combination, we take 10,000 random samples of size k for white candidates and size $n - k$ for non-white candidates for $k = 0, 1, \dots, n$. For each sample of total size n , we find the true and the estimated –based on $w_{s,t}^i$ that we have constructed above– mean of how many white candidates this group has. We, then, compute the grand mean of those 10,000 sample means: Figure 4 depicts the *estimated* versus the *actual* proportion of white candidates in the group of n randomly sampled candidates when $n = 50$.²⁰

[Insert Figure 4 about here]

Strikingly, the plot is an almost perfectly straight line. That is, the estimated proportion of white candidates in the group is linearly and monotonically increasing in the true proportion, and the two variables are *effectively collinear*,²¹ and, hence, the use of the estimated proportion, instead of the real one, is admissible econometrically. Moreover, recall that in the true population (across states and over time) the relevant range of the share of white candidates lies between 0.7 and 0.9. Hence, our estimates are almost identical to the true values when the actual share of white candidates in the true sample is approximately 0.8 which is, in fact, very close to the overall true proportion of whites in the overall sample. In the range that is relevant, our estimator seems to perform extremely well in aggregating the

²⁰The results are identical when we use different sampling sizes (that is, when $n = \{25, 75, 100\}$).

²¹We need to stress here that in no way did we force this relationship to be linear, but rather it is an outcome of the sampling process.

information that we need.²² Obviously, our estimator is not perfect at the individual level, but in the relevant range between 0.7 and 0.9 our estimator aggregates correctly the proportion of whites in the group of n randomly selected candidates. Thus, we have every reason to feel confident that our estimated parameter $P_{s,t}$ is a *fairly accurate approximation* of the share of electoral contests (within a state in a given election year) that were contested among candidates of different racial backgrounds.²³ Moreover, as an additional robustness check, we also estimate our main econometric specification (presented in the next section) by replacing $P_{s,t}$ with the simplest possible variable that we can construct: the estimated state-wide proportion of non-white (minority) candidates that stood in state legislative elections in a particular year.²⁴ We present those additional results in the appendix (Table A.1, Columns 1-3).²⁵

3.2.2 Main econometric specification

After presenting in detail the method for estimating the share of all state-wide electoral contests for local legislative offices that were contested among candidates of different racial backgrounds, we are now ready to introduce this variable into our estimation. As stated earlier, the purpose of this exercise is to identify whether the importance of inequality as a key determinant of redistributive outcomes varies with the salience of issues related to race, which we proxy by estimating the state-wide share of differentiated (heterogeneous) electoral contests. Naturally, since this variable can only be estimated at the election year, our unit of analysis is now the state-election (not simply calendar) year, which implies that our sample size is halved due to the fact that elections for state legislative offices take place every two years.

²²Since our intention is to use the estimated proportion (at the state level) of electoral contests between racially/ethnically differentiated candidates in the regression, the fact that our constructed variable is a linear and increasing transformation of the true proportion of white candidates when the sample is sufficiently large ($n = \{25, 50, 75, 100\}$), as is the case in reality where in each state there are many contests, implies that our estimation approach is econometrically valid.

²³Notice that, so far, we have argued that our constructed variable is an econometrically admissible substitute under the implicit assumption that voters have full information on the racial and ethnic identity of the candidates. But, in reality, this need not be the case. In fact, it is more likely that most voters only form perceptions on the racial or ethnic identity of a particular candidate in the same way that our estimator does: they assign a particular probability of a candidate being white (or black, or hispanic) simply by observing her name in the ballot paper –many voters might not have seen the candidates in person. If that is the case for a large proportion of voters, then our constructed variable should be better in estimating the importance of identity issues in voters’ decisions even than the actual share of differentiated contests.

²⁴As Figure 4 demonstrates, in the relevant range of the true proportion of white candidates in the sampled population, our estimation technique performs outstandingly. Thus, for a large number of candidates (as is the case when we aggregate information at the state level) our estimated proportion of white candidates should be statistically indistinguishable from the true one. As a result, this much simpler variable that we have constructed should be completely *bias-free*.

²⁵As indicated in Step 4, we have computed our measure of candidate differentiation by focusing on two-candidate electoral contests. Yet, one can repeat the estimation without restricting the set of candidates. In such a case, since in many races more than two candidates can compete for one (or even more than two seats in the case of MMDs), the concept of calculating the probability that an electoral race is contested between two candidates of different ethnic or racial backgrounds is a bit problematic. For this reason, we calculate instead –based on the assigned probability of being non-white $1 - w_{s,t}^i$ that we have estimated in Step 3– the state-wide proportion of non-white (minority) candidates that stood in state legislative elections in a particular election year. Figure A.6 (in the appendix) reports the estimates of our basic econometric specification when we replace $P_{s,t}$ –the estimated state-wide proportion of differentiated electoral contests– with our new variable detailed above.

Formally, we estimate the following model:

$$\begin{aligned}
T_{s,t} = & \beta_0 + \phi T_{s,t-1} + \beta_1 P_{s,t} + \beta_2 P_{s,t} * \left(\frac{\bar{y}}{y^{50}}\right) + \beta_3 \left(\frac{\bar{y}}{y^{50}}\right) \\
& + \beta_4 ERF_{s,t} + \beta_5 ERF_{s,t} * \left(\frac{\bar{y}}{y^{50}}\right)_{s,t} + \mathbf{X}'_{s,t} \boldsymbol{\gamma} + \alpha_s + \lambda_t + \epsilon_{s,t} \quad (2)
\end{aligned}$$

where the focus is on candidate differentiation $P_{s,t}$. All other variables in equation (2), including the controls, are defined as before. Again, in some specifications, we replace the mean to median (pre-tax) income ratio as our measure of income inequality with the variables presented in earlier sections of the paper (e.g., skewness). All versions of the model that we estimate, include the interaction between our key variable, the measure of income inequality, and the index of ethnic and racial fragmentation.

3.3 Results

Tables 2 and 3, and Figures 5 through 11 present the main results of, and some variations on, the estimating equation (2).

[Insert Tables 2 and 3 about here]

As we can see from Table 2, the coefficient on the interaction term is negative and statistically significant at the 5% level in all specifications. This implies that as the share of differentiated electoral contests in a given state is increasing, the positive effect of inequality on redistribution is diminishing. Also note that, not surprisingly, the coefficient on β_1 is positive as minority candidates are more likely to represent poorer constituencies, given the patterns of income inequality across different racial and ethnic groups that prevail in the U.S. over the last four decades. Again, as in the case of Table 1, the coefficient on the ERF index (β_4) enters with its expected (negative) sign, while the coefficient on income inequality (β_3) fails to be statistically significant at the conventional 5% level. These results –as we show in different specifications– are robust to replacing the mean-to-median (pre-tax) income ratio ($\frac{\bar{y}}{y^{50}}$) with alternative measures of inequality, such as the skewness of the income distribution and the Theil index of income inequality.²⁶ Moreover, in addition to employing different measures of inequality, in Table 3 we also

²⁶We use the Theil index here so that our results are directly comparable with those presented in Table A.1. As an additional robustness check, acknowledging the fact that, while econometrically admissible, $P_{s,t}$ is a (potentially) noisy estimate of the true fraction of differentiated electoral contests, in Table A.3 in the appendix we present the estimates of our main specification (presented in Table 2) using bootstrapped standard errors which make our estimates on the CI more conservative.

estimate our model of equation (2) using alternative measures of redistributive outcomes. That is, we use the effective individual and total income tax rates, and state social transfers as a percent of state GDP as our dependent variables. As it is clear from all specifications in both tables, the empirical evidence support our conditional hypothesis: The initially strong effect of income inequality is diminishing in the degree of candidate differentiation.

[Insert Figures 5 to 11 about here]

Yet, interpreting the output in Tables 2 and 3 is not straightforward. In fact, we are interested in estimating the marginal effects of inequality on redistribution conditioning on the degree of race-issue salience (proxied by the degree of candidate differentiation and the share of heterogeneous electoral contests). Therefore, in Figures 5 through 11 we plot the conditional marginal effects of the estimates presented in Tables 2 and 3 under various alternative specifications.²⁷ If one pays close attention to all figures, the pattern that emerges is quite clear: When a small fraction of all state-wide electoral contests in a given election year are contested among candidates of different racial and ethnic backgrounds, then inequality (irrespective of how we measure it) has a *positive* and significant (both economically and statistically) effect on redistribution, measured as the effective tax rate or social transfers. But when more than a quarter of all contests are contested between differentiated candidates, then the effect of inequality on redistribution fails to be statistically significant. That is, when non-economic issues such as matters related to race are relatively more salient, inequality ceases to be an important determinant of redistributive outcomes. As a robustness check, in the appendix, (Figures A.7 through A.12) we re-estimate the conditional marginal effects using bootstrapped standard errors in order to be more conservative in constructing our confidence intervals.

[Insert Figure 12 about here]

Finally, in Figure 12 we again plot the conditional marginal effects of inequality on redistribution, but this time we condition on the index of overall racial heterogeneity within a state. The intuition is that perhaps our constructed variable simply acts as a proxy for racial heterogeneity: It might be the case that in states with high racial and ethnic heterogeneity most of the electoral contests are fought between

²⁷Formally, the conditional marginal effects that we compute are given by the following equation: $\frac{\partial T_{s,t}}{\partial (\bar{y}/y^{50})} = \beta_2 P_{s,t} + \beta_3 + \beta_5 ERF_{s,t}$, for given values of $P_{s,t}$. The mean value for $ERF_{s,t}$, is used in all the calculations reported, but our results hold true –and are available upon request– even if one replaces the mean with the median (or the *P75*) value of $ERF_{s,t}$.

candidates of different racial backgrounds. In fact, a quick look at Figure 2 reveals a significant correlation between ethnic and racial heterogeneity and the presence of many differentiated electoral contests. As a result, this conditional effect that we capture might be driven by overall racial heterogeneity. To check against this claim, in Figure 12, we plot the marginal effects of inequality (the mean-to-median ratio) on the effective tax rate conditional on racial and ethnic heterogeneity, measured by the ERF index. One can observe the conditional effect we have estimated before is absent. If anything, as racial heterogeneity increases, the effect of inequality on redistribution is positive but not statistically significant. This, in turn, implies that if the positive effect that we have estimated in Figures 5 to 11 is biased, then this bias works against our hypothesis. That is, perhaps we are underestimating the true positive effect of inequality on redistribution.

4 Discussion

4.1 Relationship with the literature

Before discussing the empirical and policy implications of our findings, we first would like to comment on how those findings align with previous literature. First, we should note that certainly we are not the first to argue that one can recover the predicted Meltzer and Richard (1981) effect of inequality on redistributive outcomes. Previous studies by Karabarbounis (2011) and Lupu and Pontusson (2011) have shown that the relative incomes of poor, middle class, and rich voters might matter in determining redistributive outcomes. In that respect, including different and multiple moments of the income distribution that can capture those relative changes (e.g., the y^{90}/\bar{y} and the y^{10}/\bar{y} ratios, as in Karabarbounis 2011, or the skewness of the income distribution, as in Lupu and Pontusson 2011) might be able to reconcile the theoretical predictions with empirical regularities. Yet, in our analysis we have taken those considerations into account when building our econometric model. It turns out that: a) our results do not hinge on those relative changes in inequality between different income groups, and b) introducing a second dimension in our analysis –the salience of non-economic matters, captured by the fraction of heterogeneous electoral contests between differentiated candidates– is necessary in order to empirically recover the theoretically predicted effect of inequality on redistribution. Simply put, adding those additional moments of the income distribution into the regression was not sufficient to generate a positive and statistically significant effect of inequality on redistribution. We attribute this difference to the following two reasons. First, our study focuses exclusively on the U.S. and exploits within-country variation, thus keeping fixed

other determinants (e.g., institutions or culture) of redistributive outcomes. In contrast, both studies by Karabarbounis (2011) and Lupu and Pontusson (2011) use cross-country data. That is, their findings are relevant for a group of OECD countries and might not carry over in the case of the U.S.²⁸ Second, unlike Lupu and Pontusson (2011), we measure income inequality using gross (before deductions and taxes) earnings. As a result, we can capture changes in the distribution of income (and inequality) before any distortions being introduced due to redistributive taxation and transfers.

Our paper is also related to another strand in the literature that links preferences and demand for redistribution to ethnic and racial heterogeneity (e.g., Alesina et al. 1999, 2016; Alesina and Glaeser 2004; Dahlberg et al. 2012; Snyder and Testa 2016). Our results do not contradict those findings. In fact, our results in Table 1 support the hypothesis that more ethnic or racial heterogeneity is related with lower levels of redistribution. We complement these studies by adding a new dimension: The salience of issues related to ethnic or racial identity. That is, we find that irrespective of the arguably important effect that voter ethnic and racial heterogeneity has on the demand for redistribution, when issues related to race or ethnicity become salient, inequality ceases to be the most predominant determinant of redistributive outcomes, and vice versa. Thus, our results add to the findings of the literature on the relationship between ethnic heterogeneity and redistribution by stressing the importance of not only voter, but also candidate, heterogeneity.

4.2 Implications and final remarks

Despite the fact that our findings contribute to the discussion of the relationship between ethnic heterogeneity and redistribution, our study, of course, has certain limitations. First, one should apply caution in interpreting our findings as causal, as inequality itself can be an outcome of redistributive policies (or lack thereof). If redistributive policies have long-lasting outcomes, then the distribution of income today can depend on redistributive policies of the past which, in turn, might be correlated with current redistributive policies, thus giving rise to worries about reverse causality. We have tried to deal with such complications in two ways. As noted above, we have used gross (pre-deductions and taxes) earnings in order to calculate income inequality. Moreover, we have used a lagged dependent variable in our estimation to account for the possibility that current redistributive policies are correlated with past ones.

In addition and, perhaps, more importantly inequality and ethnic or racial heterogeneity might be

²⁸One plausible explanation is that issues of race and ethnic diversity are more pronounced in the U.S. context.

correlated. In other words, it can be the case that in ethnically or racially more diverse communities income inequality is larger. That is, ethnic or racial heterogeneity might simply be a proxy for ethnic income inequality (Alesina et al. 2016). This, in turn, implies that if inequality is higher in relatively more racially heterogeneous communities –perhaps because minorities are relatively poorer– then we should expect to see more minority candidates, and, hence, more differentiated electoral contests in more unequal communities. Nevertheless, this does not negate the main point that this paper makes: Candidate heterogeneity is an equally important determinant of redistributive outcomes. Regardless of whether or not candidate differentiation is a proxy for ethnic inequality and its direct effect on redistributive outcomes, our estimates show that when the salience of issues related to identity is high (e.g., the percent of heterogeneous electoral contests is high), then redistributive outcomes do not seem to be sensitive to changes in income inequality.

In the appendix, we address in more detail some issues related to candidate selection which could be endogenous to the relationship between inequality (especially between different ethnic and racial groups) and redistribution (or the absence of it). What the evidence reveals is that, in our context, there is little reason to worry excessively about such issues of endogeneity: candidate selection appears to be orthogonal to income inequality and redistribution, even if one allows for a non-linear relationship (see Figure 13).²⁹ In fact, if anything, candidate (ethnic and racial) differentiation seems to be correlated with overall ethnic and racial heterogeneity of the population (see Figure 2); but the latter, as shown above (Figure 12), has a starkly different marginal effect on the inequality-redistribution nexus, in contrast to the effect of interest that we have estimated for candidate differentiation.

[Insert Figure 13 about here]

Moreover, an additional concern might be that, given widespread gerrymandering, the districts where different-race (or minority-race) candidates are fielded are not competitive. That is, what do we know about the characteristics of districts where different-race candidates are fielded and are those districts closely contested? This question is important, since the outcome in most local races is not in question and political competition focuses on a small number of contested districts. For this reason, we explore in

²⁹We have regressed $P_{s,t}$ (the state-wide percent of electoral contests between candidates of different racial and ethnic backgrounds) on income inequality and redistribution using the same controls as in equation (2), as well as state- and year-specific fixed effects. In Figure 13, we plot the estimates of this regression: the partial regression plot (also known as the adjusted partial residual plot) and the augmented component-plus-residual plot (also known as the augmented partial residual plot) which is better suited for detecting any nonlinearities in the data. There appears to be no correlation between candidate differentiation and inequality.

more detail the relationship between the aggregate (over time) level of competitiveness of competitiveness (measured by the margin of victory) of a particular district and the presence of different-race candidates (measured by our estimated variable $P_{s,t}$). As we show in Figure 14 the likelihood of observing different-race contests in a particular local electoral district (over time) does not seem to be correlated with the competitiveness of that particular district.³⁰ Moreover, if we zoom in in those districts that are fairly competitive (Figure 15), we again observe that in a sufficient amount of those districts the probability of observing a different-race contests is sufficiently high. To put it in other words, the districts that feature different-race contests do not seem to be politically irrelevant (or non-competitive) but, at the same time, there seems to be no strong link between those particular districts and the degree of competitiveness.

[Insert Figures 14 and 15 about here]

Of course, there is still much to be done in order for all the aspects of the underlying mechanism to come to the surface. Indeed, it may be that when two candidates of different ethnic or racial background compete they do not have to pander to the economic median (and her preference for more redistribution), and, thus, they do not promise any redistribution as they can secure enough votes by playing the identity card. However, it also may be that parties or interest groups select minority candidates in constituencies with high levels of income inequality –which might also be more diverse– in order to divert attention from issues of class to those of identity. Regardless of the exact mechanism taking place, the fact of the matter is that candidate heterogeneity appears to be an important determinant of redistributive outcomes that counteracts income inequality: As candidate heterogeneity increases, the median voter in the economic dimension is no longer decisive since the non-economic dimension becomes an increasingly relevant determinant of voting decisions.³¹ This paper is the first to our knowledge that documents this effect by compiling a large volume of electoral contests at the state level for a long period of time. Exploring this relationship and the exact mechanisms taking place in more detail is something that future research should focus on.

³⁰We have regressed $P_{d,s,t}$ (the district’s over time probability that an electoral contest between candidates of different racial and ethnic backgrounds takes place) on the aggregate (over time) margin of victory for that district using the same controls as in equation (2), as well as state- and year-specific fixed effects. Our sample size is the set of more than 5,500 local electoral districts in all 50 states. In Figure 14, we plot the estimates of this regression: the partial regression plot and the augmented component-plus-residual plot which is better suited for detecting any nonlinearities in the data. There appears to be no correlation between a district’s level of electoral competitiveness and the likelihood of observing a different-race electoral contest.

³¹This finding is in the spirit of previous theoretical findings (e.g., Krasa and Polborn 2014; Matakos and Xefteris 2016) that document strong spill-over effects from non-economic dimensions to economic ones in the framework of multi-dimensional electoral competition.

The implications of our findings are twofold. On the one hand, they highlight that in the context of multi-dimensional electoral competition, the relative salience of non-economic matters might have important spill-over effects on redistributive outcomes. This, in turn, implies that factors and mechanisms that affect issue salience might be important determinants of redistributive policies and outcomes. Therefore, our work highlights the importance of exploring how issue salience arises endogenously.

On the other hand, our findings also point to a relationship between polarization on non-economic matters and inequality. In our analysis, we chose to focus on issues related to racial and ethnic identity –which seem to matter in the context of U.S. politics. Yet, issues of ethnic identity are not the only ones which are salient; in recent years, for example, religion, and social ideology (e.g., issues such as abortion or same-sex marriage) have become equally important as race and ethnicity in the context of U.S. and world politics. Future work should explore the role of candidate heterogeneity in a variety of other dimensions, not exclusively race and ethnicity. In fact, social polarization at the candidate level might prove to be one of the most predominant determinants of redistributive outcomes as it has the potential of raising the salience of non-economic matters, thus surfacing the conflict between class and identity politics (Mukand and Rodrik 2016). While the relationship between inequality, social polarization, and redistributive policies is certainly worth exploring in greater detail, we defer it to future research.

Finally, our work also connects to the literature on the determinants of liberal democracy (Mukand and Rodrik 2015) and the prevalence of ethnic cleavages and in some cases conflict in environments where inequality is prevalent (Esteban and Ray 2008). Our work uncovers a conflict between the politics of class and identity, and, hence, can provide a rationale behind the prevalence and the increased salience of identity cleavages (e.g., race, religion, ethnicity, or culture) in countries where income (and perhaps ethnic) inequality are heightened. Since in those societies, political competition most likely revolves around identity cleavages rather than class cleavages, it can be the case that they are less conducive to liberal –used in the traditional sense– politics (Mukand and Rodrik 2015), thus jeopardizing further the role of ethnic, religious, or racial minorities in the political process.

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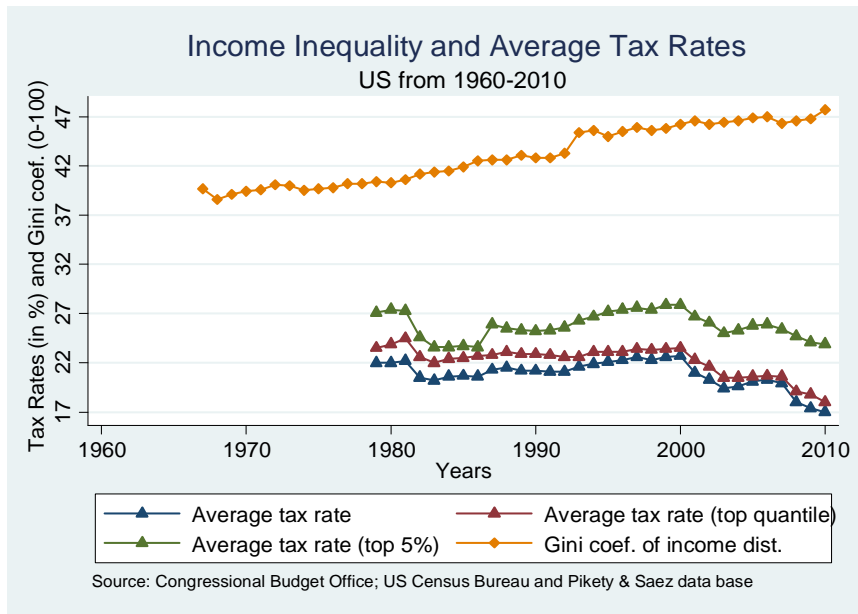


Fig. 1.a The evolution of income inequality in the US and average effective tax rate.

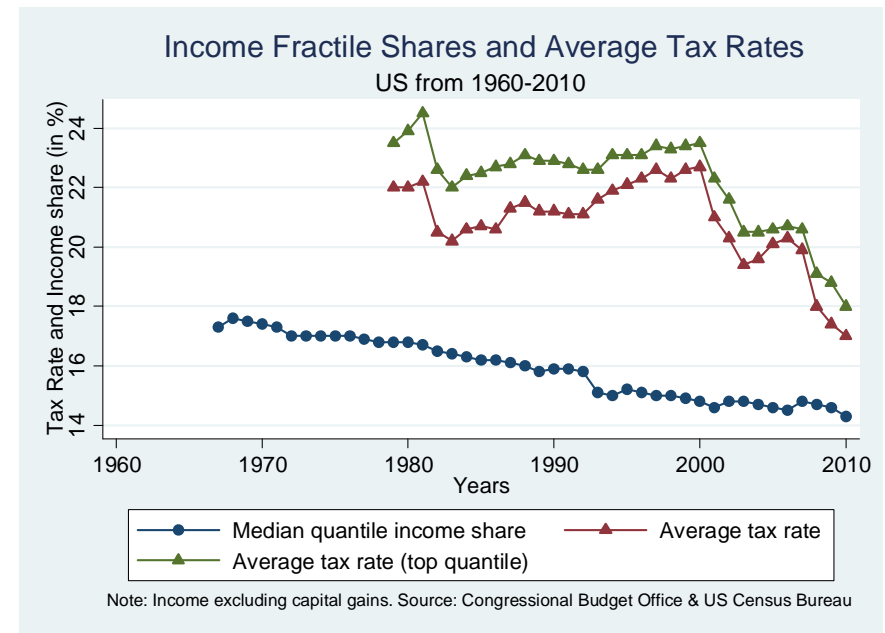


Fig. 1.b The evolution of median quintile income share and average effective tax rate.

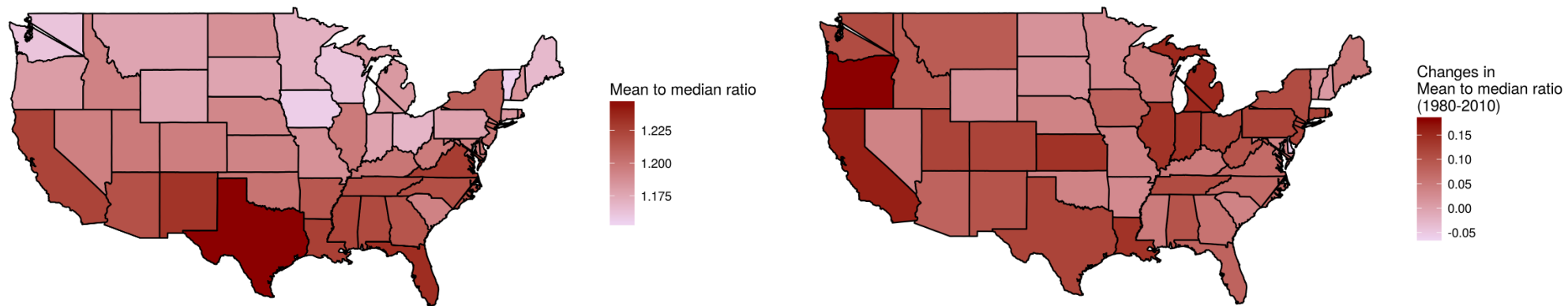


Fig. 2.a Income inequality (measured by the mean-to-median ratio) across US States from 1979 to 2012: averages (left) and changes over time (right)

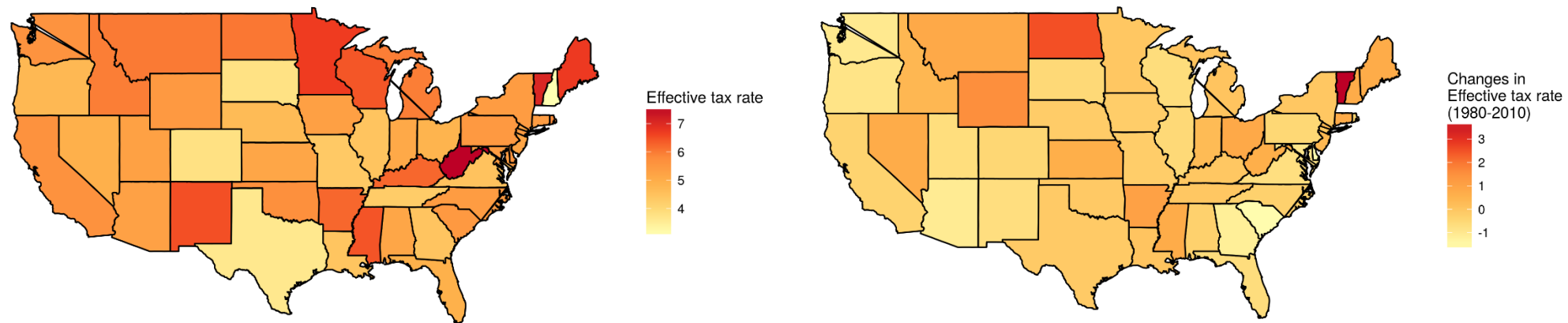


Fig. 2.b Effective income tax rate across US States from 1979 to 2012: averages (left) and changes over time (right)

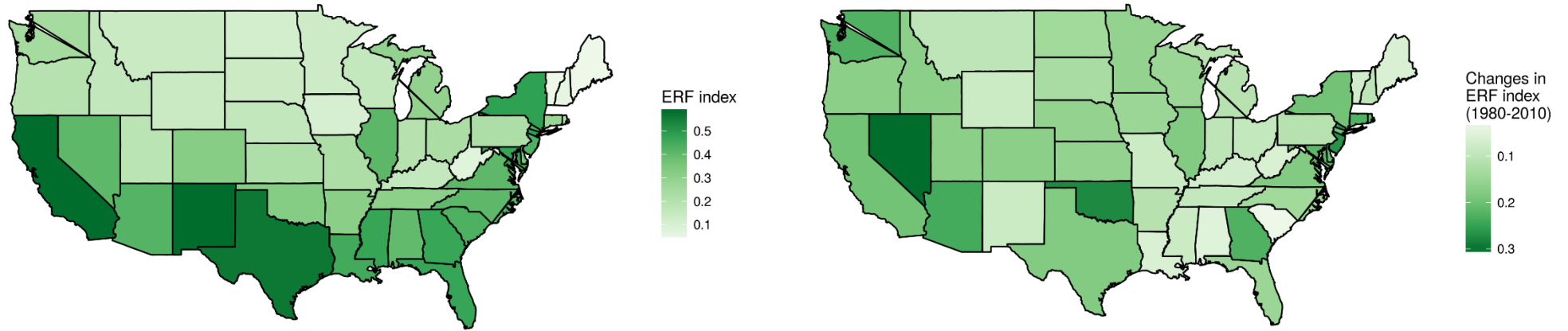


Fig. 2.c Ethnic/racial heterogeneity (measured by the ERF index) across US States from 1979 to 2012: averages (left) and changes over time (right)

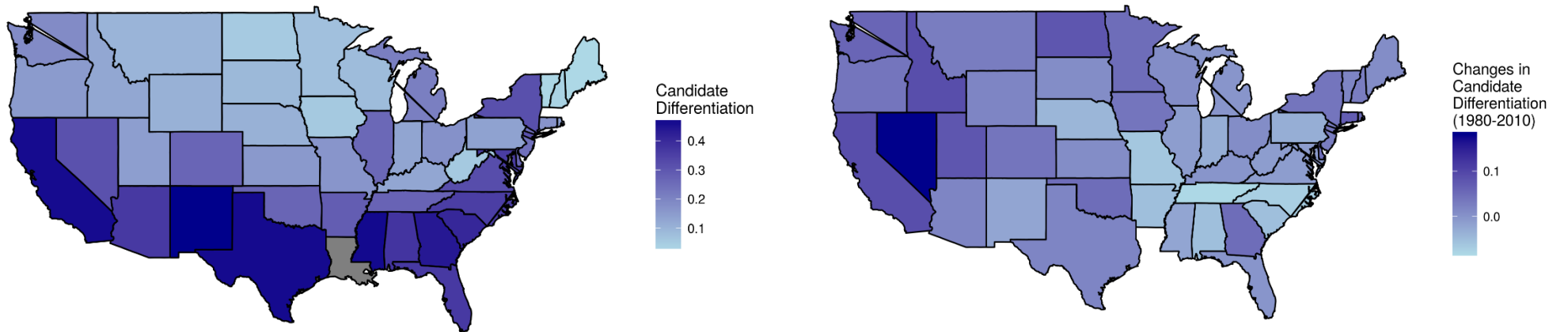


Fig. 3. Candidate racial/ethnic heterogeneity (measured by the percent of state-wide electoral contests between candidates of different race) across US States from 1979 to 2012: averages (left) and changes over time (right)

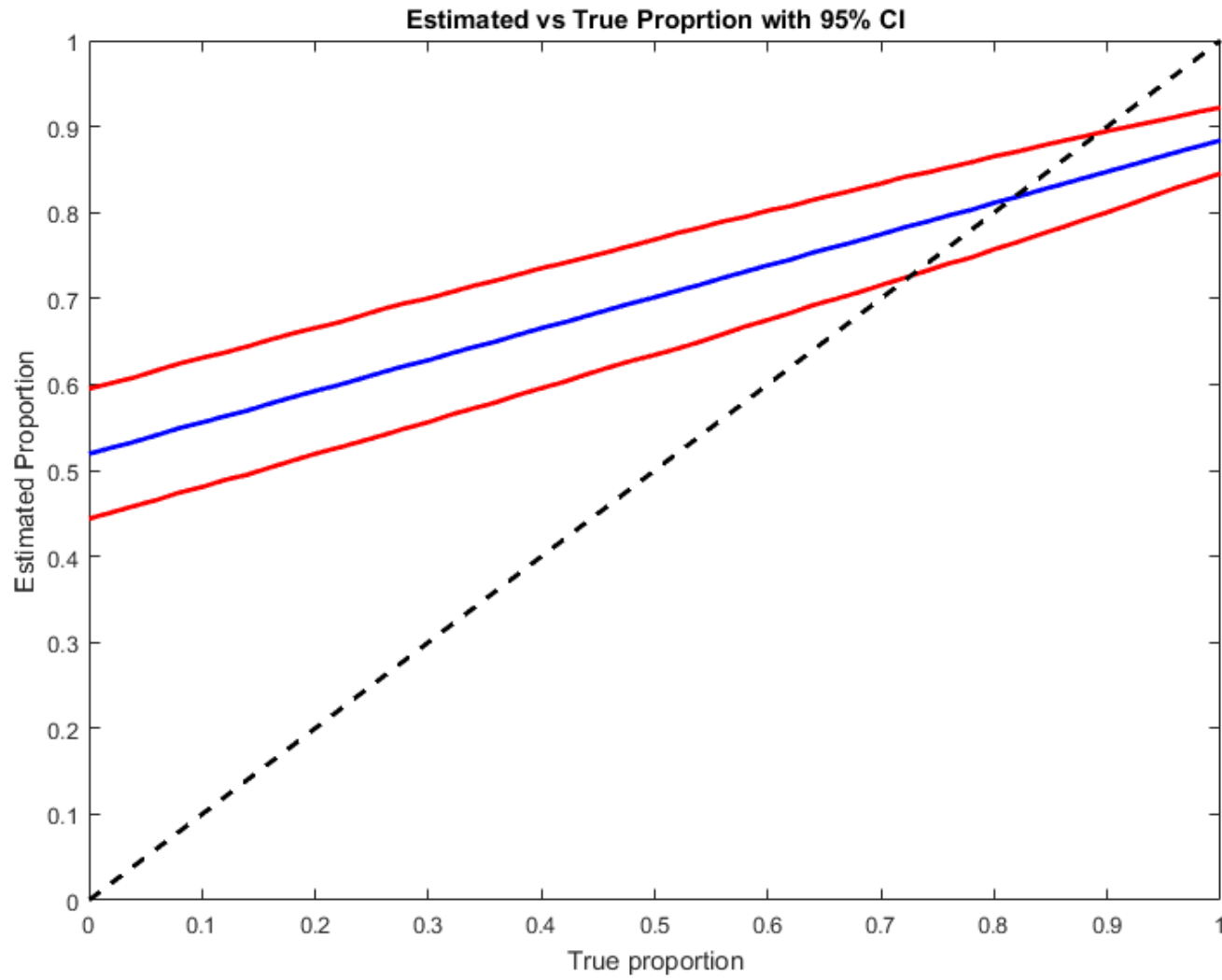


Fig. 4 Estimated and true proportion of white population in randomly selected groups of 50 candidates (Note: dashed line represents the 45-degree line; red lines represent the 95% confidence intervals).

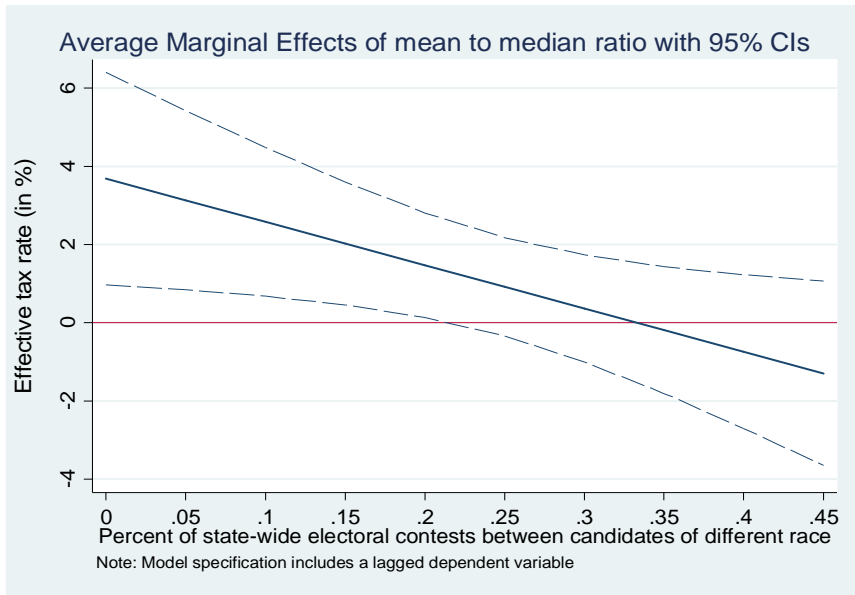


Fig. 5 The conditional effect of mean/median ratio on effective tax rate.

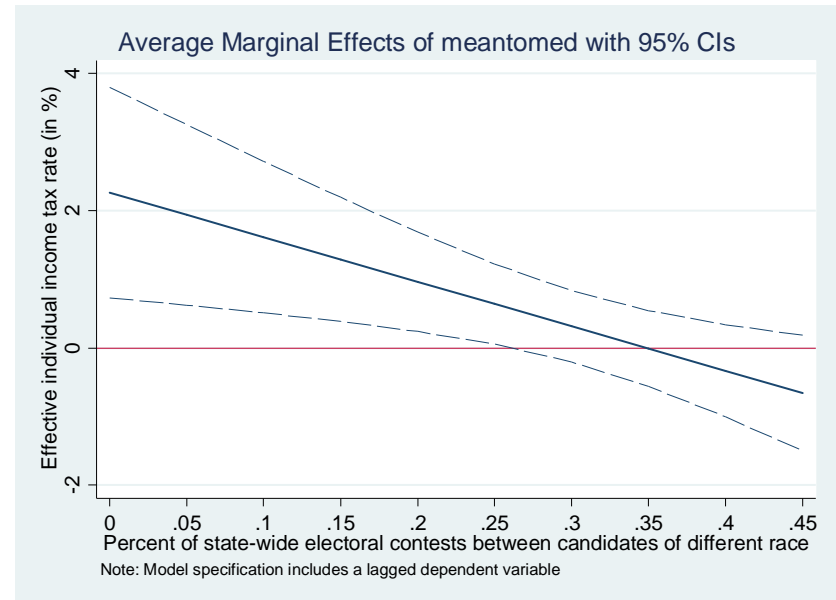


Fig. 6 The conditional effect of mean/median ratio on effective income tax rate.

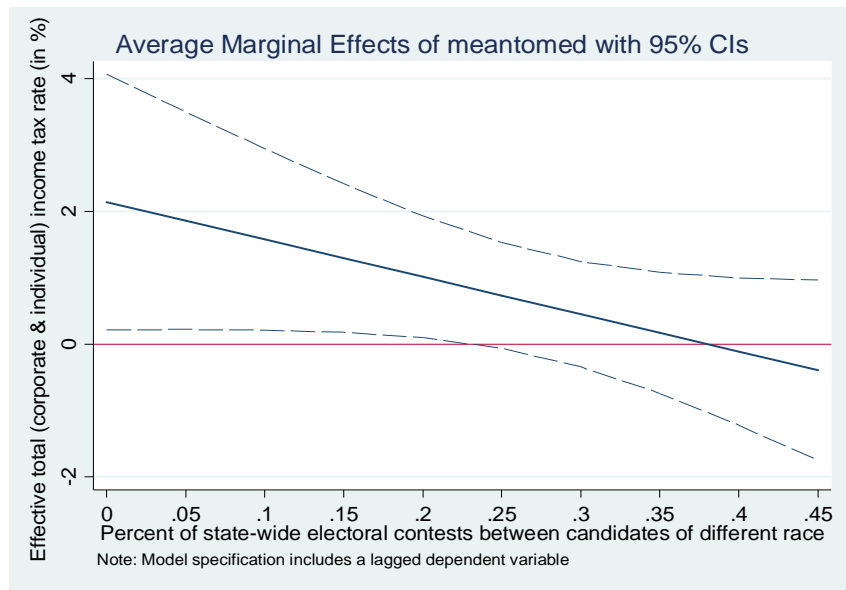


Fig. 7 The conditional effect of mean/median ratio on effective income tax rate.

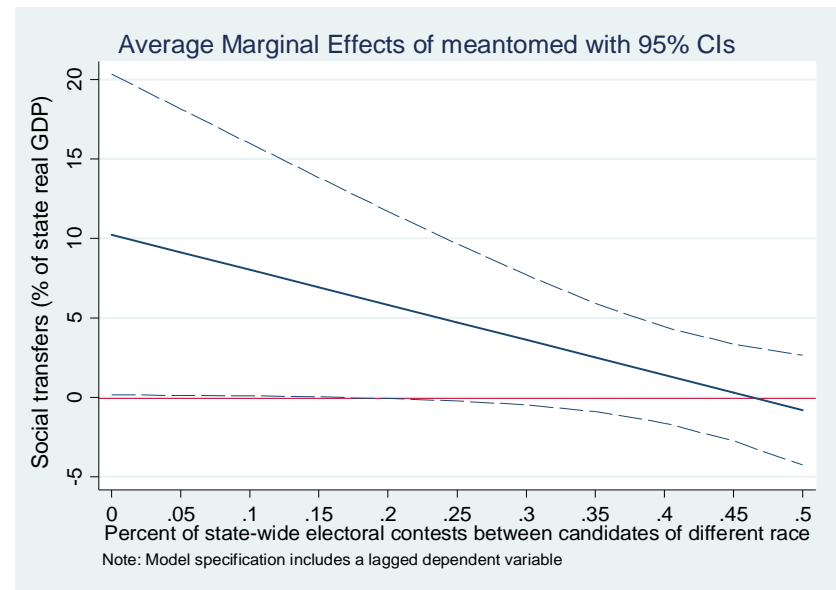


Fig. 8 The conditional effect of mean/median ratio on social transfers.

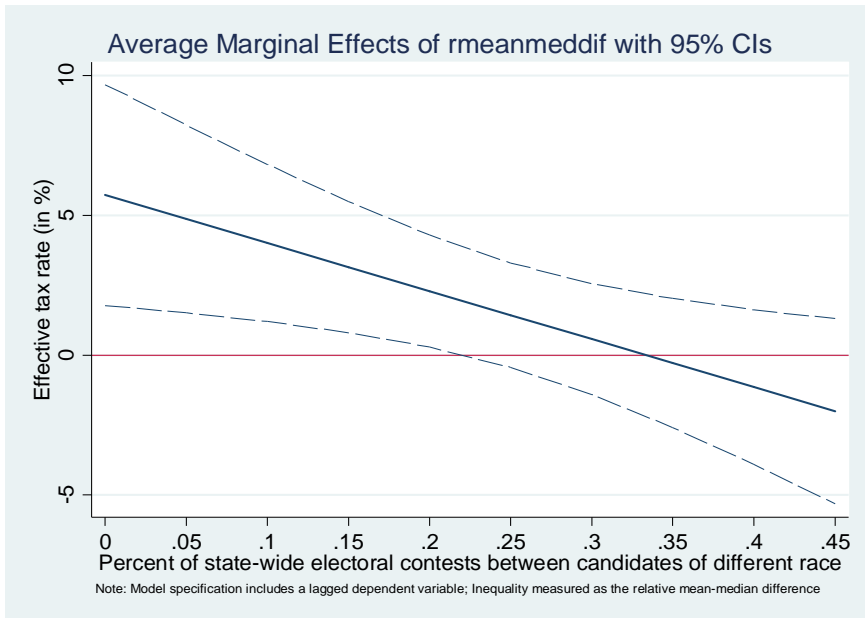


Fig. 9 The conditional effect of relative difference of mean to median income on the effective tax rate.

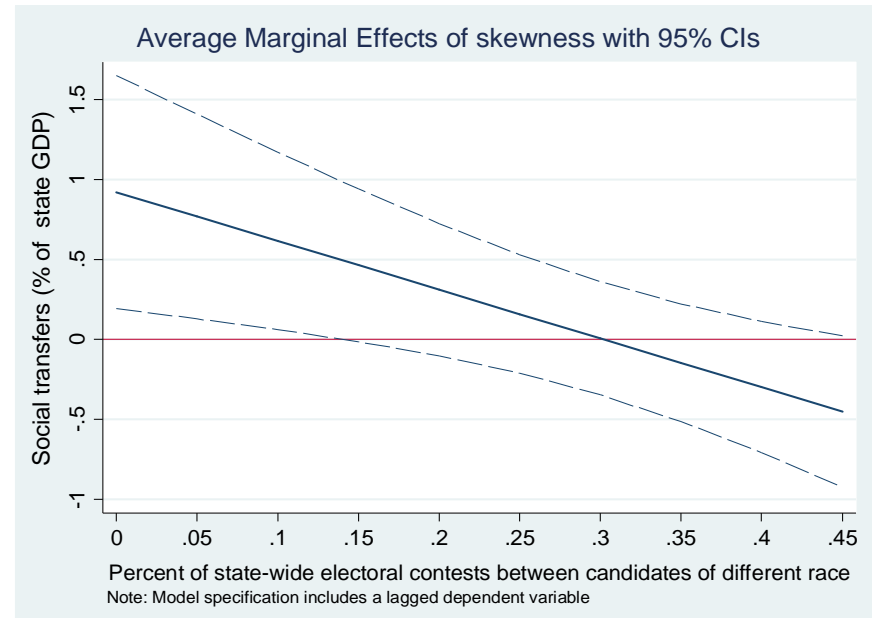


Fig. 10 The conditional effect of the skewness of the income distribution on state social transfers.

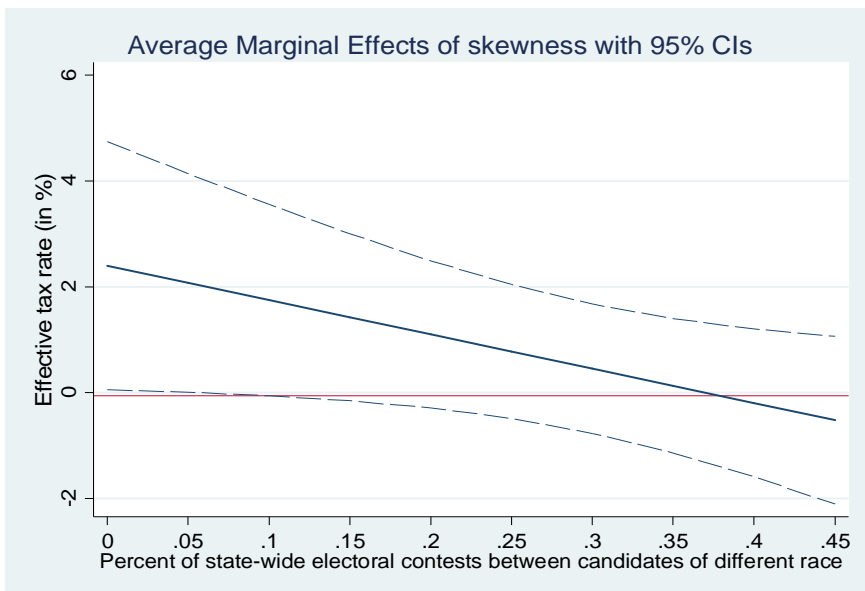


Fig. 11 The conditional effect of the skewness of the income distribution on the effective tax rate.

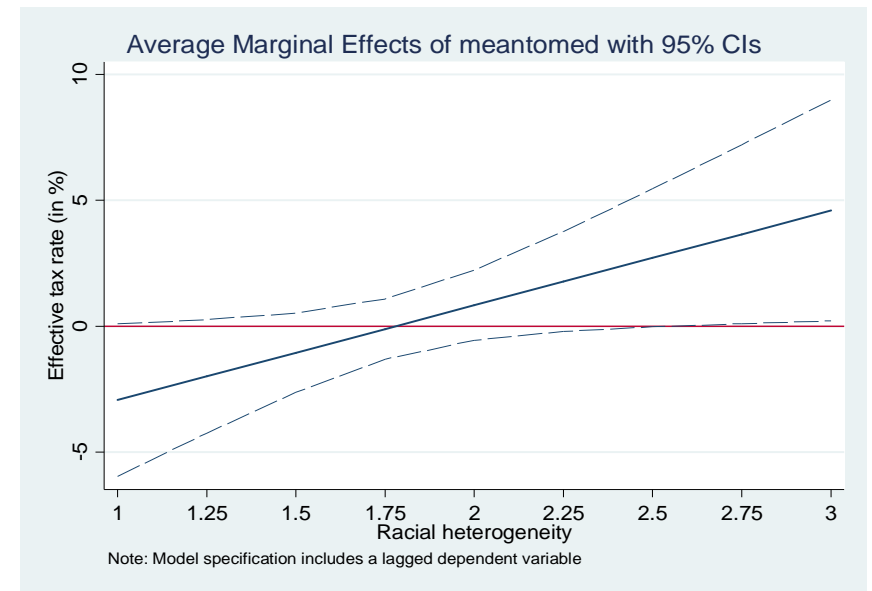


Fig. 12 The conditional effect of mean/median ratio on the effective tax rate.

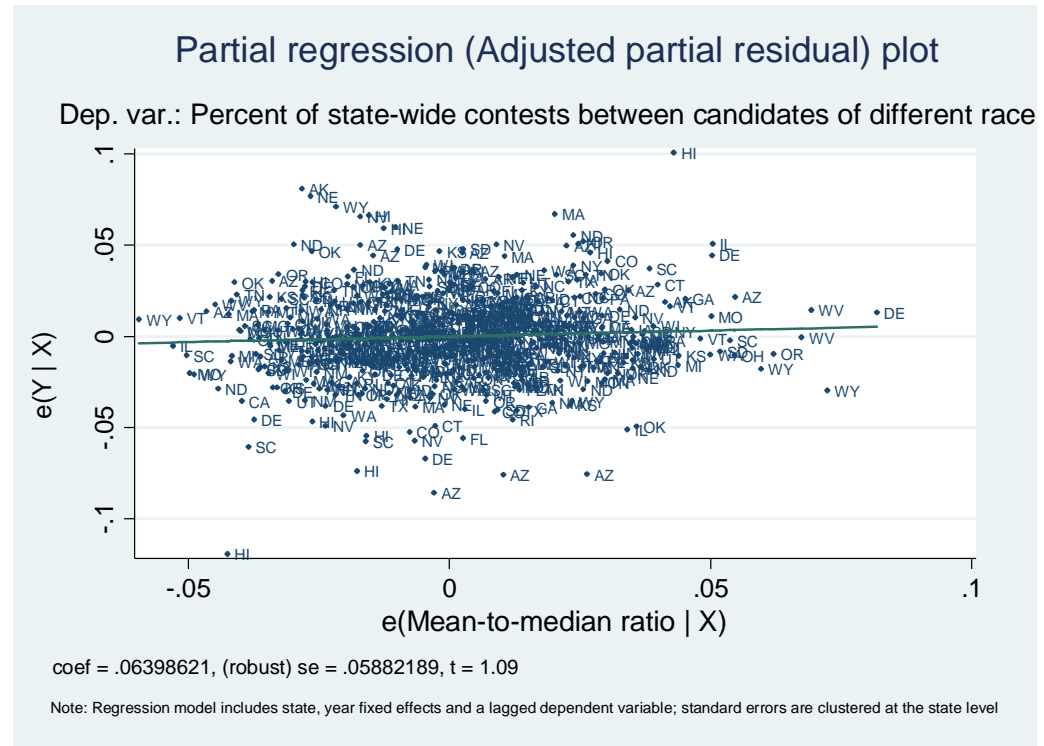
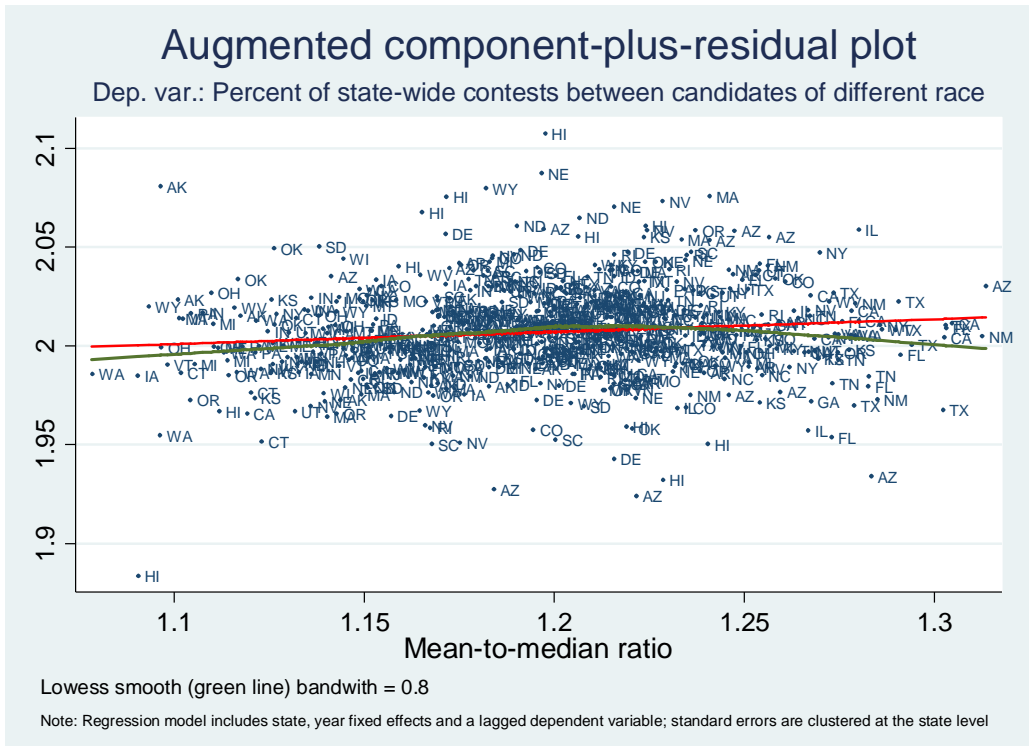


Fig. 13 The correlation between income inequality (measured by the mean-to-median ratio) and candidate heterogeneity (measured by the percent of state-wide electoral contests between candidates of different race): augmented component-plus-residual plot (left) and adjusted partial residual plot (right).

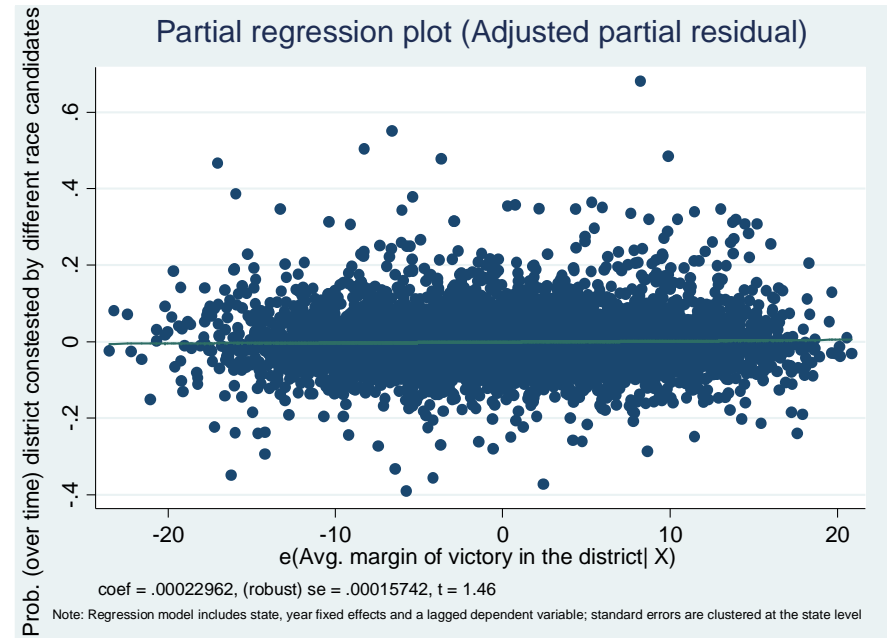
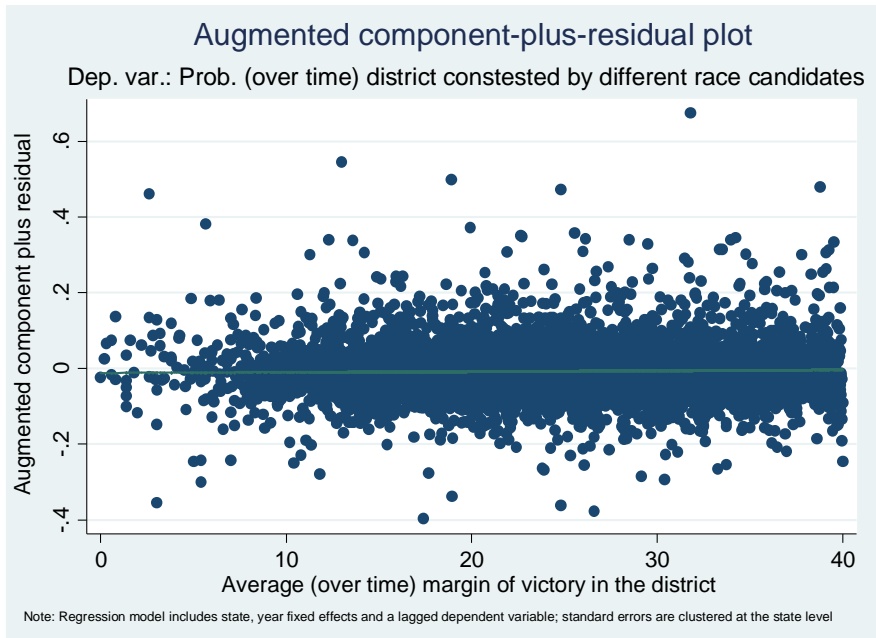


Fig. 14 The correlation between district competitiveness (avg. margin of electoral victory over time) and the probability that it was contested by different race candidates

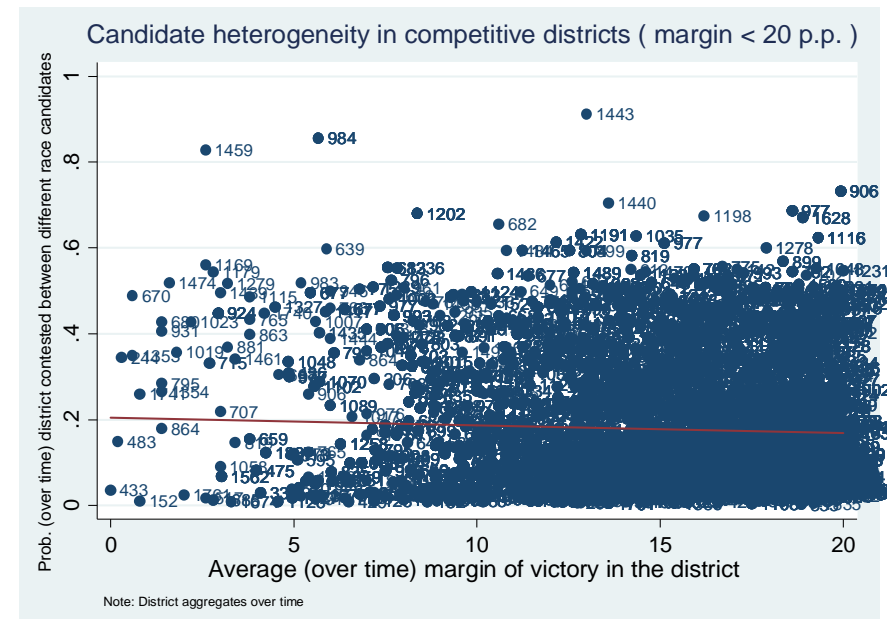
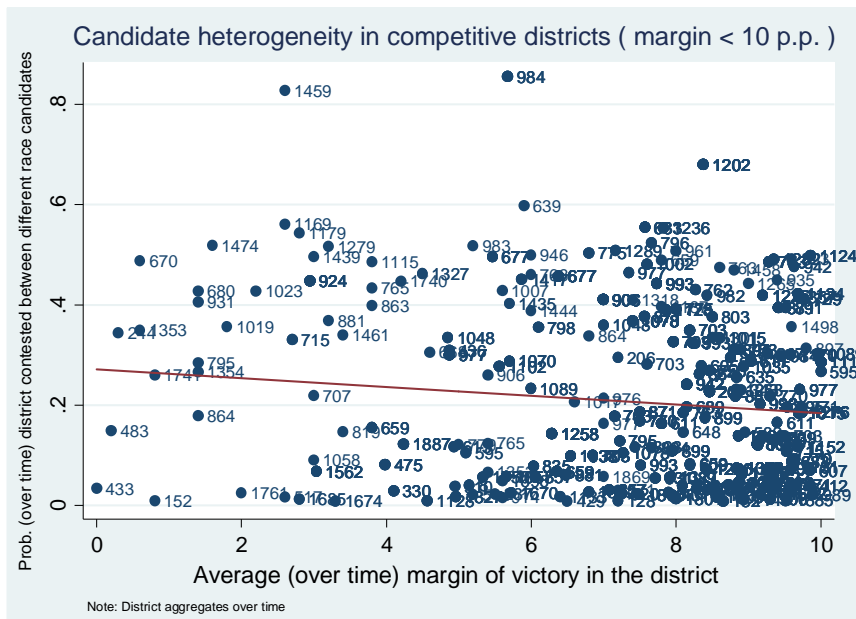


Fig. 15 The relationship between candidate heterogeneity and average (over time) margin of electoral victory in competitive electoral districts

Table 1: The Effects of Inequality and Racial Fragmentation on Redistribution

Dependent Variable	<i>Effective State Tax Rate</i>								
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
<i>Inequality measures (β_1)</i>									
Mean / Median ratio (\bar{y}/y^{50})	1.482 (3.687)	-0.514 (2.568)	0.064 (3.605)	-1.416 (2.628)	-. -	-. -	-. -	-1.675 (2.776)	-. -
Skewness	-. -	-. -	-. -	-. -	0.064 (0.261)	0.330 (0.425)	0.113 (0.323)	0.130 (0.277)	-. -
P90 / P10 ratio	-. -	-. -	-. -	-. -	0.008 (0.037)	0.094 (0.054)*	0.033 (0.039)	-. -	-. -
P90 / P50 ratio	-. -	-. -	-. -	-. -	-. -	-. -	-. -	-. -	0.655 (0.733)
P50 / P10 ratio	-. -	-. -	-. -	-. -	-. -	-. -	-. -	-. -	0.015 (0.228)
<i>Ethnic/racial heterogeneity</i>									
ERF index (β_2)	-0.284 (3.126)	-0.909 (2.099)	-1.818 (3.382)	-2.044 (2.381)	-0.136 (0.354)	-0.839 (0.483)*	-0.293 (0.434)	-2.190 (2.559)	-0.663 (0.440)
ERF * Inequality (β_3)	-0.387 (2.377)	0.442 (1.598)	0.930 (2.569)	1.404 (1.773)	-0.101 (0.131)	0.150 (0.201)	0.037 (0.162)	1.518 (1.899)	-. -
GOP control	-. -	-. -	-0.318 (0.169)*	-0.210 (0.121)*	-. -	-0.308 (0.166)*	-0.205 (0.121)*	-0.212 (0.125)*	-0.299 (0.156)*
Lagged Dep. Var.	NO	YES	NO	YES	YES	NO	YES	YES	NO
Other Controls	NO	NO	YES	YES	NO	YES	YES	YES	YES
State fixed effects	YES	YES	YES	YES	YES	YES	YES	YES	YES
Election-year fixed effects	YES	YES	YES	YES	YES	YES	YES	YES	YES
R^2	0.73	0.79	0.74	0.80	0.79	0.74	0.80	0.80	0.74
N (<i>obs.</i>)	751	675	735	660	675	735	660	660	735

* $p < 0.1$; ** $p < 0.05$; *** $p < 0.01$

Note: Robust standard errors clustered at the state level reported in parentheses. The estimation is based on the model of equation 1 but relying only on election (not calendar) years as our unit of analysis. Dependent variable is the effective state tax rate (in %). Inequality measures are the mean-to-median ratio (columns 1-4 and 8), the skewness of the (gross) income distribution (columns 5-8), and the P90/P10, P90/P50 and P50/P10 percentile income ratios. Other controls include: log of real (state) GDP per capita, unemployment rate, female labor force participation rate, growth rate, and a dummy variable indicating whether both chambers of the state's legislature (State House and State Senate) are controlled by the Republican (GOP) party. Columns 3, 4, 6, 7, 8, and 9 have fewer observations due to missing controls for year 1979. Columns 2, 4, 5, 7, 8, and 9 have fewer observations due to the use of a lagged dependent variable in the estimation.

Table 2: The Effect of Inequality and Candidate Differentiation on Redistribution

Dependent Variable	<i>Eff. Tax</i>	<i>Eff. Tax</i>	<i>Eff. Tax</i>	<i>Eff. Tax</i>	<i>Eff. Tax</i>	<i>Transfers</i>	<i>Eff. Tax</i>
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
<i>Candidate differentiation</i>							
Share of heterogeneous contests $P_{s,t}$ (β_1)	38.027 (14.340)**	16.195 (5.891)***	13.840 (5.825)**	32.098 (14.008)**	14.927 (5.846)**	5.308 (2.122)**	4.730 (2.048)**
Interaction term $P_{s,t}$ * Inequality (β_2)	-29.944 (11.701)**	-12.542 (4.878)**	-11.055 (4.854)**	-25.891 (11.664)**	-11.730 (4.840)**	-2.870 (1.147)**	-4.370 (2.096)**
<i>Measures of Inequality (β_3)</i>							
Mean / Median ratio (\bar{y}/y^{50})	-5.259 (4.042)	-2.679 (1.888)	-2.729 (1.921)	-5.242 (4.177)	-2.685 (1.965)	-. -	-. -
Skewness	-. -	-. -	-. -	-. -	-. -	-0.655 (0.334)*	-. -
Theil index	-. -	-. -	-. -	-. -	-. -	-. -	-2.464 (1.333)*
<i>Ethnic/Racial heterogeneity</i>							
ERF index (β_4)	-11.101 (4.951)**	-4.708 (2.146)**	-4.660 (2.094)**	-10.687 (4.862)**	-4.738 (2.101)**	-1.219 (0.629)*	-1.821 (1.028)*
ERF * Inequality (β_5)	8.439 (3.929)**	3.768 (1.745)**	3.732 (1.705)**	8.185 (3.925)**	3.802 (1.709)**	0.813 (0.329)**	1.561 (0.892)*
GOP controls legislature	-. -	-. -	-0.153 (0.099)	-0.304 (0.160)*	-0.151 (0.101)	-0.014 (0.062)	-0.294 (0.162)*
Other controls	NO	NO	YES	YES	YES	YES	YES
Lagged dependent variable	NO	YES	YES	NO	NO	YES	YES
State and Election-year FE?	YES	YES	YES	YES	YES	YES	YES
R^2	0.73	0.85	0.85	0.74	0.85	0.99	0.74
N (obs.)	751	751	735	735	735	321	735

* $p < 0.1$; ** $p < 0.05$; *** $p < 0.01$

Note: Robust standard errors clustered at the state level reported in parentheses. Dependent variable is the (state) effective tax rate (in %) and social (state) transfers (as % of state GDP) -in column 6. Reported estimates are based on the specification presented in equation 2. In column 5 the term $P_{s,t}$ is also interacted with the ERF index (coefficient not reported). Other controls include: log of real (state) GDP per capita, unemployment rate, female labor force participation rate, growth rate, and a dummy variable indicating whether both chambers of the state's legislature (State House and State Senate) are controlled by the Republican (GOP) party. The unit of analysis is the state-election year. Columns 3 to 7 have fewer observations due to some missing controls in year 1980. In addition, column 6 has fewer observations because data on social transfers at the state level are available after 1997.

Table 3: The Effect of Inequality and Candidate Differentiation on Redistribution and Social Spending

Dependent variable	Effective Income Tax Rate			State Social Transfers (as % of State GDP)			
	Personal	Personal	Total	(4)	(5)	(6)	(7)
	(1)	(2)	(3)				
<i>Candidate differentiation</i>							
Share of heterogeneous contests $P_{s,t}$ (β_1)	9.661 (8.538)	7.791 (2.811)***	6.548 (4.017)	26.309 (14.307)*	27.450 (14.491)*	5.342 (1.983)***	12.180 (5.961)**
Interaction term $P_{s,t}$ * Inequality (β_2)	-7.927 (6.853)	-6.492 (2.327)***	-5.636 (3.170)*	-21.549 (11.616)*	-22.076 (11.831)*	-3.048 (1.050)***	-6.477 (3.326)*
<i>Measures of Inequality (β_3)</i>							
Mean / Median ratio (\bar{y}/y^{50})	-1.256 (3.069)	-1.359 (0.813)	-1.309 (1.268)	-5.759 (4.075)	-6.346 (4.009)	-. (0.330)*	-. (1.509)
Skewness	-. (0.330)*	-. (0.330)*	-. (0.330)*	-. (0.330)*	-. (0.330)*	-0.591 (0.330)*	-1.628 (1.509)
<i>Ethnic/racial heterogeneity</i>							
ERF index (β_4)	-3.844 (2.957)	-2.568 (0.928)***	-2.458 (1.386)*	-8.159 (4.822)*	-8.806 (4.734)*	-1.216 (0.611)*	-4.157 (1.773)**
ERF * Inequality (β_5)	2.986 (2.387)	2.108 (0.750)***	2.009 (1.122)*	6.823 (3.888)*	7.348 (3.824)*	0.801 (0.316)**	2.133 (1.085)*
Other controls	YES	YES	YES	YES	YES	YES	YES
Lagged dependent variable	NO	YES	YES	YES	YES	YES	NO
State & Election-year FE	YES	YES	YES	YES	YES	YES	YES
R^2	0.94	0.98	0.97	0.99	0.99	0.99	0.97
N (obs.)	735	732	732	321	328	321	323

* $p < 0.1$; ** $p < 0.05$; *** $p < 0.01$

Note: Robust standard errors clustered at the state level reported in parentheses. Dependent variable is the (state) effective individual and total (individual plus corporate) income and tax rate (in %) and social (state) transfers (as % of state GDP). Data for social transfers are available from 1997 and onwards. In columns 1-5 the inequality measure is the mean-to-median (gross) income ratio; in columns 6 and 7 it is the skewness of the (gross) income distribution. Other controls include: log of real (state) GDP per capita, unemployment rate, female labor force participation rate, growth rate, and a dummy variable indicating whether both chambers of the state's legislature (State House and State Senate) are controlled by the Republican (GOP) party.

5 Appendix A (for online publication)

5.1 Candidate selection

While we have previously presented evidence that candidate differentiation appears to be orthogonal to income inequality and redistribution (for example, see Figures 2 and 13), a caveat that still needs to be addressed further relates to a possible endogeneity issue with candidate selection: simply put, the number of minority candidates contesting a state legislative election could be endogenous to economic conditions (inequality, redistribution) or even depend on the nature of the relationship between those two variables. For example, it could be the case that when the inequality-redistribution link is weak, then more minority candidates care to run for office.

In this section, we address this issue in various ways. To begin with, econometrically speaking, if the inequality-redistribution link fails (and assuming that changes in inequality mostly harm minorities, which need not be the case necessarily) then this implies that past redistribution should have been lower than expected in places where there is a lot of candidate heterogeneity. That is, in a lagged dependent variable model this information can be captured by using lags of past redistributive transfers and inequality –as we do. The result is robust to the inclusion of lags of the dependent variable that can account for some of the variation in candidate heterogeneity –if one, of course, assumes that inequality disproportionately affects minority populations.

But, most importantly, there are reasons to question this assumption. As, mentioned above, the premise of the concern over candidate selection is that changes in inequality disproportionately affect minorities. That is, any increase in income inequality that is documented should mainly harm the incomes of minorities such as black and Hispanic voters. While this might be the popularized wisdom (and even true in some countries) this is certainly not the case in the US –according to the data. First of all, in recent years (post-1980) the increase in inequality is mainly driven by within-whites changes in income inequality. As Piketty and Saez (2003) document, most (if not all) of the recent increase in income inequality in the period of interest (post-1980s) is driven by top incomes. Basically, what this means is that the very rich (which are predominantly white) become richer. In fact, most of the change in income inequality can be accounted by the change in inequality within a particular racial group (see Figure A.1). Second, again in the data (see Figure A.2), there appears to be no correlation between changes in overall income inequality and changes in the per capita income of black (or Hispanic) voters, nor there appears to be the case that changes in inequality are driven by changes in income inequality between different

racial groups. In general, if one observes the states where most minority candidates run (see Figure 3), there appears to be little (if any) correlation between candidate heterogeneity (measured by the percent of state-wide electoral contests between candidates of different racial and ethnic background) and changes in income inequality between ethnic or racial groups, measured by the decomposed Theil index of between groups inequality (see also Figure A.3).

Furthermore, in order to fully demonstrate that candidate selection is not driven by changes in inequality between different racial or ethnic groups, we also conduct the following counter-factual exercise. Following Alesina et al. (2016) we decompose inequality into two components: inequality within a particular race and inequality between different racial groups and we run a regression where we use inequality within whites only.³² The purpose of this exercise is to examine whether our mechanism is still valid even if the variation in inequality comes solely from changes in income inequality between white voters. That is, in practice, we hold income inequality between racial groups constant and we ask the following question: if the income of the average black voter relative to the income of the average white voter does not change and all variation in inequality is due to changes in the distribution of incomes between white voters does candidate ethnic and racial heterogeneity condition the response of redistribution to an increase in income inequality? Certainly, in such a case, since variation in inequality is due to the fact that some white voters become relatively poorer compared to other whites (but the income of the average white voter relative to a black one is unchanged) the change in the change number of minority candidates –what we call differentiated candidates– is very unlikely to be correlated with changes in inequality *solely* driven by changes in the distribution of income among white voters *alone*. As Figure A.5 and Column 4 of Table A.1 show, we find the same conditional effect. Importantly, we find the same conditional effect even when controlling for any changes in inequality in minorities. That is, even if inequality among black and Hispanic population is held constant, having more minority candidates leads to softening of the positive effect of increased inequality (among whites) on redistribution.

In sum, after examining all the evidence –presented both in the main text (e.g., in Figures 2 and 13) and also in this appendix– it becomes clear that candidate selection and, hence, candidate differentiation is not responsive to changes in income inequality between racial and ethnic groups. In fact, if anything,

³²Here, following the literature (Alesina et al. 2016), we depart from the main section of the paper where we use the mean-to-median income ratio as our main variable that measures income inequality. Instead we use the well-known Theil index for the following reason: the Theil index, as all entropy indices, is fully decomposable into multiple (additive) components for any number of groups. That is, in our case, the Theil inequality index can be decomposed into within and between different racial groups income inequality. In order to make sure that the mean-to-median and the Theil indices of inequality produce identical (in qualitative terms) results, we estimate our main specification again, this time replacing the mean-to-median with the Theil index of income inequality. As we can see in Figure A.4 the results are identical: the conditional effect that we document is present and statistically significant.

candidate differentiation seems to be correlated with the degree of racial and ethnic heterogeneity of the population. Yet, as we have shown before (Figure 12), candidate differentiation is not a proxy for ethnic and racial heterogeneity: they have completely different effects on the inequality-redistribution relationship.

[Insert Figures A.1 to A.5 and Table A.1 about here]

5.2 Alternative measure of candidate differentiation

With respect to the measure of candidate differentiation, here, we perform one additional robustness check –of technical nature– regarding the way we have constructed our variable that measures the state-wide proportion of ethnically or racially differentiated electoral contests ($P_{s,t}$); as stated earlier, in constructing this variable we focused on two-candidate contests. Here, we repeat the same exercise of estimating our main econometric specification (equation 2) by replacing $P_{s,t}$, with a new variable that was constructed by taking into account all available candidate entries, even the cases where more than two candidates compete for more than one seat (as in MMDs): the state-wide proportion of non-white (minority) candidates that participated in state legislative elections in a particular election year. We present those results in Figure A.6. As one can see, our findings are robust to this alteration. That is, all the qualitative implications of our study still stand regardless of how one chooses to compute the degree of candidate differentiation.

[Insert Figure A.6 about here]

5.3 Bootstrapped standard errors

In the paper, we have discussed the possibility that our estimated parameter $P_{s,t}$ can be a noisy – albeit econometrically admissible– measure of the true proportion of state-wide electoral contests between different-race candidates. As a result, this additional uncertainty should be reflected on the standard errors of $P_{s,t}$ and, consequently, on the CIs of the estimated marginal effect of inequality on redistributive outcomes, which is also a function of $P_{s,t}$. For this reason, we re-estimate our main specification (in equation 2) using bootstrapped standard errors and we present the results in Table A.3 below. We also repeat the same exercise when calculating the marginal effect of inequality on redistribution and we present those estimates in Figures A.7 through A.12. It can be seen that our main conclusion remains

qualitatively unchanged: when the state-wide share of different-race electoral contests is relatively low, an increase in income inequality leads to higher taxation and redistributive spending.

[Insert Table A.3 and Figures A.7 to A.12 about here]

5.4 Formal argument

To understand the underlying intuition behind our main result, in this section we provide a sketch of the formal argument involved. To fix ideas, consider the simple case in which the first candidate is characterized by a pair of elements, $(a_1, a_2) \in \mathbb{R}^2$, and the second candidate is characterized by the pair, $(b_1, b_2) \in \mathbb{R}^2$: a_1 and b_1 are the (immutable) identity parameters of the candidates; and a_2 and b_2 are their (strategically chosen) economic platforms. Each voter is characterized also by a pair of elements, $(i_1, i_2) \in \mathbb{R}^2$, which we call her bliss point: i_1 denotes her ideal identity of the winning candidate and i_2 her ideal economic policy. A voter votes for the candidate whose pair of elements is closer—in terms of Euclidean distance—to her bliss point; and evenly splits her vote in case of indifference. Let us assume that the bliss points of the society are distributed on $[-1, 1]^2$ according to twice differentiable distribution F and that candidates propose a_2 and b_2 strategically trying both to attract as many votes as possible and to satisfy special constituencies that they are supported/finance from. Formally, consider that they maximize $v(a_2, b_2 : a_1, b_1, F) - w \times (a_2 - \hat{a})^2$ and $1 - v(a_2, b_2 : a_1, b_1, F) - w \times (b_2 - \hat{b})^2$ respectively, where $v(a_2, b_2 : a_1, b_1, F)$ is the vote share of the first candidate, \hat{a} (\hat{b}) is the economic policy pursued by the constituency that the first (second) candidate represents; and $w \geq 0$ is the a parameter used to weight these two goals.

If we fix for simplicity $d/2 = -a_1 = b_1 > 0$ then:

$$v(a_2, b_2 : a_1, b_1, F) = \int_{[0,1]} F_1 \left(\frac{(b_2 - i_2)^2 - (a_2 - i_2)^2}{2d} \mid i_2 = \hat{i}_2 \right) \times f_2(\hat{i}_2) d\hat{i}_2$$

where $F_1(x_1 | x_2 = \hat{x}_2)$ is the conditional distribution of ideal identities given ideal economic policies and $f_2(x_2)$ is the density of the marginal distribution of ideal economic policies. Given this standard framework, let us investigate the incentives that, for example, the first candidate faces to deviate from a symmetric strategy profile $a_2 = b_2$. The marginal effect on her vote share from proposing greater redistribution, that is, from increasing a_2 , is equal to $\int_{[0,1]} \frac{(i_2 - a_2) F_1'(0 | i_2 = \hat{i}_2)}{d} \times f_2(\hat{i}_2) d\hat{i}_2$ and the marginal effect

on the component of her utility that depends on constituency representation is equal to $2w(\hat{a}-a_2)$.³³ As it is evident the marginal effect on a candidates' vote share from a change in economic policy is decreasing in the degree of candidates' identity differentiation, d , while the marginal effect on the component of her utility that depends on constituency representation remains constant; and hence *when candidates are perceived very dissimilar in their immutable characteristics, candidates have less incentives to react to changes of voters' preferences in economic issues*. In Figure A.13 we show that this is not true only for marginal deviations, but also for non-degenerate ones. With G (L) we denote the area which contains the bliss points of the voters who start preferring the first candidate more (less) compared to the second one when the first one changes the proposed economic policy. As we see these areas become smaller as candidate differentiation in immutable characteristics becomes larger, for equal changes in the proposed economic policy of the first candidate. In other words an increasing identity differentiation between candidates should make them more interested in satisfying their core supporters than to propose economic policies that are attracting new voters.

[Insert Figure A.13 about here]

We do not aspire to provide a full equilibrium analysis of this model. For equilibrium analysis of multidimensional spatial models with differentiated candidates one is referred to Krasa and Polborn (2010, 2014), Matakos and Xefteris (2016) and Xefteris (2016). Indeed, as all these papers show, candidate differentiation in non-economic issues affects the equilibrium economic policies. All that the current example aimed at illustrating was the simple fact that, an increasing degree of identity differentiation between candidates makes candidates want to pander more to their core constituencies rather than reacting to changes in the general electorates' preferences.

³³When $a_2 \neq b_2$ we have that: $\frac{\partial v(a_2, b_2; a_1, b_1, F)}{\partial a_2} = \int_{[0,1]} (i_2 - a_2) F_1' \left(\frac{(b_2 - i_2)^2 - (a_2 - i_2)^2}{2d} \middle| i_2 = i_2 \right) \times f_2(i_2) di_2$. It is easy to see that as $d \rightarrow \infty$ we have $F_1' \left(\frac{(b_2 - i_2)^2 - (a_2 - i_2)^2}{2d} \middle| i_2 = \hat{i}_2 \right) \rightarrow F_1'(0 | i_2 = \hat{i}_2)$ and hence $\frac{\partial v(a_2, b_2; a_1, b_1, F)}{\partial a_2}$ converges to zero for any admissible parameter values. In other words, the marginal effect of a change in economic policy on a candidate's vote share is decreasing in candidates' identity differentiation even if the posited strategy profile is asymmetric.

Table A.1: Robustness checks and candidate selection

Dependent variable	<i>Effective tax rate</i> (1)	<i>Effective tax rate</i> (2)	<i>Effective ind. income tax rate</i> (3)	<i>Effective tax rate</i> (4)
<i>Candidate differentiation</i>				
Share of non-white candidates (state-wide) (β_1)	18.432 (8.909)**	17.367 (9.134)*	8.759 (4.060)**	-.
Share of non-white candidates * Mean / Median ratio (β_2)	-14.821 (7.337)**	-14.383 (7.656)*	-7.325 (3.363)**	-.
Share of heterogeneous contests $P_{s,t}$ (β_1)	-.	-.	-.	3.204 (1.502)**
$P_{s,t}$ * Theil (within whites) (β_2)	-.	-.	-.	-12.370 (6.602)*
<i>Inequality measures (β_3)</i>				
Mean / Median ratio (\bar{y}/y^{50})	-3.303 (2.613)	-3.866 (2.705)	-1.924 (1.126)*	-.
Theil index (within whites)	-.	-.	-.	0.010 (0.208)
<i>Ethnic/racial heterogeneity</i>				
ERF index (β_4)	-4.789 (2.895)	-5.396 (3.060)*	-2.741 (1.301)**	-0.741 (0.297)**
ERF * Inequality (β_5)	3.845 (2.353)*	4.340 (2.492)*	2.244 (1.060)**	3.132 (1.307)**
GOP controls Legislature (dummy)	-.	-0.167 (0.098)*	-0.029 (0.019)	-0.138 (0.099)
Lagged dependent variable	YES	YES	YES	YES
Year fixed effects	YES	YES	YES	YES
State fixed effects	YES	YES	YES	YES
R^2	0.85	0.85	0.98	0.85
N (obs.)	792	776	776	732

* $p < 0.1$; ** $p < 0.05$; *** $p < 0.01$

Note: Robust standard errors clustered at the state level reported in parentheses. In the first three columns, instead of candidate differentiation (term $P_{s,t}$) being used in the main analysis, we use the (state-wide) percent of non-white candidates running for office. In columns 1-3, the index of ethnic/racial fragmentation (ERF) is interacted with the mean-to-median ratio; in column 4 the ERF index is interacted with the Theil index of (within whites) income inequality. Other controls include: log of real (state) GDP per capita, unemployment rate, female labor force participation rate, growth rate, and a dummy variable indicating whether both chambers of the state's legislature (State House and State Senate) are controlled by the Republican (GOP) party.

Table A.2: The Effect of Inequality on Redistribution (effective state tax rate)

Dependent variable	<i>Effective State Tax Rate</i>								
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
<i>Measures of Inequality (β_1)</i>									
Mean / Median ratio (\bar{y}/y^{50})	0.474 (1.120)	0.196 (0.557)	0.918 (1.367)	0.381 (0.688)	--	--	--	0.296 (0.612)	--
Skewness	--	--	--	--	0.001 (0.065)	0.428 (0.303)	0.122 (0.158)	0.086 (0.128)	--
P90 / P10 ratio	--	--	--	--	0.013 (0.015)	0.066 (0.048)	0.018 (0.018)	--	--
P90 / P50 ratio	--	--	--	--	--	--	--	--	0.334 (0.543)
P50 / P10 ratio	--	--	--	--	--	--	--	--	0.045 (0.144)
<i>Ethnic/Racial heterogeneity</i>									
ERF index (β_2)	-0.852 (0.411)**	-0.247 (0.146)*	-0.754 (0.382)*	-0.232 (0.155)	-0.247 (0.138)*	-0.694 (0.361)*	-0.213 (0.133)	-0.223 (0.145)	-0.765 (0.399)*
GOP control	--	--	-0.376 (0.164)**	-0.174 (0.077)**	--	-0.368 (0.162)**	-0.174 (0.077)**	-0.175 (0.078)**	-0.370 (0.163)**
Other controls	NO	NO	YES	YES	NO	YES	YES	YES	YES
State and Year FE	YES	YES	YES	YES	YES	YES	YES	YES	YES
Lagged dep. variable	NO	YES	NO	YES	YES	NO	YES	YES	YES
R^2	0.75	0.87	0.76	0.87	0.87	0.76	0.87	0.87	0.76
N (obs.)	1,650	1,600	1,616	1,568	1,600	1,616	1,568	1,568	1,616

* $p < 0.1$; ** $p < 0.05$; *** $p < 0.01$

Note: Robust standard errors clustered at the state level reported in parentheses. The estimation is based on the model presented in equation 1 (as in Table 1) but this relying on calendar (not only election) years. Dependent variable is the effective state tax rate (in %). In all specifications the interaction term between the ERF index and inequality (the term $ERF_{s,t} * Inequality_{s,t}$ in equation 1) is always included in every specification but the coefficient estimate (β_3) is not reported in the table. Other controls include: log of real (state) GDP per capita, unemployment rate, female labor force participation rate, growth rate, and a dummy variable indicating whether both chambers of the state's legislature (State House and State Senate) are controlled by the Republican (GOP) party. Columns 3, 4, 6, 7, 8, and 9 have fewer observations due to missing controls for year 1979. Columns 2, 4, 5, 7, 8, and 9 have fewer observations due to the use of a lagged dependent variable in the estimation.

Table A.3: The Effect of Inequality and Candidate Differentiation on Redistribution

Dependent Variable	<i>Eff. Tax</i>	<i>Eff. Tax</i>	<i>Eff. Tax</i>	<i>Eff. Tax</i>	<i>Eff. Tax</i>	<i>Transfers</i>
	(1)	(2)	(3)	(4)	(5)	(6)
<i>Candidate differentiation</i>						
Share of heterogeneous contests $P_{s,t}$ (β_1)	38.027 (16.892)**	16.195 (12.548)	13.840 (8.082)*	32.098 (13.538)**	4.730 (1.391)***	5.308 (2.035)***
Interaction term $P_{s,t}$ * Inequality (β_2)	-29.944 (13.982)**	-12.542 (10.704)	-11.055 (6.879)*	-25.891 (11.563)**	-4.370 (1.750)**	-2.870 (0.971)***
<i>Measures of Inequality (β_3)</i>						
Mean / Median ratio (\bar{y}/y^{50})	-5.259 (2.746)*	-2.679 (1.800)	-2.729 (1.926)	-5.242 (2.769)*	-. (0.976)**	-. (0.369)*
Theil index	-. (0.976)**	-. (0.976)**	-. (0.976)**	-. (0.976)**	-2.464 (0.976)**	-. (0.976)**
Skewness	-. (0.976)**	-. (0.976)**	-. (0.976)**	-. (0.976)**	-. (0.976)**	-0.655 (0.369)*
<i>Ethnic/Racial heterogeneity</i>						
ERF index (β_4)	-11.101 (4.332)**	-4.708 (2.506)*	-4.660 (1.962)**	-10.687 (3.996)***	-1.821 (0.614)***	-1.219 (0.557)**
ERF * Inequality (β_5)	8.439 (3.552)**	3.769 (2.100)*	3.732 (1.630)**	8.185 (3.240)**	1.561 (0.522)***	0.813 (0.275)***
GOP controls legislature	-. (0.071)**	-. (0.071)**	-0.153 (0.071)**	-0.304 (0.101)***	-0.294 (0.102)***	-0.014 (0.077)
Other controls	NO	NO	YES	YES	YES	YES
Lagged dependent variable	NO	YES	YES	NO	YES	YES
State and Election-year FE?	YES	YES	YES	YES	YES	YES
R^2	0.73	0.85	0.85	0.74	0.74	0.99
N (obs.)	751	751	735	735	735	321

* $p < 0.1$; ** $p < 0.05$; *** $p < 0.01$

Note: Bootstrapped standard errors (300 repetitions) reported in parentheses. Dependent variable is the (state) effective tax rate (in %) and social (state) transfers (as % of state GDP) -in column 7. Reported estimates are based on the specification presented in equation 2 (Table 2). Other controls include: log of real (state) GDP per capita, unemployment rate, female labor force participation rate, growth rate, and a dummy variable indicating whether both chambers of the state's legislature (State House and State Senate) are controlled by the Republican (GOP) party. The unit of analysis is the state-election year. Columns 2 to 6 have fewer observations due to some missing controls in year 1980. Column 7 has fewer observations because data on social transfers at the state level are available after 1997.

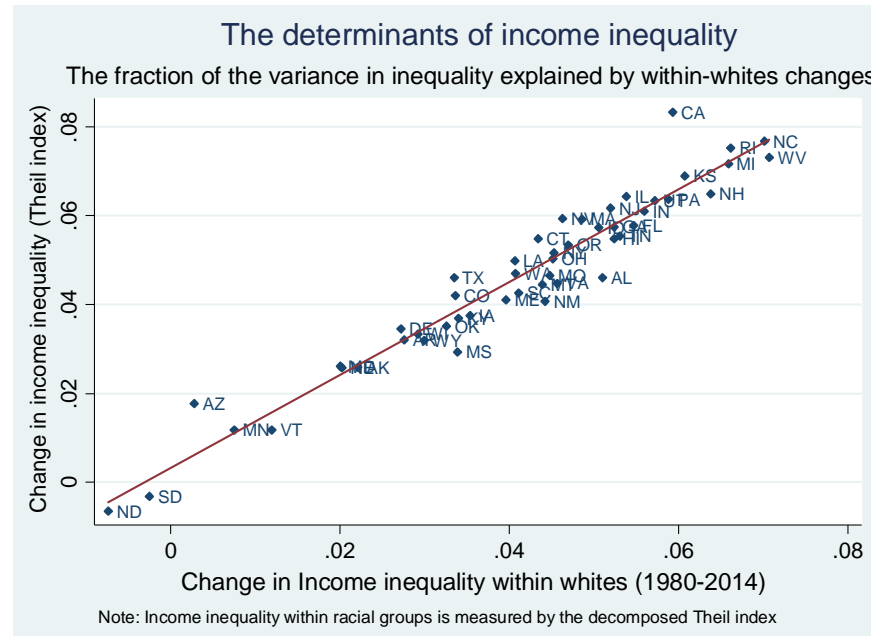


Fig. A.1 Changes in income inequality are driven by changes in within-whites inequality (measured by the Theil index)

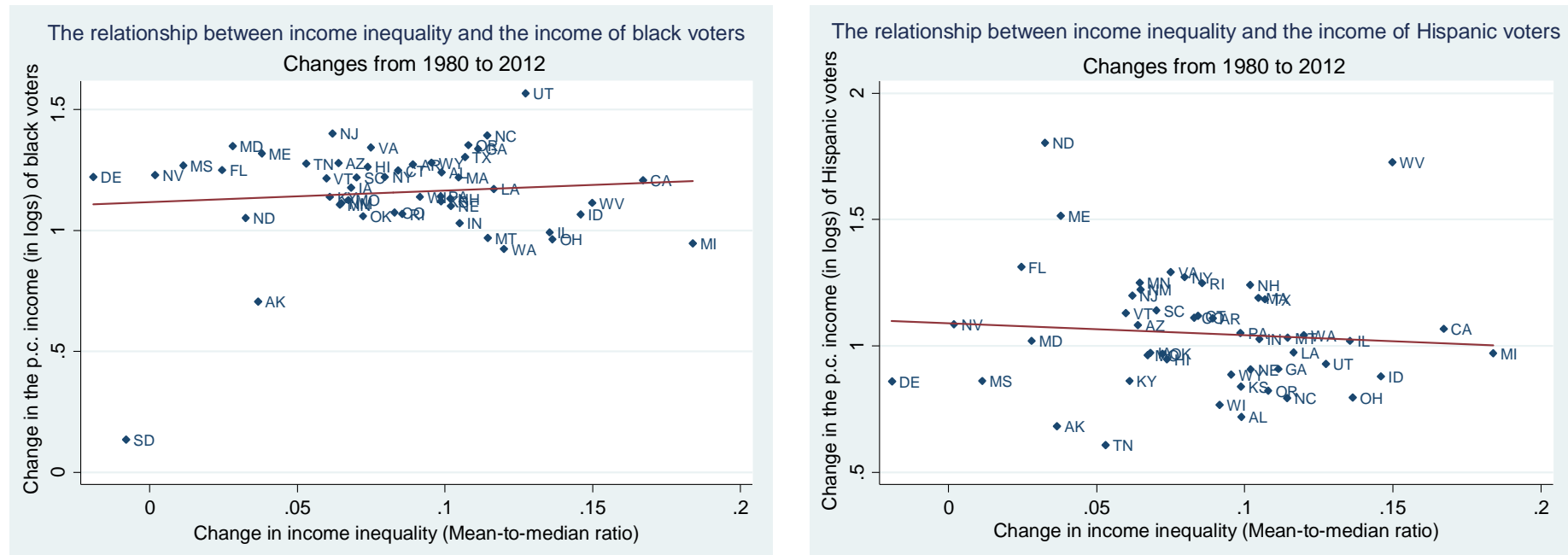


Fig. A.2 The correlation (State averages) between changes in income inequality (mean-to-median ratio) and changes in the income per capita (in log terms) of two important minority groups: black (left) and Hispanic (right) voters

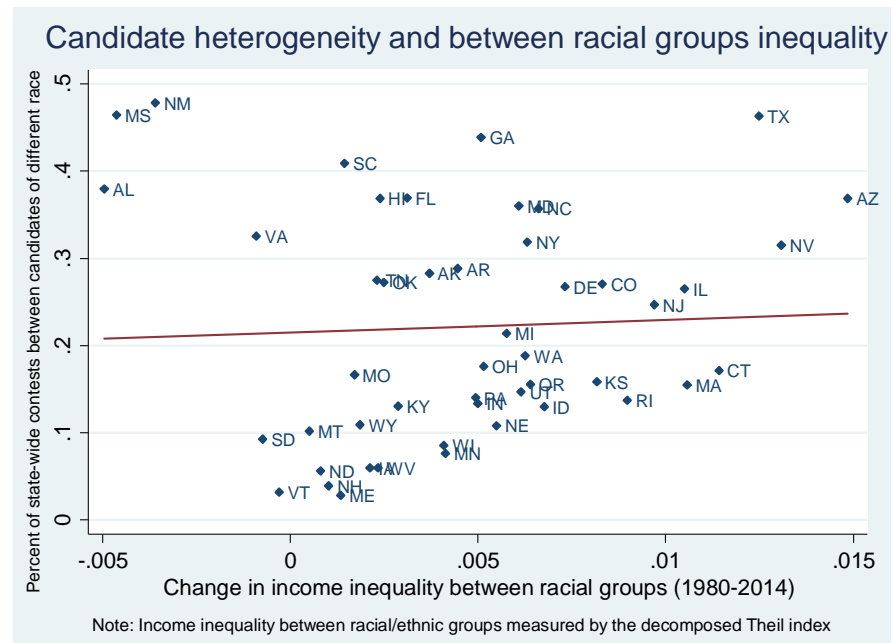


Fig. A.3 The correlation (State averages) between changes in candidate differentiation and changes in between groups inequality (Theil)

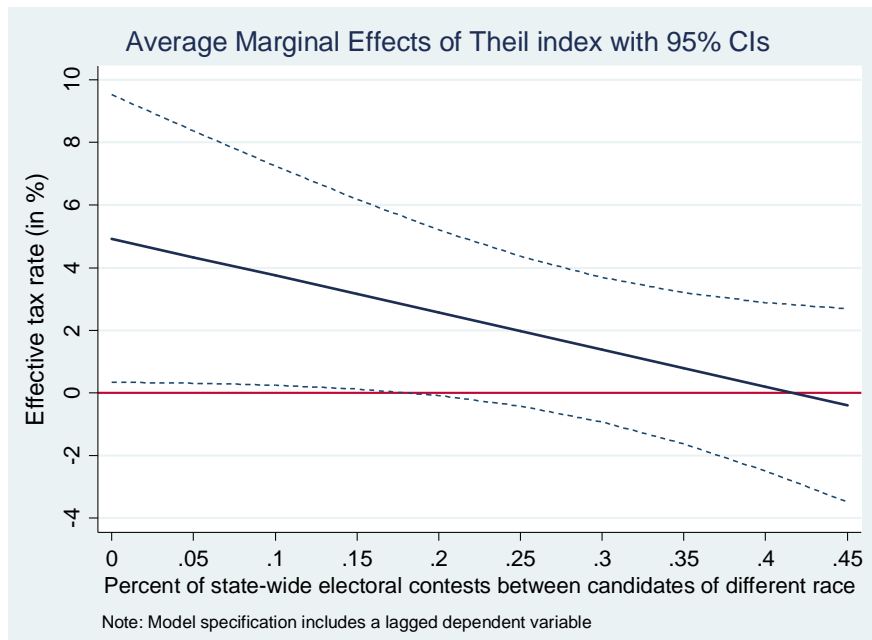


Fig. A.4 The conditional effects of income inequality (Theil) on the effective tax rate

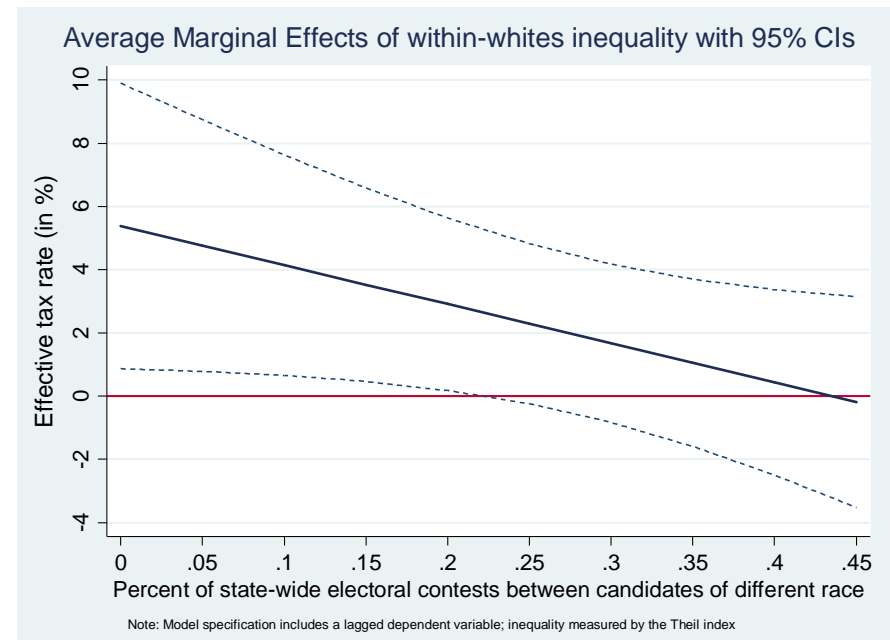


Fig. A.5 The conditional effects of income inequality within whites (Theil) on the effective tax rate

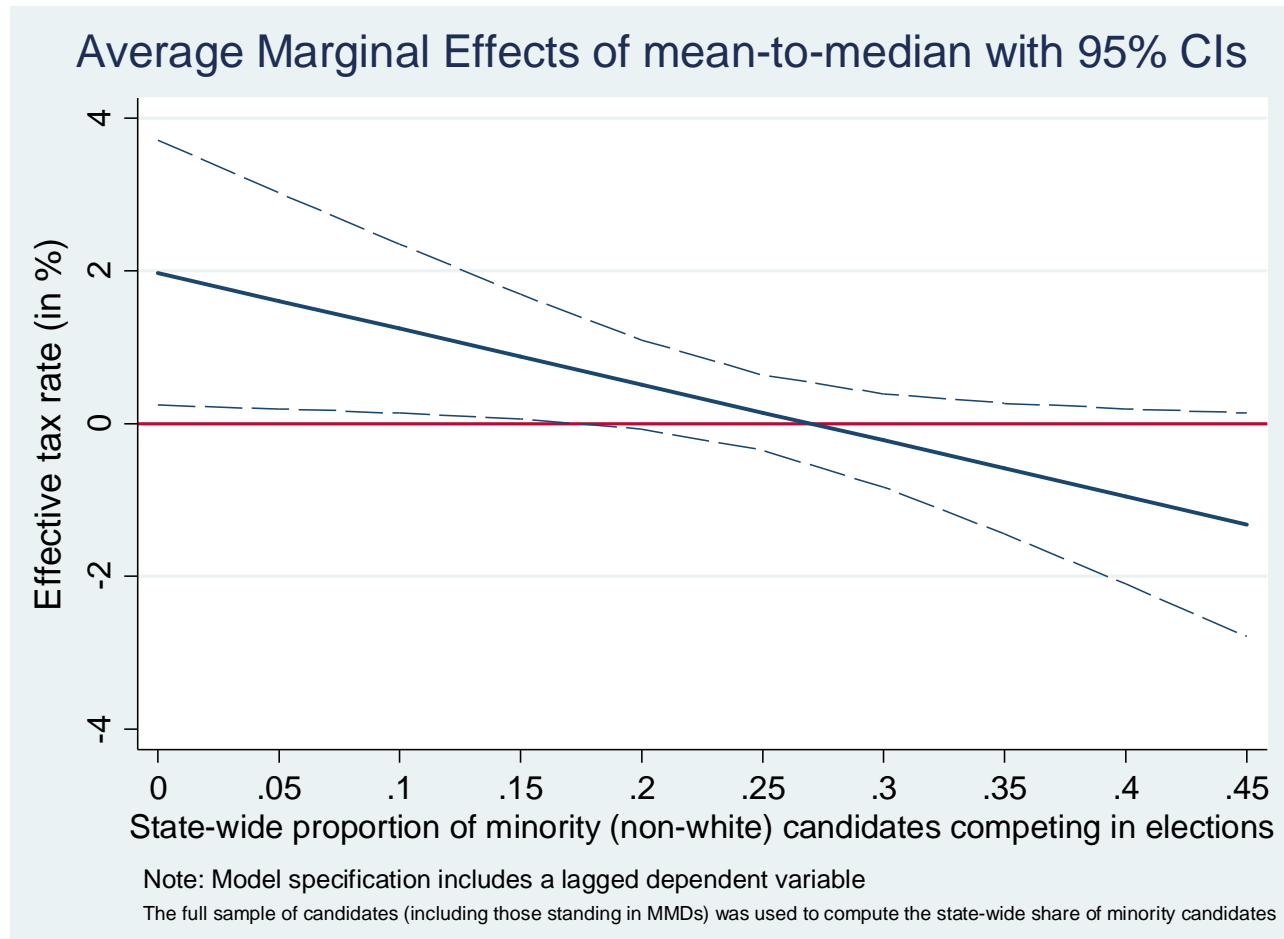


Fig. A.6 Robustness check: Conditional effects of income inequality (mean-to-median ratio) on the effective tax rate when candidate differentiation is measured by the state-wide proportion of minority (non-white) candidates

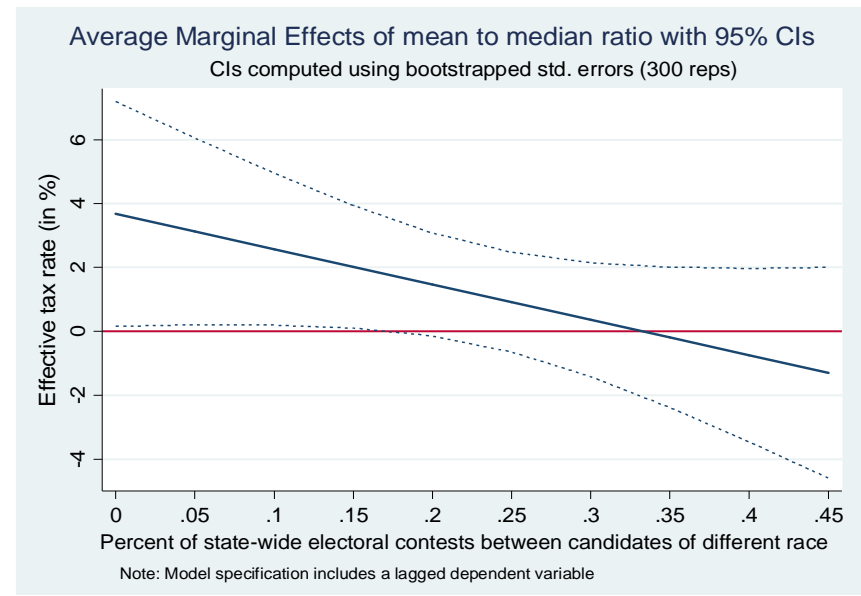
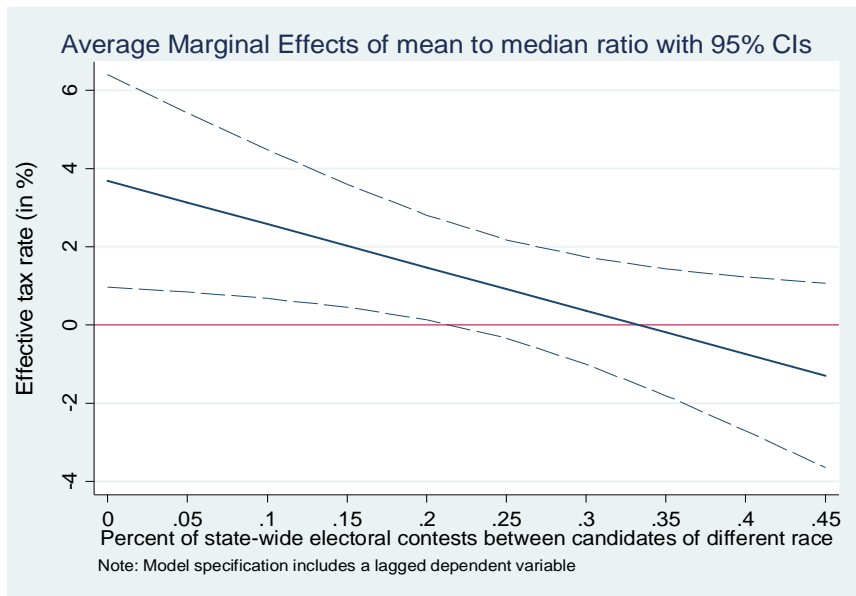


Fig. A.7 The conditional effect of mean/median ratio on effective State tax rate with clustered (left panel) and bootstrapped (right panel) standard errors.

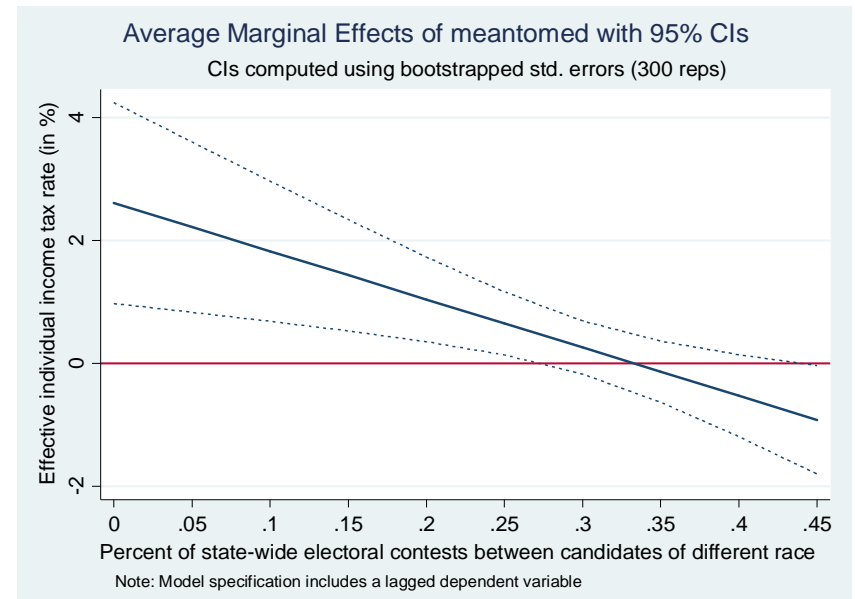
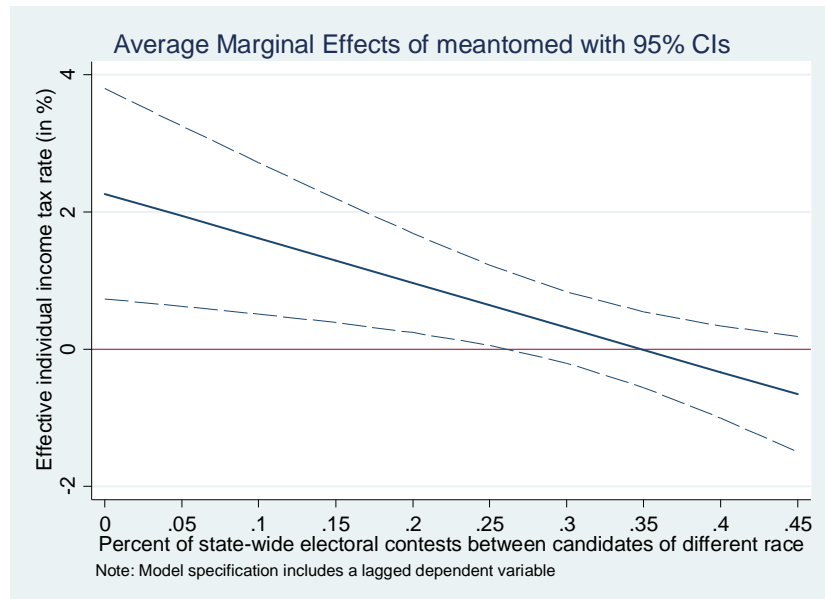


Fig. A.8 The conditional effect of mean/median ratio on effective individual income State tax rate with clustered (left panel) and bootstrapped (right panel) standard errors.

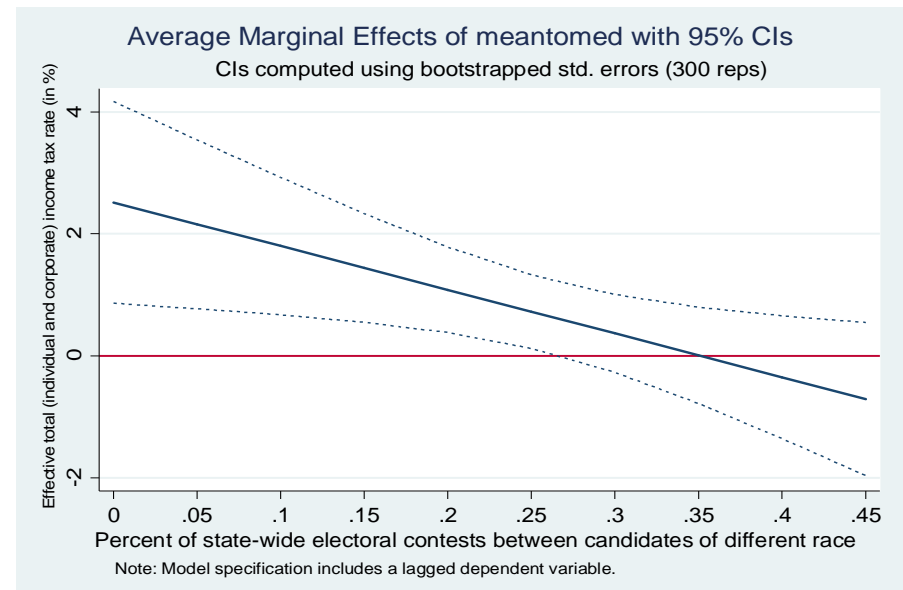
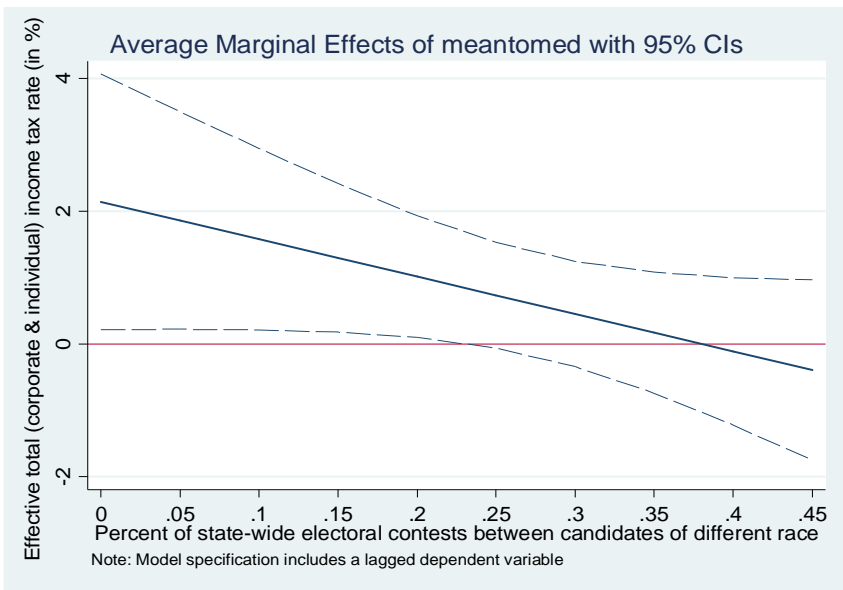


Fig. A.9 The conditional effect of mean/median ratio on effective total income tax rate with clustered (left panel) and bootstrapped (right panel) standard errors.

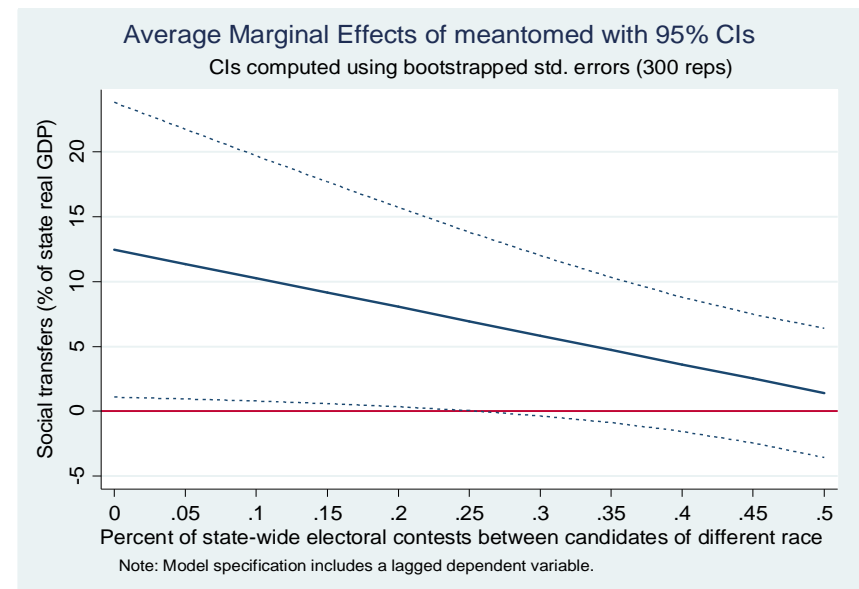
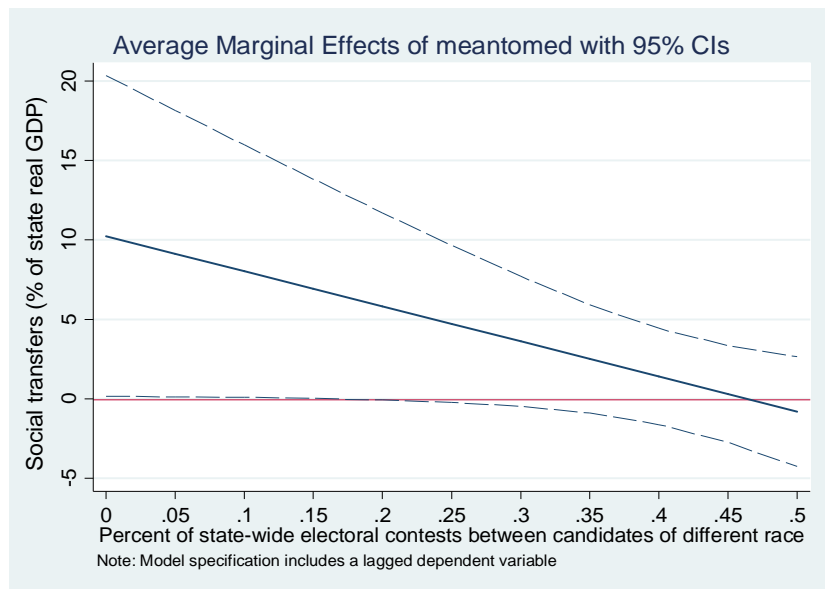


Fig. A.10 The conditional effect of mean/median ratio on social transfers (as % of state GDP) with clustered (left panel) and bootstrapped (right panel) standard errors.

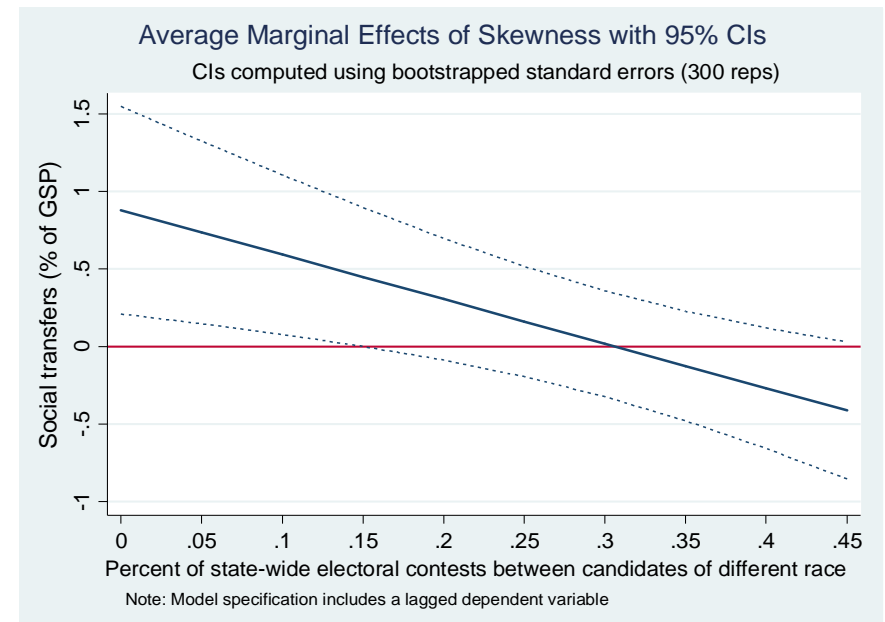
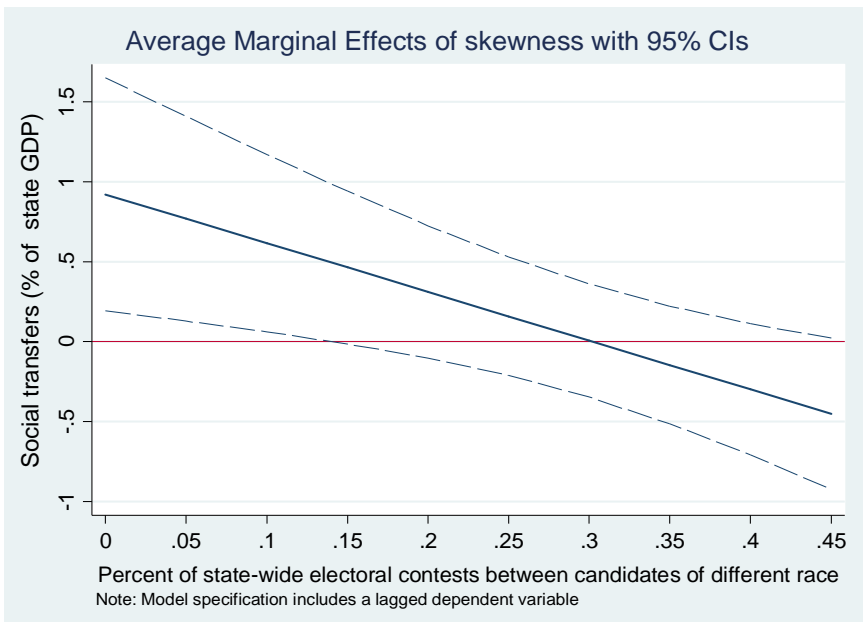


Fig. A.11 The conditional effect of the skewness of the income distribution on state social transfers with clustered (left panel) and bootstrapped (right panel) standard errors.

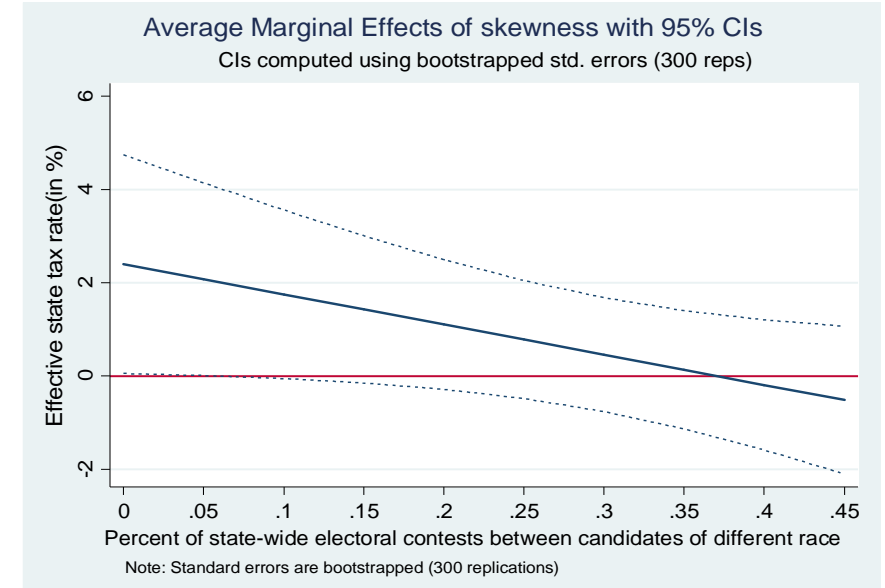
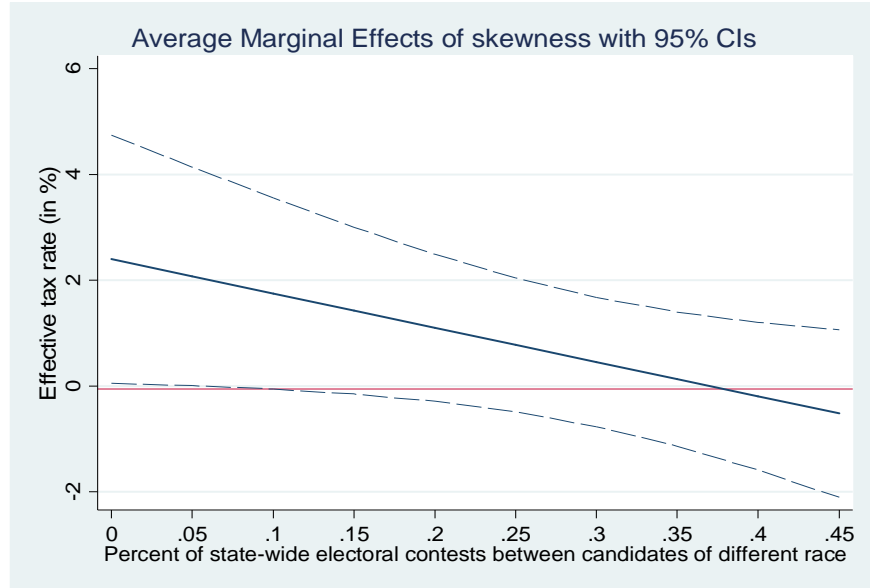


Fig. A.12 The conditional effect of the skewness of the income distribution on the effective tax rate with clustered (left panel) and bootstrapped (right panel) standard errors.

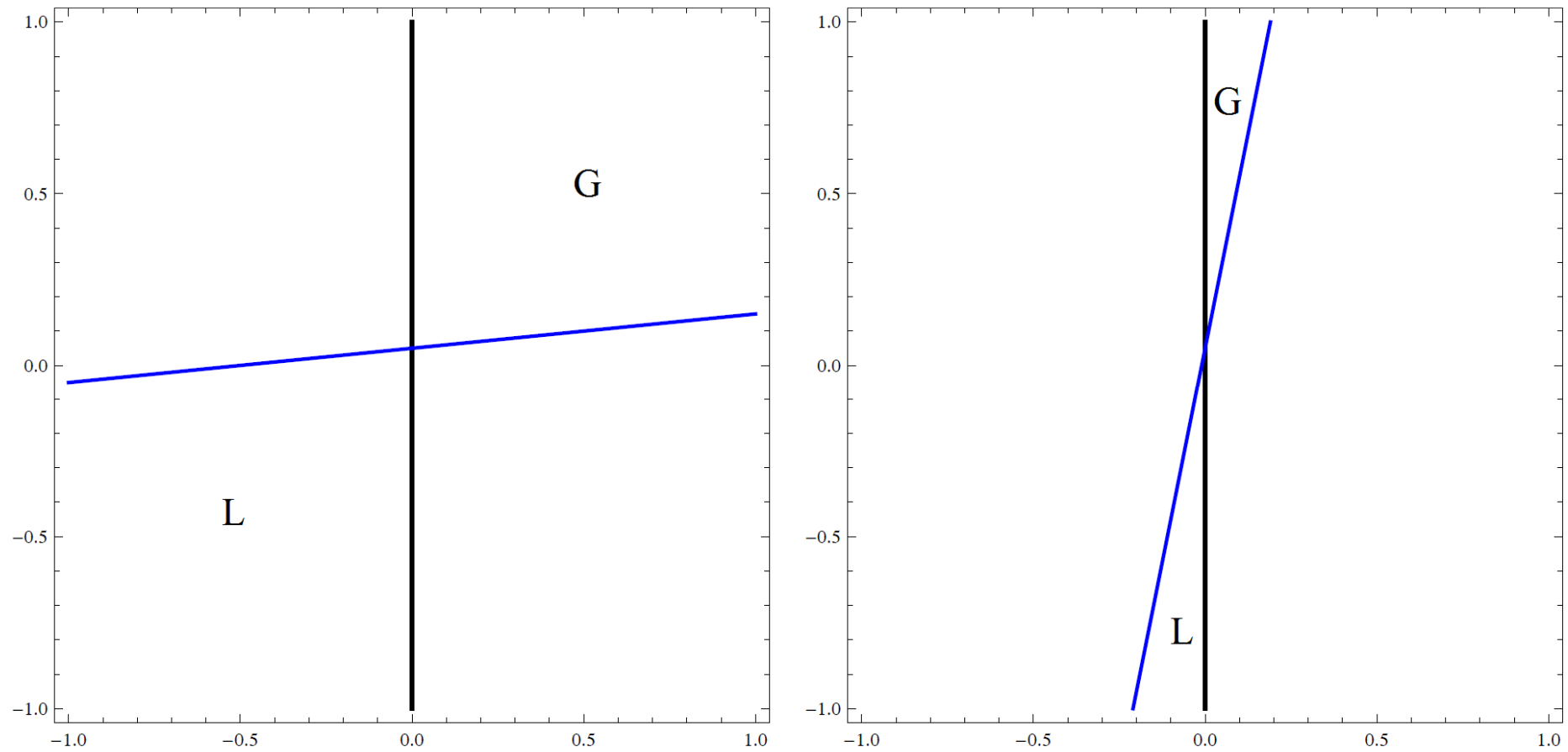


Figure A.13. The bliss points of indifferent voters when the first candidate proposes economic platform $a_2 = 0$ (black line) and when she proposes economic platform $a_2 = 0.1$ (blue line), when $a_1 = -b_1 = -0.01$ (left panel) and when $a_1 = -b_1 = -0.5$ (right panel); considering that $b_2 = 0$.