

Making Unequal Democracy Work? The Effects of Income on Voter Turnout in Northern Italy

Jerome Schafer  LMU Munich

Enrico Cantoni , **Giorgio Belletini** , and **Carlotta Berti Ceroni** 

University of Bologna

Abstract: *In many democracies, voter turnout is higher among the rich than the poor. But do changes in income lead to changes in electoral participation? We address this question with unique administrative data matching a decade of individual tax records with voter rolls in a large municipality in northern Italy. We document several important findings. First, levels of income and turnout both dropped disproportionately among relatively poor citizens following the Great Recession. Second, we show that within-individual changes in income have an effect on participation, which is modest on average due to diminishing returns, but can be consequential among the poor. Third, we find that declining turnout of voters facing economic insecurity has exacerbated the income skew in participation, suggesting that income inequality and turnout inequality may reinforce each other. We discuss the theoretical implications of these results, set in a context with strong civic traditions and low barriers to voting.*

Verification Materials: The materials required to verify the computational reproducibility of the results, procedures, and analyses in this article are available on the *American Journal of Political Science* Dataverse within the Harvard Dataverse Network, at: <https://doi.org/10.7910/DVN/IN2E8O>.

Empirical democratic theory holds that active citizen participation is vital to the quality of democracy (e.g., Dahl 1989). Yet, conceptualizing and measuring this relationship are challenging. In their influential book *Making Democracy Work* (1994), Putnam, Leonardi, and Nanetti argue that levels of civic engagement condition the responsiveness and effectiveness with which elected officials meet citizens' needs. According to Lijphart (1997), however, political participation matters mainly because it is unequal. This view suggests that relatively lower participation in some segments of society may not only lead to biases in representation, but also negatively impact the overall performance of democratic institutions.

We contribute with an empirical investigation of the income–turnout gap—namely, the fact that, in most western democracies, the rich vote more than the poor

(Solt 2008; Kasara and Suryanarayan 2015). The income skew in participation seems particularly problematic for the quality of democracy because income is the most important demographic with which governments determine levels of taxation and benefits (Leighley and Nagler 2013). Thus, changes in the composition of the electorate may have major consequences for policymaking. Yet, prior empirical evidence is ambiguous. Although the extant literature shows that there are inequalities in voter turnout, including by income, it struggles to tease out whether income itself is responsible for this rather than other correlated factors like education (Leighley and Nagler 2013). Whereas recent work examines how growing up in poverty affects turnout later in life (Akee et al. 2018; Ojeda 2018), here we study the impact of income in the voting-age population. Do changes in income lead to changes in electoral participation?

Jerome Schafer, Assistant Professor, Department of Political Science, LMU Munich, Oettingenstr. 67, 80538 Munich, Germany (jerome.schaefer@lmu.de). Enrico Cantoni, Foscolo Europe Research Fellow, Department of Economics, University of Bologna, Piazza Scaravilli 2, 40126 Bologna BO, Italy (enrico.cantoni@unibo.it). Giorgio Belletini, Professor, Department of Economics, University of Bologna, Piazza Scaravilli 2, 40126 Bologna BO, Italy (giorgio.belletini@unibo.it). Carlotta Berti Ceroni, Professor, Department of Economics, University of Bologna, Piazza Scaravilli 2, 40126 Bologna BO, Italy (carlotta.berticeroni@unibo.it).

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We address this question with unique administrative data matching individual tax records with voter rolls over four elections (2004–13) in a large municipality in northern Italy. We find that income and turnout both dropped disproportionately among relatively poor citizens following the Great Recession. We also show that within-individual changes in income lead to changes in turnout. Although these effects are modest on average due to diminishing marginal returns, they can significantly impact participation among the poor. In particular, we find that voter turnout decreases by 3 percentage points (p.p.) when households stop earning any taxable income. Furthermore, we show that the income skew in participation has increased over the period of study. Specifically, we find that, although disparities between rich and poor eligible voters became larger, the median of the active electorate became relatively richer.

Our results have important implications for the voter turnout literature. A recent meta-analysis shows that, although many studies find a positive effect of income while controlling for other theoretically important predictors of turnout, many others find no significant effect (Smets and Van Ham 2013). To make sense of these mixed findings, we suggest that conventional self-reported measures of income and turnout would lead to a more tenuous relationship between the two than would analyzing administrative records. Although we acknowledge the limitations of our data, we demonstrate that they provide the best available evidence about the voter-level effects of income on turnout. Our administrative records mitigate misreporting and nonresponse bias that have plagued prior work using surveys. Moreover, we leverage the panel structure of our data to estimate how changes in income affect turnout in a difference-in-differences (DD) framework. This reduces confounding bias by accounting for all time-invariant voter characteristics like education. We also conduct robustness checks indicating that time-varying confounders are unlikely to drive our results.

Our findings marshal credible evidence that income itself affects voter turnout (Brady, Verba, and Scholzman 1995). Moreover, we show that these effects can be large among the poor, and also affect participation among lower middle income voters somewhat, but beyond that they diminish toward 0. These results add to a growing literature showing that short-term economic adversity depresses electoral participation (Solt 2008; Aytac, Rau, and Stokes 2018). They are also consistent with studies indicating that the effects of childhood economic status endure over time (Akee et al. 2018; Ojeda 2018). Yet, we extend this work exploring asymmetric effects and showing that, in adulthood, negative income shocks tend

to be more consequential for participation than positive ones. This contributes to explaining the curvilinear relationship between income and turnout (Rosenstone 1982).

Our aggregate-level findings shed light on the role of political and economic context. Prior comparative work indicates that, in advanced democracies, the relationship between income and participation is stronger when economic inequality is higher (Solt 2008) and when redistributive issues are more salient (Anderson and Beramendi 2012; Kasara and Suryanarayan 2015). Yet, longitudinal studies focusing on the United States find that the income–turnout gap has been sticky over time (Leighley and Nagler 2013; McCarty, Poole, and Rosenthal 2016). We contribute by documenting the consequences of the Great Recession in northern Italy. Our results suggest that individual-level resources play a greater role for voter turnout when the political party system is in flux. We also find that the turnout effects of income are larger in second-order elections than in national parliamentary elections, which further corroborates that the stakes of politics moderate these effects.

Our study also adds to a growing body of work examining whether economic inequality is politically reinforcing (e.g., Kelly and Enns 2010). This literature documents the political consequences of rising upper tail inequality since the 1990s (e.g., Hacker and Pierson 2010). Our findings highlight the complementary, but sometimes neglected, role of unequal participation in this process (Larcinese 2007; McCarty, Poole, and Rosenthal 2016). In our data, the actual or active median voter is not the median in the income distribution, but is significantly richer (Larcinese 2007). Moreover, higher turnout inequality decreases the share of relatively poor voters who, in western Europe, tend to prefer more income redistribution (Meltzer and Richard 1981; Rueda 2018). This suggests that turnout plays a role in explaining why rising income inequality may *decrease* the political incentives for redistribution.

Finally, our results offer an opportunity to revisit some of the central arguments of Putnam, Leonardi, and Nanetti's (1994) seminal study of civic life in Italy. These authors contend that the large differences in performance between similar institutions of local government in the North and in the South of Italy are driven by differences in citizens' political participation and broader levels of social capital. Here we show that, by focusing their attention on the great socioeconomic diversity across the different regions of Italy, Putnam, Leonardi, and Nanetti (1994) may have neglected the stratification of civic engagement within each region. We discuss theoretical and practical implications of our findings, suggesting that

unequal participation undermines the quality of democracy even if civic traditions are strong.

Although focusing on northern Italy is interesting on its own, there are reasons to believe that many of our insights hold more generally. In particular, other European democracies have faced similar political challenges during the Great Recession, including a crisis of mainstream parties (Guiso et al. 2017). Yet, here we focus on a region with strong civic traditions and low barriers to voting. We discuss how, in this context, showing an effect of income on voter turnout should be harder, if anything, which strengthens the generalizability of our findings.

Theory and Prior Evidence

Our main argument is that income and participation should be linked *even though* the prior evidence is decidedly mixed. We theorize that ambiguous empirical findings in the extant literature likely stem from the biases of conventional measures of income and turnout, which would lead to more tenuous impact estimates than would administrative records. We then refine existing theories suggesting that the effects of income on turnout should be curvilinear, and that they should play a greater role in political contexts where the level of party mobilization is lower. We also argue that if changes in income lead to changes in participation, then we should expect rising income inequality to translate into rising turnout inequality. We explore how this might diminish the political incentives for redistribution.

Three Sources of Bias

Although it is well documented that, in most western democracies, the rich vote more than the poor (Solt 2008; Kasara and Suryanarayan 2015), it is unclear whether income has an independent effect on turnout. In a meta-analysis of prior studies from the United States and Europe, Smets and Van Ham (2013) show that about half found a positive effect of income, whereas the other half found no statistically significant effect. Here, we contend that this mixed body of evidence should not be taken at face value. To do so, we discuss the problems that arise when estimating the relationship between self-reported measures of income and turnout, which have received little attention in prior work, and then briefly discuss the risks of confounding and ecological bias. We also show how leveraging individual-level administrative measures of income and turnout would mitigate each of these biases.

The first source of bias is survey misreporting. It is well known that survey respondents overreport turnout because voting is socially desirable (e.g., Ansolabehere and Hersh 2012). This finding holds in advanced democracies around the globe including the United States, the United Kingdom, New Zealand, and Norway (Karp and Brockington 2005). To allay this concern, a growing literature matches surveys with administrative voter files; yet, these data should be used with caution given the high proportion of records with insufficient information to attempt validation (Leighley and Nagler 2013). Surveys also overestimate turnout because response rates are lower among nonvoters, particularly among those with low socioeconomic status (Lahtinen et al. 2019), which may skew estimates of the impact of income on turnout.

By the same token, validation studies reveal that income surveys exhibit high levels of random error and some underreporting. Random error indicates that many survey respondents lack the necessary information to accurately state how much they make (Micklewright and Schnepf 2010; Yan, Curtin, and Jans 2010). Underreporting reflects the sensitivity of income questions, especially regarding income from private investments and government transfers (Moore, Stinson, and Welniak 2000; Meyer, Mok, and Sullivan 2009; Hurst, Li, and Pugsley 2014). Income surveys also struggle with a large number of nonresponses, particularly at the lower and upper ends of the income distribution (Moore, Stinson, and Welniak 2000; Riphahn and Serfling 2005). In the Current Population Survey, for example, 30% of income values need to be imputed using sociodemographic covariates (Card et al. 2010).

Worryingly, income misreporting may be systematically correlated with traits that are also associated with turnout. For example, women who are known to earn more than their male partners often report incomes just below those of their partners (Roth and Slotwinski 2018). This may confound estimates of the relationship between self-reported income and turnout, a concern that is magnified using self-reported measures of turnout. In particular, more affluent individuals, who are more likely to underreport their income, are also more likely to overreport their participation (Ansolabehere and Hersh 2012). This further increases the risk of bias in the observed effect of income on turnout. Importantly, the direction of the overall bias due to all sources of measurement error is *ex ante* unclear, thus compromising the reliability of estimates based on survey data.¹

Fortunately, these problems can be addressed using administrative tax data. To be sure, taxable income

¹We illustrate these problems in the Online Appendix (p. 8).

generally underestimates disposable income because some sources are nontaxable (e.g., spousal allowances, though adjusting for household composition can account for transfers between cohabiting family members). Moreover, administrative records tend to underestimate taxable income because of tax avoidance (Meyer, Mok, and Sullivan 2009; Hurst, Li, and Pugsley 2014). However, we can expect that, in advanced democracies, tax data should be significantly more reliable than surveys. Although the incentives to underreport income are stronger when individuals file their taxes than when they respond to surveys, the costs of being dishonest are much greater and more tangible (Andreoni, Erard, and Feinstein 1998; Hurst, Li, and Pugsley 2014). Tax data are also more precise than survey measures of income (Micklewright and Schnepf 2010). This alleviates the risk of downward bias due to measurement error on the right-hand side when estimating the effects of income in a regression (Wooldridge 2016). Finally, tax records have fewer missing data compared to surveys (Yan, Curtin, and Jans 2010) and may be easier to match with administrative voter files, thus reducing nonresponse bias.

The second source of bias pertains to confounding. In their path-breaking work, Wolfinger and Rosenstone (1980) showed that U.S. citizens with higher levels of income and education were more likely to vote. However, although participation was strongly and positively related to education, the correlation with income was much weaker and vanished once an individual achieved a threshold of financial security. This would suggest that the income–turnout gap was mostly driven by differences in education; though poverty seemed to have an effect of its own. In later work, Squire, Wolfinger, and Glass (1987) argued that one particular mechanism might account for this: In the United States, the poor tend to move more frequently, which may result in loss of voter registration and thus raise barriers to voting. Yet, using administrative data, Hall and Yoder (2019) find that becoming a homeowner increases turnout, which suggests that residential mobility might have positive effects among more affluent citizens. Using matched survey and voter file data, Akee et al. (2018) leverage exogenous unconditional cash transfers to American Indian households and find no statistically significant effect on turnout among voting-age study participants; though their results do not rule out that this effect may be small and positive, and reveal large intergenerational effects. Thus, the prior evidence is ambiguous and shows the need of studies combining credible identification strategies with large-scale administrative data.

The third source of bias is the risk of ecological fallacy when using aggregate-level data. Radcliff (1994),

for example, estimates state-level correlations suggesting that incumbents are more consistently rewarded for their economic successes than punished for their failures, possibly because abstention absorbs much of the public resentment toward the in-party. In contrast, Burden and Wichowsky (2014) suggest that economic adversity, proxied by county-level unemployment rates, may mobilize voters. These conflicting findings illustrate the challenges of making inferences about individual voting behavior using group-level economic data, even when outcomes are observed at the individual level, because aggregate changes in income may coincide with other community changes that affect participation (Arceneaux 2003). However, measuring the impact of economic shocks with individual-level administrative records of both income and turnout would avoid this problem.

The Curvilinear Relationship between Income and Turnout

In spite of these empirical challenges, there are strong theoretical reasons to think that income and turnout should be linked. Our conceptual framework builds on Brady, Verba, and Schlozman's (1995) resource model, which posits that having a sufficient level of income is necessary for participating in politics.² This perspective also suggests that money should matter less for voting than for other forms of participation such as donating, because western democracies have adopted universal suffrage without regard to income or social status. Nevertheless, lack of money may still be an obstacle to the act of voting. Prior work suggests that unemployment, poverty, and decline in financial well-being each has a negative effect on voter turnout (Rosenstone 1982). Crucially, economic adversity increases the *opportunity costs* of voting, which may lead to the displacement of civic engagement by more private behaviors. For example, voters who face economic insecurity may become less interested in politics and less likely to discuss upcoming elections with their friends (Solt 2008). They may also struggle with demobilizing emotions like depression and self-blame (Aytaç, Rau, and Stokes 2018). Moreover, recent work indicates that it is relatively harder for low-income citizens to find time to vote, which exacerbates participatory inequality even though time is more equally distributed than money (Schaffer and Holbein 2020).

Although theory clearly predicts that the behavioral consequences of economic adversity should impact voter

²Similar empirical predictions also derive from a motivational model focusing on how income affects the perceived benefits (rather than the costs) of voting (Blais 2000).

turnout, a major debate revolves around the magnitude of these effects. In their influential work, Wolfinger and Rosenstone argue that “rock bottom poverty seems to depress turnout somewhat. Beyond that income does not have much effect” (1980, p. 26). This view builds on the accepted notion that changes in income have diminishing marginal returns. For example, the qualitative difference between \$10,000 and \$11,000 should be greater than between \$100,000 and \$101,000. Yet, recent work questions the implication that, given the curvilinear relationship between income and turnout, the overall impact of income would be small (Akee et al. 2018; Ojeda 2018). Although they find no large effects among adults, Akee et al. (2018) show that the long-term effects of unconditional cash transfers are consequential among voters who grew up in poverty, which suggests that positive income changes are more important in childhood than in adulthood.

We contribute by suggesting that, in the voting-age population, negative income shocks—for example, due to unemployment—are more consequential for voter turnout than positive ones—for example, after finding a new job. The extant literature provides reasons to expect that the experience of economic insecurity leads to a weakening of social ties and a decline of trust in institutions that may be difficult to re-establish even after levels of income recover (e.g., Solt 2008). Moreover, the idea that economic losses matter more than economic gains plays an important role in existing theories of voter turnout (e.g., Rosenstone 1982). Yet, little is known about the magnitude and persistence of this asymmetry—a gap that we seek to fill.

The Role of Political and Economic Context

Prior theory also holds that the stakes of politics moderate the income and turnout relationship (e.g., Solt 2008). Yet, the empirical evidence is ambiguous. On the one hand, cross-national studies show that, in advanced democracies, the association between income and turnout tends to be stronger when economic inequality is higher (Solt 2008) and when the rich anticipate taxation (Kasara and Suryanarayan 2015). This indicates that rising economic inequality may translate into rising turnout inequality. On the other hand, longitudinal evidence from the United States documents that the income–turnout gap has been remarkably stable over the last decades even though income inequality has increased (Leighley and Nagler 2013; McCarty, Poole, and Rosenthal 2016). This persistence may reflect that turnout inequality is high already in the United States due to institutional barriers to voting (Rigby and Springer 2011),

and that many low-income U.S. residents are not citizens (McCarty, Poole, and Rosenthal 2016). However, it also suggests that U.S. political campaigns generally have not focused on mobilizing the poor (Rosenstone and Hansen 1993).

Covering the beginning of the Great Recession, our setting is suitable for testing competing hypotheses about the initial effects of rising income inequality during a period of economic decline. Solt (2008), for example, proposes three different perspectives. The first theory suggests that higher income inequality may suppress political conflict and displace redistributive issues from the agenda (Goodin and Dryzek 1980). As a result, inequality should depress turnout among richer and poorer citizens, but have a larger negative effect on lower income citizens. The second theory predicts the exact opposite pattern: Inequality may increase contention about redistribution and mobilize both rich and poor voters, though the boost in engagement may be larger for richer citizens (Brady 2004). The third theory holds that inequality’s effect depends on how it affects participatory resources. Thus, rising inequality may have divergent effects, increasing turnout among voters who become more affluent and decreasing it among those who become poorer.

As we discuss below, the limited time span of our data restricts our ability to examine how shifts in parties and their platforms shape income biases in political engagement. Yet, they provide an opportunity to study how turnout inequality evolves during a crisis of mainstream parties. Prior work suggests that the effects of income on turnout are magnified when left-wing parties do not mobilize the poor (Pontusson and Rueda 2010; Anderson and Beramendi 2012). Extending this theory, we hypothesize that individual-level resources should play a greater role for participation when the political party system is in flux.

We also explore an additional implication of the theory that the stakes of politics moderate the income and turnout relationship. Namely, the effects of income on turnout may be larger in second-order elections, where the stakes are lower, than in general elections, where the outcomes matter more to voters. This would suggest that, in democracies with (quasi-)federalist institutions like Italy, the ability of political parties to mitigate turnout inequality may be lower in local, regional, and European elections than in national elections.

The Policy Consequences of Turnout Inequality

Another strand of related work examines the policy consequences of changes in the composition of the

electorate. Prior evidence shows that reductions in turnout inequality following election law reforms have in the past contributed to the development of welfare states by increasing the proportion of low-income voters who benefit the most from these policies (Fowler 2013; Bechtel, Hangartner, and Schmid 2016). Here, we discuss theoretical reasons to expect that, conversely, recent increases in turnout inequality reduce the political incentives for redistribution.

The canonical model explaining how democratic political competition affects the rate of redistribution through fiscal policy builds on Meltzer and Richard (1981). In this framework, citizens' preferences over levels of redistribution are determined by their pretax and pretransfer positions in the income distribution. Citizens with incomes above the mean prefer lower taxes because they expect to receive less in government transfers than what they pay in taxes. In contrast, citizens with incomes below the mean tend to vote for higher taxes, but their preferred tax rate is decreasing in income. The tax rate chosen by majority voting depends on the difference in income between the median voter and the average of the income distribution. When the income distribution is right skewed—as it is in most societies—democratic political competition leads to redistribution from the rich to the poor; and when the mean income rises relative to the income of the median voter, taxes rise, and vice versa.

Empirical support for this prediction is weak, as rising income inequality has typically not increased voter support for redistributive policies (e.g., Ashok, Kuziemko, and Washington 2015). A prominent explanation suggests that the rate of redistribution may be lower if political competition entails dimensions other than a strictly economic one (e.g., Alesina and Glaeser 2004). In the United States, for example, many poor whites are opposed to redistribution because they expect that it will mostly benefit racial minorities (Alesina and Glaeser 2004). In western Europe, however, the empirical evidence suggests that material benefits dominate the preferences of the poor, whereas the preferences of those less in need depend on the level of ethnic homogeneity (Rueda 2018). In countries like Finland where the share of the foreign-born population is low, the rich often support redistribution for altruistic reasons; but when it is high like in Spain, or northern Italy (Belletini, Berti Ceroni, and Monfardini 2020), self-interest tends to be more important (Rueda 2018).

Following Larcinese (2007), we argue that, when relative income is a good predictor of preferences for redistribution, a simple theoretical refinement provides testable comparative statics about the policy consequences of changes in the composition of the electorate.

Namely, the model discussed above assumes that everyone votes, which is not true empirically. Yet, if the rich vote more than the poor, then the actual/active median voter will not coincide with the median of the income distribution, but generally be richer and less supportive of redistribution. This difference may be even larger if higher income inequality also leads to more unequal political participation. This suggests that elected officials will be less likely to enact redistributive policies when turnout is declining among the poor, because doing so may harm their reelection prospects.

Background: Civic Traditions in Northern Italy

Our study focuses on the city of Bologna in northern Italy, for which we have novel administrative data. Yet, studying this large municipality is also particularly interesting because of its unique history. Bologna's strong civic traditions feature prominently in Putnam, Leonardi, and Nanetti:

Visiting the [local government] is like entering a modern, high-tech firm. A brisk, courteous receptionist directs visitors to the appropriate office [...]. Bologna's central piazza is famous for its nightly debates among constantly shifting groups of citizens and political activists, and those impassioned discussions about issues of the day are echoed in the chambers of the regional council. (1994, pp. 5–6)

To support their optimistic view, Putnam, Leonardi, and Nanetti (1994) trace the roots of civic life in Bologna back to its history as a medieval city-state and argue that high levels of social capital—as evidenced by memberships in local associations—hold the bonds of communal life together in modern times. Regarding turnout specifically, they contend that high levels of participation in nonpartisan referendums reveal a strong sense of civic duty to vote in the North of Italy, which contrasts with clientelistic voter mobilization in the South.

This depiction of civic engagement in Bologna suggests that income inequality might not diminish the forces that make democracy work. However, recent trends provide pressing reasons to revisit that argument. As we document below, levels of electoral participation have declined in recent years and left-wing parties, which used to fare well in Bologna, now struggle to mobilize their base. Moreover, the crisis of the Left during the Great Recession has been exacerbated by corruption

scandals and intraparty factionalism, which we discuss in greater detail in the Online Appendix (p. 1). Nevertheless, average levels of voter turnout have remained high (79% and above) over the period of study. This indicates that participatory inequality might have risen even though Bologna's civic traditions appear to persist.

Studying electoral participation in this context is interesting on its own, but it also provides a hard case for finding an effect of income on voter turnout. Another advantage of the northern Italian setting is that barriers to voting are low. Although compulsory voting was abandoned in 1993, voter registration is automatic; and although Bologna residents can only vote on election days,³ the administration of elections is geared toward very high levels of participation. This allows us to examine how income affects turnout in an institutional environment where voting rules might not disadvantage the poor.⁴

Although our study focuses on turnout, we show in the Online Appendix (p. 3) that other important measures of social capital, including political party membership and trust in institutions, used to be higher in Bologna than in most other parts of Italy and Europe. However, these have declined over the period of study, mirroring trends in other European countries following the Great Recession (Guiso et al. 2017). This suggests that strong civic traditions and low barriers to voting can only take us so far in explaining political participation, and that many of our insights about the role of individual income travel to other advanced democracies.

Data and Measurement

Our voter-level data cover the entire voting-eligible population of about 300,000 in Bologna over four elections: the 2004 and 2009 same-day municipal and European elections, and the 2008 and 2013 national parliamentary elections.⁵ After we digitized turnout records, the city of Bologna matched them with its other sources of administrative data using time-invariant voter identifiers. The municipality then returned to us the anonymous,

³In the elections covered by our data, Bologna residents could vote on Sunday and the following Monday.

⁴Even the homeless are registered to vote if they are eligible and known to the authorities.

⁵The difference in turnout between municipal/European and national elections is small (1–1.5 p.p., see Figure 1), which attenuates concerns about unobserved heterogeneity. Thus, we pool all available data in our main voter-level models reported in Table 1 and absorb election-year trends with fixed-effects. However, we also analyze results separately by election type.

matched data, which we use here. These contain taxable income and taxes paid in each election-year, together with other sociodemographic information updated as of, approximately, the four election days in the sample, including age in years, gender, marital status, number and age of cohabiting children, neighborhood, immigration status, and position within the household. In the analysis, we restrict the matched sample to Italian citizens aged 18 or above.

Below we focus on pretax income, which we also use as an approximation of individual preferences over redistribution (Meltzer and Richard 1981)—an assumption that we validate with survey data in the Online Appendix (p. 5). We also show robustness checks using after-tax income. We report values in constant 2010 € throughout, and adjust our income measure to account for household size. We apply the OECD modified scale, which divides the sum of household income by 1 for the household head, an additional 0.5 for each adult member (aged 14 or older), and 0.3 for each child (younger than 14). In the Online Appendix (p. 12), we show that our results hold when we use other approaches. Consistent with qualitative evidence that no tax return implies no taxable income,⁶ we finally recode households with no tax report (4.3%) as having 0 income and pool them with households that file a tax report with 0 income (3.4%). We show robustness checks in the Online Appendix (p. 19).

As we discuss below, we leverage the panel structure of our data—with up to four observations/elections per voter—in order to reduce bias caused by omitted variables. The retention rate is 84.2%—with deceased voters and out-of-town movers dropping out—over the 9 years of our study. This relatively long time series for both income and turnout distinguishes our data from related Scandinavian registries (e.g., Lahtinen et al. 2019).

Estimation

Our individual-level identification strategy leverages our panel data in a DD framework. This design comes with assumptions we discuss below. However, it reduces biases that have limited prior work based on conditional-on-observables approaches (e.g., Ojeda 2018). This literature has been cognizant that comparisons between higher and lower income individuals controlling for available covariates might be biased by unobserved differences in background and socioeconomic status (Leighley and Nagler 2013). Yet, worryingly, predicting the direction and magnitude of potential biases is difficult. For example, impor-

⁶See Online Appendix (p. 18).

TABLE 1 Individual-Level Effects of Income on Voter Turnout

	(1)	(2)	(3)	(4)
<i>Model 1</i>				
Household income (in constant k€) × 100	.073** (.006)	.013** (.002)	.012** (.002)	.012** (.002)
<i>Model 2</i>				
Logged household income (ln(€ + 1))	.018** (.000)	.004** (.000)	.004** (.000)	.004** (.000)
<i>Model 3</i>				
Any taxable income (0 or 1)	.152** (.002)	.030** (.002)	.030** (.002)	.030** (.002)
Voter FE	No	Yes	Yes	Yes
Election FE	Yes	Yes	Yes	Yes
Age FE	Yes	Yes	Yes	Yes
Neighborhood controls	Yes	No	Yes	Yes
Individual controls	Yes	No	No	Yes
Average turnout	.824	.833	.833	.833
Observations	1,163,307	1,084,120	1,084,120	1,084,120

Note: Standard errors in parentheses are two-way clustered at the individual and household levels. Coefficients and SE in Model 1 are multiplied by 100 to facilitate interpretation. *N* varies because DD models drop voters observed only once. Neighborhood controls include neighborhood-by-year fixed-effects, and precinct-year averages of age, income, income taxes paid, and shares of females and Italian citizens. Individual controls are gender-specific dummies for marital status and counts of children in 5-year age groups.

** $p < .01$, * $p < .05$, two-tailed.

tant correlates of turnout like political interest and health are likely “bad controls” (Angrist and Pischke 2008) as they may themselves be affected by income.

To address these concerns, we investigate whether individual-level changes in income lead to changes in turnout using the following DD framework:

$$Y_{it} = \beta_1 \text{Income}_{it} + \mathbf{X}'_{it} \boldsymbol{\beta} + \alpha_i + \delta_t + \epsilon_{it}, \quad (1)$$

where the outcome Y_{it} takes the value of 1 if voter i turned out in election t , and 0 otherwise; β_1 is the estimated effect of income; \mathbf{X}_{it} is a vector of socioeconomic control dummies; α_i and δ_t denote, respectively, a full set of voter and election fixed-effects; and ϵ_{it} is the error term. Standard errors are two-way clustered by voter and household, which accounts for serial correlation of residuals within each voter, as well as household-level spill-overs.

In the main analysis, we report results for three treatments: linear household income, logged household income ($\ln(x + 1)$), and an indicator for whether a household reports any taxable income (as opposed to 0). We estimate four different specifications for each income measure. We first report between-individual estimates that include all available controls (see Table 1)—that is, conditional-on-observables but without

individual fixed-effects. We then show within-individual DD estimates with and without neighborhood and individual controls.

We also graphically display the results from a model estimating the effects of relative economic status. To this end, we replace our linear income measure with nine dummies identifying voter-by-year positions in different income deciles and omit the lowest income decile to avoid collinearity.

Our DD specifications rely on a parallel-trend assumption. That is, in a counterfactual world where income does not change, turnout of voters who experience income changes would follow the same trend as that of voters whose income never changes. We test the robustness of our results and (indirectly) the validity of the parallel-trend assumption in several ways. First, we use year fixed-effects to absorb differences across elections, as well as neighborhood-by-year fixed-effects to compute counterfactual time trends among households living in similar areas. We also include age-in-years fixed effects, and gender-specific dummies for marital status and counts of cohabiting kids of different ages. Second, in the Online Appendix (p. 14), we test whether changes in turnout follow changes in income, rather than vice versa,

by reporting a placebo specification including future income as a control.

We note that our models estimate the overall effects of income together with the bundle of correlated changes that also affect turnout. For example, changes in income may coincide with accepting a new job, retiring, or finishing school. We acknowledge that this restricts our ability to adjudicate between alternate causal mechanisms. However, we take advantage of the granularity of our data in order to provide suggestive evidence.

Event-Study Estimation

We also use an event-study approach, which allows us to explore asymmetries between positive and negative income shocks, indirectly test the assumption for causal identification, and visualize the timing and duration of our effects. Specifically, we leverage two distinct events. First, we look at households that went from earning no income to earning some positive income (e.g., after a household member finds a job). Second, we look at households experiencing a total decline in household income (e.g., because all previously employed household members lose their jobs).

Like with the main estimates, our ability to identify causal effects with event studies hinges on a parallel-trend assumption. That is, voters who gained/lost income in the sample period (i.e., treated voters) would, absent changes in income, experience identical overtime changes in turnout as voters whose income did not change (i.e., control voters). As the parallel-trend assumption is a statement on counterfactual outcomes—that is, unobservable changes in voter turnout of treated voters in absence of treatment—it cannot be tested directly. Yet, event studies allow an indirect test in the spirit of Granger (1969). The idea is to check that, consistent with income causally affecting turnout, changes in income *predate* changes in turnout, and not vice versa. To this end, we estimate the following equation:

$$Y_{it} = \sum_{\tau} Income_{it\tau} \times \beta_{\tau}^{Income} + X'_{it}\beta + \alpha_i + \delta_t + \epsilon_{it}, (2)$$

where $\sum_{\tau} Income_{it\tau}$ is a dummy equal to 1 if election t occurs τ elections because voter i had nonzero taxable income. The coefficients of interests are the β_{τ}^{Income} s, which measure the difference in turnout, conditional on controls, between treated and control voters for each election τ before ($\tau < 0$) or after ($\tau \geq 0$) the change in whether or not an individual reports any taxable income. Because our data span four elections, τ ranges between -3 and

2. All other terms are identical to our main DD framework. Standard errors are two-way clustered by voter and household.

Results

We first describe the evolution of income inequality over the period of study. The top left panel in Figure 1 shows that average income in Bologna has continuously decreased among the poorest 20%. Among more affluent citizens, in contrast, income has either increased or remained constant over 2004–09, and decreased over 2009–13. Our results also show that absolute differences between the rich and the poor have declined somewhat during the Great Recession. Yet, income ratios—shown in the top right panel—reveal that, although the top 20% lost three times more in absolute terms 2009–13 (drop from € 63,742 to € 60,205) than the bottom 20% (drop from € 5,217 to € 3,923), the relative impact was larger among the poor. This continued the rise in inequality between the rich and the poor: Whereas in 2004, the top 20% made 12.2 times more on average than the bottom 20%, this ratio had increased to 15.3 by 2013.⁷

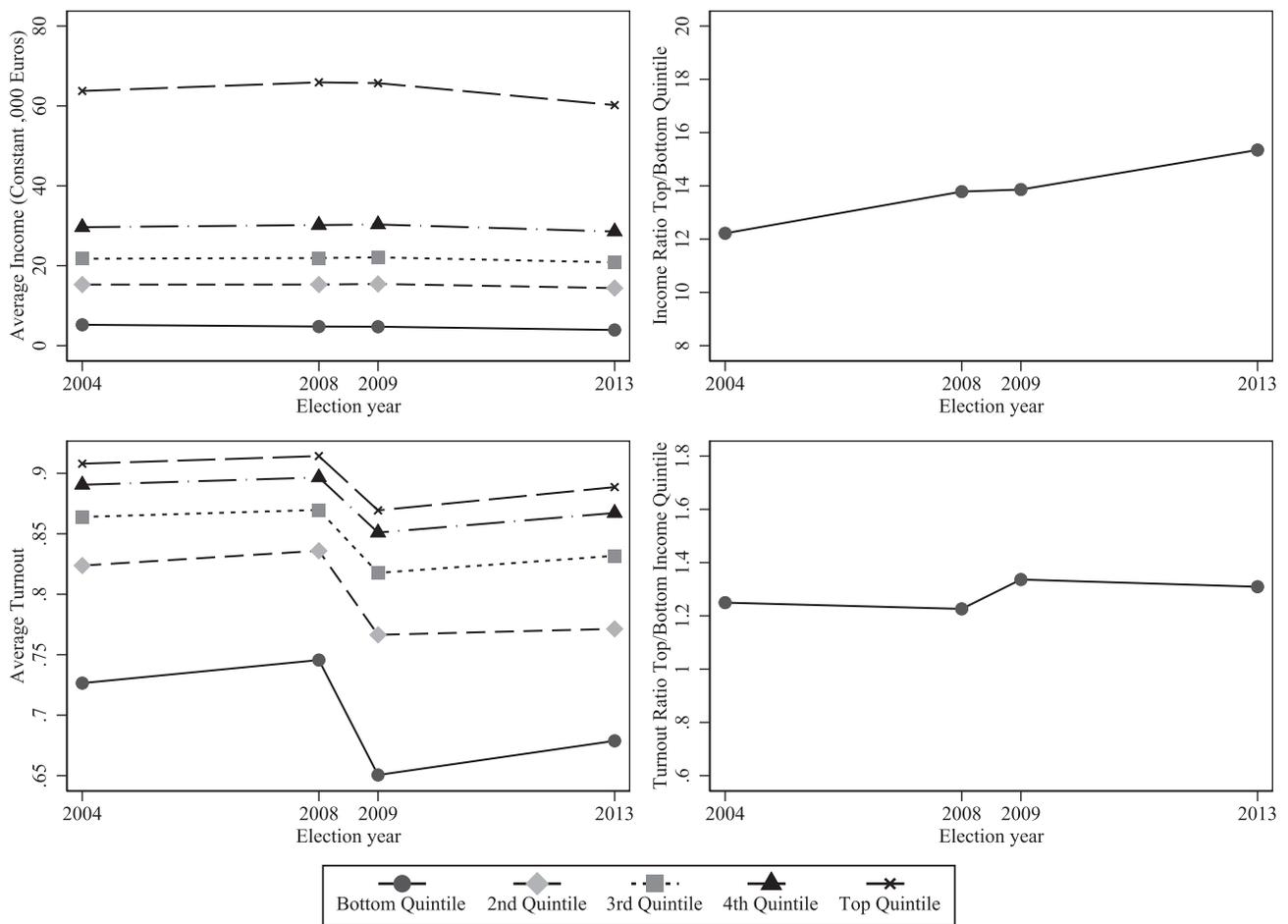
Turning to participation patterns, the bottom left panel in Figure 1 shows that average turnout plummeted around 2008–09. The persistence of this change until 2013 indicates that it was not primarily driven by differences between types of elections. Crucially, this shift has exacerbated participatory inequality. Whereas turnout dropped from 91.4% to 88.9% in the richest quintile between the 2008 and the 2013 parliamentary elections, this difference was more than double in the poorest quintile, changing from 74.5% to 67.9%. We note that the turnout ratios comparing the richest with the poorest 20%—shown in the bottom right panel—are significantly higher than estimated in prior work using survey data,⁸ and have increased even further over the period of study.

The timing of these changes shows that the Great Recession has magnified the association between income

⁷We note that the Gini coefficient rose from 0.4209 in 2004 to 0.4313 in 2008, but then dropped slightly to 0.4292 in 2009 and 0.4287 in 2013. However, here we focus on the top/bottom 20% ratio, which allows us to directly compare income inequality with a standard measure of turnout inequality (e.g., Kasara and Suryanarayan 2015).

⁸For example, Kasara and Suryanarayan (2015) place the Italian turnout ratio in the 1.04–1.16 range, though it is likely larger in Italy, on average, than in Bologna (see Online Appendix, p. 4).

FIGURE 1 Income Inequality and the Income–Turnout Gap in Bologna



Note: The top left panel of Figure 1 shows the evolution of average pretax household income by quintile in constant 2010 k€. The top right panel shows the income ratio of richest 20% over poorest 20%. The bottom left panel shows average turnout by income quintile. The bottom right panel shows the turnout ratio of richest 20% over poorest 20%; 2004 and 2009 are same-day European and municipal elections; 2008 and 2013 are national parliamentary elections

and turnout. Figure 1 provides fine-grained descriptive evidence about the consequences of rising income inequality for turnout inequality during a period of economic decline. The finding that electoral participation has dropped across all social strata suggests that the initial effect of the Great Recession was to suppress political conflict and displace contention about redistribution (Goodin and Dryzek 1980). This runs counter to the prediction that it would mobilize both rich and poor voters (Brady 2004). Yet, the decline in turnout was larger among relatively poor voters, which comports with the notion that rising income inequality decreases their share of participatory resources (Solt 2008), which may be even more consequential when the political party system is in flux. These rapid and large shifts in the composition of the electorate contrast with the stability documented in the American context (Leighley and Nagler 2013). How-

ever, turnout inequality might already be higher in the United States due to prohibitive voting rules (Rigby and Springer 2011).

Voter-Level Effects

We next turn to individual-level regressions in Table 1. The most conservative linear coefficient in column 4 is statistically discernible from 0, and shows that a € 1,000 change in income leads to a 0.012 p.p. change in turnout, on average.⁹ We also find that DD estimates are about five times smaller than conditional-on-observables estimates. Although the latter do not include a control for

⁹In the Online Appendix (p. 13), we show that our results hold when we use after-tax income.

TABLE 2 Subsample Analysis of the Effects of Income on Voter Turnout

	General elections (1)	Second-order elections (2)	Non-movers (3)	Age 25–65 (4)
<i>Model 1</i>				
Household income (in constant k€) × 100	.007 (.004)	.013** (.004)	.013** (.003)	.013** (.002)
<i>Model 2</i>				
Logged household income (ln(€+1))	.003** (.000)	.004** (.000)	.004** (.000)	.004** (.000)
<i>Model 3</i>				
Any taxable income (0 or 1)	.022** (.004)	.031** (.004)	.030** (.003)	.035** (.003)
Voter FE	Yes	Yes	Yes	Yes
Election FE	Yes	Yes	Yes	Yes
Age FE	Yes	Yes	Yes	Yes
Neighborhood controls	Yes	Yes	Yes	Yes
Individual controls	Yes	Yes	Yes	Yes
Average turnout	.849	.842	.837	.850
Observations	473,880	490,060	764,010	660,965

Note: Table 2 shows estimates from a DD specification with controls as in column 4 of Table 1, but across different subsamples. Coefficients and SE in Model 1 are multiplied by 100 to facilitate interpretation.
 ** $p < .01$, * $p < .05$, two-tailed.

education,¹⁰ this difference underscores the contribution of our within-individual design, which reduces omitted variable bias by absorbing all time-invariant voter characteristics.

We report additional results addressing concerns about unobserved heterogeneity in Table 2. However, the robustness of our DD estimates in Table 1 to a rich set of fixed-effects shows that our results are not confounded by time-varying factors including marital and parental status, and local economic conditions. In the Online Appendix (p. 14), we further test the parallel-trends assumption by using future income as a placebo. The null effect of future income on current turnout corroborates the causal interpretation of our DD estimates.

Our linear models predict that a large 1 s.d. (€ 34,000) increase in income would raise turnout by a modest 0.41 p.p.¹¹ Yet, theories of turnout suggest that

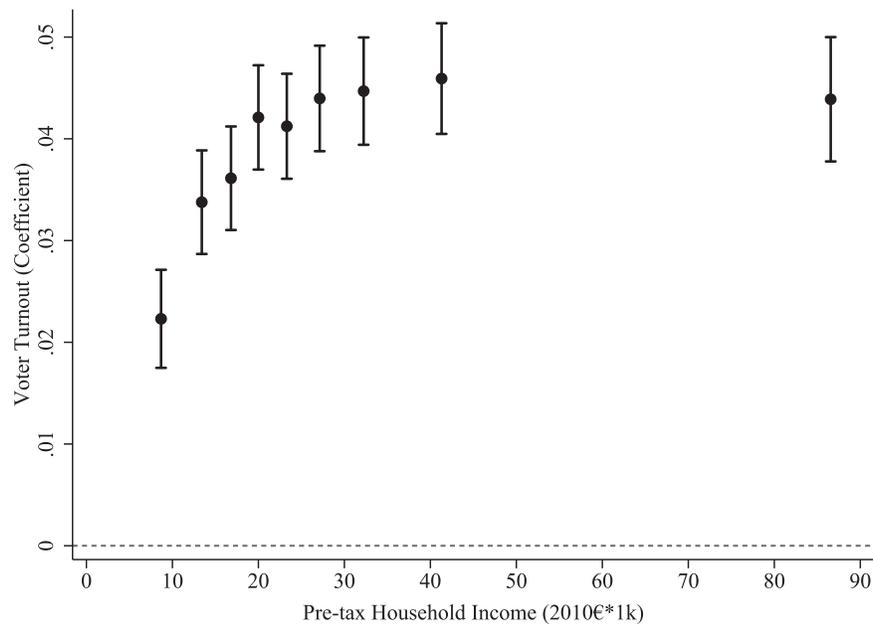
the impact of changes in income should be larger among the poor than among the rich (Wolfinger and Rosenstone 1980). We explore effect nonlinearity in the second row of Table 1. The coefficient in column 4 estimates that every 1% increase in income leads to about 0.0036 p.p. higher turnout, on average. Lower p -values suggest that these log-models fit the data better than the linear models. This could indicate that the marginal effects of income diminish toward 0, but may be consequential when the initial income level is low. The third row in Table 1 reinforces this idea by showing that whether or not households report any taxable income affects turnout by 3 p.p.

In Figure 2, we show the curvilinear effects of income on turnout graphically. To do so, we estimate the impact of economic status, as measured by changes in a voter's relative position in the income distribution (in deciles) from one election-year to the next. For example, the left-most coefficient shows that moving from the lowest 10% to the 10%–20%—a difference of about € 9,000—increases voter turnout by 2.2 p.p., on average. Climbing up each step of the income ladder leads to higher voter

¹⁰Conditional-on-observables estimates may still be biased when controlling for education. For example, holding educational attainment fixed, individual-specific prosocial attitude may correlate (positively) with both turnout and income.

¹¹The average within-individual income variation that we leverage in our DD models—measured by the residual s.d. of income after

controlling for voter and year fixed-effects—is € 14,776 over the 9 years of study.

FIGURE 2 The Effects of Economic Status on Turnout

Note: Coefficients in Figure 2 report estimates from a DD specification with controls as in column 4 of Table 1, which uses income decile dummies as a treatment variable with the lowest decile as a baseline. Point estimates show the turnout effects of changes in income relative to the lowest income decile. The x-axis indicates the average pretax income in each decile; the mean of the omitted baseline category is € 642. Error bars show 95% confidence intervals

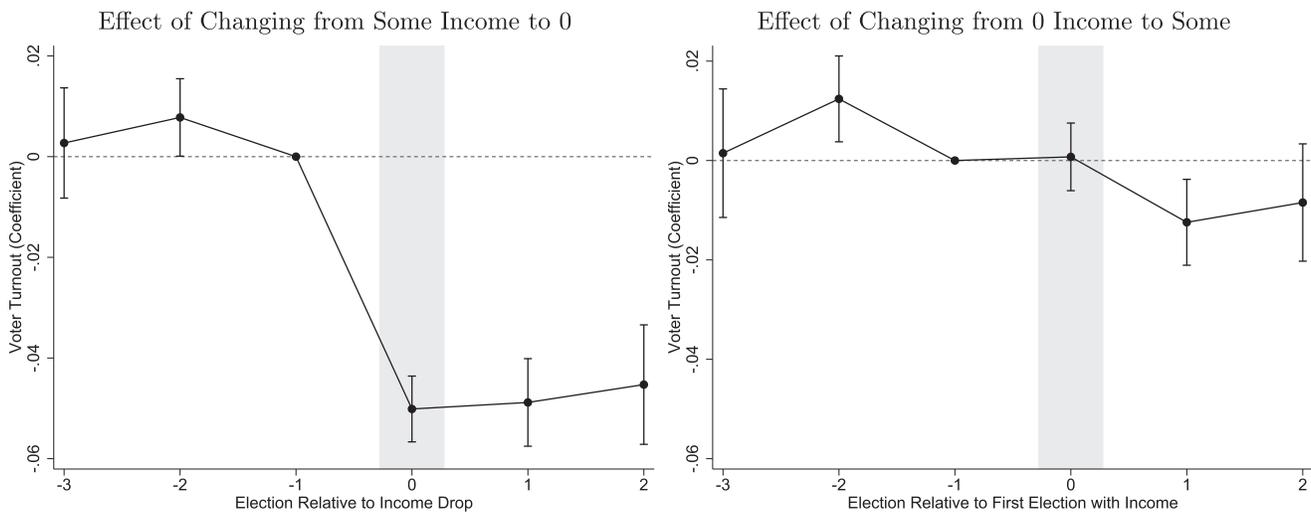
turnout until the median (about € 21,500), where the impact on participation compared to the bottom decile is about 4.2 p.p. Beyond that, the marginal effect of income appears to diminish toward 0. These results provide suggestive evidence that poverty and unemployment are the major drivers of the income and turnout relationship, given that the effects are the largest at the bottom of the income distribution. However, other changes in economic well-being also seem to have some effect on turnout among lower middle income households.¹²

To further explore the heterogeneous effects of income on turnout, we next compare DD estimates across various subsamples of our data. The first two columns in Table 2 show separate models for the 2008 and 2013 national parliamentary elections and for the 2004 and 2009 same-day European and municipal elections. The results indicate that the effects of income on turnout are statistically discernible from 0 in both electoral environments, with the notable exception of linear income falling short of the $p < .05$ threshold when we restrict the

sample to general elections. We also find that the effects of income are consistently larger in same-day European and municipal elections than in national parliamentary elections. This provides suggestive evidence that the factors that mitigate the income and turnout relationship at national level—such as party mobilization—may be muted at other levels of government. However, these results should be interpreted with caution given that the available data contain only two elections of each type.

We conduct additional robustness tests by comparing the full sample results in column 4 of Table 1 with columns 3 and 4 in Table 2. Column 3 shows that our findings are robust when we focus on voters who do not move to a different precinct over the period of study, which allays the concern that our results may be driven by differences in residential mobility. Column 4 shows that our findings are equivalent when we restrict the sample to citizens aged 25–65 years. This addresses potential concerns about bias due to unobserved heterogeneity in education and civic skills, given that these voters have already completed their formative years. This also indicates that our main results are not driven by retirements.

¹²Consistent with these findings, we show in the Online Appendix (p. 16) that the turnout effects of a voter's income tend to "spill over" to the voter's spouse.

FIGURE 3 Event-Study of the Effects of Income Shocks on Voter Turnout

Note: Figure 3 shows estimates from within-individual event-study models with controls as in column 4 of Table 1. Error bars show 95% confidence intervals. We provide descriptive statistics about income transitions in the Online Appendix (p. 11)

Event-Study Results

To gain a deeper understanding of the curvilinear relationship between income and turnout, we now investigate asymmetries between negative and positive income shocks. The left panel in Figure 3 shows the event-study for transitions from some to 0 income. Reassuringly for our identification assumption, treated and control households share statistically indistinguishable voter turnout in pretransition elections (i.e., $\tau < 0$). In contrast, turnout decreases after losing income (i.e., $\tau \geq 0$) by a significant 5 p.p. Similarly, there are no obvious pretrends in voter turnout in the right panel of Figure 3, which shows the transition from 0 income to some—with the exception of a small increase at $\tau = -2$. There is, however, no noticeable change in turnout after the event, except for a small decrease (rather than the expected increase) after two elections (i.e., at $\tau = 1$).

Although the average effect is consistent with the findings in Table 1, the asymmetric effects in Figure 3 indicate that the DD estimates in the table are driven by negative (rather than positive) changes in income. In the Online Appendix (p. 20), we report additional results showing the large and persistent negative effects of households losing a large part (rather than all) of their taxable income from one election-year to the next. This suggests that, although the results in Figure 3 are likely driven by unemployment, they more broadly capture the enduring effects of economic adversity.

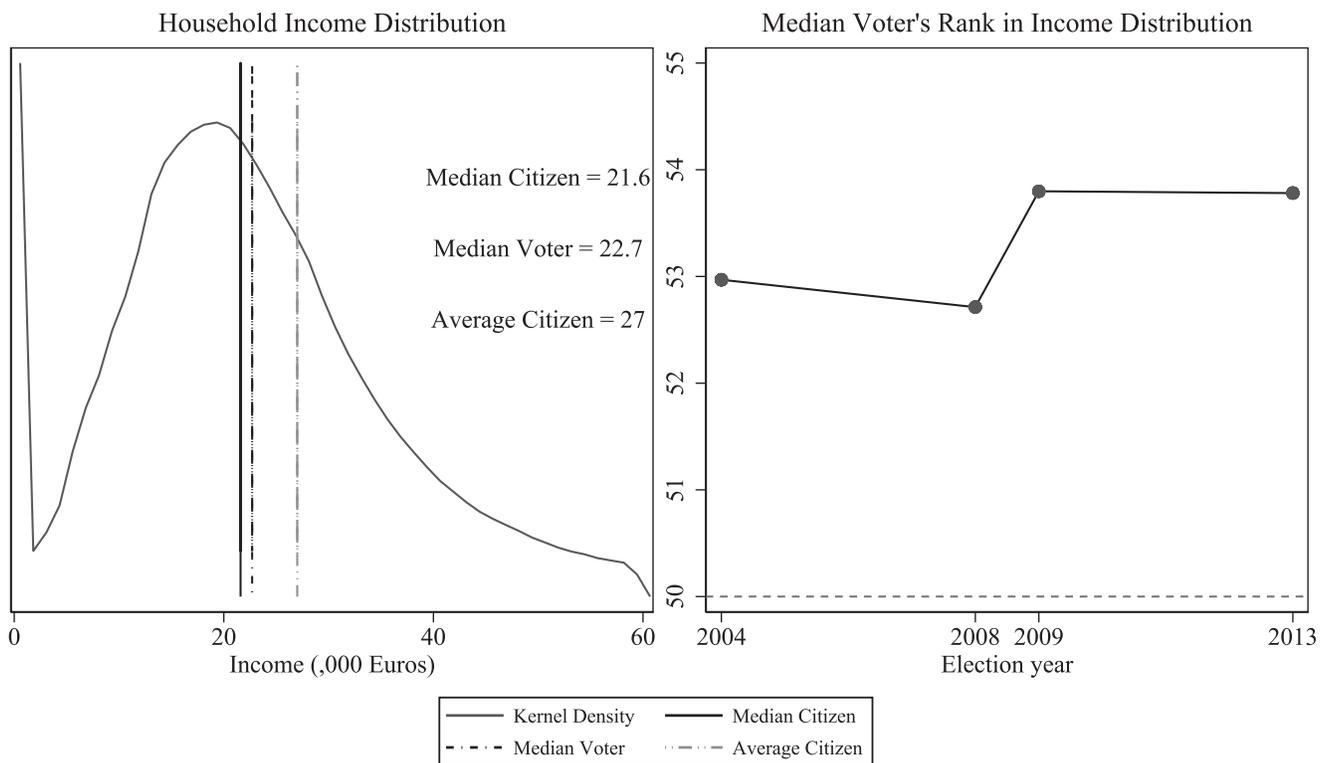
These findings are consistent with prior work suggesting that the social and psychological consequences

of economic insecurity have persistent negative effects on voter turnout (Solt 2008; Akee et al. 2018; Aytac, Rau, and Stokes 2018; Ojeda 2018). Though, admittedly, the magnitude of the asymmetry might also reflect the specific political context of our sample years; that is, the initial political reaction of many Italian voters who lost jobs during the Great Recession was to lose trust in mainstream parties and abstain. Some of these disgruntled voters may have resumed voting for populist parties starting in 2013 (Guiso et al. 2017)—the last election covered by our data. However, results in Figure 3 also provide suggestive evidence that economic insecurity leads to an erosion of social capital, which may be difficult to restore.¹³ This may durably undermine the quality of democracy even if levels of turnout recover due to increasing partisan mobilization and protest voting.

Exploring Policy Consequences

Our data enable us to precisely document how the income skew in the composition of the electorate has increased over the period of study, likely as a result of the effects of income on turnout, and to explore consequences for public policy. The left panel in Figure 4 shows that the actual median voter—that is, the median of the active electorate—is generally richer than the

¹³In the Online Appendix (p. 4), we provide additional survey evidence that trust in institutions has declined in Italy over the period of study.

FIGURE 4 The Actual Median Voter's Position in the Income Distribution

Note: The left panel of Figure 4 shows the distribution of pretax household income among voting-eligible citizens. The right panel shows the median voter's percentile rank over time

median voting-eligible citizen, which may nudge economic policymaking to the right (Larcinese 2007). The right panel shows that the relative status of the median voter, measured by their rank in the income distribution, has increased during the Great Recession from the 53rd to the 54th percentile.

Although we do not directly observe the impact of these changes on specific policies, we provide survey evidence in the Online Appendix (p. 5) showing that, over the period of study, lower income voters have tended to support redistribution and to vote for left-wing parties (Rueda 2018). Thus, increasing turnout inequality might have pushed election results to the right. Yet, the time span of our administrative data is limited, which restricts our ability to analyze how parties have strategically reacted, potentially contributing to the rise of populism (Guiso et al. 2017). Nevertheless, our findings provide evidence that declining voter turnout among the poor during an economic crisis reduces the political incentives for elected officials to mitigate economic disparities through redistribution. This comports with the notion that unequal participation plays a significant role in explaining why rising income inequality seems to be polit-

ically reinforcing (Larcinese 2007; McCarty, Poole, and Rosenthal 2016).¹⁴

Conclusion

There are strong theoretical reasons to think that income and turnout should be linked. Yet, prior empirical work is ambiguous about whether income itself affects participation, above and beyond other correlated factors. We argue that this mixed evidence likely stems from three sources of bias in conventional research designs: survey misreporting, confounding, and ecological bias. Fortunately, however, leveraging individual-level administrative records can provide more reliable and credible estimates of the income–turnout relationship.

In the empirical analysis, we use administrative panel data from a large northern Italian municipality.

¹⁴We note that our findings might also have implications for public goods provision at the regional and local levels, given that citizens' preferences over these policies often vary by income (Page and Shapiro 2010).

Consistent with prior theory, we find that income matters for voter turnout even though its average effect is small due to diminishing returns. We contribute to explaining this curvilinear relationship by providing novel evidence that negative income changes have larger effects than positive ones. We also find suggestive evidence that economic adversity not only decreases turnout in the short term, but also has persistent negative effects on social ties and trust in institutions that are vital to the quality of democracy (Putnam, Leonardi, and Nanetti 1994).

Our results also show that rising income inequality has exacerbated the gap in participatory resources between rich and poor voters during the Great Recession. This has magnified the effects of income on turnout, a process that was likely facilitated by declining mobilization during a crisis of mainstream parties. Furthermore, we find that the effects of income on turnout are larger in second-order elections than in general elections. Together, these results support the notion that individual income plays a greater role for electoral participation in political contexts where the level of party mobilization is lower.

We document that these changes in the composition of the electorate have increased the income skew in participation during a period of economic decline. This lends credence to the theory that if income has an independent effect on turnout in western democracies, then rising income inequality should lead to rising turnout inequality. As the actual/active median voter becomes relatively richer, this may in turn reduce the electoral incentives for redistributive policies, thus suggesting that income inequality and turnout inequality may reinforce each other.

The setting of our study—with strong civic traditions and low barriers to voting—provides a hard case for documenting an effect of income on turnout. Yet, our findings also suggest several avenues for further work. Additional evidence about the causal effects of income on turnout may come from research designs exploiting (quasi-)random shocks that affect either income directly (Akee et al. 2018) or its behavioral correlates like how individuals allocate their time (Schafer and Holbein 2020). Further work using longer time series may also investigate how political parties have adjusted to increasing income biases in political engagement after the Great Recession (Pontusson and Rueda 2010; Anderson and Beramendi 2012; Guiso et al. 2017). More generally, our results illustrate the promise of large-scale administrative records for future research on unequal participation as these data become increasingly available in different countries—for example, in the United States and Scandinavia.

Finally, our study provides a prologue to Putnam, Leonardi, and Nanetti's (1994) classic book on civic life in northern Italy, and offers an opportunity to reflect on the practical implications of rising turnout inequality. Our findings comport with Lijphart's (1997) theoretical argument that unequal participation undermines the quality of democracy even if average levels of participation remain high and cast doubt on Putnam, Leonardi, and Nanetti's (1994) optimistic view. However, they also caution against Lijphart's (1997) policy recommendation to adopt compulsory voting in order to reduce turnout inequality. In a context with high turnout and rising inequality, sanctions against nonvoters such as discrimination in public sector jobs might alienate low-income citizens (Cepaluni and Hidalgo 2016). Yet, our findings also suggest that economic policies that directly benefit the poor—such as increasing the minimum wage or the earned income tax credit—could have feedback effects on voter turnout that might attenuate participatory inequality.

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Supporting Information

Additional supporting information may be found online in the Supporting Information section at the end of the article.

Appendix A: Additional Background Information on Bologna and Italian Politics 2004-2013

Appendix B: Economic Status Predicts Political Leanings and Preferences for Redistribution

Appendix C: Estimates Based on Self-Reported Measures of Income and Turnout Are Sensitive

Appendix D: Descriptive Statistics for Administrative Data

Appendix E: Alternative Measures of Income

Appendix F: Placebo Tests

Appendix G: Household-Level Spillovers

Appendix H: Robustness to Missing Values

Appendix I: Additional Event-Study Results