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**JUSTICE AND GINI COEFFICIENTS**

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*abstract:*

Almost everyone agrees that statistical inequality does not entail distributive injustice, since some inequalities are fairly produced. It follows that distributive injustice cannot be inferred from gross inequality alone. Nevertheless, Gini coefficients for income and wealth, which measure gross inequality rather than its unfair component, are often used as proxy measures of distributive injustice in Western societies, evidently on the assumption that the fair inequalities in our societies are small enough and stable enough to safely be ignored. This paper presents a model for a series of ideal, perfectly just societies where financially comfortable lives are equally available to everyone, and calculates the Gini's for each. This method shows that inequalities produced by age and other demographic factors, together with reasonable individual and social choices under equal opportunity, can raise the Gini's for perfectly just societies to levels at least as high than those of any current Western country, and can as easily account for differences in Gini's between such societies or within one such society over time. If Gini coefficients at these levels are possible in ideal Western-style societies without any distributive injustice, then they should not be used as proxy measures of distributive injustice in real Western societies.

1. The Gini coefficient as a measure of distributive injustice

 Let us begin with a basic distinction among three forms of economic inequality:

 *Gross inequality* is any measure of inequality that ignores distinctions among individuals that are morally relevant to distributive justice.

 *Fair inequality* is any measure of inequality that results entirely from morally acceptable distinctions among individuals.

*Unfair inequality* is any measure of inequality that results in part from morally unacceptable distinctions among individuals. Total unfair inequality is the same as total gross inequality minus total fair inequality.

It should be obvious that gross inequality is a different thing from unfair inequality, hence that

distributive injustice cannot be inferred from gross inequality alone. In order to infer anything useful about distributive injustice in any society from a total measure of its inequality, we would also need to know, or at least to have good evidence about, how much of that total inequality is fair and how much is unfair. This fact is quite well known, at least in principle, to everyone who seriously thinks about distributive justice.

 Nevertheless, a simple statistical measure of gross inequality called the Gini coefficient has been and continues to be widely used as a proxy measure for distributive injustice in both academic and popular discussion on the topic. The Gini coefficient, invented in 1912 by Italian statistician Corrado Gini, is calculated as the difference between the actual income or wealth distribution in a society and a totally equal distribution in which every member of society has identical income or wealth.[[1]](#endnote-1) In a totally equal income distribution, 10% of the people would have 10% of the income, 50% of the people would have 50% of the income, and so on. In any actual society’s income distribution, the bottom 10% of the people have less than 10% of the income and the bottom 50% of the people have less than 50% of the income, while the top 10% of the people have more (perhaps much more) than 10% of the income. If we represent these distributions on a graph, the two curves look like this:

**GINI Coefficient for Income**

**equal distribution**

**actual distribution**

In this diagram, the shaded area represents the difference between the actual income distribution and the perfectly equal distribution. The Gini coefficient (we will usually just call it the Gini) is the ratio of that shaded area to the whole triangular area beneath the straight line for perfect equality. Thus, if there were no inequality at all in a society (the curve matches the line, so there is no area between them) the Gini would be 0. If, on the other hand, all of the wealth or income in a society were in the hands of a single person (which pushes the curve as far away from the straight line as possible), the Gini will be 1. In any real society, the Gini will of course be somewhere in-between.[[2]](#endnote-2)

 Gini coefficients have lately become popular in academic, journalistic, and political discussions of distributive justice – particularly with respect to the United States, where the Gini's for income and wealth are higher than many people believe feel they ought to be, higher than they are for other Western countries, and higher than they were in the US itself several decades ago. Thus, the current Gini for income in the United States is about .38, and the Gini for wealth in the US is about .81 or.84.[[3]](#endnote-3) Other Western countries have generally lower Gini’s: for Finland, the Gini’s for income and wealth are .27 and .68, respectively; for Sweden, .23 and .89; for Germany, .30 and .80; for the UK, .34 and .66; and for Canada, .32 and .75. And the income Gini for the US itself has grown over the past four decades, from .316 to about .38 since the mid-1970s.[[4]](#endnote-4) Such numbers can look like strong, even conclusive evidence that the US is a distributively unjust society, more unjust than other Western countries, and increasingly unjust over time. Indeed, Gini's and similar statistics are now often treated as if they were direct measures of distributive injustice in themselves, rather than partial, contingent, and indirect evidence for such injustice.[[5]](#endnote-5)

 There are three assumptions on which the Gini might reasonably be taken as a useful proxy for distributive injustice. The first is that the fair inequalities in relevant societies are so small as to be negligible compared to the unfair inequalities, so that any seemingly *high* Gini coefficient is effective proof of absolute distributive injustice.[[6]](#endnote-6) The second is that some non-negligible baseline Gini coefficient can be established as the measure of fair inequality in a society, so that any Gini above that level is necessarily *too high* to be compatible with absolute distributive justice.[[7]](#endnote-7) The third is that in comparing societies across space and time, the level of fair inequality – whatever that level might be – is constant, or close enough to constant, so that a *higher* Gini's is effective evidence of *more* distributive injustice.[[8]](#endnote-8) Based on these often unspoken assumptions, high, too high, or relatively high Gini coefficients are then typically explained in terms of patently unjust causes such as social class divisions and unequal opportunity, while the factors of fair inequality like age distribution and free career choice are ignored or set aside as trivial.[[9]](#endnote-9)

 We believe that the three assumptions that support this way of interpreting Gini's are all false, or at least easily *could* be false for all that is generally known. Nobody has established that the fair component of the gross inequality in Western societies is negligibly small, or that it can be set at some known level over which all inequality is necessarily unfair, or that it's constant between different societies or over time. And we will not attempt to establish for ourselves how much of the gross inequality in Western societies is fair. But we will argue that minimal common assumptions about economic justice imply Gini coefficients for ideal, perfectly just societies that are surprisingly high – indeed, high enough in theory to account potentially for all of the gross inequality in actual Western societies, as well as for all of the gross differences in inequality between Western societies or within one society over time. While no one (including us) believes that all of the *substantive* inequalities in Western societies are actually fair, the fact that our *statistical* inequalities *could* all be fair invalidates the frequent use of Gini's as a proxy measure of distributive injustice.

2. A simple model for a perfectly just society.

 In order to make the gap between gross inequality and unfair inequality clear in absolute terms, let us define a series of ideal model societies that are entirely just by almost any reasonable standard, and then calculate their Gini coefficients. Of course, the notion of a perfectly just society depends on many factors over which reasonable people disagree. Is it fair for people with different natural abilities to have different incomes? Is it fair to let some children inherit wealth from their parents while other, equally deserving children receive nothing? Should women’s greater average longevity be reflected in lower annual retirement incomes? We will not consider controversial questions like these in our constructions. We will include only inequalities that almost everyone in the discussion of distributive justice plainly accepts as fair in principle (and also in practice among themselves), and then compute the Gini coefficients for societies with only those inequalities. This will provide no more than a *minimum* baseline of fair inequality in these model societies, but that minimum will be sufficient for our argument.

 The two ingredients of the first and simplest perfectly just society we have in mind are that every individual lives exactly the same economic life as every other (so that class structure and other discriminatory inequalities are completely ruled out), and that they all live in the comfortable, free conditions common to contemporary, upper-middle-class Western professionals such as tenured philosophers and social scientists. To this end, we take for granted these two moral principles:

 *The principle of identity*: If two people in a society live identical lives in every morally relevant respect and receive identical benefits, then there is no distributive injustice between them.

 *The principle of adequacy*: The life of an upper-middle class professional Westerner is not essentially unjust.

This model society will be one in which everyone is guaranteed what most of us currently seem to desire for our own children and friends, namely, a successful professional life with a high income and a comfortable retirement. In this ideal society, there is no reason to discriminate between one person and another, because the citizens are all utterly alike in every morally relevant way. The only factor relevant to wealth or income that we allow to vary from one person to another is each person’s age at any moment. Thus, we are deliberately leaving out potentially important difference factors like hard work, perseverance, honesty, and talent in order to isolate age as a single factor in our ideal society. If you like, you can imagine that our ideal citizens are all exact clones, indistinguishable in every way other than their age.

 It might be argued against our principle of identity that injustice can still exist between age cohorts, so that even if people have identical whole careers, it is wrong at each moment that those who are at one point in their careers should have more or less than those at any other point. A strict egalitarian, for example, might want to assert that every adult should have the same net worth and income at all times regardless of age, though many others who consider themselves egalitarians would be satisfied with equality of outcome over people's whole lives. It is certainly the case that both incomes and wealth vary widely over the financial lives of ordinary middle-class Americans, with both the highest incomes and the greatest accumulations of wealth ordinarily gained by those approaching retirement.[[10]](#endnote-10) It is also undoubtedly true that many young workers feel oppressed by having to make largely regressive transfer payments through Social Security and Medicare to retirees who never had to carry such a huge burden themselves, while some seniors still feel that they are being treated unfairly by younger people who are better off. But these intergenerational resentments would presumably not occur an ideal system where whole lives are treated equally; they occur rather between competing cohorts in a real society that changes over time and distributes different total packages to people of different generations. Thus, much of the present resentment of young workers toward Social Security recipients is based on their (sadly, reasonable) expectation that they will both pay disproportionately for the current retiree's benefits, and fail to receive such benefits themselves when they retire. By contrast, in our idealized steady-state model, everyone both expects and receives exactly the same treatment as everybody else at the same age. So, for our simplified model society, it seems reasonable to treat this sort of intergenerational injustice as negligible according to the principle of adequacy.[[11]](#endnote-11) In any case, this sort of social distinction is not the usual focus of discussion on distributive justice, and not what Gini coefficients and other statistical measures of inequality are typically thought to characterize. Instead, the bulk of our discussion of distributive injustice is concerned with persistent class distinctions between different people, not between different stages of similar people’s whole lives.

 Here are some initial assumptions to define our ideal upper-middle-class society, including arbitrary round-number values for several important factors in income and wealth distribution:

 Every person becomes independent and starts working at the same age, say 21, with no assets or debts.[[12]](#endnote-12)

 Every person retires at the same age, say 65.

 Every person lives to the same age, say 80.

 Every person has the same initial salary, say $50,000.[[13]](#endnote-13)

 Every person’s income increases at the same rate, say 2% (real) per year.[[14]](#endnote-14)

 Every person saves the same percentage of their annual income, say 10%, in personal retirement accounts, home equity, or other reasonable investments.

 All savings earn a constant return, say 2% (real) per year.

 Every person retires on an annuity based on their savings, which is exhausted just at the time they die (so there is no inheritance).[[15]](#endnote-15)

 There is a demographic steady state: no immigration, and no natural population change.

 According to our two principles, this model society is perfectly distributively just, if also rather dull, because everybody lives exactly the same comfortable modern economic life as everybody else. But consider what happens statistically when we create this model society with the values we’ve suggested. Looking at income first, we see that salary increases from $50,000 at 21 years of age exponentially to $129,813 at the retirement age of 65, at which point an income of $41,852 from annuities kicks in until death at 80.[[16]](#endnote-16) This produces a Gini for income of .208. When we look at wealth instead of income, the inequality is considerably greater (as it is in all actual Western societies), with a Gini of .400 resulting from older workers’ accumulation over time of compounded salary increases and interest on regular savings. Thus, with age as the sole variable among otherwise identical upper-middle-class lives, and with moderate values plugged in for interest rates and the other variables, we derive Gini’s for income and wealth in our ideal society that are approximately half those of the current United States.[[17]](#endnote-17)

 It is easy to understand how there can be substantial Gini coefficients in this perfectly just society. Since its individuals earn and own different amounts of money at different points in their financial lives, a cross-section of our model society at any moment will include young people with good starting incomes but little or no wealth, middle-aged people with much higher incomes and considerably more wealth, and retirees with lower but still comfortable incomes and gradually declining wealth. The Gini’s for this society might be taken superficially as evidence of inequalities between rich and poor *classes* of people, the way that Gini’s tend to be interpreted in much of the current discussion. But that cannot be right, since in our model the apparent economic “classes” comprise *exactly the same people*, just at different points in their careers. What we have defined, then, is an absolutely classless Western-style society with considerable gross inequality, all of which is perfectly fair.

 Our model is robust with respect to its general features. The Gini coefficients that it yields are naturally sensitive to the arbitrary values we plug in for all the variables, but no values that seem plausible make much difference to our basic argument, other than suggesting what the range of Gini's for ideal Western societies might be like. For example, raising or lowering our initial salary of $50,000 makes no difference at all to the inequalities involved, though raising or lowering the annual *increase* in salary raises or lowers the Gini’s for both income and wealth accordingly. Thus, if we halved the annual increase in our initial model from 2% to 1%, the resulting Gini’s would be lowered from .208 and .400, respectively, to .161 and .383, respectively. If we doubled it to 4%, the Gini’s would increase to .301 and .436, respectively.

 The more of their income people in our model save, the less gross income inequality results. Our initial model’s Gini of .208 for income assumes that everybody puts aside 10% of their annual earnings for investments of one sort or another. If we raised that arbitrary number to 20%, the result would be a lower Gini of .145, because each person’s income in retirement would be closer to their average income while working.[[18]](#endnote-18) If we lowered it to 5%, the coefficient would go up to .275.[[19]](#endnote-19) Changing the savings rate has no effect on the model’s Gini for wealth of .400, because, with everyone still saving the same percentage over their whole careers, relative wealth at any age remains the same.

 Raising or lowering the retirement age in our model society changes the Gini’s for income and wealth in opposite directions. For example, if everyone in this society retired at 60 instead of 65, the income Gini would increase from .208 to .268, because fewer people would be earning very high pre-retirement incomes at their jobs, while the wealth Gini would decrease from .400 to .383, because each person would have had five fewer years to accumulate their savings. Alternatively, if everyone retired at 70 instead of 65, we would see the income Gini drop from .208 to .165, largely because there would be fewer “poor” retirees with relatively small incomes, while the wealth Gini would increase, from .400 to .417, largely because each older person would accumulate more years of savings and interest. So, here we have a trade-off between inequalities of income and wealth: the later people retire, the less income inequality and the more wealth inequality is liable to result.[[20]](#endnote-20)

 The same is true of other variables like longevity and appreciation on savings. Thus, if longevity increased from 80 to 85 years in our original ideal society, the Gini’s for income and wealth would change from .208 and .400, respectively, to .251 and .385, respectively. If longevity were reduced from 80 to 75, the results would be .160 and .407. Similarly, halving the real rate of appreciation on savings from 2% to 1% per year results in increased income inequality and decreased wealth inequality (Gini’s of .235 and .384, respectively), while doubling the rate to 4% results in changes the other way around (Gini’s of .163 and .434, respectively).

 There are other desirable features of upper-middle-class economic life that have not been represented in our very simple model, but that can lead to greater gross inequality. One is that young people do not always head straight from college to their first career-level jobs, but typically spend several years beforehand in some combination of graduate study, interning, volunteering, traveling, living in big cities for adventure, and otherwise exploring life before settling down. To represent this in our model, we might suppose that each person lives for five years, say, at something over minimum wage, say $20,000 income per year, and then starts their $50,000 career job at the age of 26, with all other parameters the same. Adding this feature to our original model would raise the income Gini from .208 to .254, and the wealth Gini from .400 to .440. Stipulating less time between college and career would produce intermediate results.[[21]](#endnote-21)

 In sum, we can see that Gini coefficients are sensitive to several real-life technical factors that have nothing apparently to do with injustice. We have not tried to model more than a skeleton of modern economic life here, obviously, and we have opted for simplicity over strict realism in the values chosen for the basic variables, so we are in no position to say that any particular Gini for either income or wealth is the right baseline coefficient for actual societies like ours. The best that we might do is to suggest a range of coefficients for plausible-looking sets of values in demographically steady-state Western-style societies, say setting retirement between 60 and 70, longevity between 75 and 85, salary increases between 1 and 4% (real) per year, savings rates of between 5% and 20% per year, savings interest and home appreciation of between 1% and 4% (real) per year, and between 0 and 5 years of post-graduate education. This range of values yields a range of "fair-inequality" coefficients for income of anywhere from .126 to .487 (which would include the current income Gini's for all actual Western societies), and for wealth of .358 to .534 (which still falls somewhat short of actual Western Gini's for wealth). These are all possible Gini’s for a modern society of perfect justice – in which, again, the *only* difference among its equally comfortable citizens would be their present age.[[22]](#endnote-22)

3. Fair inequality by choice.

 There are several plausibly fair or neutral distinctions among individuals that we have left out of our simple model, but that are worth considering for somewhat more realistic distribution models that permit some diversity in people's lives. Again, it is controversial whether distinctions in income and wealth depending only on differences in natural ability are fair, but we all agree that equally talented upper-middle-class people can desire different things in life. Some value prestige more than high income; some value leisure time more than either; some particularly value excitement, others comfort, others security, and so on. Such choices typically have predictable consequences for an individual’s lifelong levels of income and wealth, so they can reasonably be seen as elements of “package deals. And almost everyone believes that some income and wealth differentials among reasonable people of the same age can be perfectly fair if they depend entirely on free and equal choice. To reflect this in a more realistic model of ideal societies, let us retain the principle of adequacy, so that we can speak about fair distinctions still within a generally equal upper-middle-class society. And let us still presuppose that all individuals in our model have identical natural abilities and economic opportunities. But let us replace the general principle of identity with this:

 *The principle of choice*: If two people in a society differ economically only as a result of the foreseeable consequences of reasonable choices equally available to each, there is no distributive injustice between them.

We should be clear that we are not saying that distributive justice *demands* that *all* inequalities be attributable to reasonable choice. The principle of choice is not intended to commit us to "luck egalitarianism" or any other positive theory of distributive justice. We are only stating a very minimal thesis that almost any theory would entail, namely that distributive justice *permits* inequalities that are entirely attributable to free, equal, and reasonable choice.

 Including difference factors due to choice naturally raises the potential gross inequality in our model upper-middle-class societies, driving their maximum Gini coefficients for income and wealth considerably higher than in our initial model. In combination, they increase the range of Gini’s even further. Here are a few examples.

*Fair choice in household partnership.* So far we have been speaking only about individual income and wealth. But the US Census statistics typically used for Gini calculations are given for household, not personal, income and wealth. This obviously makes little difference for people who are single, but modern upper-middle-class society includes increasingly many two-earner households, which ordinarily have much more income and wealth. Among upper-middle-class Western professionals, it is ordinarily a matter of free choice whether people enter into marriage or other household partnerships, with or without children or other dependents. But the gross statistical consequences of different choices are significant. If, for example, we put a random half of the members of our original uniform society into two-income households (such couples then constituting 1/3 of all households, each with twice the income of the remaining single households), the Gini for household income in the new model society rises from .208 to .279, and the Gini for household wealth increases from .400 to .443.[[23]](#endnote-23)

*Fair choice in working conditions.* Some people choose jobs that require longer hours than others, some agree to work in less pleasant environments, some will travel further to their places of work, some accept particularly arduous, stressful, or dangerous duties, and the like, while others choose more pleasant and comfortable jobs closer to home. If we assume that any such hardship factor justifies some extra increment in pay, and we suppose again that such choices are equally available to all, then we must accept a corresponding increment of gross inequality as fair. Thus, if we return to our original model and now add a differential pay ratio of, say, 2:1 between high-hardship work and low-hardship work, however these may be distinguished, and imagine equal numbers of people choosing each, then the result is a more unequal but still perfectly just model society,with a Gini for income that has risen from .208 to .279, and a Gini for wealth that’s gone from .400 to .443.

*Fair choice in job location.* In real societies like the United States, the cost of living can vary substantially from urban to rural settings or from one region of the country to another. For example, public school teachers in cities like New York can make about twice the salary of teachers in the rural Midwest, but it can cost them about twice as much to maintain an equivalent standard of living.[[24]](#endnote-24) Other things being equal, we should think of such differences as morally neutral – but they have misleading consequences for statistical gross inequality. For a rough idea of how misleading this potentially could be, suppose we let half of our original model society live in cities and half in the country, with the urban workers earning twice the nominal salary but spending twice as much to live as all their rural peers. This would have the same statistical effect as any other 2:1 difference in starting pay, with Gini's for income and wealth rising again from .208 to .279 and from .400 to .443, respectively.

*Fair choice in education.* In the modern West, people from comfortable backgrounds sometimes choose to go to work directly after college, while others choose to spend several years going to graduate school or doing other pre-career activities that pay less than their career starting salaries. Even if we suppose that such activities make no difference to initial salaries, gross inequality in both income and wealth necessarily increases as a result of some people delaying their careers. If we suppose that half our initial model population still enters the workforce with an annual salary of $50,000 straight from college at age 21, but the other half chooses to enter at 26 with the same starting salary, but after earning only, say, $20,000 per year in the meantime, the Gini’s for income and wealth increase from .208 and .400, respectively, to .235 and .424. If we suppose instead that the delayed but more educated workers start at a compensatory higher salary of, say, $75,000, then the Gini for income rises even further to .253, while the Gini for wealth stays the same .424. It seems intuitively to be a morally neutral choice whether someone starts his career straight from college or postpones it for the sake of further education, then recouping just enough from higher salaries to end up with the same wealth and income at retirement. But this neutral choice among peers increases the gross income inequality of our model society in two ways: first, by counting people as relatively “poor” while they are in graduate school; and second, by counting them as relatively “rich” while they are working at compensatory higher salaries.

 In real life, most such educational choices are not wealth-neutral, of course, and can result in substantially above- or below-average overall financial rewards, which further increases the gross inequality of the society in which they occur. For example, every year roughly the same pool of graduating college students chooses between attending academic graduate programs and attending law school, which decision ordinarily results in greatly different subsequent financial lives. Academic Ph.D. programs take about twice as long as law school (roughly six as opposed to three years), and professors make much lower average salaries than lawyers, but many people choose this freely so that they can follow their own interests in their work and live a comfortable, generally quiet life with reasonably high prestige.[[25]](#endnote-25) If we were to split the post-graduate half of the population in our ideal society into two further halves, one of which starts at only the college-level salary of $50,000 after six years of graduate school (“professors”) and the other at $100,000 after three years (“lawyers”), the Gini’s for income and wealth would increase to .290 and .454, respectively.[[26]](#endnote-26)

*Fair choice in productivity.* Even people with the very same jobs can choose to work at them in different ways. Some people focus almost all of their energies on their careers, work harder, take fewer vacations, attend conferences, study at night and on weekends to improve their performance, cultivate useful relationships, and constantly strive for raises and promotions at their jobs while seeking better positions elsewhere. Others prefer to enjoy their lives with friends and family, pursue sports, travel, gardening, or other hobbies, or to improve their minds with studies not related to their careers. Both can be perfectly reasonable choices, depending on the different things we want out of life as individuals.[[27]](#endnote-27) But they result in very different career trajectories with different rates of salary increase. If we imagine another 2:1 differential, with half of our initial ideal workforce increasing their salary by 2% per year, and the other, more ambitious half by 4%, the resulting Gini’s for income and wealth will be .296 and .436, respectively.[[28]](#endnote-28)

*Fair choice in savings rate.* In our original model, we assumed a uniform savings rate of 10% for the entire working population. But we know that people of the same age in similar comfortable circumstances save money at different rates, some choosing to enjoy themselves more while they are young, others putting more away for their future lives. Within a wide range of reasonable choices, the resulting differences in wealth among initial peers are intuitively neutral with respect to social justice: one person may retire somewhat more comfortably now, but another had a nicer car and more vacations back then, and these were perfectly voluntary choices, so neither person has a reasonable claim against the other. But when we add this differential to our calculations, greater gross inequalities result, particularly for wealth. This can be especially misleading, because the new statistics will show the first person’s greater maximum wealth and retirement income, while they ignore the other’s big house, fancy cars, and pricey annual vacations. To get a notion of the superficial change that this can make, imagine a difference in savings rate between two random halves of our initial population, with one half saving, say, 5% and the other 10% of their annual income towards retirement in a new model society. This will increase the Gini for income from .208 to .245, and the Gini for wealth from .400 to .443. As above, a greater or lesser difference in choice of savings rates will yield greater or lesser changes in both coefficients.

*Fair choice in pension plans.* Western middle-class workers are sometimes given a choice these days between so-called defined benefit and defined contribution retirement plans (or, more commonly and less directly, employers make the choice of which to offer, and the workers choose among employers). Defined contribution is what we have been assuming for everyone in our model so far: each person keeps his savings in a personal account, accrues further net worth through compound interest, and then trades that personal wealth for an annuity. Defined benefit programs promise workers a certain annuity up front, typically a given percentage of their final salary, while keeping the money to fund it in a common pool. Ideally, the retirement income from both types of plan should be the same, so income Gini’s should be unaffected by this choice. But the savings that fund defined benefit plans are invisible to Gini’s for personal or household wealth, since they are held by the employers. Instead of personal wealth that counts in calculating Gini’s, workers have essentially the same guaranteed income that the same savings would fund in either system, but in a form that is opaque to these statistics. If we imagine that half of the people in our first model society switched from a defined contribution to an equivalent defined benefit plan, and that these savings constituted half of everyone’s total investment portfolio (i.e. 5% of their income per year), this would have no effect on the original income Gini of .208, but it would make half of their savings disappear from personal into common accounts, with the result that the Gini for wealth would increase from .400 to .443, just the same as if they’d never saved that money at all. If we supposed that people had all of their savings in their retirement plans, so that for half of the society zero savings would be visible to Gini calculations, the Gini for wealth would rise all the way to .695.[[29]](#endnote-29)

*Fair choice in savings risk.* Upper-middle-class people with 401k plans, IRAs, and other modern retirement accounts are commonly required to choose how much investment risk they will accept in their portfolio. High-risk investments like stocks tend to pay better (about double, on average) over time than low-risk investments like bonds or certificates of deposit, but carry a greater risk of loss in bad economies.[[30]](#endnote-30) On top of this, many adventurous upper-middle-class people choose to invest their savings in particular stocks that they believe will beat the market, or real estate investments, restaurants, and other small-business endeavors, while their security-minded peers keep all their non-retirement savings in the bank. If we imagine another 2:1 differential in return on savings between successfully aggressive and conservative investors of all sorts, so that half of our model society achieves 4% growth per year on savings while the other half gains our standard 2%, the Gini for wealth rises from .400 to .436, just as it did with differential productivity above, while the Gini for income actually goes down from .208 to .192. This is a rather perverse result, because this lower overall income inequality is just an function of the fact that the successful investors’ much higher income in retirement, at $76,525 per year as opposed to the usual $41,852, is now close to the average income of people who are working, so that the relative “poverty” of retirees as a group is diminished.

*Fair choice in retirement age*. Among healthy middle-class people in similar financial condition, some choose to retire early and others to retire later than average, some never retiring at all. As everyone facing retirement knows, this has a great effect on how much income we receive during retirement. But again, we do not consider the resulting inequalities to be unjust, provided they are made as totally unforced decisions in a reasonable way. In our models so far, we have assumed a uniform retirement age of 65. But suppose that a random half of our society retires at 60 and the other half works until 70. The additional fair inequality that results raises the Gini for income from .208 to .226 and the Gini for wealth from .400 to .428.

 Combining several such choice-based distinctions can produce almost arbitrarily high Gini’s for both income and wealth. For an extreme example, let us imagine an upper-middle-class society in which one half of the population freely chooses to marry, to work in high-cost areas at high-salary advanced-degree jobs with long hours, to strive for advancement, to save at a high rate in 401k or IRA accounts, to invest aggressively (all with our arbitrary 2:1 differentials), and to retire at 70, while the other half chooses to remain single, to work in low-cost areas at relatively low-salary jobs, to advance, save, and invest at ordinary rates with defined benefit retirement plans, and to retire at 60. The resulting Gini’s in this model society would be .743 for income and .818 for wealth.[[31]](#endnote-31) Both of these coefficients are higher than those for any actual Western country (the income Gini far higher) – all in a model society that is still perfectly just according to our principles.[[32]](#endnote-32) It is unrealistic, of course, to imagine a society composed entirely of polar opposites like this, with one half conservative and relatively placid workers and the other half highly ambitious, risk-taking careerists; in real life, almost everyone falls somewhere in-between. [[33]](#endnote-33) Our point is only that this is a *possible* society composed of people like ourselves in which there is no distributive injustice at all, but which nevertheless has higher gross inequality as measured by Gini coefficients than any actual Western society.

4. Comparing Gini’s across places and times

 It might be argued that even though Gini coefficients tell us little or nothing by themselves about absolute distributive injustice, they can still be used as a guide to relative levels of injustice between different societies, or as a means of telling whether a given society has gotten more or less distributively unjust over time. It is this relative interpretation of Gini statistics that we find most prominent in arguments for the distributive inferiority of the present United States, both to other Western countries now and to the US itself of several decades ago.[[34]](#endnote-34) But relative gross inequality as measured by Gini coefficients can be just as misleading as absolute gross inequality. For one thing, changes or differences in age structure obviously matter. Other things being equal, one society will have a lower Gini for income than another if it has fewer very low or very high-earing workers, which might just mean fewer younger or older citizens, perhaps through lower fertility or less emphasis on the extension of old age. One society will tend to have a lower Gini than another for both income and wealth if it has fewer people in their fifties and sixties, perhaps because more people drink alcohol or smoke tobacco and die young as a result. Such basic demographic facts need to be taken into account before a reasonable judgment of relative injustice can be made from Gini coefficients. All of the other factors we have mentioned must be accounted for as well: one country will display a higher Gini for income than another if the first has greater longevity in general; if it has a two-earner household partnership rate closer to an optimum of about 60% than does the second; if it has a lower average retirement age than the second, or has more variation in retirement age; if it has more varied working conditions; if it comprises people who start their careers later in life than the second, or has more varied starting ages than the second; if it has a lower savings rate or more difference among savings rates; if it has greater differences in individual productivity increase or level of investment risk; or if it has greater differences in cost of living between urban and rural settings.[[35]](#endnote-35) Other things being equal, one society will have a higher Gini coefficient for wealth in the same circumstances, except when the first has higher longevity, a lower retirement age, or more variation in retirement age, in which case the Gini’s for wealth will be lower. Also, as we have seen, large differences in Gini’s for wealth can result from preferences between equally reasonable defined-benefit and defined-contribution pension systems. To the extent that any of these differences are based on people’s voluntary individual or social choices – possibly influenced by culture, geography, or other morally neutral conditions – they must be accounted for in inferences concerning relative as well as absolute distributive injustice.

 The same thing goes for those societies in which the Gini coefficients change over time. We cannot infer that increasing Gini’s over time indicates greater unfair inequality, hence possibly more distributive injustice, unless we rule out changes in fair, baseline inequality that might explain the changing Gini’s. Since the United States and other Western countries have benefitted from seven or eight years of increased average longevity over the past few decades, for example, we should expect to see increases in their Gini’s for income, other things being equal, because more people will be living in retirement. Since there has also been a trend with the advance of working women toward both more single households and more two-earner married households, we should expect to see further increases in Gini’s for both income and wealth as a result. We cannot estimate how much of the noted increase in Gini’s for the US and elsewhere over recent decades ought to be attributed to such morally acceptable causes. But it is important to note that such explanations are possible, and must be considered in any sound analysis inferring greater distributive injustice from increased Gini coefficients.

 Another possible difference between countries, or within countries as different times, is the rate of immigration, particularly Third World immigration. If one society chooses to admit large numbers of immigrants who are less skilled or educated than the native population, younger on average, or more fertile at younger ages than average – all typical of large Third World populations entering into Western countries, then this will raise income and wealth inequality in three connected ways. First, it will add a number of people to the society without the education necessary to make upper-middle-class incomes. Second, even if all immigrants are able to earn starting salaries equal to those of natives with a college education, the new immigrants will alter the standing age structure to increase the ratio of younger to older workers. Third, by having more children at younger ages, the new sub-population will increase in size until it is assimilated into the native fertility structure. Thus, any society more open to immigration of younger, less skilled, and more fertile workers than another (for example, the United States compared to any other Western country) will tend to have proportionately higher Gini coefficients, even if the immigrants are treated individually just like natives of the same age.[[36]](#endnote-36) Yet most of us think it is a good, not a bad, thing for distributive justice to let large numbers of Third World immigrants join our prosperous and free societies, since even below-average incomes in the West can be substantially higher than average incomes in developing countries.[[37]](#endnote-37)

 Another sort of choice with consequences for Gini coefficients is the extent to which a society pursues policies that tend to even out the incomes or wealth of its people over the course of their own lives. For example, a country might institute a mandatory retirement age, or raise or lower an existing one, in order to reduce unemployment among young workers, or perhaps to solve a shortage of labor. Countries might also opt to choose favorites among other normally free choices, e.g. to encourage more postgraduate education or higher savings rates, in order to promote economic growth or other socially valued ends. A just, democratic society might even choose economically progressive policies simply in order to reduce gross income inequality between older and younger workers, on the expectation that its people will be happier overall as a result. This might be a very good utilitarian choice for some societies, perhaps including Nordic countries with their unusually low income inequality, well-tended elderly, and relatively unworried youth, while other societies, perhaps including the United States, might legitimately favor long-term economic growth or other goals at some cost to short-term utility. Obviously, different policies along these lines will produce quite different Gini's, and deliberately so. But, at least within some reasonable range of options, this will be a social *choice* in income or wealth redistribution, not a requirement of justice.

5. Conclusion.

 We have argued that economic justice in modern, Western-style societies like ours is consistent with considerable gross inequality of wealth and income as measured by Gini coefficients, both as a function of natural differences in age and as a result of voluntary differences in savings rates, retirement plans, and other ordinary choices at the individual or social level. We have not tried to show that distributive injustice does not exist in the United States or other Western countries. There is little doubt that such injustice exists in the West just as it does everywhere else in the world, whether it is due to human cruelty and indifference, to economic exploitation, to ethnic, gender, and other forms of unfair discrimination, or to well-meant but ineffective or destructive social and economic policies; and there is little doubt that some societies are more unjust than others. But we have argued that gross inequality statistics like Gini coefficients do not constitute good evidence of such absolute or relative injustice, since even the highest actual Gini's could in theory be explained in terms of morally acceptable differences within and among perfectly just societies. Therefore, Gini coefficients ought not to be used as proxy measures of distributive injustice.

**NOTES**

1. By way of illustration, assume a society of 100 people with a total income of $1 million. To calculate the GINI coefficient, we would create two data series. The first series is the cumulative income shares of the society if each member had an identical annual income of $10,000. The first data point would be set at zero, and the second would be the income of the poorest person as a share of the total. Since in a perfectly equal society, each member has an income of $10,000 ($1 million divided by 100), the second data point would be 1%. The third data point would be the total income of the two poorest people or 2%, and so forth. The final data point in this series would be 100%. Plotted on a graph, this series would be a straight line rising from zero to 100%. The second data series would be the cumulative income shares of the society as they actually are. Again, the first data point in the series is set at zero. If the poorest person in the society had an annual income of $1,000, the second data point in this series would be 0.1% ($1,000 divided by $1 million). If the second poorest person had an annual income of $1,200, the third data point would be 0.22%, and so forth. Once again, the final data point would be 100%. [↑](#endnote-ref-1)
2. There are actually two different sets of income Gini’s in wide circulation, one for gross household income, and the other for net income after taxes and transfer payments. These are not always carefully distinguished. The second set is the one that we are using here, and the only set that makes much sense in discussions of distributive justice, since all that matters to most people is how much income they actually get to spend. Thus, if one person makes twice as much gross income as another, but that higher gross income is taxed and transferred to a second person to the point where their net incomes are equal, then they will have the same real standard of living, which makes their high nominal inequality of income much less interesting. [↑](#endnote-ref-2)
3. Organization for Economic Co-operation and Development, “Growing Unequal? Income distribution and poverty in OECD countries”, 2008. [↑](#endnote-ref-3)
4. *ibid.* [↑](#endnote-ref-4)
5. For one very prominent example, [Branko Milanovic](http://econ.worldbank.org/external/default/main?authorMDK=91636&theSitePK=469372&piPK=64214942&pagePK=64214821&menuPK=64214916), a lead economist in the World Bank research group, takes Gini's for granted as measures of inequality between rich and poor classes of citizens, with no reference to age distribution and other background factors of fair inequality, in [The Haves and the Have-Nots: A Brief and Idiosyncratic History of Global Inequality](http://www.amazon.com/Haves-Have-Nots-Idiosyncratic-History-Inequality/dp/0465019749) (Basic Books, New York 2010). [↑](#endnote-ref-5)
6. This is what we find in many journalistic treatments of the subject. See for example Nicholas Kristof, “Why let the rich hoard all the toys?”, *New York Times*, October 3, 2012. [↑](#endnote-ref-6)
7. Michael Norton and Daniel Ariely, in “Building a Better America – One Wealth Quintile at a Time” (*Perspectives on Psychological Science,* 6(9), offer a Rawlsian approach to baseline inequality which avoids consideration of detailed moral and economic issues. In effect, they just ask people in surveys how much inequality they would consider fair behind the “veil of ignorance”, and take their answers as a good proxy for their intuitions about distributive justice. They conclude from their surveys that a distribution in which the top quintile of the society had about three times as much wealth as the bottom quintile is what most Americans consider fair, which suggests a baseline Gini for wealth of between about .20 and .23. A detailed critique of this approach is beyond the scope of this paper, but we think that a proper Rawlsian experiment ought to distinguish carefully between total gross inequality and gross inequality within age cohorts or other groups of peers, and to provide some minimal test for the coherence of subjects’ responses.

 Kristof’s column *op. cit.*, among many other popular sources, spreads a remarkable "meme" from Norton and Ariely's article (pp. 9-12), allegedly based on their surveys, to the effect that Americans generally prefer Sweden’s wealth distribution over that of the United States. The claim is remarkable because it is actually based on a comparison between the American wealth distribution and the Swedish *income* distribution, a fact that the authors acknowledge only in an endnote. A genuine, apples-to-apples comparisons would make no sense because the US and Sweden have almost identical wealth inequalities, with Sweden’s Gini even edging out the US Gini slightly in the most recent statistics, cited above. [↑](#endnote-ref-7)
8. #  See for one of many examples Max Fischer, "Map: U.S. Ranks Near Bottom on Income Inequality" in *The Atlantic*, September 19, 2011. Even the comedian Jon Stewart on his popular *Daily Show* (August 18, 2011) gets into the issue, proclaiming that "The United States is not a Third World country by any measure - except, perhaps, income inequality" while showing a list of Gini income coefficients with the US towards the bottom (according to Lisa Margonelli, "The Formula", *Pacific Standard*, January 22, 2013).

 [↑](#endnote-ref-8)
9. See for example Goran Therborn, "Global Inequality: The Return of Class", *Global Dialogue* 2(1), 2011. Similarly, Benjamin Page and Lawrence R. Jacobs, *Class War?: What Americans Really Think about Economic Inequality*, University Of Chicago Press, 2009 (p.7) take the recent increase in the US Gini for wealth as evidence of a "frantic sprint by the super rich" to gain at the expense of others. And it is not just social scientists and political commentators who are using the Gini coefficient in this way. Even business executives are taking recent changes in the US Gini for income as a measure of the "shrinking middle class", according to Ellen Byron, "As Middle Class Shrinks, P&G Aims High and Low", *Wall Street Journal*, September 12, 2011**.** [↑](#endnote-ref-9)
10. For some indication, here are the most recent statistics available to us. Median household income by age of head in 2010 was:

< 25: 29.1

25-34: 51.4

35-44: 63.4

45-54: 64.3

55-64: 58.9

65-74: 41.0

≥ 75: 26.2

in thousands of 2011 dollars. (U.S Census Bureau, Historical Income Tables H10AR\_2011). Median household net worth distribution by age of head in 2010 was:

< 35: 65.3

35-44: 217.4

45-54: 573.1

55-64: 880.5

65-74: 848.3

≥ 75: 677.8

in thousands of 2010 dollars. (J. Bricker, A Kennickell, K. Moore, and J. Sabelhaus, "Changes in U.S. Family Finances from 2007 to 2010: Evidence from the Survey of Consumer Finances", *Federal Reserve Bulletin*, June 2012). These statistics are for the whole US population, but we assume the upper-middle-class component is at least roughly similar, given the professional career patterns typical of people in this group. [↑](#endnote-ref-10)
11. In fact, throughout their financial lives most professional people have seemed to prefer having their highest incomes and most of their wealth when they are older, seeing this as only partial compensation for losing the freedom, health, and energy they have when they are young, not to mention the greater financial responsibilities that come with raising families and other social obligations. The increased longevity of parents these days, plus the current practice in America of students taking massive loans to fund spiraling tuition costs, have been shifting some of this burden back towards younger workers, with unforeseeable results. [↑](#endnote-ref-11)
12. This is imagined to include free higher education and to exclude the student loans that burden many of our graduates today. [↑](#endnote-ref-12)
13. All salary and other income in our model are meant to be understood as net, disposable income, after all taxes are subtracted and any transfer payments added in. [↑](#endnote-ref-13)
14. This is imagined to cover any normal raises, promotions, or moves to better positions during each person’s career. [↑](#endnote-ref-14)
15. For home equity investments, this could take the form of a reverse mortgage. [↑](#endnote-ref-15)
16. In any real Western society, this would be income on top of what is guaranteed by tax and transfer, such as through the US Social Security System. [↑](#endnote-ref-16)
17. The fact that these baseline Gini’s are about half of the actual US Gini’s should not be taken as evidence that the US is only half as distributively unjust as critics claim it is. As with body temperature and health, it could turn out that all the interesting “action” takes place only within a fairly narrow range of Gini’s. It is worth noting, though, that this baseline Gini for wealth is already twice what Norton and Ariely claim that most Americans believe is fair. [↑](#endnote-ref-17)
18. Gini’s for income will go down as the saving rate goes up, until the point where retirement income is the same as average working income. Beyond that point, the retirees will have increasingly higher than average incomes, so the Gini for income will go up again. Note that we are considering only gross income here, not the net income that would result from subtracting savings. Looking at net incomes would show a more equal distribution at moderate savings rates, but this is not how Gini’s are ordinarily computed. [↑](#endnote-ref-18)
19. The income Gini will continue to increase as the savings rate decreases, to a maximum of .356 when savings reaches zero and the retirees get nothing. [↑](#endnote-ref-19)
20. We do not mean to imply that Gini's are sensitive to changes only at the extremes of wealth or poverty. Income or net worth in the middle quintiles can also increase or decrease relative to the extremes, resulting in higher or lower Gini's as well. [↑](#endnote-ref-20)
21. For what it’s worth, the authors of this article both took considerably longer than five years each to finish their educations, and made considerably less than $20,000 real incomes in the meantime. We are assuming that most of today’s young people are more prudent. As with college in the basic model, we are ignoring the large debts that many young people accumulate these days in graduate school, and assuming that they all start their careers with zero net worth. [↑](#endnote-ref-21)
22. If you would like to examine our model or try different values for its variables, it is available at [internet address]. [↑](#endnote-ref-22)
23. Two-earner households typically have higher costs as well, especially including child care, but these are ignored in the usual statistics about gross household inequality. [↑](#endnote-ref-23)
24. For example, last year the cost of living in Brooklyn, NY was 181% of the national average and the average public teacher salary was $70,000, while the cost of living in Jefferson City, MO was 97% of the national average and the average teacher made $37,000. (Council for Community and Economic Research, *ACCRA Cost of Living Index* 44(3), October 2011); (US Bureau of Labor Statistics, “May 2011 Occupational Employment and Wage Estimates”). On average, the differential in both salary and cost of living between urban and rural settings in the US is about 50%. [↑](#endnote-ref-24)
25. Note that many ABDs and PhDs end up going to law school anyway after trying an academic career, and these people lose several years of income and savings that cannot be replaced. We still think of these highly educated people not as victims of distributive injustice but as free people following their own desires. The same is true for would-be professional artists or musicians who end up as teachers or in other steady jobs. These are reasonable choices for people like ourselves to make in full view of their likely consequences. [↑](#endnote-ref-25)
26. This ignores the much higher debts that burden American law school graduates today, which most but not all lawyers can pay back comfortably. It is still a far better "package deal" financially for most equivalent students to choose law rather than an academic career. [↑](#endnote-ref-26)
27. Even in unionized industries, the most ambitious and career-focused workers tend to rise into higher-paying management positions, sometimes within the union itself. [↑](#endnote-ref-27)
28. The additional exponential increase in annual salary yields a top salary for “strivers” of $296,958 as opposed our model’s standard $129,813, with a retirement income of $66,216 as opposed to $41,852. Wealth tops out at $850,830 instead of the usual $537,762. [↑](#endnote-ref-28)
29. Defined-benefit plans have largely been replaced by defined-contribution plans within the private sector in the US over the past few decades, and the public sector will probably follow suit, with many government employees currently being given a choice. This may account for some of the widely noted increase in US Gini coefficients for wealth over the past 40 years. [↑](#endnote-ref-29)
30. For some indication of these differences, as of October 2009 the average annual return on stocks (S&P 500) since 1926 was 9.8% excluding dividends, while the average annual return on government bonds was about 5.5%, and on Treasury bills, about 3.7%. (Jeff Sommer, “In This 10-year Bonds Win by a Mile”, New *York Times*, October 25, 2009.) [↑](#endnote-ref-30)
31. Assuming further that the less-ambitious group keeps not just half but all their savings in defined benefit plans, the wealth Gini rises to .829. [↑](#endnote-ref-31)
32. It is easy to imagine that a society like this would quickly become unjust for future generations, since the wealthier-by-choice have much greater resources to spend on their children’s education and other unearned advantages over the children of the relatively-poor-by-choice, plus much more money to pass on to them in their estates. Note again, though, that our ideal state model presupposes, in effect, 100% inheritance taxes and free higher education available to all, in order to preserve the exact same choices for everyone in every generation. [↑](#endnote-ref-32)
33. Still, we can easily imagine a career-driven heart surgeon with an aggressive 401k, married to a colleague and living in Manhattan, whose unmarried brother is a teacher with a defined benefit pension plan, living in rural Maine on one-sixteenth of her household income, with an even smaller fraction of her nominal savings, but both having made their financial choices freely under similar initial conditions, and both quite happy with their decisions. The reader probably knows people from upper-middle-class origins who have freely chosen equally divergent economic lives, as well as many others in-between. [↑](#endnote-ref-33)
34. See note 4 for examples. [↑](#endnote-ref-34)
35. In the US, for example, the most expensive city is Manhattan with a cost of living index of 216.7% of the national average (U.S. Census Bureau, *Statistical Abstract of the United States: 2012*, Table 728) with several other major cities at around 130% to 140%. By comparison, Stockholm’s cost of living is only 115.8% of the Swedish national average, and Helsinki’s is only 106.6% of the Finnish national average. Together with corresponding differentials in salary, this superficial, morally neutral difference alone will tend make these Nordic countries appear more equal than the United States according to Gini's for income, hence to some observers more distributively just. [↑](#endnote-ref-35)
36. The age factors involved in immigration are hard to represent within our simple model, but we might arbitrarily adjust our initial model to include, say, 10% immigrants who begin work at 21 with a pay rate of, say, $20,000 per year, with the same other factors as everybody else in our original model. Even ignoring age-structure changes, this by itself raises the income Gini for that society from .208 to .238, and the wealth Gini from .400 to .418. If that portion of the population then doubles in size relative to the native population over time, those Gini’s will increase to .260 and .432, respectively. [↑](#endnote-ref-36)
37. It might be argued that a Western society with higher Gini coefficients based on immigration is still in fact more distributively unjust with respect to its own post-immigration population, while at the same time the global “society”, for which the Gini coefficients will have decreased, has become less distributively unjust. The proper argument would then move from the question whether distributive inequality is always unjust, to the question whether local distributive injustice is always a morally bad thing. The immigration example seems to show that global distributive justice might well justify local injustice understood this way. [↑](#endnote-ref-37)