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# Tax policy and fair inequality

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# Tax policy and fair inequality

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## Abstract

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## 1 Introduction

The standard economic approach to tax policy has to a large extent relied on welfarist theories of justice, in particular the utilitarian view that the government should try to maximize the sum of individual welfare. This welfarist framework has proved a productive point of departure for much economic analysis, but it has an important limitation in its inability to take into account considerations of personal responsibility. Welfarist theories evaluate policies solely on the basis of their consequences for individual welfare, and thus do not assign any intrinsic importance to how a specific situation came about.

The inability to take account of personal responsibility implies that the welfarist framework is unable to distinguish between different kinds of inequalities. By way of illustration, the standard Pigou-Dalton principle of inequality aversion states that the elimination of welfare inequality between two persons always is just, at least as long as it does not contribute to a decrease in overall welfare. The disregard for personal responsibility puts welfarist theories at odds with commonly held moral intuitions. It is evident from the political debate, surveys (Gaertner and Schwettmann, 2007; Schokkaert and Devooght, 2003) and economic experiments (Cappelen, Drange Hole, Sørensen, and Tungodden, 2007; Cappelen, Mæstad, and Tungodden, 2010;

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Frohlich, Oppenheimer, and Kurki, 2004; Konow, 2000) that people view some inequalities, e.g. inequalities arising from differences in the number of hours worked, as fair, and other inequalities, e.g. inequalities arising from gender or race, as unfair. The intuition that it is necessary to distinguish between inequalities that individuals are responsible for and inequalities that people are not responsible for is at the core of liberal egalitarian theories of justice (Arneson, 1989; Bossert, 1995; Cohen, 1989; Dworkin, 1981; Fleurbaey, 1995, 2008; Roemer, 1996, 1998).

In this chapter we discuss the implications of a liberal egalitarian approach to tax policy and argue that such an approach avoids two fundamental challenges faced by the standard welfarist approach to tax policy.<sup>1</sup> We also argue that this approach is able to capture the distinction between fair and unfair inequalities in a way that the standard approach is unable to. A major challenge for the liberal egalitarian approach to tax policy is that it requires information that typically is unavailable to tax authorities in order to be implemented. We argue, however, that this approach still can be used in the evaluation of tax policies. More specifically, we present a framework for inequality measurement that allows for fair inequalities (Almås, Cappelen, Lind, Sørensen, and Tungodden, 2011). The defining feature of this approach is that, for a given interpretation of the fair income distribution, it measures how much the actual income distribution deviates from the fair income distribution. We illustrate how this framework can be used to evaluate tax policy analyzing the pre-tax and post tax income distribution in Norway from 1986 to 2005.

The paper proceeds as follows: Section 2 introduces the moral intuitions behind the liberal egalitarian theories of justice and presents a specific principle of income distribution that respects these intuitions. Section 3 discusses two dilemmas in welfaristic tax policies, whereas Section 4 considers some important implications of the liberal egalitarian view for optimal tax policy. Section 5 presents a generalized version of the Gini-coefficient that measures unfair inequality and illustrates how this measure can be used to evaluate policy. Section 6 provides some concluding

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<sup>1</sup>See also the chapter by Marc Fleurbaey in this volume and Fleurbaey and Maniquet (2006); Fleurbaey (2008).

comments.

## 2 What is the fair income distribution?

Liberal egalitarian theories of justice seek to combine an ideal of equality with an ideal of personal freedom and responsibility. The contemporary focus on this relationship can be traced back to the seminal work of Rawls (1971). The ideas of Rawls have been developed further, notably by Arneson (1989); Bossert (1995); Cohen (1989); Dworkin (1981); Fleurbaey (1995, 2008); Roemer (1996, 1998), where the main achievement has been to provide a more precise analysis of how considerations of personal responsibility can be incorporated in egalitarian reasoning. The dominating modern egalitarian view is that people, within a framework offering equal opportunities and respecting personal freedom, should be held responsible for their accomplishments.

A key feature of liberal egalitarian theories of justice is that they draw a distinction between responsibility factors and non-responsibility factors and argue that inequalities arising from non-responsibility factors are illegitimate, whereas inequalities arising from responsibility factors are considered legitimate. There are several competing versions of liberal egalitarian ethics and the purpose of this paper is not to defend a particular position. However, in order to fix ideas for the later discussion and application of liberal egalitarianism, we present a specific responsibility-sensitive fairness principle, the generalized proportionality principle. This principle, as developed in Bossert (1995), Cappelen and Tungodden (2010), and Konow (1996) can be seen as a generalized version of the classical proportionality principle.

### 2.1 The generalized proportionality principle

To provide a precise formulation of the generalized proportionality principle we assume that all factors that affect a person's pre-tax income can be classified either as a responsibility factor or as a non-responsibility factor. The pre-tax income of an individual,  $i$ , can then be written as  $f(\mathbf{x}_i^R, \mathbf{x}_i^{NR})$ , where  $\mathbf{x}_i^R$  and  $\mathbf{x}_i^{NR}$  represent

the vector of responsibility and non-responsibility factors for this individual, respectively.

The generalized proportionality principle holds that an individual's fair claim,  $g(\mathbf{x}_i^R; \cdot)$ , is given by what would have been the average income in a hypothetical situation where everyone had the same responsibility vector as this individual,

$$g(\mathbf{x}_i^R; \cdot) = \frac{1}{n} \sum_j f(\mathbf{x}_i^R, \mathbf{x}_j^{NR}). \quad (1)$$

Accordingly, individual  $i$ 's fair income,  $z_i^{GPP}$ , is proportional to his fair claim relative to the other individuals' fair claim,

$$z_i^{GPP} = \frac{g(\mathbf{x}_i^R; \cdot)}{\sum_j g(\mathbf{x}_j^R; \cdot)} \sum_i y_i. \quad (2)$$

where  $y_i$  is the actual pre-tax income of an individual  $i$ . The generalized proportionality principle treats all individuals as if they were identical with respect to all non-responsibility factors. The principle can be said to be egalitarian because it eliminates all inequalities arising from non-responsibility factors, i.e., *unfair inequality*. The generalized proportionality principle can also be said to be responsibility-sensitive because it preserves inequalities that are only arising from responsibility factors, i.e., *fair inequality*.

The generalized proportionality principle satisfies the classical minimal requirements of unfair inequality elimination and fair inequality preservation proposed by Bossert and Fleurbaey (1996). First, any two individuals with the same responsibility factors are assigned the same fair income. Second, in any situation where all individuals have the same non-responsibility factors, each individual's fair income is equal to his pre-tax income.<sup>2</sup>

In sum, the generalized proportionality principle is an attractive formalization of a responsibility-sensitive fairness principle. There are also other responsibility-sensitive fairness principles, such as the *egalitarian equivalent* principle, that satisfy

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<sup>2</sup>A complete characterization of the generalized proportionality principle can be made based on the strong requirement of fair inequality preservation and a rather weak requirement of unfair inequality elimination (Cappelen and Tungodden, 2010).

both the minimal requirement of unfair inequality elimination and the minimal requirement of fair inequality preservation (Fleurbaey, 2008), but the discussion in the rest of this chapter does not rely on the choice between these different theories. In the application to Norwegian tax policy, we apply the generalized proportionality principle, but the results are robust to using the egalitarian equivalent principle and other reasonable formulations of this approach (Almås et al., 2011).

### 3 Two dilemmas in tax policy

In this section, we discuss two dilemmas facing standard welfarist reasoning about tax policy, namely the “exploitation of the energetic” and “the slavery of the talented”.

Consider first a situation in which all individuals in the economy face the same hourly wage rate, but differ in their preferences and that they therefore choose to work different hours. As a result of these choices the “energetic” person ends up with a high level of income and the “lazy” with a low level of income. How should we evaluate this situation? According to liberal egalitarian reasoning, the answer depends on whether we view hours worked as something individuals are responsible for. If hours worked is viewed a responsibility factor, then there is no reason to worry at all. The liberal ideal that income inequalities due to responsibility factors should be accepted, implies that the pre-tax income distribution in this situation is fair and that there should be redistributive taxation.<sup>3</sup>

In contrast, the optimal welfaristic tax policy may have very different implications. In an interesting study Sandmo (1993) shows that utilitarianism may justify redistribution from the “energetic” to the “lazy”, i.e. from those who have a low marginal disutility of work towards those with a high disutility of work. The utilitarian justification for this is easily seen if we assume that the marginal utility of consumption is independent of how many hours a person works. In such situations, the sum of utility would be maximized by a tax policy that encouraged the energetic to work more than those who are lazy and then transferred income from

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<sup>3</sup>This is what referred to as the *laissez-faire* criterion in Fleurbaey and Maniquet (2006).

the energetic to the lazy. We name this the "exploitation of the energetic". If we believe that people should be held responsible for their preferences (or their choice of hours worked when they face the same income opportunities), then such a conclusion should be considered a problem for utilitarian reasoning (see also Sandmo (1993, p.162)).

To illustrate the second dilemma, consider the kind of situation analyzed by Mirrlees (1971), where all individuals have the same preferences, but differ in earning capacity. In particular, let us consider a case where the Marshallian labor supply is inelastic, such that all individuals make the same choice of labor effort, but face different hourly wage rates. If we believe that people's earnings capacity is largely outside individual control and therefore should be viewed as a non-responsibility factor, a liberal egalitarian would object to such a situation on egalitarian grounds. The income inequality is due to a non-responsibility factor and thus liberal egalitarians would aim at equalizing incomes as much as possible in such a situation.<sup>4</sup>

Utilitarians may also endorse a redistribution from the more talented to the less talented, but this would again depend on the properties of the individuals' utility function. Utilitarians would in this type of situation also be concerned with the level of effort exercised by the different individuals. Specifically, utilitarians would aim at having the more talented exercising more effort than the less talented, because this would increase the total amount of utility in society. The more talented individuals, because of the high alternative value of their leisure time, are less efficient "utility machines" than the less productive individuals. This is the well-known problem of the "slavery of the talented".

In sum, utilitarianism and the standard welfarist framework more generally face the problems of "the exploitation of the energetic" and "the slavery of the talented", which we believe shows that this framework violates basic moral intuitions in society. Liberal egalitarianism, on the other hand, avoids both these conclusions, and moreover presents a less instrumental justification of redistributive tax policies. Income inequalities are seen as intrinsically justifiable if they reflect differences in respon-

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<sup>4</sup>Fleurbaey and Maniquet (2006) formalizes this intuition as the transfer principle, which is modified version of the Pigou-Dalton principle.

sibility factors, and an equal income distribution is seen as intrinsically justifiable if it reflects that the individuals differ in non-responsibility factors. Hence, in the process of justification, no reference is made to other larger goals, like the total amount of welfare in society, which income equalities or inequalities may or may not contribute to.

## 4 Optimal tax policy

The welfarist framework has a simple solution to the optimal tax problem. To achieve the first-best solution, the government should impose differentiated lump-sum taxes. A lump-sum tax is a transfer that is independent of individual choices, and by differentiating on individual characteristics, the government could achieve whatever distribution of income that maximizes the social welfare distribution. Importantly, such lump-sum transfers would not interfere with efficiency concerns, since they do not change the marginal productivity of each individual.

A fundamental problem with lump-sum taxation is that the government typically cannot observe each person's talent directly (Stiglitz, 1987). Thus, the government cannot introduce a differentiated lump-sum transfer from the more talented individuals to the less talented individuals. To introduce tests in order to reveal talent would be self-defeating, since a person could pretend to be less talented than she really is. Differentiated lump-sum transfers therefore do not represent a practically feasible tax policy. But still, in theory, it represents the first-best ideal within a welfarist framework.

In contrast, in a liberal egalitarian framework, differentiated lump-sum taxes are insufficient in order to ensure a first-best income distribution. This follows from the simple fact that equalization of income opportunities requires that everyone faces the same opportunity set. A system of differentiated lump-sum taxes cannot achieve this, since they are unable to change the marginal productivity of each individual.

This first-best analysis thus provides a nice illustration of an important distinction between standard welfarist and liberal egalitarian reasoning in redistributive questions. The fact that the standard welfarist perspective focuses solely on differ-



ences in welfare, implies that the opportunity set offered to any individual *only* is instrumental for giving this person a certain level of welfare (see also Sen, 1988). Hence, the shape of the opportunity set offered to each individual is irrelevant. The liberal egalitarian ideal, however, is concerned with equalizing opportunities, which cannot be guaranteed by a set of differentiated lump-sum transfers.

This difference is also important in second-best analysis, where the tax system has to rely only on income information. The standard welfarist framework views the possibility of an efficiency loss as the *only* problem of progressive taxation, where the efficiency loss is assumed to be traded-off against the gain of transferring resources from people with low marginal welfare to people with high marginal welfare (possibly discounting for differences in total welfare).

The liberal egalitarian approach, on the other hand, is concerned with two opposing effects of fairness in a progressive tax system. First, a progressive tax system may *reduce* unfair inequalities between individuals who are identical with respect to their responsibility factors; second, it may eliminate *fair* inequalities between individuals who differ with respect to their responsibility factors. The first effect contributes to reduced unfairness, whereas the second effect contributes to increased unfairness. Hence, in the design of an optimal income tax system, a liberal egalitarian would have to balance these two considerations.<sup>5</sup>

One might argue that the informational requirements of liberal egalitarian considerations are too demanding, since individual information on responsibility factors and non-responsibility factors typically is not available for the tax authorities. In this respect, it is important to notice the difference between using such information in the *operation* of a tax system and in the *evaluation* of a tax system (see also Atkinson and Stiglitz (1980, p. 358). Even if information about individual effort can not be used directly by the tax authorities, there is statistical information available that can be used in normative analysis of alternative tax systems. In the next section we illustrate how this can be done in a study of the Norwegian tax system.

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<sup>5</sup>A liberal egalitarian would further need to take into account the concern of Pareto-optimality in the design of an optimal tax policy, as is carefully discussed in the chapter of Marc Fleurbaey in this volume.

## 5 Evaluating a tax system

There are three normative steps necessary when applying the liberal egalitarian approach to evaluate whether an income tax system contributes to a fairer distribution of income in society. First, one needs to determine where to draw the responsibility cut, that is, what to include as responsibility factors and non-responsibility factors, respectively. Second, one needs to specify the specific liberal egalitarianism principle determining what is the fair distribution of income in any particular situation. Third, one needs to decide on how to aggregate individual deviations from the fair distribution into a measure of overall unfairness in society. With this in place, one can evaluate the tax system by simply comparing overall unfairness in the pre-tax and post-tax income distribution.

In the following, we apply this framework to a study of the income tax system in Norway in the period 1986-2005.<sup>6</sup>

### 5.1 The responsibility cut

Norwegian register data provide us with individual data on a number of dimensions that may potentially affect an individual's pre-tax income: hours worked, years of education, whether one works in the private or public sector, gender, age, and county of residence.<sup>7</sup> The liberal egalitarian framework requires us to assign each of these factors to the responsibility set or the non-responsibility set. If one assigns all factors to the non-responsibility set, this framework collapses to strict egalitarianism where all pre-tax inequalities are considered unfair. At the opposite extreme, if one assigns all factors to the responsibility set, then it collapses to libertarianism where the pre-tax income distribution is considered fair.

We would argue that the majority view in most societies is in between these

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<sup>6</sup>This framework is developed with co-authors in (Almås et al., 2011). Alternative approaches also introducing the distinction between fair and unfair inequalities are given in Bourguignon, Ferreira, and Menéndez (2007), Devooght (2008), and Roemer, Aaberge, Colombino, Fritzell, Jenkins, Marx, Page, Pommer, Ruiz-Castillo, San Segundo, Tranaes, Wagner, and Zurbiri (2003), where our framework is closest to Devooght (2008).

<sup>7</sup>Our measure of pre-tax income is annual labor earnings. It includes all earnings from work activities, but excludes pensions, transfers that are not direct replacements of labor income, and any capital income. We deflate all the labor earnings to 1998 prices using the Consumer Price Index constructed by Statistics Norway.

two extreme positions, where one holds people responsible for some factors and not responsible for others. Still it is a difficult task to pin down exactly where to draw the responsibility cut in any particular society, and in Almås et al. (2011) we therefore highlight the importance of doing a robustness analysis with respect to the responsible cut. In the main part of the analysis, we adopt what we consider the majority view in Norway, where individuals are held responsible for hours worked, years of education, whether they work in private or public sector, and county of residence, but not for gender and age. We show, however, that our results are robust to alternative plausible specifications of the responsibility cut.

In empirical analysis, observable factors can only explain a fraction of the overall variation in pre-tax income, in the Norwegian case less than 50%, and thus a crucial question is how to treat the unobservable factors. We argue that it follows from the egalitarian part of liberal egalitarianism that unobservable factors should be treated as non-responsibility factors, deviations from an equal distribution should only be justified if individuals differ with respect to some observable responsibility factors. Thus, in addition to age and gender, when calculating each individual's fair income, we do not hold people responsible for the unexplained part of their pre-tax income.

## **5.2 Calculating the fair income**

Based on a specific responsibility cut and a liberal egalitarian fairness principle, in our case the generalized proportionality principles, one can derive each individual's fair income from the estimated labor earnings equation. The estimated labor earnings equation shows the extent to which each factor contributes to explaining the pre-tax income, and thus one can calculate each individual's fair income by treating all individuals as if they are identical with respect to all non-responsibility factors and only differ in their non-responsibility factors.

Applying this procedure to the Norwegian data, we show that individuals with different responsibility vectors may have very different fair incomes. To illustrate, it follows from the estimated labor earnings equation that the highest fair income in 2005 in Norway was close to five times as high as the lowest fair income. Overall,

fair inequality, measured as the difference between the fair income distribution and perfect equality, decreased slightly from 1986-2005. The standard Gini for the fair income distribution fell from 0.176 in 1986 to 0.149 in 2005. Differences in hours worked justify much of the fair inequality, but other responsibility factors also played an important role. The labor earnings estimates for 2005 show that it may be fair to give one person two and a half times more income than another who worked the same number of hours if they differ maximally with respect to the other responsibility factors.

The remaining step is now to develop an aggregate measure of how much the pre-tax and post-tax income distributions differ from the fair income distribution.

### 5.3 Unfairness Gini

The standard Gini measure for income inequality measures how much the actual income distribution in a situation deviates from a completely equal distribution of the same total income. Our concern, however, is the distance between the actual income distribution, pre-tax or post-tax, and the fair income distribution, and for this we introduce the unfairness Gini.

To formalize the unfairness Gini, let a situation,  $\mathbf{A}$ , contain a set of individuals,  $\mathbf{N} = \{1, \dots, n\}$ , where each individual,  $i$ , is characterized by the pair,  $(y_i^{\mathbf{A}}, z_i^{\mathbf{A}})$ , where  $y_i^{\mathbf{A}} \geq 0$  is the actual income and  $z_i^{\mathbf{A}} \geq 0$  is the fair income of individual  $i$  in  $\mathbf{A}$ . Hence, a situation  $\mathbf{A}$  is characterized by  $\mathbf{A} = [(y_1^{\mathbf{A}}, z_1^{\mathbf{A}}), \dots, (y_n^{\mathbf{A}}, z_n^{\mathbf{A}})]$ , where the average income is denoted as  $\mu(\mathbf{A}) = n^{-1} \sum_i y_i^{\mathbf{A}}$ .

In this framework, it can be shown that the unfairness Gini can be written as

$$G^u(\mathbf{A}) = \frac{2}{n(n-1)\mu(\mathbf{A})} \sum_i i u_{i(\mathbf{A})}. \quad (3)$$

where  $u_{i(\mathbf{A})}$  is how much person  $i$ 's actual income deviates from her fair income. The standard Gini is given by the case where  $z_i^{\mathbf{A}} = \mu(\mathbf{A})$  for all individuals, but the unfairness Gini allows for individual-specific fair incomes that, in the liberal

egalitarian framework, reflect differences in observable responsibility factors.

## 5.4 Evaluating the tax system

By using the unfairness Gini, we can evaluate the performance of the income tax system in Norway from 1986 to 2005.<sup>8</sup> In particular, we can establish which of the two opposing fairness effects are more important. Does the progressive Norwegian income tax system primarily eliminate fair inequalities between people who are similar on responsibility factors, or does it primarily eliminate unfair inequalities reflecting differences in non-responsibility factors?

We observe from Figure 1 that the overall effect of the Norwegian income tax system is a reduction in unfairness throughout the period. But the effect is larger in 1986 than in 2005; the tax system reduces the unfairness Gini with 22.6% (from 0.204 to 0.158) in 1986 and with 16.6% in 2005 (from 0.220 to 0.184). Hence, the tax reforms that have taken place in Norway between 1986 and 2005 seem to have made the tax system less capable of reducing overall unfairness in society.

[Figure 1 about here.]

The figure also shows that there has been an increase in both pre-tax and post-tax unfairness in Norway from 1986 to 2005: the pre-tax unfairness Gini has increased from 0.204 to 0.220, and the post-tax income distribution has increased from 0.158 to 0.194. In contrast, the standard Gini shows reduced pre-tax inequality in this period, but, in line with the unfairness Gini, increased post-tax inequality.

As we discuss in Almås et al. (2011), there are two trends that explain most of this development. First, in line with what has been observed for a number of other countries in recent decades (Atkinson, Piketty, and Saez, 2010), there has been an increase in top labor incomes in Norway; the pre-tax income share of the top percentile increased from 3.41% in 1986 to 4.87% in 2005. The concentration of income at the top of the distribution increases both the standard Gini and the unfairness Gini, and can, in fact, account for almost all of the increase in the unfairness Gini.

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<sup>8</sup>Details of this analysis can be found in Almås et al. (2011).

Second, we observe important changes in the situation of females in the period, and as a result the average pre-tax income of females is much closer to the average pre-tax income in society in 2005 than in 1986. These changes, however, do not bring females much closer to their fair income, since the increase in working hours and education among females also translates into an increase in females' fair income of almost the same size as their increase in pre-tax income. Thus, the increased role of females in the labor market impacts the standard Gini and the unfairness Gini differently. It causes a substantial decrease in the standard Gini that contributes to outweigh the effect of the increase in top pre-tax incomes, whereas it has almost no impact on the unfairness Gini. As a result, the development of the two measures diverge for the pre-tax distribution, where we observe an increase in the unfairness Gini and a reduction in the standard Gini.

## 6 Concluding remarks

In this paper we have argued that a liberal egalitarian approach to tax policy respects some fundamental intuitions about personal responsibility and the need to distinguish between different types of inequality. As a result, it avoids two fundamental challenges to the standard welfarist approach to tax policy: the "exploitation of the energetic" and the "exploitation of the talented".

The liberal egalitarian approach also highlights that a progressive income tax system may have two opposing effects on fairness. It may increase the level of unfairness in society by eliminating fair inequalities reflecting differences in responsibility factors, but it may also reduce the level of unfairness in society by eliminating unfair inequalities reflecting differences in non-responsibility factors. We illustrate, by using Norwegian data, how one empirically can investigate which effect is more important, by using the unfairness Gini to study whether the level of fairness is lower in the post-tax income distribution than in the pre-tax income distribution.

The use of the liberal egalitarian framework can be extended in a number of directions. First, our empirical approach can be generalized to cover more robust tax policy comparisons not only relying on an unfairness Gini, but more generally on

the comparison of unfairness Lorenz curves. Second, it can be extended theoretically, as shown in Fleurbaey (2008), to ensure that it also can be combined with a concern for Pareto optimality in the design of redistributive tax systems. Thus, we believe that the liberal egalitarian approach represents a promising and plausible normative foundation for modern tax debates that respect fundamental principle prevalent in most modern societies.

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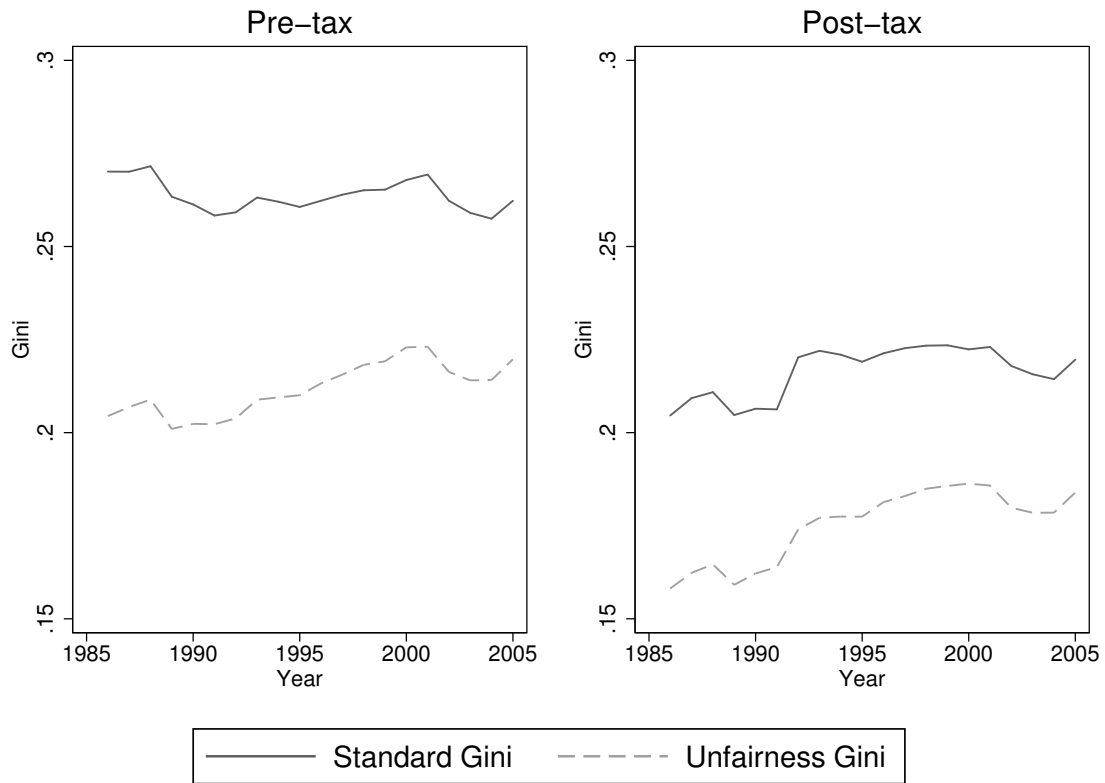


Figure 1: **Unfairness and inequality over time.** The figure (which is identical to Figure 4 in Almås et al. (2011)), shows the development of the standard Gini and the unfairness Gini in the period 1986 - 2005. The estimates of fair income are based on the responsibility set containing hours worked, years of education, sector (public versus private), and county of residence.

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