

Chapter 6

Need-Based Justice and Distribution

Procedures: The Perspective of Economics



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Abstract In this chapter, we present both macro-empirical and micro-experimental evidence of how subjects redistribute resources. We identify a moderate level of redistribution both in macro-empirical and experimental work. We present evidence that moderate levels of redistribution are due to the preferences of individuals rather than other possible explanations, such as the interests of elites or institutions. Particularly, we find that moderate redistribution, which transfers resources based on the fairness principle of need-based justice is generally accepted and brings along productivity-enhancing effects instead of efficiency losses.

6.1 Introduction

From each according to his ability, to each according to his need...

A phrase popularized by Karl Marx in his 1875 Critique of the Gotha Program.

There is a fundamental imbalance embedded in many modern states: a substantial inequality of incomes coexists with a demand for equal political rights. The poor majority of citizens accepts a considerably unfavorable inequality of wealth despite having the voting power to eliminate that inequality by means of redistribution (see Corneo and Gruener 2000).

One reason for abstaining from a rigorous form of redistribution is that tax collection and money transfers do not come at a zero cost. There are obvious costs of

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redistribution: tax declarations have to be administered, money has to be transferred between bank accounts, and so on. However, economists are far more concerned with the hidden costs of redistribution: taking away income and providing funds affects incentives to work. In other words, the same person receiving governmental transfers provides a different production effort than when paying taxes than if she neither receives transfers nor pays taxes. Therefore, the size of redistribution affects the total welfare within societies.

There is a large body of economic research dealing with biased incentives and the resulting welfare consequences. In a nutshell, distorted incentives predominantly amplify a loss in welfare. However, in the last 20 years, economists have uncovered yet another important facet of the problem, which influences the costs of redistribution and may even turn them into benefits: redistribution may support people's fairness sentiments. In other words, people are willing to pay for a "fair" distribution of wealth within a society. A moderate, more even distribution of incomes may stimulate production, both by taxpayers and transfer receivers.

Thus, it is crucial to think about the wise fairness principle that guides and organizes our redistribution activities. Traditionally, the literature conceptualizes three distinct fairness principles (Miller 1999): equity (or accountability), equality, and need. All three are usually deemed essential fairness principles. As pointed out elsewhere, the context crucially influences which fairness principle is activated and applied (Konow 2001, 2009).

Surprisingly, the major focus of contemporary research on social justice and social contracts is aimed at understanding equality and equity preferences, and how both the principles affect the behavior (see the recently published survey of the relevant literature by Konow and Schwetmann 2016).

Although one may argue that equality and equity are of great importance, it seems that actual redistribution follows largely need-based considerations: governmental transfers satisfy individual needs that recipients are unable to finance themselves; subsidies are implemented to avoid suffering, and institutional settings such as minimum income, basic income or breadline income (margin of subsistence) reflect considerations of need-based justice in a social contract rather than trying to equalize the net wealth within societies.

An empirical example is the "Gallup Poll Social Series: Economy and Personal Finance".¹ In this questionnaire, participants are asked, "What is the smallest amount of money a family of four needs to make each year to get by in your community?" On average, participants state that \$58,000 would be enough to "just get by". In contrast, the federal poverty threshold for a family of four is under \$24,000. This example points to two important things. First, subjects do not solely focus on surviving but on "getting by in their community". Secondly, stated demands differ from what is universally accepted as a need.

Need-based justice is focused on social needs. These needs are stated individually as demands for specific goods or services. The electorate has to agree on the needs that they want to accept. Once, the need is accepted, society has to fulfill these needs.

¹<http://www.gallup.com/poll/162587/americans-say-family-four-needs-nearly-60k.aspx>.

It is an open question that needs to get accepted and to what extent the process of acceptance depends on, for instance, information and beliefs. The concept of need-based justice is very flexible: if commonly accepted as a social need, need-based redistribution is able to take into account various reasons that subjects may feel deprived relative to others in the society (Runciman 1966). In contrast, the fairness principle of equality would “automatically” yield redistribution, which (at least to some extent) equalizes inequalities.

We consider the discussion of redistribution as incomplete without reference to need-based reasoning. Nevertheless, compared to other principles, little is known about need-based justice and its distributive consequences in economics. This chapter tries to close this gap by discussing the interplay between redistribution and need-based justice in greater detail. First, we introduce the orthodox perspective on taxation and redistribution (Sect. 6.2). In Sect. 6.3, we introduce the fairness views of equality and equity. Section 6.4 then focuses in detail on need-based justice. Section 6.5 provides a general discussion about the interplay between need-based redistribution and welfare within societies, and why this fairness principle is especially important for understanding how voters determine the social contract. Section 6.6 concludes and highlights the importance of improving scientific understandings of need-based redistribution in economics.

6.2 The Cost of Redistribution, Part 1

There are good reasons to collect taxes: a society pools individual risks such that societal goals (e.g., fighting poverty, running a nationwide health-care system, enabling universal participation in socioeconomic life) are financed by means of taxation (cf. Lampert and Althammer 2001). In other words, efficiency concerns justify social security insurance. Society finances this insurance by necessary violations of individual property rights (Barr 1998; Barr and Diamond 2008, 2010).

The rather surprising (for non-economists) question is why we observe so little taxation. The income distribution of almost all societies is skewed to the right. That is, there is a majority in society that earns significantly less than a minority of people. At its extreme, the few possess almost the entire wealth of a nation while all others own almost nothing. In democratic states, it follows from the right skewness of both the income and the wealth distribution that those who benefit from redistribution constitute the majority, and—according to the median voter theorem—determine the size of taxation (see e.g., Meltzer and Richard 1981; Acemoglu and Robinson 2000, while this view is criticized by Korpi 1983; Huber and Stephens 2012). According to this perspective, the welfare state is a mechanism that empowers the poor.

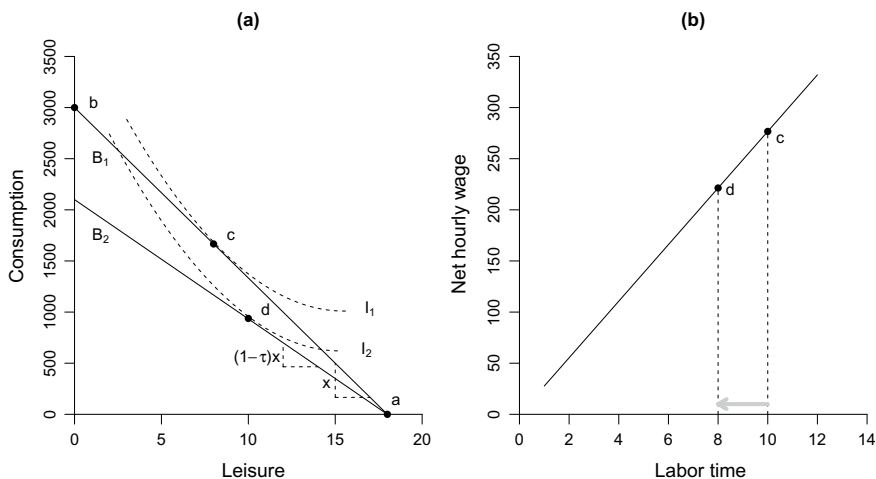


Fig. 6.1 Taxation biases the optimal time allocation in favor of leisure

6.2.1 A Standard View on Taxation

The reason we observe predominantly moderate levels of redistribution is that even the majority of society has to balance the benefits of receiving transfers with the disincentives for labor provision. That is, excessive redistribution is likely to generate socially inefficient outcomes because it undermines the willingness of those who are more able to expend effort (Alesina and Perotti 1996; Persson and Tabellini 1994).

Figure 6.1 sketches the traditional labor-leisure-time reasoning of workers: in panel (a) of the figure, we measure on the horizontal axis the time spent on leisure activities, and on the vertical axis the economic outcome of time spent on labor. Let us begin in a world without taxes. On the vertical axis, we measure the consumption expenditure the worker can afford from her labor income. As a consequence, there is a feasible set within the diagram from which the worker can pick her most favorable leisure-consumption mix. That is, the worker may choose any combination of time for leisure and for work below the time constraint B_1 . If she chooses a in the lower corner of the set, she spends all the time at her disposal (say 18 out of 24 h per day) on leisure activities, but has no labor income and cannot consume anything. At the other extreme (b), she spends all her time working, yielding maximum consumption but no free time.

Each point within the set of time allocation corresponds to a certain utility for the worker. There are certain points she likes more and there are points she likes less (implying more utility resulting from the choice of the former points than from the choice of the latter points). Points she is indifferent to in terms of resulting utility lies on an “indifference” curve (the dotted curves I_1 and I_2), while all points on I_1 are more preferable than all points on I_2 : for every point on I_2 there is a corresponding

point north-east on I_1 implying more consumption and more leisure. In other words, moving north-east to higher indifference curves increase the worker's utility.

Obviously, the worker optimizes her labor-leisure mix by picking the point on her highest indifference curve, which is still within the feasible set of leisure-consumption combinations (say, this is point c). Notice that in this simplified model, the slope of the budget constraint B_1 equals the hourly wage of the worker: spending one hour less on leisure increases the consumption by x (the wage the worker earns in this hour).

How does taxation change the choice of the labor-leisure mix? Let us assume that the worker has to pay a fraction of τ from her hourly wage to the state. Her net hourly wage becomes $(1 - \tau)x$. Importantly, leisure time is not taxed, meaning her time constraint changes and becomes B_2 . Again, she chooses the point associated with the highest indifference curve, which is still inside her new time constraint B_2 (say this is point d). Obviously, taxation decreases the net salary of workers and biases the optimal labor-leisure-time choice in favor of leisure time—since leisure is not taxed—meaning that the worker spends less time working (panel (b) of Fig. 6.1).

6.2.2 *Taxation and the Struggle for Redistribution*

Based on the standard approach of taxation, society has to consider the work disincentive for the rich when the social contract is set. Despite the biasing effect of taxation, even the traditional paradigm admits that there are strategic reasons to pay taxes. For example, we mentioned the insurance character of governmental transfers earlier in this chapter. Mirrlees (1971) highlights that, from a welfare-maximizing point of view, the level of redistribution should be at a level at which the poor do not suffer and both the poor and the rich have an incentive to spend effort. Mirrlees also motivates the insurance aspect with fairness considerations.

Another reason is that transfers decrease the likelihood of radical forms of power and income transition or revolutions within societies (Barro 2000; Forbes 2000). That is, moderate redistribution stabilizes democracy at the price of biasing the labor-leisure-time mix. Another branch of the literature stresses that redistribution reduces the disincentives for the poor to take risks that are too high (e.g., Aghion and Bolton 1997). Redistribution increases the endowments of the poor. The poor reduce the demand for loans and invest more efficiently, which means that they take fewer risks. Thus, efficiency in the economy is improved.

Lorenz et al. (2013) points to the so-called portfolio effect through redistribution. Assuming that individual human capital follows a risky multiplicative stochastic process, the authors show that, even if redistribution comes with costs and the stochastic process leads to decreasing human capital, redistribution leads to the growth of aggregated human capital. By exclusively focusing on the portfolio rebalancing effect, they propose a new approach about the link between inequality, redistributive taxation, and wealth. They have shown that taxation and redistribution can be a crucial ingredient in ensuring the survival and development of a society.

The politico-economic literature stresses that either an institutional or a structural condition is sufficient to protect a society against excesses from both sides. On the one hand, institutional rules of collective decision-making giving veto power to all stakeholders (Buchanan and Tullock 1962; Miller and Vanberg 2013) enforce a consensual decision and, thereby, make the distributive struggle an issue of explicit negotiation. On the other hand, the existence of a neutral but opportunistic middle class serves as a buffer between the upper and the lower classes because they fear expropriation from both sides and will thus side with the weaker group in case of conflict (Scharpf 1987; Easterly 2001; Glaeser et al. 2003; Kittel et al. 2015). Moreover, not being the main target of redistribution, members of the middle class will let their decisions be guided more by moral values such as justice norms than the other two socioeconomic groups (Arts and Gelissen 2001; d'Anjou et al. 1995; Jaeger 2006).

Besides the above mentioned protection through institutional hurdles or the existence of a neutral middle class, another stream in the literature stresses different explanations for why the poor median voter does not necessarily follow the median voter's prediction. The "prospects of upward mobility" (POUM) hypothesis brings forward the argument that some voters who have an income below the mean expect that their future income will be above the mean (Benabou and Ok 2001). Therefore, they prospectively vote against high levels of redistribution. Roemer (1998) and Lee and Roemer (2006) show that voting on redistribution is also affected by religion and race. The more fragmented the population is with regard to both dimensions, the lower is the willingness to redistribute. Alesina and Angeletos (2005) and Fong (2001) show that if the poor believe that the rich are rich because they invested greater efforts and have greater abilities, the pressure for redistribution is low.

Yet, in recent years, public awareness of an increasingly lopsided distribution of income and wealth in Western countries has strongly increased (Piketty 2014). Most OECD countries have witnessed growing inequality over the past 20 years (OECD 2008). In particular, the gap between the bottom and the top deciles of the household income distribution has risen dramatically. The decile ratio currently amounts to about 1:15 in the US and 1:9 in the OECD-34, and even in a Nordic welfare state like Sweden, it is close to 1:6. In recent years, the growth of inequality seems to be slowing down in some countries (see OECD 2011).

Observers note the formation, as well as deliberate establishment, of a winner-takes-all society in which the middle class is gradually being eroded (Frank and Cook 1995; Frank 2007; Hacker and Pierson 2010). A few superstars, which may or may not be the most able practitioners in a particular area, receive all the profit while the efforts of others are in vain (e.g., Rosen 1981; DiPrete and Eirich 2006; Franck and Nüsch 2012). This development may result in increasing societal division, distributive struggle, and violent conflict (e.g., Stiglitz 2012). On the other hand, the fall of communist regimes in the late 1980s and early 1990s has demonstrated the crippling effects of excessive egalitarianism on economic efficiency and growth (Fukuyama 2006; Alesina and Angeletos 2005). So, do we observe a change from redistribution and mild equality to radical equity? We argue that this and similar questions cannot

be answered without the consideration of need-based justice. Before we introduce need-based justice, we present the most prominently mentioned concepts of justice, namely equality and equity.

6.3 Varieties of Fairness: Two Rivaling Sisters

There are two leading views on fairness in economics, equality and equity. We characterize them as two sisters from the same family of fairness sentiments. They do not get along very well with each other. However, once separated from one another, they miss each other terribly.

On the one hand, one may argue that the increasing dispersion of incomes and the division of classes lead to inherently unfair—*unequal*—distributions of wealth within societies. But this is just one side of the coin. On the other hand, there is the notion of equity: those who earn the highest wages have, in fact, deserved it. One may say that equity reflects the fairness of *achievements*. In the following, we elaborate on both notions of fairness.

6.3.1 Equality

Equality is probably one of the oldest and most common paradigms for human coexistence. The New Testament quotes Jesus' second Great Commandment as "Thou shalt love thy neighbor as thyself" (Mark 12: 31), while, for example, there is one Hanukiya (the Hanuka lamp) for each family member at the Jewish holiday of Hanuka.

Despite its omnipresence, it has taken economists a very long time to accept that people have a desire for equality. That is, for a long time there was no general agreement that inequality decreases the utility of people. In 1982, Werner Güth and his coauthors published their article on the 'ultimatum game' and provided evidence that people are fair-minded. In this game, two anonymous players bargain in a very stylized form over some money. More precisely, one of the two persons, called the "proposer", is endowed with E monetary units. The proposer has to offer her counterpart, the "responder", a fraction x of E . The responder may accept x , in which case the responder earns x and the proposer $E - x$, or rejects it, in which case both earn nothing.

When testing the game with students and other participants from various socio-economic and ethnic backgrounds, Güth and many other researchers observed two stylized facts: (i) the modal and median offers are 40–50% of E , and (ii) the few offers at or below 20% are frequently rejected (see the survey by Gueth and Kocher 2014). Is this surprising for non-economists? Certainly, not. But for economists, it is a big deal to admit that people's behavior departs from the standard assumption of money maximization. Since accepting even the smallest offer possible yields a higher payoff than rejecting it, rejections violate narrow self-interest. The anticipation of

the non-rejection of any $x > 0$ leads any money-maximizing proposer to offer the smallest (non-zero) amount. In turn, anticipating that small, unfair offers are to be rejected leads to an increase of offers to the level that we observe in experiments.

Thus, equality of outcomes matters for people. However, what drives this behavior? Is it fairness towards others or anticipation of others' preferences for fairness? If the latter, then the preferences for fairness may simply be a "mis-anticipation" of others' preferences. To clarify this point, researchers have explored the "dictator game" (Kahneman et al. 1986). In this setup, proposers (now called "dictators") make offers, but responders have no choice regarding their response and have to accept whatever the dictator offers. Narrow money maximization suggests that the offer will be zero. Forsythe et al. (1994), however, find mean offers of roughly 20%, which is significantly less than in the ultimatum game, but also significantly greater than zero. Thus, there is evidence that altruism partly impacts our choices. Particularly, the general tendency to choose equal splits when negotiating has been attributed to a preference for equality.

Consequently, economic theory has developed preference models that nest both pure self-interest and inequality aversion. Most prominently, Fehr and Schmidt (1999) as well as Bolton and Ockenfels (2000), and many others, formalize utility functions implementing disutility for unequal allocations of outcomes, while nesting perfectly selfish preferences for certain parameter constellations. For instance, Fehr and Schmidt introduce an individual taste parameter that amplifies the disutility per unit of unequally divided money (economists refer to this as the marginal disutility) in the following way²:

$$u_i = m_i - \alpha_i \max(0, m_y - m_i) + \beta_i \max(0, m_i - m_y), \quad (6.1)$$

where m_i (u_i) denotes my money (utility), m_y the money of the opponent with whom I am interacting, and α_i (β_i) my marginal disutility from inequality, which disadvantages (advantages) me. In other words, α_i and β_i are my individual tastes for envy and shame. If m_y is larger than m_i , every money unit y 's payment is exceeding i harms i utility by α_i (a similar rationale applies when m_i exceeds m_y). Bolton and Ockenfels (2000) provide an alternative to the Fehr-Schmidt utility function. Instead of introducing individual weights for inequality they claim that it is the relative payoff standing that drives fairness considerations.

Despite its simplicity and its ability to accommodate an enormous number of empirical observations in which behavior departs from the pure money maximization prediction, there have been serious doubts over the years about whether equality subsumes *completely and correctly* the fairness sentiment driving peoples' choices. The criticism follows two directions: one deals with the consistency and persistence of fairness across choices, another with the dominance of the equality principle over alternative ones. Blanco et al. (2011) assess individual fairness sentiments in a modified dictator game utilizing a within-subjects design. Based on the estimated

²Notice that we show here a simplified version of Fehr and Schmidt's utility function restricted to the two-person case only. For the complete framework, we refer to their article (1999).

strength of individual fairness concerns they predict behavior in a sequential prisoners' dilemma game. Actual decisions, though, show that there is little consistency between predictions and behavior.

Along this line of argument, Hoffman et al. (1996) show that minor modifications in terms of wording or the level of anonymity cause substantial changes in the dictator's giving. Likewise, systematic changes in the set of alternatives the dictator can choose from (e.g., if the experimenter allows the dictator also to take from the receiver) lead to dramatic changes in the share of dictators who give positive amounts (e.g., Cappelen et al. 2013; List 2007; Bolton et al. 1998).³

Finally, a stream of the literature reinterprets the individual sentiments in favor of equality differently. Andreoni and Bernheim (2009) argue that people like to be perceived by others as fair or at least non-selfish rather than inherently preferring to behave fairly. This claim is supported by Bartling and Fischbacher (2011). In their experiment, dictators can choose the money allocation themselves or delegate this decision to a third party. Most dictators delegate the decision, clearly avoiding selfish choices, which they, however, expect the third party to choose for them. In a related experiment, Dana et al. (2007) allow dictators to camouflage selfish choices at the cost of the receiver. Results show significantly less giving if dictators can disguise their intentions.

Summarizing the arguments against the fairness principle of equality, it seems that equality is an important sentiment for human behavior, but it may not influence decisions as robustly and persistently as economists believed at first glance. Konow (2001, 2003) concludes that the social context induces fairness motives, particularly equality, and that the frequent choice of equal splits in the laboratory may be an experimental artifact. Experiments eliminate a lot of everyday contexts, which may draw subjects away from equal splits.

The second line of criticism questions whether equality is the exclusive motive for fair behavior, even if we stay in a reduced framework that fosters the salience of equal distributions. To test the predominance of equality over other fairness sentiments, Falk et al. (2003) develop the following design: they analyze the likelihood of an identical offer of $m_y = 8$, $m_i = 2$ being rejected in the ultimatum game with only two alternative offers. The rate of rejections more than triples if the alternative not chosen is more equal ($m_y = 5$, $m_i = 5$), than when it is more unequal ($m_y = 10$, $m_i = 0$) compared to the proposed one.

This finding is a direct contradiction of the social preference system like in equation (1): since my monetary utility (2) and the distance between payoffs (6) is identical, there cannot be differences in the utility of accepting the offer. Thus, there should be no systematic difference in rejection rates for identical offers. Related to this issue is the observation by Blount (1995). She reports on experimental ultimatum games in which offers are randomly chosen by a computer on behalf of a human receiver. In this setting, offers are rejected significantly less often than when offers are actually chosen by human receivers themselves.

³A comprehensive survey of the dictator game literature is provided by Engel (2011).

Again, those systematic differences do not surprise non-economists: the rejection rates are influenced by the circumstances under which the offers are chosen. In the Falk et al. experiment, it is the unchosen alternative that matters; in the Blount experiment, it is the proposer's responsibility for the suggested outcome. Thus, it seems that people's fairness sentiments reflect not only the outcome of a procedure, but also the process that leads to the outcome. In other words, we interpret choice, derive intention, and try to reciprocate by matching the intention accordingly. If somebody treats us kindly by proposing a nice offer, we respond kindly by accepting the offer; if however, somebody treats us unkindly by proposing a mean offer, we respond unkindly by rejecting the offer.

Although the general idea of reciprocity—"do ut des"—is very straight forward and easy to understand, there is still an ongoing debate among economists on how to formalize kindness in a very general way (see for this discussion, e.g., Sobel 2005; Nowak and Sigmund 2005). Charness and Rabin (2002) utilize a simple indicator function to account for reciprocity. If person y behaves nicely towards person i , the indicator value is in i 's utility function is equal to one, and person i 's utility increases also in the size of person y 's payoff (who treated person i nicely). Despite this formal problem, it is generally accepted that a concept of fairness that refers exclusively to the outcome of a distribution process—for instance, equality—does not capture our notion of fairness completely. Rather, the distribution process in itself matters for our judgment, and there is a large heterogeneity regarding the weight people put on each of those motives (see, e.g., Nicklisch and Wolff 2012).

6.3.2 Equity

From the fact that people's fairness sentiments relate to the procedure that brings about the outcomes, it follows that if a process does not favor one particular person, provides equal chances for everybody, and does not permit "bypassing of" the chance equality, one can call such a process fair. This holds even if the process yields unequal outcomes. Specifically, if we consider it fair when a process provides equal chances for everybody, and allows any individual to increase the chance of a favorable outcome for herself by means of individual effort and individual talent, we apply an equity principle. In other words, an equity process renders outcomes proportionally to the input people deliver.

Following this rationale, one can say that the resources people provide during the production (e.g., working time) represent their claims to whatever is divided afterward (e.g., the production surplus).⁴ People acquire entitlements to some fraction of the pie. In turn, it is fair that those who do not acquire entitlements, receive nothing or dramatically less than the others.

Equity motives play an important role in social perceptions regarding the fairness of relative positions in income and wealth. These motives depend on the extent

⁴Moulin (2002) gives an overview of the literature of surplus sharing.

to which individuals are perceived as accountable for differences in economic performance (see Konow 2000; Fong 2001). The notion of “equity theory” was first advocated by Adams (1965) and Homans (1974) in psychology and sociology. In economics, the notion of equity is also called the theory of entitlements (Croson and Konow 2009; Gill and Stone 2010; Krawczyk 2010; Cappelen et al. 2013; Gill and Stone 2015; Mollerstrom et al. 2015).

There is evidence pointing to the existence of a preference for proportional distributions, particularly when individual claims exceed the available pie.⁵ Gächter and Riedl (2006) introduce a real effort experiment in which participants bargain over money previously “produced” in a quiz task. In a second treatment condition, participants are asked to choose hypothetically the fairest allocation facing the same distribution problems. Proportionality is the most preferred rule in the latter treatment condition, while a mixture of equity and equality determines allocations in the former treatment condition.

Bosmans and Schokkaert (2009) analyze how participants hypothetically divide surplus in the context of firm earnings and pension payments. With varying individual claims and surplus sizes, a majority of participants prefer the proportionality rule across different tasks in which subjects earn their claims. Finally, Herrero et al. (2010) confirm Gächter and Riedl’s earlier finding: across different claims, contexts, and surpluses, hypothetical choices predominantly follow proportionality. However, subjects in the paid experiment choose a mixture of different rules depending on the game. Thus, it seems that equity is an important component of fair division of resources, but people apply this principle less rigorously when it affects their own outcomes.

One reason for the restricted implementation of equity in experimental studies—and even more so in real scenarios—is the issue of deserts. Quite often, it is unclear which attribute must be assigned to which proportionality to yield a fair outcome. Inequalities based on attributes that fall into the responsibility of individual persons are commonly assumed to be justified, whereas attributes that cannot be influenced by individual persons do not justify unequal outcomes (Konow 1996). For instance, a very common assessment of behavior is that people are responsible for their effort but not for their luck. Successful people often downplay the role of luck as a reason for success—a phenomenon known as “illusion of control” (Langer 1975). Consequently, people should be held accountable for the effort they choose to exercise, and agents should be rewarded for their effort, but not for their luck. Cappelen and Tungodden (2009) call this the principle of responsibility. However, it is less clear, and more challenging to define, if one should be held responsible for talent, initial endowment of knowledge, wealth, etc. Defining deserts is a challenging issue (for an extensive discussion, see Fleurbaey 2008).

Of course, in the context of laboratory experiments, we can manipulate entitlements, and, therefore, the acceptance of inequality. In dictator game experiments by Cherry et al. (2002), dictators ‘earn’ their endowments in a quiz task. Depending on

⁵Note that there is a rich literature on bankruptcy and repayment rules dealing with solutions for this type of problem (e.g., Chun 1999; Thomson 2003).

variations on the level of endowment and anonymity, the vast majority (70–97%) of dictators give nothing at all, while 15–19% of the dictators do so when endowments are granted for free. The authors conclude that “when assets are legitimized with effort and strategic concerns are controlled with isolation, altruism was the exception and self-interest was the rule” (Cherry et al. 2002, 1221). However, deserts are fragile, and so are the result of this experiment: in Cherry et al.’s design, receivers could not participate in the quiz task. In a modified version of the game, Mittone and Ploner (2012) allow both dictators and receivers to participate in the task. As a result, only 21–48% of dictators transfer nothing to recipients. In other words, keeping everything or almost everything is justified when dictators exclusively provide the effort to ‘generate’ the incomes.

Studying the role of performance differences in a cognitive-effort task on the so-called ‘in-group bias’, Paetzel and Sausgruber (2018) argue that high-performing groups should exhibit a greater tendency to favor the in-group over the out-group if individuals recognize entitlements in line with the equity principle and performance differs across groups. They provide experimental evidence in support of their argument. ‘In-group bias’ is strong in groups consisting of high-performing members, and it is weak in low-performing groups. This holds although high-performing subjects exhibit no and low-performing subjects exhibit a strong ‘in-group bias’ in a minimal group setting.

At the end of the day, equity as much as equality seems to be an important ingredient for human fairness. In their seminal paper, Cappelen et al. (2007) document a large variety of fairness sentiments. In particular, they introduce two-dimensional heterogeneity among participants. In their one-shot dictator game with production, people are put into pairs and must invest from homogeneous endowments. Subjects are paired with different counterparts possessing different investment levels and either different or equal return rates from their investments. Finally, all subjects have to decide on how to split the sum of returns from both investments. Actual payoffs are based on one randomly chosen matching and one randomly chosen dictator. Results show subjects can mostly be classified into three categories: 44% are egalitarians and prefer equal total payoffs for both players, 18% are libertarians promoting extreme equity and leaving payoffs unchanged, and 38% are liberal egalitarians partially accepting inequalities. The latter group does not compensate for payoff differences resulting from different investments when splitting up the money, but compensates differences due to different return rates. Results from Konow (2009) seem to support the overall picture: stakeholders (i.e., people actually deciding upon their own money) redistribute payoffs according to an attenuated form of proportionality, while, interestingly, spectators (i.e., people deciding upon others’ payoffs) redistribute in a strictly proportional way.

Some scholars claim that the unstable and impartial implementation of proportionality can be explained by the influence of pure self-interest. Konow (2000) concludes that more than 60% of decisions in his experiments can be interpreted as some self-serving understanding of competing distribution rules. Unfair behavior may be masked as being fair. Other scholars have questioned whether participants are actually responsible for production differences, since money is still distributed

by the experimenter exogenously in these experiments. That is, people do not generate values when solving quizzes, counting letters, or adding numbers. Thus, it is unclear to what extent subjects consider their activities as being productive, and, consequently, to what extent they distribute payoffs proportionally with respect to those rather meaningless activities (Konow and Schwettmann 2016).

6.3.3 *Efficiency: Advantage Equity*

Regardless of its vague notion of desert and responsibility, economists favor equity for a different reason: proportional distribution of payoffs according to effort yields the incentive to deliver effort. Specifically, if the amount people receive in terms of governmental transfers is proportional to their tax burden (i.e., they receive a fraction ρ of τx), then proportionality decreases the bias of taxation in favor of leisure to $(1 - \rho)\tau x$, as introduced in Sect. 6.2. In other words, unlike equality, equity enhances the implementation of efficient labor-leisure-time choice.

There are two reasons why enhancing efficiency is actually good news for all members of a society. First, the redistribution process that decreases the bias in favor of leisure, in turn, increases the amount of resources that can be distributed among members of the society. That is, if people have an incentive to provide effort, more is produced, and each member receives higher transfers from the state. Conversely, redistribution that increases equality reduces incentives to deliver effort, since, regardless of individual contribution, each member of the state receives the same outcome. Less is produced and the entire society is poorer. For that reason, equity-based distribution is, at least to some extent, in the interest of all members of a society.⁶

The second reason is that people seem to have a preference for efficiency in the sense of surplus maximization. That is, people are willing to forgo their own payoffs or larger equality of payoffs for the sake of a higher sum of payoffs for all involved parties. In their seminal papers, Charness and Rabin (2002) and Engelmann and Strobel (2004) test the limits of the efficiency-selfishness and the efficiency-equality trade-offs using experiments with multiple distribution decisions.

Engelmann and Strobel employ three-person dictator games where—always keeping the payoff for the decision maker constant—options include either minimizing the distance between individual payoffs (option 1), changing others' payoffs such that one's own payoff represents the average (option 2), or choosing an allocation for the other two subjects that maximizes the total sum (option 3). Note that option 1 is the most preferable considering the utility function presented in equation (6.1). That is, option 1 maximizes Fehr and Schmidt-type utility, while option 2 yields the higher utility under Bolton and Ockenfels-type utility. Finally, option 3 maximizes efficiency even though this allocation creates greater inequality than the other options.

⁶There is an extensive literature on how taxation can be optimal given the different disincentives stemming from taxation. For an overview of optimal taxation, see Auerbach (1985) and Mankiw et al. (2009).

The results show that the majority of people predominantly choose option 3 across a number of different payoff constellations. Likewise, Charness and Rabin find in similar distribution tasks that many people opt for the alternatives that maximize the sum of payoffs. Consequently, they propose a utility function that adds, beside individual income maximization, concern for the least well-off member in the group and concern for the sum of payoffs:

$$u_i = (1 - \lambda)m_i + \lambda[\delta \min(m_i, m_{y1}, \dots, m_{yN}) + (1 - \delta)(m_i + m_{y1} + \dots + m_{yN})], \quad (6.2)$$

where m_{yk} denotes the money of group member k , and λ (δ) being my taste parameter for other-regarding preferences (concern for the wellbeing of the least well-off person in the group). Charness and Rabin (2002) consider a convex combination between a subject's own monetary payoff and a social welfare function, which can be seen as a Rawlsian and a utilitarian social welfare function.

However, some papers cast doubts on the generalization of this result. While Engelmann and Strobel use mainly economics students as subjects, Fehr and Schmidt (2006) report on results for similar experiments with samples of students from other fields of study and nonacademic employees. Finally, Pelligra and Stanca (2013) run their experiments with a representative pool of subjects. Both latter studies find substantially lower concerns for efficiency and stronger concerns for equality, with only a minority of people preferring efficiency over the other fairness motives. As shown in Andreoni and Miller (2002), when there is a trade-off between fairness concerns and narrow self-interest, efficiency has minor priority: in their experiments, only one-fifth of participants prefer efficiency over self-interest and equality.

6.4 The Forgotten Brother: Need-Based Justice

As mentioned earlier, redistribution based on equity leads to higher efficiency and increases economic surplus in comparison to redistribution based on equality. Therefore, states with the equity based redistribution system are *ceteris paribus* richer than states with equality-based redistribution systems. More and more states are adapting their social systems, such that equity suppresses equality: for example, Krieger and Traub (2013) show that pension systems in many OECD countries converge on a more 'Bismarckian' system with less intragenerational redistribution.

So, is the transition from an equality-based system towards equity-based system the reason for growing inequality in the OECD countries? The OECD itself names developments in labor earnings and labor markets as the main reasons for increasing inequality (OECD 2011).⁷

⁷The OECD (2011) lists the following determinants as driving forces for increasing inequality: globalization brought by rapid economic integration; skill-biased technological changes; institutional and regulatory reforms; changes in employment patterns; changes in family formation and household structures; and changes in tax and benefit systems.

Another important part of the answer relates to a forgotten brother of equality and equity, need-based justice. That is, need-based justice recognizes that people are heterogeneous with respect to their needs and adjust redistribution accordingly. Instead of focusing on the distribution of income within society (i.e., equality), or on the supply of resources within society (i.e., equity), need-based redistribution focuses on socially accepted needs.

Despite the dominance of the two sisters, equality and equity, in the economic literature, even economists confess that need-based justice crucially influences our fairness perception (e.g., Baxter and Moosa 1996).

These needs are stated individually as demands for specific goods or services. The electorate has to agree on the needs that they are willing to accept. Only if a specific need is accepted society will fulfill that need. As a consequence, need-based justice is a principle for redistribution that helps particularly weak and poor segments of the population.

However, the process of accepting a stated need or demand as a socially accepted need is an understudied issue and requires more research. We surmise that the process of recognition depends, among others, on information and beliefs. Konow (2001) shows that specific information about a subject can completely change evaluations of what is fair and unfair. A hard-working person is deserving, but her benefiting from redistribution would be unfair if at the same time a substantial part of the population is below an 'appropriate' minimum income.

Redistribution based on need-based justice secures that the needy do not suffer, but at the same time guarantees that incentives to invest efforts are high. The resultant societal level of redistribution is moderate. We argue that the concept of a welfare state that encourages people to invest effort and be more responsible for their own social security (Pierson 1995; Dingeldey 2007) is in line with need-based justice.

Beyond its complexity and ambiguity, need-based justice has an enormous empirical relevance in today's social welfare states. In fact, substantial elements of the redistribution system in the majority of all OECD countries redistribute based on need-based justice. For instance, governmental support for health insurances refinances the special needs of those who are in desperate need of medical treatment. Likewise, child allowance helps families and their special needs at the cost of the entire society.

In almost all OECD countries, the level of social assistance is calculated as a sum of the cost that allows a social life comparable to the life of the lowest quintile of the income distribution. Gough et al. (1997) find that social benefits in all OECD countries are at least partly, but most often entirely, means-tested. Hereby, the level of benefits differs substantially between countries. Some countries are only concerned about providing a 'minimum' while others, like Austria, Germany or Luxembourg, emphasize that benefits should allow a 'decent life with human dignity' (which allows people to take part in social life). Apportioning social benefits according to means-testing reflects the recognition of individual-specific needs. We interpret a means-testing benefit system as a system based on the fairness principle of social needs.

In turn, redistribution based on need-based justice may be orthogonal to our feelings about equality. Sometimes, it may even increase the level of inequality when the neediness category does not correspond with lower income classes: older people are not necessarily poor, but they have their special needs. Therefore, growing income inequality in the OECD countries results not only from the stronger influence of equity on redistribution, but also as a result of the recognition of special needs for an increasing number of groups in the population.

6.4.1 Evidence About Need-Based Justice

Frohlich et al. (1987) and Frohlich and Oppenheimer (1990) are the first to study a richer set of redistribution principles in an experimental setting. They vary the underlying redistribution procedure to elicit subject's preferences about the fairness principle (e.g., equal distribution, redistribution according to needs). In some treatments, subjects get to discuss their preferred redistribution principle. Frohlich and Oppenheimer, therefore, analyze public spending and not public revenue. The most preferred principle implements a minimum income for the worst-off members in society, whereas money redistribution beyond the minimum income follows proportionality. Moreover, results show that active participation in implementing the redistribution principle (i.e., its endogenous determination) leads to lower inefficiencies in production.

Gerber et al. (2013) extend Frohlich and Oppenheimer's work in several aspects. They analyze both theoretical and experimental voting by feet by allowing subjects to switch between societies. Subjects join societies implementing the redistribution principles that are individually preferred by all members of that society.⁸ In addition, they vary the 'thickness' of the veil of ignorance behind which people vote on their type of redistribution. That is, people either do not know, partly know, or fully know their productivity when choosing their redistribution principle. The authors find redistribution to be lower than predicted when behind the full veil of ignorance, and redistribution to be higher than predicted when the veil of ignorance is partly lifted. However, the most interesting finding is that regimes with different redistribution principles emerge and exist side by side.

Barberá et al. (2015) study the core of a coalition formation game, where players first form coalitions before having to vote on a distribution principle. These can be either meritocratic (no redistribution) or egalitarian. Hence, unlike in Gerber et al. and Frohlich and Oppenheimer's work, the players do not select themselves into a priori given distribution rules but choose the distribution principle ex post, after coalitions have been formed and the productivities of all coalition members are known. Moreover, players do not invest in this model. That is, the effect of different distribution principles on players' investment incentives and economic efficiency is

⁸The very basic idea of voting by joining into the preferred society can be traced back to Tiebout (1956).

not considered. Nonetheless, findings are similar: different distribution principles coexist, and stable coalition structures may include non-segregated groups.

Cabrales et al. (2012) conduct an experiment with costly production, followed by majority voting on egalitarian redistribution. They find that redistribution in conjunction with high effort is not sustainable because the rich are never willing to reward the poor even if the poor have put in high effort in the production phase.

A different branch of the literature analyzes the question of the preferred extent of redistribution. In their seminal article, Meltzer and Richard (1981) analyze the emergence of tax rates, and consequently the size of redistribution in a political system with voting. Particularly, they focus on the production inefficiencies caused by redistribution (along the line of arguments presented in Sect. 6.2 of this chapter). Meltzer and Richards show that, for simple majority voting and the resulting pivotal position of the median voter, the size of redistribution and the inefficiencies due to redistribution decrease as the productivity of the median voter increases. The larger the median voter's productivity relative to the average of society, the smaller the redistribution and inefficiencies.

Following this tradition, Konrad and Morath (2010) analyze a simplified version of the Meltzer-Richard model. They study how prospects of income mobility may affect preferences for redistributing taxes in an individual decision-making experiment without strategic interaction between subjects. Each human subject is paired with two computers that choose actions to maximize their own earnings. It is important to stress that human subjects are aware of the computers' strategies. In a treatment without mobility, observed tax rates are in line with theoretically predicted ones, while past or future changes in the income hierarchy affect the choice of the tax rate in the current period.

Agranov and Palfrey (2015) also report results regarding equilibrium tax rates, inequality, and income redistribution from laboratory experiments on the Meltzer-Richard model. The authors vary the amount of wage inequality and the political process used to determine tax rates. Unlike most papers in the literature, which fix the amount of resources to be distributed exogenously, the authors allow for an endogenous production of the pie and a complete reallocation of resources (not just the surplus). Their results indicate that higher inequality leads to higher tax rates. The tax rates and labor supply functions are both quantitatively close to the theory. The result is robust to the political institution (direct and representative democracy). The authors do not find evidence that inequity aversion might have an effect on behavior.

Finally, work by Kittel et al. (2015) introduces an interesting variant of the redistribution experiment on surplus sharing. Their game involves a communication phase before voting on the tax, and they vary both the initial distribution of endowments and the institutional background in terms of the quorum. The experiment consists of two consecutive stages: a multiple-prize rank-order contest, which involves a simple cognitive ability task, and a surplus sharing stage. In the second stage where subjects vote on redistribution, the authors find that subjects most often equalize payoffs. This finding confirms their initial hypothesis that the existence of a middle class is as effective as institutional hurdles in limiting the power of the less able in order to protect the more able players from being exploited.

Regarding the quorum variation, the unanimity rule as the institutional hurdle spurs production, and as such minimizes external costs due to the inclusion of all members of society. It also allows every member to uphold the decision until the outcome meets particular interests. However, majoritarian voting with a middle class involves fewer bargaining impasses than granting veto rights to the more able players and is, therefore, more efficient.

In other words, there are two ways to counterbalance the abuse of redistribution: institutional hurdles and the presence of a middle class. The existence of a middle class quasi-automatically corrects for both excessive inequality and equality without generating the hold-up effect of a sufficiently high quorum. The position-based interests of the middle class limit the costs burdened upon the minority because its members will shift sides as soon as demands on the minority become exploitative.

A new field of research analyzes how equivalence framing has an effect on the level of redistribution. Utilizing a simplified version of the Meltzer-Richard model, Lorenz et al. (2017) show that if subjects have to set the level of redistribution by agreeing on a redistributive tax rate, the individually preferred and finally implemented level of redistribution is about 50% lower than in cases where subjects have to agree on a minimal income level, holding everything else constant.

Paetzel et al. (2018) find that increasing the transparency of the redistributive consequences by providing a simple calculation tool that informs subjects about the ex post distribution for each tax rate or minimum income, diminishes the above mentioned framing-effect. Transparency has an asymmetric effect on both the individually preferred and finally implemented level of redistribution. In the minimal income framing, a high degree of transparency decreases both the preferred and implemented level of redistribution. In the tax frame, transparency has a contrary effect on redistribution. Here, higher transparency increases the level of redistribution. When subjects are fully aware of the redistributive consequences, they decide on average on the same level of redistribution.

Traub et al. (2009) conclude that most of their subjects preferred a distribution that is equitable enough not to be protested but still allows some to outperform others. Overall, the literature shows a preference for a moderate, two-part redistribution scheme: the first part of the redistribution scheme, that is, its lower section guarantees a minimum income for the poor members of the society. We interpret this as a desire for need-based justice regarding the basic provision of income for all members of society. The second part, its upper section, proportionally redistributes incomes beyond the basic needs. This yields a combination of needs-based justice and equity.

6.4.2 *What is Neediness?*

Of course, a crucial question for need-based justice is what the determinants of the justified need are. To improve our understanding of how need-based justice defines redistribution, we have to understand how a society or a group jointly agrees upon the level of subsistence. Of course, the prospect of what such a level of subsistence

should look like differs significantly and might be very subjective. Even the actual levels of social assistance differ to a large extent between countries (compare, e.g., Gough et al. 1997).

The threshold for social assistance does not appear from nowhere. For example, suppose all subjects state a demand for food. If someone states that he demands twice as much food as another, his demand will likely be rejected and result in no satisfaction of that individual need. If the same person provides information that he has the hardest job in the country, his demand is more likely to be accepted and result in the satisfaction of the need. The context (i.e., the additional information provided) has an effect on the acceptance of individual needs and, therefore, on the level of redistribution. Although it is long known that needs are taken into account in allocation decisions (Lamm and Schwinger 1980), economists have little to say regarding the issue beyond this point.

One of the few exceptions are studies on the desert. Gaertner and Schokkaert (2012) distinguishes between allocations of granted resources and allocations of resources that are created collectively. In the first case, the fairness principles of equality and need are predominant. In the latter case, when resources are created by individual contributions or efforts, entitlements play an important role.

Balafoutas et al. (2013) conduct an experiment with heterogenous initial endowments and majority voting, varying the entitlement of endowments, which are either earned or randomly assigned. They find that the player with the highest and the lowest endowments are mainly driven by material self-interest. Low-endowment players, however, signal their willingness to cooperate by increasing their contributions if the redistribution rate is determined by the majority of the votes.

Mollerstrom et al. (2015) differentiate in an experiment between uncontrollable and controllable (insurable) bad luck. They show experimentally that many spectators condition the compensation for bad outcomes caused by uncontrollable bad luck on the subject's previous insurance decision, even though this choice is irrelevant. Durante et al. (2014) investigate how preferences for redistribution vary with social preferences, risk aversion, self-interest and the source of pre-tax inequality. The main finding is that subjects' preferences for redistribution decreases substantially when the initial distribution of endowments is determined based on the task performance rather than randomly. Durante et al. (2014) use experiments with large groups and compare subjects' demand for redistribution when they are directly affected or when they are unaffected third parties. Between treatment conditions, the authors vary the deadweight loss associated with redistribution (taxation costs). The majority of subjects prefer less inequality when they are third parties, and are sensitive to changes in the cost of taxation.

Along the same line of research, Esarey et al. (2012) analyze under which circumstances subjects with various ideological convictions are willing to redistribute. They show that conservatives have a strict preference for a society with low taxes and almost no redistribution. Subjects with liberal attitudes are willing to redistribute only if redistribution helps the poor, whose poverty is due to bad luck. Thus, liberal subjects favor a combination of redistribution based on equity and on need-based

justice. However, differences in individual productivity or performance are hardly the only reasons for redistribution, either for conservatives or liberals.

We would like to stress that this literature is far from matured. Particularly, we do not know how people solve potential conflicts between ‘dimensions’ of neediness, for example, how much to allocate to someone who is deserving due to high effort when, at the same time, a substantial part of the population is below an ‘appropriate’ minimum income. Although the research agenda is far from new, some basic issues like framing, individual dispositions or the interactions between different context variables remain unexplored. A lot of work lies ahead of the academic community to improve the knowledge on different facets of fairness.

6.5 The Cost of Redistribution, Part 2

Let us return to the earlier discussion on the (indirect) cost of redistribution, this time assuming minimum income levels. That is, people have a basic minimum consumption level that they cannot undercut. Theory predicts a censored distribution of the labor-leisure time-mix. Specifically, some individuals may have strong preferences for leisure. If their most preferred mix of working and leisure yields less than a minimum income, in the absence of redistribution and taxation, they would have to increase their labor time and choose a labor time corresponding to the minimum income level. On the other hand, in the presence of taxation and redistribution, people may rely on the transfer and may allocate less or no time to labor. We describe the rationale in greater detail below.

6.5.1 Choice Restrictions and Need-Based Redistribution

Suppose workers pick their most preferred labor-leisure mix under the restriction that income must exceed C_0 (say, 500 Euros). Further, we assume that there is initially no taxation and no redistribution. The individual worker chooses in this scenario the leisure-consumption combination associated with the highest indifference curve within the feasible set of alternatives. Notice that leisure-consumption combinations yielding a consumption of less than C_0 are not feasible. There are two possibilities: (1) The indifference curves of the worker are ‘sufficiently’ flat (so that she values *ceteris paribus* consumption a lot, but leisure little). Then she will choose point c on her budget constraint B_1 —which is the same point as in the scenario without minimum income. That is to say, her consumption is so high that the minimum income does not influence her decision about the optimal leisure-work-time-mix (panel (a) of Fig. 6.2). (2) the indifference curves of the worker are ‘sufficiently’ steep (so that she values, *ceteris paribus*, consumption little but leisure a lot). Then she will choose the point y (panel (b) of Fig. 6.2). In point y , the worker spends only a few hours working.

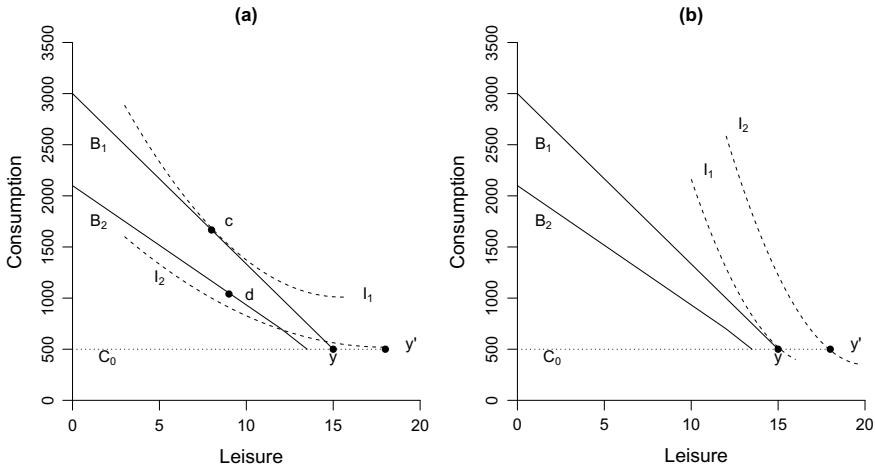


Fig. 6.2 Need-based redistribution leads to a bifurcation regarding the time allocation between leisure and labor

Now let us assume that there is taxation and redistribution based on need-based justice. That is, workers whose income (and consequently their consumption) fall short of C_0 , receive the difference of their labor income and C_0 as a transfer from the state. If a worker has no labor income, her transfer equals C_0 . In turn, workers whose net income exceed C_0 pay a fraction of τ from their labor income as tax in order to finance transfers to needy members of the society.

What happens to the total labor supply? For this, we have to consider the indifference curve I_2 through the point y' with leisure = 18 and consumption = C_0 (in our specific example = 500). Again, there are two possibilities: (1) I_2 is ‘sufficiently’ flat and I_2 intersects the budget constraint after tax B_2 . Then there are points on B_2 which lie beyond I_2 (i.e., lie on higher indifference curves). Thus, the worker will choose point d which is on her budget constraint B_2 . This is the most preferable point in her set of alternatives (i.e., lies on the highest indifference curve intersecting her budget constraint), and leads to less leisure than 18 and more consumption than 500 (panel (a) of Fig. 6.2). (2) I_2 is ‘sufficiently’ steep and I_2 does not intersect the budget constraint after tax B_2 . Then there is no point on B_2 that is more attractive than y' (i.e., lies on higher indifference curves).⁹ Thus the worker will choose point y' , which is the most preferable point in her set of alternatives (i.e., lies on the highest indifference curve). This leads to the leisure of 18 and consumption of 500 financed by redistribution (panel (b) of Fig. 6.2).

⁹Finally, it could be the case that I_2 only marginally intersects B_2 (i.e., only in the point d). Then the worker is indifferent between y' and d , and we do not know which of the two points is chosen by the worker. It is, however, very unlikely that the budget constraint and the indifference curve intersect exactly in one point.

Overall, we predict a bifurcation regarding the response of workers to the existence of taxation and need-based redistribution. Those workers valuing consumption a lot and leisure little, choose their labor-leisure-time-mix in the same biased way as when there is only taxation. Those workers emphasizing leisure a lot and consumption little, respond in their labor-leisure-time-mix strongly to need-based redistribution. They spend their entire time on leisure and no time on working. Therefore, one can hypothesize that the bias effect of taxation and need-based redistribution in favor of leisure is extreme (if there is a sufficient number of latter workers in the population). That is, need-based redistribution may come with excessive costs of redistribution. In the next section, we assess whether need-based redistribution necessarily has a negative effect on labor supply.

6.5.2 Beyond Text-Book Economics: Substitution- and Income Effect

Is need-based redistribution devastating for the efficiency of the leisure-labor-time-mix? Unfortunately, research on this issue is still scarce. What we know is that redistribution, in general, is less efficiency decreasing than predicted: Grosser and Reuben (2013) conduct a two-stage experiment in which participants first earn their income by trading assets in a double auction. The authors use the final allocation of assets in the market to measure (allocation) efficiency. That is, efficiency measures whether those participants with the highest valuations own assets at the end of the trade. In the second stage, participants agree on how they want to redistribute part of their earnings by applying majority voting.

Since taxes are non-distortionary and the median voter has a low income, the theoretical equilibrium tax rate is 100%. As this tax rate equalizes earnings after the trade, participants have little incentive to increase their surplus during the auction stage. Results show tax rates close to what is predicted. If endowments are equalized, the final asset allocation is less efficient, however, not as inefficient as theoretically predicted. Redistribution impedes efficiency, but less than predicted.

Kessler and Norton (2016) compare the framing effect of a wage cut in comparison to an income tax of the same size in a real effort experiment. They show that the wage cut leads to a significantly lower average decline in productivity than the corresponding income tax, regardless of the use of the tax. Notice, however, that in this setting, no minimum income requirement exists, and individual needs play a rather minor role.

Sharif (2000) as well as Nakamura and Murayama (2010) analyze the labor supply for wage variations, distinguishing between the supply behavior of the working poor and that of the non-poor. That is, they compare the labor supply curve of people in very low-income categories at or near the minimum standard of subsistence requirements for those in higher income classes. They show that reservation wages of the working

poor and of the non-poor are likely to be fundamentally different leading to an inverted S-shape labor supply curve of both groups of workers.

Chugunova et al. (2017) take on the idea of subsistence requirements and present to the best of our knowledge—currently the only experiment specifically analyzing the effect of taxation when workers have a minimum income requirement. In their real effort experiment, participants face several stages with a piece-rate payment for numeric tasks. In their baseline treatment, participants have to earn a certain total amount in a stage to be allowed to work in the next stage. In the redistribution treatment, participants have to pay a piece-rate tax of 30% per solved task. The tax return is in some treatment conditions used to support other, systematically disadvantaged participants in this experiment, or in other treatment conditions destroyed altogether. The results of Chugunova et al. show that the productivity of taxed workers increases steeply. In other words, there is hardly any evidence in favor of a negative effect of taxation on productivity. Rather it seems that workers try to compensate for the income loss due to taxation and react to the neediness of disadvantaged members of society by increasing the effort.

To understand this puzzle, let us have a look at the opposite case, i.e., wage increases. Several empirical studies analyze the effect of per-mile wage increases for cab drivers (e.g., Camerer et al. 1997; Farber 2005, 2008). Of course, based on the theoretical considerations in Sect. 1.2, we could claim that a wage increase raises the price of leisure. Therefore, workers ‘demand’ more work and less leisure time. However, Camerer et al. find that the daily wage elasticity of labor supply of New York City cab drivers is substantially negative. This means that a wage increase leads to less labor time.

This result is less surprising if we acknowledge that there is not only the substitution effect of a wage variation (i.e., leisure becomes more expensive, so workers demand less), but also an income effect. If the worker has a target income, she needs less time in order to reach this income. Therefore, she demands less labor time. Indeed, Farber (2008) provides evidence suggesting that cab drivers are target earners and hold reference-dependent preferences.¹⁰

In the same vein, Fehr and Goette (2007) do a controlled field experiment with bicycle messengers in Zurich. They pay them for a certain time interval a wage premium of 25% per ride and compare the number of rides and shifts that they take under the new payment scheme to their previous behavior. Fehr and Goette provide evidence for both the substitution effect and the income effect: on the one hand, bicycle messengers take more shifts, implying that they substitute leisure time for labor time, and on the other hand, they take on less rides per shift, implying that they work less hard as the income target is reached nonetheless.

It seems that the effect of wage increases is at best ambiguous. Both the substitution effect and the income effect are at work. If the substitution effect dominates the income effect, the total effect may be positive, but this is far from clear. Likewise, the results on the effect of income taxation when workers have a minimum income

¹⁰Altman (2001) discusses a richer model of labor supply for target real income and target non-market time in further detail.

requirement suggest target incomes, as workers try to compensate for the income effect of taxation. Overall, it seems the effect of moderate taxation and need-based redistribution does not have to be necessarily negative in terms of productivity. Yet, the results are, to the best of our knowledge, inconclusive.

6.6 Conclusion

This chapter adds to the long list of economic papers dealing with biased incentives caused by redistribution and resulting welfare consequences. We discuss the indirect costs of redistribution. We focus on the effects of redistribution following the principle of need-based justice (i.e., whether people have basic needs and whether redistribution is used to satisfy those needs). This is a rather new perspective for the taxation literature.

We disentangle need-based justice from the two other major principles of justice, equality and equity, which are discussed far more often in the economic literature. Evidently, equity has systematic advantages in terms of increasing efficiency when compared to equality. Redistribution based on equity provides incentives for effort provision, while redistribution based on equality impedes incentives for effort provision.

In contrast, taxation according to need-based justice generates no such strong effects. This finding is particularly surprising as a large percentage of real-world redistribution seemingly follows this fairness principle. Therefore, debates about redistribution based on need-based justice appear very important for a greater part of the population.

The limited evidence we present here provides a rather optimistic view regarding the consequences of need-based redistribution. Overall, need-based justice is a generally accepted principle of redistribution. Also, there is little proof that (moderate) income taxation has a negative effect on the labor supply of workers who have specific needs. On the contrary, it seems that workers try to compensate for the decrease in income due to taxation. One way to explain this finding is that target income fosters a strong income effect.

Of course, research on this topic is far from complete and more discussion is required. For example, the experimental studies we cite leave out the important question of how societies agree upon justified needs. Yet, the effect of need-based redistribution may be more negative if needs are less objective and salient. Another example is the effect of receiving transfers. That is, the primary focus in the economic analysis of redistribution is on the people who pay the taxes. However, the benefits created for recipients of need-based redistribution are also important. As these questions are vital and have far-reaching consequences for the long-term success of our socioeconomic systems and our societies, we invite further research on this long unattended issue.

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