Removing Rents: Why the Legal System is Superior to the Income Tax at Reducing Income Inequality

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Abstract

Reducing income inequality is, in the eyes of many, one of the major political issues of this time. The conventional political approach to reduce income inequality is to raise taxes for the wealthy and redistribute the proceeds to the poor. This approach finds support in the economic literature, which postulates that redistribution through the tax system is more efficient than through the legal system.

I argue instead that the legal system is intrinsically superior at reducing income inequality—at least to the extent that inequality is caused by rents (profits that would not have been earned in a perfectly competitive and transparent economy). The legal system is superior because it can address the specific market failures that make rents possible. This way, it can prevent income inequalities from occurring in the first place—an ex ante approach. The income tax system, by contrast, tries to correct the problem ex post—after it has already occurred.

Rents can be analogized to implicit commodity taxes, the proceeds of which go to private individuals or companies rather than to the government. Just like explicit commodity taxes (with varying rates), they cause price distortion; and just like all explicit taxes, they cause labor distortion. Legal rules that reduce rents therefore reduce both price and labor distortion. Income taxes, by contrast, leave the price distortion unaffected and increase labor distortion (by being an overly broad instrument that treats income from rents and hard work alike).

This finding has major implications. The first is that trade-offs between equity and efficiency

should be made in the legal system whenever legal rules generate or reduce rents. The second is that rents (and windfalls) should be considered costs, rather than zero-sum effects, in law and economics models. As a result, many law and economics models may need to be revisited.

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1. Introduction

Conventional economic wisdom holds that the tax system—not the legal system—is the optimal vehicle for income redistribution.[1] Though the tax system admittedly causes certain economic distortions, so goes the argument, using the legal system to redistribute income would produce the same distortions while also interfering with the separate goals of the legal system (Shavell, 1981, Kaplow & Shavell, 1994, 2000).

Take tort law (Kaplow & Shavell's prime example) as an illustration of this mainstream argument. Suppose the government is considering two methods to redistribute income to the poor. The first method consists of taxing all wealthy individuals, and redistributing the tax proceeds to the poor. The second method consists of waiting until a car accident happens and then letting wealthy injurers pay artificially high tort damages when they hit a poor victim and receive artificially low damages when they are hit by a poor injurer. The latter method of redistribution, in addition to causing the same distortions of the tax system, would perversely incentivize poor people to drive negligently or even trigger accidents (as well as incentivize wealthy people to be overly cautious). A fundamental goal of tort law—achieving optimal precaution—would be undermined. The tax system, while flawed, at least avoids these unintended consequences.

As a consequence, conventional economic wisdom holds that the legal system should focus only on efficiency and that equity–efficiency trade-offs should be made only in the tax system; income inequality arguments should be irrelevant in contract law, property law, tort law, employment law, patent law or any other field of law except tax law.[2]

In this paper, I challenge this viewpoint and argue instead that the legal system is intrinsically superior at reducing income inequality. My starting point is that there are two fundamental ways to correct income inequality. The first one—the *ex post approach*—intervenes after income inequality has occurred. This is the conventional approach, which is also taken in

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[1] In this paper, in line with the literature, the term "legal system" refers to all fields of law except for tax law. Tax law is defined so as to include transfer payments to individuals. In line with the literature, I compare the legal system with the (federal and state) income tax system. Nonetheless, the superiority of the legal system will extend to other forms of taxes, such as sales taxes or property taxes, because these are generally considered to be even more distortive than income taxes. See Atkinson & Stiglitz (1976).

[2] Of course, in the traditional view, income differences may *indirectly* be relevant in the law, for instance to determine damages in tort law or contract law, or to prove an unequal bargaining position under the unconscionability doctrine. But correcting income inequality is not seen as a goal of the legal system.

the economic literature (Kaplow & Shavell, 1994). The second one—the *ex ante approach*—tries to prevent income inequality from occurring in the first place. This paper takes the latter approach.

I also start from the observation that income inequality is caused not only by talent and labor effort differences, but also (and possibly to a large extent) by *rents*.[3] Put simply, rents are profits that would not have been earned in a perfectly competitive and transparent economy.[4] These profits are enabled by a variety of market failures: network externalities, asymmetric information, decreasing economies of scale, cartels, lock-in effects, exploitation of behavioral shortcomings, and more. Cartels, for example, create collusive, anticompetitive behavior that artificially inflates the price of goods and services above what would be possible in a competitive market. The rent, then, is the difference between what a good could be sold for in a perfect market and what the cartel can sell it for.

My point is that the legal system is intrinsically better at correcting these market failures; the legal system can use narrower instruments that specifically target the rents. This way, the legal system can remove the causes of income inequality while the income tax can only treat the symptoms.

My core assumption (which I make in line with the tax literature)[5] is that the income tax system can observe income but cannot determine to what extent this income consists of rents. Consider three plumbers who all make 50% more than the average plumber. The first does so by working 60 hours instead of 40 hours per week. The second does so by working only 40 hours per week while participating in a price cartel. The third does so by working 40 hours per week while overcharging naive consumers for spare parts. The extra income of the first plumber does not consist of rents—this surplus would also have been made in a perfectly competitive, transparent market. The extra income of the second and third plumber does consist of rents because price cartels and information rents (based on the exploitation of consumers with inferior

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[3] To what extent rents are responsible for income inequality is an empirical question that is beyond the scope of the article. In a book-length project, *The Art of Overpricing*, I argue that rents are larger than generally believed.

[4] Rents should be clearly distinguished from profits. In a perfect market, businesses will make a sufficiently high profit to compensate the entrepreneur for her time and to pay the investor a normal interest for the use of her capital. Rents are anything that exceeds the profits that would have been made in a perfectly competitive market.

[5] The difficulties associated with observing rents seem to have led tax scholars to completely abandon the rent tax idea of Henry George. Illustratively, the term "rent" does not even appear in the subject index of the recent monograph of Kaplow (2008).

information about the costs of spare parts) would not be possible in a perfectly competitive, transparent market. The tax authorities, however, can only observe the plumbers' income without being able to determine why the income is so high; they cannot know which portion of a person's income is the product of rents. As a result, the tax system can only remove rents by increasing marginal tax rates for everybody with the same income, including those who do not accrue any rents but simply work harder.

At the outset, however, it is important to emphasize that the assumed informational advantage of the legal system does *not* hinge on the assumption that civil servants working for the legal system are doing a better job than those working for the tax authorities.[6] The informational advantage, instead, is only related to the timing of intervention: Ex ante intervention requires only estimations on aggregate rents (and inequality costs), while ex post correction requires information on individual rents. For instance, when the legal system has to decide on entry regulations for the physician market, it only has to know the total magnitude of rents associated with certain rules; if the tax system wants to remove these rents ex post, it has to know how many rents each individual physician received.

Another—obvious—assumption I make in this paper is that rents do exist. To what extent the GDP consists of rents and to what extent rents are in practice dissipated in the form of rent-seeking costs is beyond the scope of this paper. The paper asks what needs to be done *if* income inequality is caused by rents. In this respect, this paper is analogous to an environmental economics paper that identifies the optimal instruments for reducing pollution without empirically proving that pollution exists. While readers may have varying estimates on the empirical significance of rents, this paper's findings will be relevant as long as there are at least some rents in the economy that are not fully dissipated and that increase income inequality.

To understand the results of this paper, it is helpful to *analogize a rent to an implicit commodity tax*, the proceeds of which go to a private party instead of to the government. Just like commodity taxes, rents cause price distortions (since the price is set above the true costs, and since the rent rate may differ among products so that the choice between products is also distorted), and just like taxes more generally, rents cause labor distortions (because they reduce

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[6] In practice, it may well be true that the FTC is more specialized in discovering cartels, while the IRS is more specialized in observing income. This difference is not fundamental, however, because the IRS could in theory hire experts in antitrust enforcement and the FTC could hire experts in income detection. *See* Weisbach & Nussim (2004).

the marginal benefits of labor compared to leisure, since rents are only paid when goods are bought on the market, and rents therefore "tax" labor, not leisure). Moreover, since the rent-receiver usually becomes wealthier than average, this implicit commodity tax is regressive in nature.

When the tax system removes a rent, there are two more distortions than when the legal system removes that same rent. The first is the well-known *labor distortion*.[7] Tax increases reduce the incentive to work hard because the tax authorities cannot distinguish between rents and hard work; as a result, they can only increase the tax rates on rents by also increasing the tax rates on hard work.[8] The second is that the tax system leaves the *price distortion* associated with the rent unaffected. Indeed, in the examples of the second plumber (who is in a cartel) and the third plumber (who overcharges for components), the problem is not only the income inequality but also the fact that these prices are set above their true costs. Income taxes do not change the overpricing, but only reallocate the proceeds of overpricing. The legal system, in contrast, reduces overpricing when it reduces the rents.

It is important to realize that the legal system is not only superior in the obvious cases, in which the rent is caused by inefficient law and therefore there is no trade-off between equity and efficiency. It is also superior in the many cases in which there is such a trade-off. Take for instance antitrust enforcement (detecting cartels). Since enforcement has a cost that needs to be balanced against the efficiency gains of more competitive markets, the optimal level of enforcement will often be lower than the maximum level. But when the inequality costs of cartels are added to the equation, the optimal level of enforcement will often increase (for instance, it may become optimal to spend $150 million instead of $100 million during a given period). More generally, adding inequality costs to the equation will usually lead to more aggressive legal intervention against all types of market failures.

This paper aims at contributing to the existing literature in several ways. It is the first to compare ex ante redistribution by the legal system versus ex post redistribution by the tax system,[9] to systematically analyze the effect of rents on optimal redistribution methods,[10] and to

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[7] I use the shorter term "labor distortion" to denote labor-leisure choice distortions (sometimes also called "work effort incentives distortions").

[8] The legal system, by contrast, not only avoids this labor distortion, but it even reduces labor distortion by reducing rents which are—just like taxes—a source of labor distortion. See Section 2.2.

[9] Logue & Avraham (2003)'s point that insurance regulation can efficiently redistribute income (by preventing adverse selection that makes insurance impossible) could be interpreted as an implicit argument

identify why the legal system is *intrinsically* and *generally* superior to the tax system.[11] This paper is also the first in the optimal taxation literature to analyze rents as implicit commodity taxes, which cause labor distortions as well.

Since Kaplow and Shavell's seminal papers (postulating that the income tax is superior at redistributing income), an extensive literature has been developed, qualifying the results of Kaplow and Shavell. Yet this literature compares taxes only with *ex post* redistributive legal rules (such as tort rules) and not with ex ante legal rules.[12] Some authors have argued, for instance, that tort law might theoretically be better at redistributing income if it could better observe some proxies for income-earning ability, such as "klutziness."[13] The point has also been made that increased tort liability related to leisure activities may reduce the attractiveness of leisure, offsetting the labor–leisure incentive distortion of the tax system somewhat.[14] However, so far, the literature has not identified clear examples of legal rules that should be changed on the basis of these rationales. Ex post legal rules may also be better at redistributing nonmonetary goods such as self-respect[15] or preferable when monetary transfers themselves are considered distasteful.[16] Moreover, they may have an expressive function, decreasing the resistance to redistribution.[17] Ex post redistribution through the legal system may distort behavior less if it is

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in favor of a specific type of ex ante legal rules. Logue & Avraham, however, do not consider ex ante legal rules more generally, nor do they discuss rents.

[10] Rents are also discussed by Galle (2010), but in a different context and regarding a different type of rents—locational rents, which reflect the value jurisdictions provide by making good policy decisions.

[11] Many legal scholars have argued that redistributive arguments should play a role in the legal system, without, however, identifying the reasons why the legal system would be superior to the income tax system. Often-cited papers include Ackerman (1971); Michelman (1978); Kronman (1980); Kennedy (1982); Calabresi (1991).

[12] Shavell (1981, showing that a redistributive legal rule causes the same labor distortions as a tax if it redistributes the same amount of income). Kaplow & Shavell (1994, arguing that an inefficient redistributing rule can be replaced by a combination of an efficient rule plus a redistributive tax scheme). *See also* Hyllund & Zeckhauser (1979, making a similar point on the superiority of tax system over government projects); Miceli & Segerson (1995, concluding that tort law should focus solely on efficiency, if insurance or instruments for redistribution are available, responding to Arlen); Jennifer H. Arlen (1992, arguing that optimal tort liability may depend on the wealth of defendants, but assuming implicitly that income taxes are not available.)

[13] Sanchirico (2000, 2001); Logue & Avraham (2003); Avraham, Fortus & Logue (2004).

[14] Sanchirico (2000); Sanchirico (2001). Technically, Sanchirico's result is based on the assumption that there is no separability of the utility of leisure and care.

[15] Lewinsohn-Zamir (2006, framing her analysis in terms of other values than efficiency); Georgakopoulos (2002); Georgakopoulos (2006).

[16] Blumkin & Margalioth (2005).

[17] Lewinsohn-Zamir (2006).

less "salient" so that individuals underestimate its extent.[18] In addition, it may become a second-best solution if there are imperfections in the tax system [19] or in the political system.[20]

All these papers have raised interesting theoretical qualifications to the result of Kaplow and Shavell; yet so far, hardly any examples of legal rules that should be adjusted on the basis of these qualifications have been offered. Therefore, the literature so far has not altered Kaplow and Shavell's conclusion that taxes are *in general* superior. As a result, law and economics textbooks consider the result of Kaplow and Shavell as the leading principle.[21]

This paper is organized as follows. Section 2 offers a theoretical analysis.[22] Section 3 explains the intuitions behind the results, using four illustrations, and briefly discusses other applications to show that the results apply in a wide range of cases. Section 4 concludes by discussing the results. The appendix models the effect of rents on labor distortion.

2. Analysis

2.1. Core assumption: The tax system cannot observe rents because it operates ex post; the legal system can observe rents because it operates ex ante

A central assumption of this paper is that the tax system cannot observe rents. For instance, in the previously mentioned hypothetical of the three plumbers with an income 50% above the average income of plumbers, I assume that the tax authorities can observe the magnitude of the plumbers' income but not the reason why their income is so high. Note that this is a generally accepted assumption in the tax literature.

Yet, when legal rules are designed, I assume that the inequality cost can be observed, and therefore that the total magnitude of the rents can be observed as well. For instance, when the government determines the optimal budget to enforce anti-cartel rules, I assume that the

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[18] Jolls (1998, potential injurers tend to underestimate the probability of accidents, so that wealthy injurers would also underestimate the effects of a redistributive tort law system). *See also* McCaffery & Baron (2005, exploring cognitive biases with respect to the perceived fairness of tax policy); Markovits (2005).

[19] Blumkin & Margoliath (2005); O'Reilly (2008); Raskolnikov (2013, the tax system may be less redistributive than assumed in Kaplow and Shavell, for instance because tax rules have many other goals, such as deterrence of undesirable behavior).

[20] Shapiro & McClennen (1998); McDonnell (2003); Galle (2010).

[21] Cooter and Ulen (2008, pp. 9-11); Polinsky (2003, pp. 152–156); Posner (2011, p. 715). This view is also adopted in Weisbach (2003) and Curran (2000).

[22] Note that the math that is used in Section 2 is only meant to make some of the statements more precise, rather than endogenize some of the results.

government is able to observe not only the enforcement costs and deadweight losses but also the inequality costs associated with cartels. Similarly, when lawmakers decide whether plumbers should be obliged to publish their price lists on the Internet (a measure that would make it harder to acquire information rents on components), I assume that they are not only able to observe the administrative costs and efficiency benefits (including reduced deadweight losses) of this rule but also the inequality costs associated with the information rents. Is this inconsistent?

The reason I assume that the legal system has an informational advantage is that it needs less information than the tax system because it *intervenes at an earlier stage*. Indeed, at an ex ante stage, when a problem is attacked at its roots, there is less information required than at an ex post stage, when the symptoms need to be removed.

To understand the intuition behind this point, consider the following hypothetical. Suppose you are transporting a box with all your golden coins in an airplane, and at some point, the golden coins risk falling out of the airplane. There are two ways to prevent losing the golden coins. The first is to prevent the box from falling out of the airplane. This is an ex ante intervention. The second is to let the golden coins fall out of the airplane and to later pick them up where they have fallen. This is an ex post intervention. It is clear than an ex ante intervention requires less information: all you have to know is how many coins there are in the box, and how much effort it costs to keep the box from exiting the plane. But in an ex post intervention, you must search for your coins across 10,000 acres. And for each coin that you find, you have to prove that it is yours and not a coin belonging to the owner of the land where you found it.

Now analogize the golden coins to rents. Suppose that you spill a box with rents over the economy, for instance, by granting a guild to the plumbers.[23] You may roughly know how many rents are created this way, but once they are spread over so many plumbers, it is next to impossible to find out how much rent each individual plumber received. The problem is not only that you need more pieces of information (as a matter of fact, as many pieces as there are plumbers); the problem is also that, for each plumber, you have to know which part of the income is due to rents and which part is due to hard work or higher-than-average efficiency.

So the reason the legal system has an informational advantage is that *it needs less information*—it needs only information on the *total amount of rents* and *not on individually-*

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[23] Guilds are discussed here only as a hypothetical example of an inefficient regulation. While economists are usually negative about guilds and other forms of entry-barrier-creating institutions, guilds may also have had a positive economic function by protecting consumers against fraud (Preston, 1996, pp. 30–31).

received rents. Moreover, the information on the total amount of rents does not always need to be precise. For instance, when policy choices are discrete, it is sufficient to know whether the total benefits of legal intervention outweigh the total costs associated with it; when policy choices are marginal, information on marginal values is required but only in the region where the fine-tuning needs to be placed. Note also that in those cases, *the tax system needs the same information plus information on individual values*. Indeed, if the tax system wants to reduce these rents by increasing general tax rates, it also needs to know the marginal inequality costs of these rents (which need to be balanced against, for instance, the marginal labor distortion costs). In some cases the information requirements are even more limited. For instance, in the plumbers' guild example (further discussed in Section 3.1), it is sufficient to know that equality and efficiency point in the same direction—so there is no need at all to know the magnitude of the total rents.

2.2.   *Rents as implicit commodity taxes paid to the wealthy, causing price and labor distortion*

A rent is a profit that would not have been made in a perfectly transparent, competitive market. For instance, if the true cost of a plumbing service is $100, the price on a perfect market would be $100. If the plumber succeeds in selling it at $150 (for instance, because he can overcharge consumers for spare parts since the market is non-transparent), he receives a rent of $50.[24]

Analytically, a rent is analogous to a commodity tax. Suppose that in a perfect market, in which the plumbing service's price is $100, the government introduces a 50% commodity tax on plumbing services so that the consumer now pays $150. Just as in the case of the $50 rent, the price is now $50 above the true costs, causing price distortion. Just as in the case of the rent, this tax impoverishes the consumer. One difference, though, is that the tax proceeds go to the government while the rents go to a private individual. If we assume that government uses the tax proceeds to reduce income inequality (by redistributing the tax proceeds more equally, either in the form of cash transfers or in the form of public goods), while the rents go to individuals who end up getting wealthier than average, we could consider a rent as an implicit, regressive commodity tax. Somewhat imprecisely, a rent could be called a "commodity tax paid to the

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[24] It should be repeated that the "true cost" of $100 includes a market compensation for the entrepreneur's time and a market interest for the investor's capital.

wealthy."[25]

Since rent rates vary among products, rents even have to be analogized to "non-neutral" commodity taxes, which distort choice between products. Suppose that restaurant prices are only 1% above the true costs (because competition is high on that market), while plumbers can set prices 50% above the true costs (because the market for components is non-transparent) and tablet manufacturers can set repair prices 99% above the true costs (because consumers are locked in ex post). This is the equivalent of a commodity tax system with rates of 1%, 50% and 99% for the respective services. Because rates are not set at uniform levels, such a commodity tax system would violate the well-known normative "neutrality" principle of Atkinson & Stiglitz (1976).

Just like explicit taxes, implicit commodity taxes in the form of rents also cause labor distortion. It is well known that explicit taxes cause labor–leisure distortion because they tax only labor income, not the utility derived from leisure. Explicit taxes, in other words, reduce the utility individuals derive from working (compared to enjoying leisure) by reducing the quantity of goods individuals can buy with the income they derive from working. But the same applies to rents: they also make goods artificially more expensive and therefore reduce the utility that can be derived from working (compared to enjoying leisure—since no rents have to be paid when no goods are bought).

To draw a more complete picture of labor distortion effects in an economy, it is therefore necessary to consider the effect of not only explicit taxes but also of implicit taxes (i.e., rents). I will use the term *total burden* to denote the sum of explicit and implicit taxes. To illustrate, if individuals pay 40% taxes, but spend 20% of their net income on rents (for instance because they buy some goods in oligopolistic markets), their total burden of explicit and implicit taxes is 52% (i.e., 40% taxes + 12% rents). If the rents were abolished (by making all markets perfectly competitive) but replaced by explicit commodity taxes of 20% on all goods, the total labor distortion would remain the same.[26]

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[25] This is somewhat imprecise because it assumes (as the main part of this paper does) that the recipient of the rents is always wealthier than average. I comment on this assumption in Section 4.2.

[26] In this numerical example, explicit commodity taxes have to be set so that 20% of the total price consists of commodity taxes; if the commodity tax rate is defined in reference to the pre-tax price, the rate needs to be 25% to obtain that effect. Note also that in this sub-section I only focus on the labor distortion effect on rent-payers. The effect on rent-receivers is more complicated, and will be discussed in section 2.4 and the appendix.

2.3. The tax system leaves price distortion unaffected; the legal system reduces price distortion

When the legal system corrects the market failures that cause the rents, the effect is not only that rents become lower, but also that prices get closer to the true costs. For instance, when cartels are more often prosecuted, fewer cartels will be formed, and prices will be lower on average.

By contrast, when the tax system taxes away a fixed percentage of the rents, it leaves prices unaffected, since rent-receivers still have an incentive to maximize rents. Indeed, whether tax rates are 40% or 95%, post-tax rents are still maximized by maximizing pre-tax rents. (The only exception is if tax rates were 100%; this would remove the incentives to acquire the rent in the first place and therefore also remove the price distortion associated with the rent. But a 100% tax rate would obviously eliminate all monetary incentives to work, so that it is not a realistic policy option.)

As a matter of fact, what happens when tax rates are increased is that implicit commodity taxes paid to individuals are transformed into (still implicit) commodity taxes paid to the government. While this reduces income inequality, it still has all the distortive effects of non-neutral commodity taxes (violating Atkinson & Stiglitz, 1976).

2.4. The tax system increases labor distortion; the legal system reduces labor distortion

That taxes cause labor distortion is generally accepted in the literature. This is a side effect of being an overly broad instrument, targeting the entire economy and treating rents and the proceeds of hard work alike. That the legal system avoids these labor distortions is also evident— it is a consequence of using narrower instruments, targeting specific market failures in specific sectors.

That a more active legal system actually *reduces* labor distortion may not be immediately clear to some readers. Yet, it follows directly from the insight that rents cause labor distortion. Rents do so by making products artificially more expensive; therefore, they make it less rewarding to work hard in the labor market. Rents, as we have seen, can be analogized to commodity taxes; therefore, we should expect them to have similar labor distortion effects as explicit commodity taxes.

While the labor distortion will be in the direction of too little effort when we consider those who pay the rents, it will usually be in the opposite direction when we consider those who

receive them—working harder than optimal. Indeed, for rent receivers, rents work like implicit labor subsidies, leading to too much labor effort.

To be fair, rents may have a positive effect on the rent receivers' labor effort in one small zone in which the received rents are smaller than the taxes and rents paid to others. In this zone, rents just cancel out some of the discouraging effect of taxes and other rents. The interplay of those two effects is illustrated in the mathematical appendix.

This positive effect, however, happens only when the rents are relatively low, and only on the side of the rent receiver, not on the side of the net rent-payers, where the effect remains negative. Usually, this overall effect will be distortive since one large distortion (on the side of the rent-payers) plus one small distortion (on the side of rent-receivers) tends to be worse than an equally strong, medium-force distortion on both sides.

The bottom line is that rents introduce both an implicit tax and subsidy, which cause labor distortions in different directions. Usually, the overall effect of rents will be negative and therefore, a more active legal system will usually reduce labor distortions. Nonetheless there may be exceptional cases in which a distortion improves society by canceling out some other distortion.

2.5. *Should the legal system be used exclusively or jointly?*

So far I have argued that the legal system has intrinsic advantages over the tax system when it comes to reducing income inequality caused by rents. But does it mean that all the work has to be done by the legal system? Or should both be jointly used—the legal system just a little more than the tax system?

Let us frame the question as follows. Suppose there is an economy with rents but for some magical reason these rents do not affect income inequality. Both the legal system and the tax rates are set optimally (at x^E and t^E), taking into account that rents have efficiency costs (such as deadweight losses) but no income inequality costs. More specifically, each legal rule is based on balancing two costs: one that is increasing in more legal intervention ($a(x)$, where x stands for the degree of legal intervention), and one that is decreasing in x (denoted as $b(x)$).[27] For instance, $a(x)$

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[27] More specifically, x is the degree to which a change in the legal system (or in its enforcement) reduces the received rent. If $x=0$, the rent is unaffected; if $x=1$, the rent is completely removed and the price of the commodity reflects the true costs. (Note that this is analogous to the tax rate: if $t=0$ the rent is unaffected by the income tax; if $t=1$ the rent—just like any other form of income—is completely removed by the

may stand for the administrative costs of the legal system and b(x) for the price distortions associated with the market failure that causes the rent. Similarly, tax rates (*t*) are based on balancing two costs: one that is increasing in higher taxes (*l(t)*), and one that is decreasing in t (*m(t)*); (*l(t)* may stand for labor distortion, and *m(t)* for the benefits of more public goods, but the symbols can stand just for anything that is increasing and decreasing in *t*.

Now imagine that suddenly the same rents start to cause income inequality (for instance because the rents end up in the hands of fewer individuals). More specifically, there is now an income inequality cost ε related to after-tax rents R.[28] (The reason income inequality is considered a cost does not matter here; it can be the decreasing marginal utility of money, or the utility loss due to empathy, or a purely ethical cost). Should the legal system make adjustments (increasing *x*, thereby preventing acquisition of pre-tax rents) or should tax rates go up (increasing *t*, thereby reducing the post-tax rents)?

The general question is one of maximizing an outcome with two instruments—each with different costs. Mathematically, this is an unconstrained maximization problem with two variables. The outcome will obviously depend on the specifics of the model that is chosen. Yet one can say that under conventional assumptions both will do some of the work. Indeed, the optimal legal rule now has to minimize $a(x)+b(x)+\varepsilon R(x,t)$ and the tax rate now has to minimize $l(t)+m(t)+\varepsilon R(x,t)$.[29] If we assume convexity, then both should make some adjustments at the

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income tax.)

[28] More formally, let constant ε (with $\varepsilon \geq 0$) denote the inequality cost per dollar rent, after legal intervention and after tax. For instance, if an after-tax \$1 billion rent has a \$200 million inequality cost, then $\varepsilon=0.2$. The total inequality cost is therefore εR.

[29] I assume for simplicity that *x* has no indirect influence on *l(t)*, i.e., $\partial^2 l/\partial t\partial x=0$. However, if *l(t)* includes (or stands for) labor distortion costs, an increase of *x* may indirectly lead to adjustments of *t** (other than through a decrease of inequality costs). Indeed, if the legal system reduces rents, the labor distortion caused by rents is also reduced. Individuals are less "exhausted" by rents, and therefore the marginal discouragement of taxes may become lower, i.e., *l(t)* may decrease. Technically, this is the case if $\partial^2 l/\partial t\partial x<0$. Since labor distortion costs decrease, the optimal tax rate may increase (though it may also decrease because of a second effect: lower rents lead to lower inequality costs). While this effect may change the exact values of *t** (and *x**), it does not change the general conclusion that the legal system should also be used to address income inequality costs (associated with rents) as long as *t**<1. The reason is that this effect in itself cannot push *t** to 1. Even stronger, the adjusted *t** will never be higher than the total burden (*t**+*r*–*rt**) before the legal system addressed the rent. To see why, suppose that at the optimal tax rate the total burden *t**+*r*–*rt**=52%. Now suppose that a legal rule completely removes the rent (*r*=0) and suppose that *t* would be increased to *t*=52%. The marginal labor distortion of taxes at this rate is still the same as before the rent was removed (when the tax rate was lower but labor was also distorted by the rent). But the other marginal cost *m'(t)* has not changed and the inequality cost caused by the rent has decreased to 0. Therefore this tax rate of 52% cannot be *t** in this case.

margin.[30]

Let's first identify the conditions under which the legal system has to do at least a part of the work—that is, the conditions under which the equity–efficiency trade-off should also be made in the legal system. Let's denote the new optima (which take into account the income inequality cost of that particular source of rents) as x^* and t^*, respectively. A weak condition (for x^* being higher than x^E) is that, after the adjustment, the optimal tax rate is still lower than 100% ($t^*<1$). Indeed, if optimal tax rates are 100%, income inequality in society is entirely eliminated and there is no role left in this respect for the legal system.[31]

Note that this is a "weak" mathematical condition because all economists will agree that general tax rates of 100% are unlikely to be optimal since they would destroy all monetary incentives in the economy.[32]

Now we consider the opposite question—whether the tax system should also do a part of the work here. Reasoning in a similar way, it can be shown that the tax system should do some of the work unless the legal system already did all the work (which is the case if $x^*=1$).

So far, the results show that *the equity–efficiency trade-off should also be made in the legal*

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[30] Technically, since it is an unconstrained maximization problem with two variables, we must assume not only that $a(x)$ and $l(t)$ are convex and $b(x)$ and $m(t)$ semi-convex, but also that the Hessian matrix (of the second derivatives) is positive semidefinite (with a positive determinant) on the whole domain. (The latter condition essentially assumes that the second-order effects through the cross-derivatives are not strong enough to dominate the first-order effects that come from the positive second derivatives of x and t.) From these definitions (and the fact that the sum of convex functions is a convex function), it follows that the social cost function $S(x,t)$ is a strictly convex function of x and of t. Therefore, any stationary point is a *global minimum*. If x^* denotes the value of x that minimizes the previous expression given t and t^* the optimal value of t given x, then, given the assumptions, $x^*=x^*(t^*)$ and $t^*=t^*(x^*)$.

[31] Since the case in which inequality costs are not taken into consideration is analytically identical to the case in which inequality costs are taken into consideration but equal zero ($\varepsilon=0$), the first-order condition for the efficient optimum is $a'(x)+b'(x)=0$. Let x^E denote this optimum. Mathematically, the legal system should play a role in reducing income inequality caused by rents if $x^*>x^E$. By comparing this first-order condition with the one of expression (3), we see that $x^E=x^*$ only if $\varepsilon(1-t^*)=0$. Since we are considering the case in which there are positive inequality costs ($\varepsilon>0$), this implies that t^* has to equal 1.

[32] Another weak condition (that needs to be simultaneously fulfilled) is that, at the efficient outcome x^E (that is, the legal intervention that was optimal before the adjustment was made to address the income inequality cost), the marginal cost was not too high. If the standard assumptions of convexity and continuity are made, this assumption can be reduced to an even weaker assumption—that the efficient outcome x^E was higher than zero. Indeed, since $x^*{\geq}x^E$ and $t^*{\geq}t^E$ there is an interior solution if $x^E>0$ and $t^E>0$. If $x^E=0$, it is possible that the legal system should not be used to reduce income inequality caused by rents. Indeed, if the administrative costs associated with the legal system were so high that doing nothing at all with the legal system was optimal, it is not certain that an additional benefit would change this outcome at the margin. Similarly, if $t^E=0$, it is possible that the tax system should not be used to reduce income inequality caused by rents.

system. But they do not show yet *why the legal system is superior*—that is, why the legal system should do most of the work. To express the idea that legal rules are narrower instruments (with only local and therefore usually lower side effects, in contrast to tax rate increases, which have side effects on the entire economy), we can rewrite $a(x)$ as $a(x)\check{R}$, $b(x)$ as $b(x)\check{R}$, $l(t)$ as $l(t)G$ and $m(t)$ as $m(t)G$ (where $\check{R}$ is defined as the total rent in the absence of any legal intervention or tax and G stands for the GDP). In other words, the costs of legal intervention are written in comparison to the total amount of rents that are targeted (and which are completely removed when $x=1$), while the costs of the tax system are written in comparison to the GDP (since the total tax amount equals the entire GDP if $t=1$).[33] Moreover, rewrite for simplicity $\varepsilon R(x,t)$ as the more specific function $\varepsilon\check{R}(1-x)(1-t)$ and define r as the proportion of the GDP that would have been spent on that particular rent $\check{R}$.[34] After defining the social cost function, deriving the first-order conditions and doing some algebra, we find that the following must hold at the (unique) optimum:[35]

$$l'(t)+m'(t)=\frac{r(1-x^*)}{1-t^*}[a'(x)+b'(x)] \tag{6}$$

The left side lists the net marginal costs of the tax system; the right side lists those of the legal system. Parameter r in expression (6) expresses the idea that the legal system uses narrower instruments, which have only local side effects (because the side effects are multiplied by

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[33] For simplicity, I assume that the GDP equals the national income and that the tax rate t is applied to the entire GDP. Note also that if $a(x)$ were to be interpreted as the cost per dollar removed, then the total costs should strictly speaking be expressed as $a(x)x\check{R}$. Similarly, the other costs would be expressed as $b(x)x\check{R}$, $l(t)tG$ and $m(t)tG$. Mathematically, however, the function $a(x)x\check{R}$ can be expressed as $a(x)\check{R}$. I use the latter for notational simplicity; using the former would not qualitatively change the results.

[34] For notational simplicity, I assume that $\check{R}$ is not a function of x or t. See also the comments on a similar assumption in the appendix.

[35] The social planner minimizes the following cost functions:

$$S(x,t)=a(x)R+b(x)R+\varepsilon R(1-x)(1-t)+l(t)G+m(t)G \tag{1}$$

Since $R=rG$ and G is a constant, the optimization problem can be reduced to:

$$S(x,t)=a(x)r+b(x)r+\varepsilon r(1-x)(1-t)+l(t)+m(t) \tag{2}$$

Assuming an interior solution, the following first-order conditions must hold at the optimum:

$$a'(x)r+b'(x)r=\varepsilon r(1-t^*) \tag{3}$$

$$\boxed{l'(t)+m'(t)=\varepsilon r(1-x^*)} \tag{4}$$

Next, rewrite equation (3) as

$$\frac{a'(x)+b'(x)}{1-t^*}=\varepsilon \tag{5}$$

and plug ε into equation (4).

parameter $r<1$). This shows why, in practice, *most of the adjustments should be made in the legal system*. While the tax system should make adjustments that are mathematically higher than zero, these adjustments will tend to be small (for instance, tax rates may be increased from 40% to only 40.01% in light of a new source of rents).[36]

2.6. Cases in which the legal system should be used exclusively

When should the legal system do all of the work? Doing all the work here does not mean removing the entire rent; it only means that all work done to reduce rent-caused income inequality is done through the legal system. In mathematical terms, this is the case when $t^*=t^E$. Two general cases can be identified.

The first case is when the optimal degree of legal intervention is the maximum degree of legal intervention ($x^*=1$). In this case, the rent is completely removed and therefore no adjustment needs to be made in the tax system. A sufficient condition is that $x^E = 1$ (that is, complete removal of the rent needed to be done anyway on pure efficiency grounds). This may be the case when the rent is caused by an inefficient regulation in favor of a special-interest group. Section 3.1 will offer an illustration. Note, however, that in this case there is no equity–efficiency trade-off.

Another case is when the cost associated with the legal system is also associated with the tax system. In mathematical terms, this may be the case when a is a function of $x+t$. In this case, there is a "double distortion" argument in favor of the legal system: the tax system causes the same costs as the legal system plus some more. The patent example of section 3.3 offers an illustration.

2.7. Cases in which the tax system should be used exclusively. Reinterpreting Kaplow and Shavell (1994)

To understand why Kaplow and Shavell conclude that the tax system should be used exclusively, consider again equation (6):

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[36] To illustrate, consider a $15 billion rent to a certain professional group out of a GDP of $15 trillion (so that $r=0.001$). In order to tax 1% (i.e., $150 million) of this rent, $150 billion new taxes need to be collected in total. The side effects of $150 billion in taxes will usually be large compared to the inequality costs of that particular rent.

$$l'(t) + m'(t) = \frac{r(1-x^*)}{1-t^*}[a'(x) + b'(x)] \qquad (6)$$

The left side lists the costs that are exclusive to the tax system; the right side lists the costs that are exclusive to the legal system. In the framework of Kaplow and Shavell, there are no costs that are exclusive to the tax system and therefore the left side becomes zero. As a result, it must be that $a'(x)+b'(x)=0$ at the optimum, which is the same condition as for the efficient optimum x^E.

The essence why different results are obtained is that in Kaplow and Shavell's framework the legal system operates ex post, causing the same labor distortion as the tax system. In my framework, the legal system operates ex ante, when it can use narrower instruments. This way, it not only avoids but even reduces labor distortion.

3.   Illustrations and applications

3.1.   *Plumbers' guild example (no equity–efficiency trade-off)*

To illustrate the intrinsic advantages of the legal system in reducing income inequality caused by rents, I will first discuss the case of an inefficient regulation that generates rents for a group of people. Note that, in this case, there is no equity–efficiency trade-off (since abolishing the regulation is good for both efficiency and income equality), so that, strictly speaking, the case does not contradict the results of Kaplow and Shavell (whose starting point was that the legal system was set efficiently, in which case these rents would not have existed in the first place). Yet, I will start with this example for pedagogical reasons, as it clearly illustrates why the legal system is superior to the tax system.

Consider a medieval plumbers' guild that artificially restricts competition and as a result generates rents for its members. More specifically, the income of plumbers is on average $150 per day (including a $50 rent), while carpenters and bakers make on average only $100, working the same number of hours but without the benefit of a guild. The rents cause not only income inequality but also price distortion, since plumbing services are artificially more expensive than carpentry services or bakery products. Moreover, the rents cause labor distortion: the carpenters and bakers have an incentive to work less hard than is optimal (since they can buy fewer products with their income than they produce), while the plumbers have an incentive to work harder than is optimal (since they can buy more products than they produce).

There are two ways to address this income inequality. The first is to use the legal system,

abolishing the guild or its competition-restricting regulations so that competition is restored and the plumbers' income falls back to $100. The second is to use the tax system, increasing the tax rate for higher incomes so that some or most of the rents are redistributed.

The problem with the tax system is that it cannot observe to what extent income consists of rents. Therefore it has to apply the same tax rate to the all equally high incomes—so that carpenters who make $150 because they work more hours than average pay at the same rate. Since some higher incomes are due to hard work rather than to rents, taxes can only remove rents by also increasing labor distortion. In addition the tax system leaves the price distortion associated with rents unaffected. Even if most of the rents of the plumbers get taxed away, their goods remain overpriced.[37]

In mathematical terms, a higher x stands for more legal intervention in the form of abolishing the guild. When $x=1$, the guild and all of its competition-restraining regulations are abolished. What is special here is that the administrative costs do not increase and may even decrease in x since deregulation usually lowers administrative costs ($a(x)\leq0$)). In this case, the solution to expression 3 is $x^*=1$, that is, maximum legal intervention (i.e., abolition of the guild). Since the entire rent is now removed by the legal system, the tax system has no role to play at all ($t^*=t^E$). But note also that $x^*=x^E=1$, which means that there is no equity–efficiency trade-off. Still, the point remains that the legal system is superior at reducing this type of income inequality.

Note also that the informational requirements for the legal system are low in this case. The legal system does not need to know how much rent each individual plumber received; all it has to know is that the guild generates rents and inefficiency, that both point in the same direction, and that legal intervention does not increase (but rather decreases) administrative costs.

3.2.   Antitrust enforcement example (equity–efficiency trade-off)

Consider now an example in which there is an equity–efficiency trade-off: antitrust law (and enforcement). Indeed, to the extent that rents are the consequence of anticompetitive behavior, the legal system can reduce rents. More specifically, the legal system can do so by forbidding more types of anticompetitive behavior, by spending more on detecting violations (which remove

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[37] Only a 100% tax rate could solve the price distortion by removing the incentives to overprice; but since the tax system cannot distinguish between those who receive rents and those who simply work harder, a 100% marginal income tax rate would obviously have a devastating effect on the economy.

not only the rents of those who are caught but also of those who are deterred), and by many indirect methods—for instance by using public procurement auctions that are more collusion-proof. Alternatively, rents can be removed by taxing them away, but since the tax system cannot observe rents (e.g., it does not know who participated in a cartel), the tax system can only remove rents by increasing tax rates for everyone.

The standard economic approach so far in choosing the optimal levels of legal intervention is to consider only the administrative costs associated with the legal system (including legal information costs and law enforcement costs) and the price distortion costs. The rents are left out of the equation because they are seen as zero-sum effects (some get poorer but others get richer) and because the tax system is believed to be superior at redistributing income. But we have seen that this belief is incorrect when income inequality is caused by rents.

Antitrust enforcement nicely illustrates the general model: x stands here for increased enforcement, $a(x)$ stands for the administrative cost associated with increased enforcement and $b(x)$ for the price distortion costs caused by the cartel; a increases in x, and b decreases in x. Since the legal system should minimize $a(x)+b(x)+\varepsilon R(x,t)$, the enforcement level should increase once income inequality costs are taken into account.

Note that there remains a "trade-off," the outcome of which will often be an "interior solution": it will often be too costly to have 100% antitrust enforcement. But in practice, the optimal enforcement expenditure may increase from, for instance, $100 million to $150 million when income-inequality effects become part of the equation. This example illustrates, more generally, that more aggressive legal intervention against market failures becomes warranted once income-inequality effects are taken into account.

3.3. Patent example (equity–efficiency trade-off)

We now discuss an example in which there is an equity–efficiency trade-off that needs to be made exclusively in the legal system. More specifically, we give an example in which there is a "double distortion" argument in favor of the legal system: all the costs associated with the legal system are also associated with the tax system, but the tax system has some additional costs that do not appear in the legal system.

Suppose a lawmaker has to decide whether or not to allow a new type of patent—for instance, fashion design patents. Suppose that introducing fashion design patents will have three effects compared to the current situation. The first effect is a net "innovation benefit" of $600

million (net, i.e., after deduction of the additional "innovation costs") since some designs will be produced that would not have been produced without patent protection (and suppose for simplicity that this net innovation benefit goes fully to the consumers). The second effect is a price distortion of $500 million on the clothes that have been on the market even without the patent system but now will become more expensive (note that we should not consider the price distortion on the new goods that are produced thanks to the patent system since the consumers who do not buy them because of the too-high price would not have been able to buy them without the patent system either). The third effect is a $1 billion rent to fashion designers, which may be unintentionally generated in two ways. First, it may not be possible to award patents only to those designs that would not have been made without the patent protection (so that designers now receive higher prices for the clothes they would have made anyway), and second, the patent protection for newly produced goods may be too strong in practice.

Before going further, we should ask why the legal system could not do a better job and design a patent system that does not generate rents.[38] The reason why it may not be able to avoid generating rents is that the designer (the agent) has superior information on the design costs than the legal system (the principal). If the legal system were fully informed, it could give, for each individual design, just enough patent protection to allow the designer to recoup the costs.[39] For some designs, the duration may be 3 years and 2 months, for other designs 24 years and 7 months, and for others it may be 0 years (since the first-mover advantage may be sufficient to create optimal incentives). In practice, such fine-tuning may be impossible because the government lacks information on the innovation costs in each individual case, and therefore, patent systems tend to give a more general protection, for instance 20 years, for all inventions. But if potential inventors can roughly estimate the invention costs beforehand, they will not produce technology that could only be financed with a protection of 32 years—they will only produce those inventions that require 20 years protection or less. Whenever the protection needed is lower than the protection given by the legal system, they receive rents (for instance, if 3 years of protection would have been enough to recoup the investment but the legal system gives 20 years, all profits for the next 17 years would be pure rents). Note that the fact that the legal

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[38] I discuss this more extensively under the heading "cherry-picking rents" in a book-length project, *The Art of Overpricing*.

[39] Note that the economic concept of "costs" includes a reasonable profit, sufficient to compensate the work of the entrepreneur and to pay a market interest to the providers of capital.

system cannot avoid leaving some rents with patentees is an application of a more general principle of principal–agent theory: when the agent has superior information on the production costs, the principal may have to leave rents with the agent (this is the well-known efficiency-versus-information-rents trade-off in contract theory).[40]

Now let's go back to the numerical example. The new patent type would generate an innovation benefit of +$600 million, a price distortion of -$500 million, a rent benefit to patentees of +$1 billion and a rent payment by consumers of -$1 billion. The standard economic approach would be to consider the rent payments as zero-sum operations and to conclude that the new patent type is socially desirable. When someone would counter that the new patent increases income inequality by creating a class of new multi-millionaires, the standard answer would be that this problem should be addressed in the tax system. In practice, however, the tax system has a limited effectiveness in removing rents because the tax system cannot observe to what extent income consists of rents. When tax rates are increased, they have to be increased equally for all individuals with the same income, including those who do not receive rents. Now suppose that the optimal marginal tax rate, given labor-leisure substitution effects, is 40%. In this case, only 40% of the rents of the new patent type can be removed through the tax system. In contrast, the legal system can remove 100% of the rents by simply not allowing the new patent type.

Let's try to understand a little better why the new patent type makes society worse off by reframing the numerical example as follows. The new patent actually makes the patentees +$1 billion better off, while it makes the rest of the population -$900 million worse off (indeed, they receive a consumer surplus of +$600 million on new designs, but lose a consumer surplus of -$500 million on designs they no longer buy, and another -$1 billion consumer surplus on designs they still buy but for which they pay a higher price). The standard approach until now is to consider this change "efficient" (i.e., an economic improvement). But now introduce the cost of inequality. This cost depends on the value system that justifies more equality, but let us assume for illustrative purposes that the justification is the decreasing marginal utility of money. The $1 billion for the multi-millionaires has a lower utility value per dollar than the $900 million for the rest of the population, which is less wealthy on average. More specifically, suppose that the utility value of the $1 billion for the new millionaires is only 5% of the average utility value

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[40] Bolton & Dewatripont (2005). This is also a general feature associated with "carrots": carrots tend to overpay, sticks tend to underpay. De Geest & Dari-Mattiacci (2013).

of same amount for the consumers. This means that the inequality cost of the $1 billion, i.e., the cost of the lost utility because of inequality, is $950 million. In this case the new patent type is clearly socially undesirable. It has a net economic benefit (narrowly defined) of +$100 million but an inequality cost of -$950 million.

Let us now compare, more theoretically, the costs of the tax system with those of the legal system in removing this type of rents. *The legal system and the tax system equally distort the incentives to innovate* in this case. Indeed, in the patent context, there is a trade-off between rents and innovation benefits. The more extensive the patent protection, the more innovation is produced, but also the more rents are generated as an unintended side-effect. The legal system removes a dollar of rent by reducing the duration or scope of the patent protection; the tax system removes a dollar of rent by reducing the net income that can be generated during the period of protection. A rent reduction of one dollar has the same effect here, irrespective of whether it comes from a change in the legal system or from taxes.

But the tax system again has two additional distortions. First, it causes the *labor distortion* because every tax increase that reduces the patent rent has to be accompanied by a similar tax increase on all similar incomes across the entire economy.[41] Second, the tax system does not reduce the *price distortion*, while less protection in the legal system does. This is obvious in the discrete-choice example we have given, but it is also the case in marginal-choice examples, when the discussion is not about whether to introduce a new patent type, but on the fine-tuning of an existing patent type. Suppose the patent duration is 20 years and that each year generates the same income for the patentee.[42] If the legal system removes 10% of the income of the patentee by reducing the duration to 18 years, it also reduces the monopoly cost associated with the overpriced patented product by 10% (i.e., 2 years of monopoly). In contrast, if the tax system removes 10% of the income of the patentee, the duration remains 20 years and the monopoly price distortion is not reduced.

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[41] When the legal system reduces patent protection, it reduces the income of patent holders. For those who were previously overpaid by the patent system, the effect is that they receive lower rents. For those who were previously just sufficiently compensated by the patent system, the effect is that they no longer innovate. Yet, both effects also occur when the tax system reduces the net income of patent holders. Therefore, the tax system equally distorts the incentives to innovate.

[42] For simplicity we assume in this example that the innovation costs are zero, so that a 10% reduction of gross income is a 10% reduction of rents. In a more realistic setting, a 10% reduction of income will cause a rent reduction of more than 10%, since the innovation costs have to be deducted from the gross income to calculate the rents. But this would not change the point that the example illustrates—that rent reduction through the legal system also reduces price distortion.

To summarize, to remove a dollar of rent, the legal system creates one distortion (less innovation). The tax system causes the same distortion plus two additional ones: labor distortion and price distortion. The implication is that, at the margin, the legal system can always remove rents with lower side-effects, and therefore, rents should be reduced only by the legal system, and not by the tax system.

Mathematically, higher values of x stand for *shorter* patent protection and $a(x)$ stands for the costs of innovations forgone due to less patent protection. What is special here is that $a(x,t)$, that is, the tax system, also discourages innovators by reducing their net income. More specifically, a dollar rent removed by the tax system causes the same innovation distortion as a dollar rent removed by the legal system ($a_x = a_t$ for all vectors (x,t)).[43]

Since the legal system has no other marginal costs that increase in x (only "benefits" in the form of reducing labor distortion and price distortion, which can all be put under the cost variable $b(x)$ that decreases in x) while the tax system has additional marginal costs ($l'(t) - m'(t) > 0$ for all values $t > t^E$), the legal system is more efficient at removing rents for all values of rents. Therefore, in this specific case, the legal system is the only instrument that should be used.[44]

3.4. Zoning example (equity–efficiency trade-off)

Ricardian rents are a special type of rents, caused by the absolute scarcity of specific resources. In Ricardo's standard example, rents were received by owners of better lands (which could produce food at lower costs than the market prices that were determined by the production costs of the least-fertile land). What is special about Ricardian rents is that prices are set at an efficient level—where supply and demand meet—so that any deviation from this price level results in inefficiency. This stands in contrast with the rents in the previous three examples, where prices were set above true costs, resulting in an inefficiently low quantity of goods sold. One of the advantages of using the legal system to reduce rents was that this also reduces price

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[43] I assume here that the innovation costs are the opportunity costs of the time of the innovator, which are not tax deductible. To the extent that innovation costs are tax deductible so that only profits gets taxed, taxes may distort innovation less than patent reduction (though taxes still cause price and labor distortion). However, if costs are observable ex post, there is no reason why the legal system could not design a patent or reward system that also takes costs into account, and in that case the advantage of taxes would disappear.

[44] Another way to show this is as follows. Assume that the tax system makes an adjustment, i.e., $t^* > t^E$. This adjustment increases the net labor distortion and in addition the innovation distortion. The same adjustment could have been made in the legal system, which would also have caused the same innovation distortion but which would have reduced labor distortion and in addition reduced price distortion.

distortions. To what extent do our results hold for Ricardian rents?[45]

To illustrate, consider zoning law, which restricts the amount of building land in a certain geographic area in order to create environmental benefits (more "open space"). Suppose the restrictions are set at the efficient level, narrowly defined, where marginal environmental costs equal the marginal benefits of more building space. Now, consider another side effect of building restrictions—that building land becomes more expensive, increasing the Ricardian rents for the existing owners of land. Should the inequality costs associated with these rents be considered when zoning law is designed?

In economic analysis of law so far, these "rents" have been omitted from the discussion because they are seen as zero-sum effects: some people gain money and some people lose the same amount of money. To the extent that rents have distributive effects, the standard viewpoint has been that these need to be addressed in the tax system, not in the legal system. But we have seen that the tax system can only correct these rents by also increasing marginal tax rates of everyone with the same income level; in practice, the labor distortion associated with tax increases limits the effectiveness of the tax system.

Now consider an alternative technique to reduce the rents caused by zoning restrictions: relax the zoning restrictions. This makes building land less scarce and decreases house prices and Ricardian rents.[46] But it also increases environmental costs. In contrast, if the tax system is used, there is the usual increased labor distortion. Which system causes the least distortion?

Notwithstanding all the differences, the equity–efficiency trade-off has a similar structure in the zoning example as in the antitrust example. Let x stand for relaxing zoning restrictions (creating more building land), $a(x)$ for environmental cost, and $b(x)$ for the costs of forgone building benefits (i.e., the benefits of having more building land but expressed in the form of an opportunity cost in order to have a cost minimization model). Also here, a increases in x, and b and R decrease in x. In other words, the interpretation of the parameters is different, but the mathematical structure remains the same, so that the results remain the same—zoning law should

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[45] Ricardian rents cause labor distortion because they reduce the utility that can be bought with labor, by setting the price above the true costs. Suppose that the true costs to develop land and to build a house on it are $300,000 but that the price can be set at $500,000 because of the artificial scarcity of building land. This means that the eventual buyer will have to work longer to acquire it. If relaxing zoning restrictions makes the price plummet to $300,000, having a job on the market becomes more rewarding.

[46] Zoning restriction does not cause price distortion because the price will reflect the scarcity of land, given zoning restrictions. The relaxation of building restrictions does not cause price distortion either because in the new equilibrium, prices will again just reflect the artificial scarcity of building land.

take inequality costs into account. And also here, the tax system remains a broader instrument, with side effects on a much larger scale, so that most of the adjustment will need to be made in the legal system. Therefore, the point of the superiority of the legal system holds true even for Ricardian rents.

3.5.   Other applications

I briefly discuss other applications, partly to show that the results have a broad range of applicability, and partly to suggest avenues for future research.

Misrepresentation, economic duress, and consumer protection. Asymmetric information is an important source of rents. The legal system tries to reduce asymmetric information problems and has expanded its intervention over time—from intervening only for plain fraud to also intervening in other cases such as concealment or half-truths.

Under a narrowly-defined efficiency criterion, the optimal amount of legal intervention depends on the sum of the distortion costs of asymmetric information on the one hand and the administrative costs of the legal system on the other hand. If rent costs are added to the equation, a more aggressive approach of the legal system toward subtle forms of misleading becomes desirable. By the same token, subtle forms of economic duress (for instance in the form of deliberately created lock-in effects) are less likely to be tolerated by a legal system that also tries to reduce inequality.

Mining rights. What are the optimal rules with respect to the original acquisition of mines and oil fields? Should mining rights go to the discoverer of the mine, the owners of the land above it, or the government? In current economic literature, the problem is seen as a trade-off between, on the one hand, incentives to discover new resources and administrative costs associated with auctions, and on the other hand the potential wastefulness of races to be first.[47] It is clear, however, that first possession is often associated with significant rents. When inequality costs are added to the equation, the arguments in favor of government ownership or carefully designed auction mechanisms (that minimize the rents that are left with the winners) become stronger.

Penalty clauses. The penalty doctrine—the common-law doctrine that treats all extra-

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[47] For a review of the literature, see Lueck & Miceli (2009).

compensatory stipulated damages as unenforceable—is controversial in the law and economics literature.[48] Many costs and benefits have been identified, and scholars seem to believe that the costs of the penalty doctrine outweigh the benefits. But it is clear that a large penalty clause may create a significant rent for the promisee, and a significant negative rent for the promisor. When rent costs are added to the equation, the penalty doctrine becomes easier to justify. In light of rent costs, the penalty doctrine can now be understood as both an equitable safeguard (preventing exploitation) and one designed to promote efficiency by curbing the distortive effects of rents.

Corporate rules regarding self-dealing. CEO bonuses and other forms of self-dealing may include an efficiency cost (narrowly defined), but also represent a source of income inequality. When rents are considered as costs, an even more aggressive approach toward self-dealing seems justified. To be fair, some forms of self-dealing do not create rents but simply reallocate preexisting rents from shareholders to managers or from minority shareholders to controlling shareholders.[49] But even then, adding inequality costs to the equation may change the outcome, since the value of ε will often be different for each group.

Law enforcement: spend more when violators receive rents. Not only cartels but also many other types of criminal activities generate rents for their participants. In the absence of legal sanctions, theft, robbery, blackmail, or drug-dealing may be very profitable activities, generating a higher-than-average income for those who engage in them. Therefore, increasing law enforcement expenditures can be an effective method to reduce income inequality in the society. When optimal enforcement is a function not only of enforcement costs and monopoly (or crime) costs but also of rent costs, the optimal level of enforcement becomes higher.

Class-action fees and punitive damages. There is strong evidence that at least some class-action attorneys receive rents—that is, they are compensated above the level at which they would still be willing to take the case (even adjusting for risks and investments). Preventing overpayment becomes a concern in itself when the equity—efficiency trade-off must be made in the legal system.

Similarly, punitive damages have not only an enforcement function but also a rent effect, since successful plaintiffs (and sometimes also their lawyers) get overcompensated. When

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[48] For a review of the literature, see Walt (2011).
[49] Roe (2001, rents received by a corporation create internal rent-seeking costs as different stakeholders try to get them, increasing managerial agency costs to shareholders).

inequality costs are added to the equation, the case for punitive damages becomes weaker, and the case for either public enforcement (with fines that go to the government) or decoupled punitive damages (which partly go to the government or to a public interest organization) becomes stronger.

Network externalities. Network externalities are another source of rents (for instance, it has been suggested that the wealth of Bill Gates and Mark Zuckerberg is related to the network externalities associated with Microsoft Windows and Facebook). They become a much more serious problem when income inequality effects are added to the equation. This has implications for antitrust law and for economic regulation.

Negative rents: Explaining compensation for takings. So far we have focused on positive rents, i.e., on artificial gains. But the analysis can be extended to what could be called "negative rents," i.e., artificial losses. Such losses will usually increase income inequalities as well.[50] Also here the point can be made that *negative rents should be corrected where they occur*, i.e., *in the legal system* and not later in the tax system.

Consider takings under eminent domain. Why is compensation paid? Some economic arguments have been developed, such as to deter governments from over-taking. But there are also economic counter-arguments, such as the increased transaction costs associated with paying compensation, and the increased problem of moral hazard (Cooter, 1985). Yet all these economic arguments so far may not hit the real reason—that we do not accept that individuals are forced into poverty because of government action. This is basically an income equality argument.

Why don't we abolish compensation for takings, and correct the distributive effects instead in the tax system? Also here, the tax system has inherent limitations if it can only observe income (or wealth) but not the reason why the income (or wealth) is so low. In that case, the tax system can only improve the wealth of uncompensated "victims" by also giving an equal transfer to all individuals with a similarly low wealth. This compensation cannot be full because of the labor distortion effects.

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[50] In Section 4.2 I comment on the possibility that a positive rent to a poor individual lessens income disparity or a negative rent to a wealthy individual reduces income inequality.

4. Discussion

I now discuss a number of issues related to the interpretation of the results of this paper.

4.1. *Rent analysis as a fourth pillar of economic analysis*

The results of this paper suggest that numerous law and economics models may need to be reconsidered in the light of inequality costs. Economic analysis so far has been based on three pillars: incentive analysis, risk analysis, and transaction costs analysis. This paper suggests that there should be a fourth pillar: rent (or "income inequality costs") analysis.[51]

So far, rents have been considered zero-sum operations with only distributive effects and no efficiency effects. Of course, the price distortions associated with rents have been considered relevant, but not the rents themselves. In line with Kaplow and Shavell (1994), the distributional effects have been considered irrelevant for the legal system, as they matter only for the determination of tax rates.[52]

In this respect, law and economics models have differed from economic models in the field of "contract theory" (which is formally classified as a part of industrial organization, not law and economics), in which rents (paid to the agent) are a part of the objective function of the principal—a private party who obviously tries to minimize rent payments to others.

Economists who use principal–agent models in the field of industrial organization know that there is a fundamental trade-off between efficiency and (information) rents. The fact that there is a similar trade-off in the legal system has not been fully explored in the literature so far.

Two variants of the efficiency-versus-rents trade-off in legal systems can be distinguished. First, in the case of patents, class-action fees, punitive damages, mining rights, homesteading rules, beauty contests, zoning restrictions, etc., the legal system wants to incentivize someone to do something (invent, sue, discover, develop land, etc.) but does not know the true cost structure

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[51] Rent analysis and risk analysis are analytically related when decreasing marginal utility of money is considered the source of inequality costs. When parties are still at a perfect 'original position', i.e., if they do not know who will become richer and who will become poorer, an inequality problem can be framed as a risk problem (Dahlby, 1987). Yet, both analyses are obviously different when parties are no longer in a perfect original position, or when inequality is costly for other reasons than decreasing marginal utility of money. Therefore, inequality costs should be considered a separate type of costs, and rent analysis a separate form of analysis. (Note also that if inequality costs were just a type of risk costs, there would no longer be such a thing as the equity–efficiency trade-off).

[52] Economic analyses of law typically do not analyze distributional effects. An exception is De Geest & Dari-Mattiacci (2013, analyzing the distributional side effects of carrots and sticks).

and, therefore, often ends up overpaying. These cases closely resemble the efficiency-versus-information-rents trade-offs in industrial organization.

Second, in the case of rents caused by market failures (misrepresentation, duress, network externalities, self-dealing, etc.), there is a trade-off because the legal system can correct market failures only by incurring administrative costs. When income inequality costs become part of the equation, the optimal degree of legal intervention shifts, compared to what is efficient in a narrow definition of the word.

4.2.   *The empirical importance of rents and the possibility that rents are dissipated or reduce income inequality*

How much income inequality is due to rents and how much is due to true productivity differences is an empirical question that goes beyond the scope of this theoretical article.[53] This paper tried to identify the optimal instruments for reducing income inequality caused by rents; it did not try to prove empirically (or even theoretically) that rents are significant. For the paper to have some relevance, it is sufficient that there are at least some rents in society that cause income inequality.

It is true that under some conditions rents may get dissipated in the form of rent-seeking costs. For instance, if plumbers receive information rents by overcharging naive consumers for spare parts, these rents may work like a magnet, creating advertisement races to get access to those profitable customers. Under some conditions, such rent-seeking costs may even equal the rents, so that all rents become quasi-rents. [54] Rent-seeking costs may still be socially wasteful, but technically they are an efficiency problem, not an inequality problem.[55]

To what extent are rents dissipated in the form of rent-seeking costs? There is an extensive theoretical literature on this subject (not only in public-choice theory but also indirectly in other strands of literature such as tournament theory), and this literature concludes that rents are

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[53] In a book-length project, *The Art of Overpricing*, I argue that rents explain most of the variance.

[54] To the extent that rents correspond to costs made at an earlier stage, it is more precise to use the economic term "quasi-rent." Quasi-rents, as the term suggests, are not rents, though they look like them at first glance. To illustrate, suppose in our plumbers' guild example that to become a plumber, a cost of $50 has to be incurred. While the plumber apparently makes a rent by earning $150 instead of $100, this rent is no more than a compensation for a cost made at an earlier stage.

[55] Still, even then it would not change one implication of my results—that rents should in principle be considered costs in the law and economics models.

sometimes dissipated and sometimes not.[56] Empirically, it is clear that not all rents are dissipated.[57]

In this respect, rents may be similar to transaction costs. Also for transaction costs, there are some forces that make them disappear in the long run.[58] But at any given moment of time, transaction costs are positive in the economy. Since Coase, we know that it is a mistake to assume away transaction costs in economic models. For rents, it may be a similar mistake to assume them away on the basis of the argument that there are some forces in the economy that make them decrease in the long run (in addition to some other forces that make them increase). At any given moment of time, rents are likely to be positive as well.

A final remark has to be made on the relationship between rents and income inequality. Rents are likely to increase income inequality because they are above-market profits; the recipients of rents will therefore tend to obtain an above-average income. Yet there may be circumstances in which a rent improves income equality. This may be the case when a poor plumber overcharges a wealthy customer for spare parts, or when unionized workers succeed in capturing some of the rents of their employer.

While this may affect the magnitude of inequality cost parameter ε, it does not change the fact that income inequality costs εR should be part of the equation. If ε becomes a negative number, the legal system should take that into account.

Moreover, while a careful examination of this issue is beyond the scope of this article, correcting inequality caused by rents through the creation of counter-balancing rents may be an intrinsically inferior method compared to abolishing rents. As shown by Hayek (1945), correcting distortions by creating countervailing distortions is hard because it requires much information. To illustrate, suppose that only plumbers have rents ($150), and not carpenters

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[56] Some models require perfect competition in the market-for-the-market to make rents fully dissipate (Posner, 1975). But if primary markets are imperfect, it is no automatic reason to believe that markets-for-markets will be perfect. Some other models require the opposite—an informational failure—for rents to fully dissipate. In tournament theory, for instance, it is often important that participants can't predict who will be the winner of a winner-take-all competition—otherwise everyone but the future winner would give up and the winner could walk to the finish.

[57] As for rent-seeking on the political market, it is often suggested that pressure groups can buy favorable regulation in Washington, D.C., for less than 1 cent per dollar. As for rents caused by imperfect markets, no general estimates are available, but anecdotal evidence in marketing literature suggests that rent dissipation is much less than 100%. See *The Art of Overpricing*, chapter 5.

[58] For instance, search processes that are initially time-consuming eventually require only a few seconds thanks to search apps; contracts that are initially costly to draft eventually become available on a $10 CD-ROM.

($100) or bakers ($100). Why not solve inequality by also giving rents to the carpenters and bakers, so that all have $150? First, it requires *all* groups in society to receive rents. Second, it may be difficult to bring rents at exactly the same level ($150, rather than $140 or $160). Third, it may be difficult within each profession to give each member exactly the same rent.[59]

4.3.   What type of distributive arguments should be permissible in legal discussions?

The above analysis implies that arguments of distributive justice should no longer be the exclusive domain of tax law. This goes against the dominant viewpoint in law and economics, but confirms the viewpoint of many legal academics who have argued for years that redistributive arguments should matter.

Yet, the analysis does not suggest that all types of redistributive arguments should be permissible in all legal discussions. Instead, they should be allowed only under two conditions. First, income inequality must be caused by rents (and not by true productivity differences). Second, legal rules that are discussed must address the cause of the rents. *Distributive (and inequality) arguments should only be made with respect to legal rules that increase or reduce rents.* They should not be made when the law does not address the cause of the income inequality.[60] This means that existing income differences between tort injurers and victims should not be used as an argument, because accidents are not the cause of the income differences that existed before the accident. If tort law were used to redistribute income, it would be an ex post redistribution, which can better be done through the tax system. Indeed, tort law would not only have the same distortions as the income tax (labor distortion and price distortion on the markets were the rents were accrued), but would also distort care levels.

4.4.   Do this paper's results contradict or compliment Kaplow and Shavell (1994)?

Analytically, this paper complements the analysis of Kaplow and Shavell (1994). They compare ex post taxes with ex post legal rules; I compare ex post taxes with ex ante legal rules.

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[59] Creating new rents can potentially cause inflation, just as abolishing rents can cause deflation. Analyzing these macroeconomic effects is beyond the scope of the paper. One reason why they may easily be assumed away is that the legal system is not the best instrument for correcting macroeconomic effects. The Federal Reserve possesses monetary and other instruments that are specifically targeted at preventing inflation and deflation.

[60] Robin Hood transfers (stealing from the rich to give it to the poor) cannot be justified on the basis of results of this article because they are an ex post form of redistribution (addressing the symptoms, not the causes), which causes similar distortions as the legal system when it operates ex post.

They assume that income differences are caused by productivity differences; I assume they are also caused by rents. They conclude that ex post taxes are superior to ex post legal rules for income differences caused by productivity differences; I conclude that ex ante legal rules are superior to ex post taxes for income differences caused by rents.

In terms of implications, however, this paper contradicts Kaplow and Shavell (1994). They conclude that the tax system should be the first choice for policy makers who want to redistribute income; I conclude that the legal system should be the first choice. They conclude that the equity–efficiency trade-off should not be made in the legal system; I conclude that it should (under some restrictive but nonetheless general conditions).

4.5. Are this paper's findings in conflict with the Second Fundamental Theorem of welfare economics, and with Atkinson and Stiglitz (1976)?

Kaplow and Shavell's results are firmly grounded in economic theory. They can be seen as an application of the Second Fundamental Theorem of welfare economics and of the principle that commodity taxes are inefficient when income taxes exist (as shown by Atkinson and Stiglitz, 1976).[61] So how can this paper reach different results?

Let us first examine the relationship between Kaplow and Shavell (1994) and the Second Fundamental Theorem of welfare economics—that any Pareto efficient outcome can be achieved through lump-sum transfers, and that such transfers are preferable to deviating from efficiency.[62] This theorem is based on the idea that efficiency produces a larger pie than inefficiency; this suggests, at first sight, that legal rules should always be set at the efficient level.

One response is that the income tax system does not use lump-sum taxes and therefore causes labor distortion. The legal system can avoid this labor distortion when it operates ex ante.

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[61] Atkinson & Stiglitz (1976, arguing that income taxation and commodity taxation have identical negative effects on labor efforts but that commodity taxes also distort consumption choices).

[62] The relationship between Kaplow and Shavell (1994) and the Second Fundamental Theorem of welfare economics is mentioned in Miceli & Segerson (1995). The First Fundamental Theorem of welfare economics states that perfect markets reach efficient outcomes, though there can exist an infinite number of efficient outcomes, depending on the initial distribution. If this outcome is considered undesirable (for instance because all land was initially owned by a single individual, and the efficient outcome is that this individual lives in a palace while all others live in poverty), the Second Welfare Theorem holds that there is no need to tamper with market mechanisms through over-regulation—just redistribute wealth initially through lump-sum payments and let markets keep on doing their job. The Second Welfare Theorem essentially suggests that redistribution and efficiency should be addressed through different instruments and that taxation is the optimal instrument for redistribution.

While the legal system "distorts" in the sense that it requires an administrative cost to operate, this distortion will often be lower than the distortions caused by the income tax system, for the reasons explained in this paper. At a more fundamental level, one could say that transaction costs prevent the tax system from observing rents. The legal system can operate at an ex ante stage, at which point less information is required, and therefore it distorts less.

Another response is that if inequality is caused by rents, it is essentially caused by market distortions. The best way to redistribute in those cases is to remove the distortions, which is what the legal system does. The income tax system instead corrects these distortions by causing additional distortions.

Let us next examine the relationship between Kaplow and Shavell (1994) and the well-known theory of Atkinson and Stiglitz (1976), who showed that commodity taxes a la Ramsey (1927) are inefficient when there is an income tax system in place because commodity taxes cause the same labor distortion as income taxes but, additionally, cause price distortion. (In other words, taxing champagne is an inefficient way to tax the wealthy: the tax system could just as well directly tax their income, without artificially making them drink less champagne.) Kaplow and Shavell have rightly argued that (ex post) redistribution through the legal system can be analogized to commodity taxing, with different rates for different goods. For instance, an increased tort liability for yacht owners can be seen as an implicit commodity tax on yachts. Therefore, the reason the income tax is superior to the (ex post operating) legal system is essentially the same as the reason the income tax is superior to commodity taxes.

My response to this argument is that rents can in turn be seen as implicit commodity taxes. Income inequality caused by rents is essentially income inequality caused by implicit commodity taxes (the proceeds of which go to wealthy individuals). The first-best is to reduce those implicit commodity taxes, rather than to try to correct them by introducing an income tax that causes a new type of distortion. The results set forth in the current paper are consistent with Stiglitz and Atkinson (1976) in the sense that both papers consider commodity taxes undesirable.

4.6.   Why the legal system may have a transaction-cost advantage over the tax system

I have assumed in some applications that the legal system requires an administrative cost to operate, while the tax system does not require any transaction costs (note, however, that $a(x)$ does not necessarily have to be interpreted as the administrative costs of the legal system). This should be seen as an *a fortiori* assumption, that makes the case for the legal system even stronger: even

if only the legal system were to generate administrative costs, it would be intrinsically superior.

In practice, the legal system may even have an intrinsic transaction-cost advantage over the tax system: It redistributes income virtually, by preventing rents from being paid.[63] The tax system, in contrast, redistributes through real transactions. Consider again the plumbers' guild example. If the tax system were used to correct the income inequality effects of the guild, there would be three different transactions at the end of the day: first, the consumers pay too much to the plumber; second, the plumber pays taxes to the authorities; and third, the authorities pay the tax proceeds back to the consumers. If the legal system were used, there would be no real transactions: the legal system would virtually give back what the consumers would virtually have overpaid. Redistribution takes place virtually, not through effective transactions, and therefore no transaction costs are involved.[64]

4.7. *Would the tax system become equally efficient if it could observe rents? Is the legal system also superior to a more sophisticated income tax system (with separate tax rates for rents and with tax credits for rent-payers)?*

If the tax system could observe rents, it could tax rents at a different rate than other sources of income and avoid the labor distortion associated with general tax rate increases. Still, the price distortion associated with rents would remain as long as less than 100% of the rent is taxed in expected terms. If, for instance, 99% of the rent would be taxed away, the rent-receiver would still benefit from setting the price above true costs. Most of the rents would go to the state instead of to the rent-receiver, but the price of the commodity would remain above the true costs. This price distortion could, at least in theory, be removed by giving tax credits to those consumers who paid a rent. But the informational requirements for such a tax system would be enormous, and so would be the administrative costs.

An exception is when the effective tax rate for rents could be set at or above 100%. In this case, the incentive to acquire a rent would completely be removed. Analytically, though, such a prohibitively high tax rate is indistinguishable from a criminal penalty on rents. Note that a

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[63] Another reason the tax system involves additional transaction costs is that it inserts an additional party into the scheme of transactions. In the legal system, there is still only a transaction between seller and buyer. In the tax system, there is also a transaction with a third party—the IRS. The increased transaction costs include not only the costs of payment but also the costs of evidence collection and communication.
[64] In practice, the transaction costs of redistributing rents through the tax system may be attenuated when the tax proceeds are virtually paid back to the consumers in the form of lower tax rates.

perfectly informed and transaction-cost-free tax system could in theory also replace the entire legal system. For instance, it could replace the entire tort law system by a system of tax penalties for injurers and tax credits for victims.[65]

Another exception is a Ricardian rent, such as a rent caused by zoning restrictions, which is not associated with price distortion. Here, the first-best solution, on paper at least, is an efficient legal system (narrowly defined) complimented with a 100% rent tax.

In practice, though, the income tax system is unlikely to be able to observe rents with the required precision, for reasons explained in this paper.

4.8.   Is the analysis intrinsically addressed to ex ante versus ex post redistribution? Can taxes redistribute ex ante?

The intrinsic advantage of the legal system over the income tax lies in the fact that it can operate at an ex ante stage, when informational demands are lower and behavior can still be changed. Income taxes operate at a later stage, when informational demands are higher. Moreover, income taxes are primarily meant to finance public goods expenditures, not to change behavior.[66]

Corrective taxes, on the other hand, are meant to change behavior (not primarily to finance public goods) and in this respect they have the potential of redistributing ex ante as well. Note, however, that in practice, corrective taxes have limited applicability outside environmental law.[67] Note again that when corrective taxes are set so high as to completely discourage behavior, they become analytically indistinguishable from criminal fines.[68] Indeed, just as fines, they would be meant not to be paid (but just work as a mere threat), and they would be publicly enforced (so that, in the rare occasions in which they would be paid, the money would go to the state, not to an individual).

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[65] Obviously, if transaction costs are positive, they are likely to be higher under such a tort tax system than under tort law. The former requires three-party transactions (injurer to tax authorities to victim) while the latter requires only two-part transactions (injurer to victim).

[66] To the extent that the income tax system deliberately creates tax benefits or penalties for certain types of behavior, it can have an ex ante effect on income inequality as well. For instance, tax credits for educational expenses can have an ex ante effect on income inequality caused by differences in schooling.

[67] In other words, corrective taxes are typically used to correct externalities, not informational failures or lack of competition. It could be studied though whether they could be effective at solving those other market failures.

[68] Corrective taxes are typically set at a level at which some will pay them. They are analogous to strict liability, not to fault-based rules.

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5. Mathematical appendix: Rents cause labor distortion

This appendix offers a simple model that shows why rents generally lead to labor-effort distortion, either in the form of too little effort (in the case of net rent-payers, who pay more rents than they receive), or in the form of too much effort (in the case of net rent-receivers, who receive more rents than they receive). But the model also shows that if rents are relatively low they may improve labor-effort incentives for the rent-receiver by cancelling out the labor distortion caused by taxes. Yet, even in this zone, they increase labor distortion for the rent-payers.

An individual produces an output αe, where α denotes the individual productivity rate (or talent) and e the individual labor effort level.[69] To produce this output, the individual has to incur labor effort cost $\kappa(e)$, with $\kappa'(e)>0$ and $\kappa''(e)>0$. The labor-effort decision, however, may be distorted by rents and taxes. I assume there is only one type of rent associated with one specific profession (for instance, plumbers) in the entire economy. Just like in the model of section 3, I assume that all individuals in society spend the same proportion of their income on this overpriced commodity. The proportion of each individual's income that goes to rent is again denoted by r. For notational simplicity I assume that those who receive rents spend the same proportion of their rent income to rents as well (for instance, plumbers also buy overpriced plumbing services for themselves).

Individuals who do not receive rents have an income that equals their true productivity αe but keep only $\alpha e (1-r)$ after having paid rents. Those who do receive rents receive an implicit rent "subsidy" on top of that. In order to express this implicit subsidy in terms of r, I introduce parameter n, which denotes how much larger the total economy is compared to the sector in which the rent r is received. For instance, if the true productivity of the plumbers who receive a rent is 1% of the entire economy, then $n=100$. Since the rents of type r are concentrated to $1/n$ of the economy, the implicit commodity subsidy equals nr, assuming they work the same number of hours.

To simplify the analysis, I assume that the choice of effort e has no effect on the

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[69] In this rational-choice model, all functions are assumed to be continuously differentiable to any desired order. Risk attitude plays no role in the model, since all effects of working harder happen with certainty. Indirectly, risk aversion may play a role in that it may be one of the reasons why income inequality has a social cost; yet the model is not limited to one specific normative justification for increasing income equality.

implicit commodity subsidy, on *r* or on *n*. In other words, if the rent-receiver works harder, I assume that this does not impact the price, the total supply, or the proportion of the income that is spent on the good with the rent. One way to make this assumption concrete is to see the individual as a member of a privileged group of individuals who receive a certain type of rents and who can limit access to the profession; if in such a system an individual member works twice as hard as normal, this just means that one fewer individual will be allowed access to the profession.

The income tax has a single, constant tax rate *t*, applied to all sources of income of all citizens (including rents). The tax proceeds are distributed equally among all citizens in the form of a lump-sum transfer *z*. For notational simplicity, I assume that the number of citizens is high, so that the fraction of the tax that flows back to the individual who paid it is negligibly small (I assume it to equal 0). [70]

The individual who receives the rent chooses *e* so as to maximize:

$$\alpha e(1 + nr - r)(1 - t) - \kappa(e) \tag{7}$$

This function is convex because the first term is linear and the second term is convex. Assuming an interior solution, the first order condition is therefore:

$$\alpha(1 + nr - r)(1 - t) - \kappa'(e) = 0 \tag{8}$$

Note that for pure rent-payers (who do not receive a rent), this expression becomes

$$\alpha(1 - r)(1 - t) - \kappa'(e) = 0 \tag{9}$$

However, effort *e* is optimal only if:

$$\alpha - \kappa'(e) = 0 \tag{10}$$

Therefore, the marginal labor effort will be too high if:

$$(1 + nr - r)(1 - t) > 1 \tag{11}$$

Conversely, the marginal labor will be too low if the left-handed expression is lower than 1.

For the *pure rent-payer* (who receives no rent at all and for whom therefore *nr*=0), it is easy to see that rents cause labor distortion in the form of too-low labor effort. This labor distortion increases in *r* (since labor effort decreases in *r*).

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[70] In practice, *z'(e)* will indeed tend to be negligibly small. For instance, in a country with 100 million tax payers, only 1/100,000,000 of the taxes paid by an individual would go back to that individual in the form of an increase of the base income *z*.

For the rent-receiver, labor effort increases in r and decreases in t. The total effect depends on whether the rent effect dominates the tax effect. By rewriting expression (11), we can see that this is the case if

$$r(n-1) > \frac{t}{1-t} \tag{12}$$

In the zone where the rents are sufficiently large, rents cause labor effort distortion in the form of too much labor effort. It is again easy to see that the distortion gets worse as r increases. However, in the zone where the rents are sufficiently small so that the tax distortion dominates the rent distortion, rents reduce overall distortion by cancelling out the tax distortion.