Carbon-Pricing Revenues:
Why Their Use Is, in Essence, Funded by a Capitation Tax

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Abstract

Cap-and-trade and carbon-tax policies generate streams of tax revenue or of valuable permits. These represent the value of using the atmosphere for carbon emissions. The common ownership of this resource argues for an equal, or nearly equal, ownership of the value stream. Governmental appropriation of that revenue is therefore an equal-dollar-per-person (capitation) tax, which violates a social norm.

Introduction

Cap-and-trade programs and carbon taxes generate revenues or valuable permits, which must be distributed. Such revenues appear enticing, but the question of distribution can prove to be a curse. Choosing from the long list of possible revenue uses may generate enough controversy to prevent the passage of a carbon pricing program or even to destroy one after it has passed.

Too often the question of limiting emissions is viewed as a problem in fair cost allocation. Economics suggests viewing emissions as a "tragedy of the commons" and that the best solution is a fair allocation of valuable property rights—not a fair allocation of costs. Properly limiting these rights leads to efficient use of the commons and causes the market to assign costs in proportion to its use. This results in a market-determined version of "polluter pays" and in a form of "ability-to-pay" cost allocation. A first-approximation to the fair allocation of rights is an equal allocation.[1] But this means that taxing away those rights is a capitation tax (an equal-dollar-per-person tax.) Such a tax violates a norm that enjoys nearly universal approval, and such a tax should be rejected.

This result may disappoint those who see a use for carbon-pricing revenues. However, it may be a blessing in disguise. If this result is respected, it eliminates a dangerous controversy, protects carbon pricing from a vast array of inefficiencies, and transforms carbon pricing from a tax that collects revenues for government projects into a fair incentive for socially beneficial behavior.

Better than a Carbon Tax Shift

A tax shift (or swap) simply replaces part of an old tax with revenues from a new tax. A carbon tax shift is favored by economists because it increases efficiency. But, so does a capitation tax shift, which economists almost universally reject because of its distributional consequences. To reject a carbon tax shift, I compare it with a policy I call an untax. I define an untax as a carbon tax that is fully refunded on an equal-per-citizen basis, and I argue for the following result.

Result 1: Society should logically prefer an untax to a carbon tax shift.

As I discuss later, other carbon-tax policies are also preferable to a carbon tax shift, but the untax is simpler to explain. To understand this comparison, a carbon tax must be viewed from a new perspective. This requires the idea of a capitation refund, which is simply the reverse of a capitation tax. The steps to the new perspective proceed as follows.

- Carbon tax shift = carbon tax & pay down tax T
- Carbon tax shift = carbon tax & (capitation refund & capitation tax) & pay down tax T
- Carbon tax shift = (carbon tax & capitation refund) & (capitation tax & pay down tax T)
- Carbon tax shift = untax & capitation tax shift.

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1 Questions of national history complicate the international debate on fairness. I am taking the international decision as given and focusing only on the within-country allocation of revenues.

These steps are simply definitional and involve no judgments. The final step means that comparing an untax to a carbon tax shift is exactly the same as comparing an untax to an untax plus a capitation tax shift. Hence, Result 1 can be re-written as:

Result 1: Society should logically prefer an untax to an untax plus a capitation tax shift.

Using ">" to denote social preference Result 1 can written most simply as:

Result 1: untax > untax & capitation tax shift

A capitation tax shift—using a capitation tax to pay down another tax—is almost universally rejected in the United States. Consequently, it appears simple to conclude that Result 1 is true. But, there is a complication. Two wrongs *can* make a right. If both an untax and a capitation tax shift were detrimental but canceled out, then Result 1 would be false. For example, if the fairest distribution of revenues were to give them all to group G, then an untax would be unfair and combining it with a capitation tax shift that paid down taxes for group G could remedy this unfairness. In this case, Result 1 would be false.

In spite of this possibility, and because the untax appears fair, as will be discussed shortly, the social norm prohibiting capitation tax shifts is strong enough that those advocating a carbon tax shift have a substantial burden of proof to show that such a carbon tax shift is socially acceptable. Result 2 clarifies the nature of that burden.

Result 2. To show a carbon tax shift is acceptable, one must show that imposing an untax would cause society to favor using a capitation tax shift for the tax proposed in the carbon tax shift.

That is, one must show that the right side of Result 1 comprises two wrongs and that they do make a right. If an untax is fair, then there is no reason to believe it would cause society to reverse its long-standing judgment against the use of capitation taxes. Even if there is some unfairness in the untax, an argument favoring a carbon tax shift must show that it remedies this unfairness, and that this remedy is sufficiently consequential to reverse the social judgment against a capitation tax.

Equitable Carbon Pricing and the Tragedy of the Commons

The "tragedy of the commons" results when some common resource—a pasture in the original telling—is overused because everyone is allowed to use it without limit or cost. Carbon dioxide emissions into the earth's atmosphere provide the archetypical example of this problem. The classic solution, which is renowned for its fairness, though not its practicality, is to give everyone an equal right to use the commons. Setting the proper level of rights maximizes the benefit to the group.

Giving every American an equal right to the atmospheric commons—an equal right to emit carbon dioxide—has a compelling claim to fairness because none of us has enhanced or helped to discover the atmosphere and because there is no obvious basis for giving anyone a special right.[2]

Two practical policies are nearly identical to distributing equal individual rights, and I will refer to both as *equitable carbon pricing*. These policies are the untax and a cap-and-trade policy that auctions all permits and refunds the revenues as equally as does an untax.

All three policies result in essentially the same distribution of income and the same distribution of emissions. Because their real and financial effects are the same, they must all be equally fair. Proving this equality requires a bit of economics, but the result is well known and well accepted within the economics profession. Because of the way markets pass through costs, under each of the three policies, consumers pay in proportion to their carbon emissions and gain refunds or free permits on an equal-per-person basis.

This means the untax is equivalent to giving everyone equal rights, which is the classic standard of fairness for solving the tragedy of the atmospheric commons. As just argued, there is no need to claim the untax is the fairest policy, but only that it is not unfair enough to make society

2 This solution is not of course a fair solution for resources such as land, minerals, or knowledge, all of which require human effort or ingenuity to make them useful.

reverse its long-standing judgment that a capitation tax is undesirable. Being equivalent to the most widely cited standard of fairness for resolving a problem of the commons, I take the untax to satisfy this requirement of not justifying the use of capitation taxes.

If the untax does not reverse our judgment against capitation taxes, then combining a capitation tax with it cannot make things better. This is Result 1, so Result 1 holds. Logically, society prefers an untax to a carbon tax shift.

Consider this result as it applies to Gilbert Metcalf's (2007) "Green Energy Tax Swap," which pays down the payroll tax. N. Gregory Mankiw (2007) has made a similar proposal. These are exceptionally fair carbon-tax-shift proposals. One possibility is that society actually approves of a capitation tax swap for their payroll tax reductions. In that case, they should simply propose the capitation tax swap and leave the carbon tax to be implemented as fairly as possible. However, if as seems likely, society, Metcalf and Mankiw all currently disapprove of using a capitation tax for this purpose, they need to show that implementing an equitable carbon tax (an untax) would cause us all to change our minds about a capitation tax for paying down the payroll tax. Given that there is little if any connection between an untax and a payroll taxes, this seems unlikely.

Better than Carbon Tax Subsidies

Besides tax shifting, carbon-pricing revenues can be used to subsidize business. Proposed subsidies may (1) mitigate the profit-reducing effects of carbon pricing, or (2) encourage conservation and the use of alternative energy. Using the same approach as used for a carbon tax shift, we can show that:

Result 3. Carbon tax subsidy = equitable cap and trade & capitation tax subsidy.

Since business subsidies paid for with a capitation tax are currently out of the question, the only justification for a carbon tax subsidy would be an argument that imposing equitable cap and trade would cause society to start approving of some business subsidy paid for with a capitation tax.

As I have argued, equitable cap and trade is equivalent to the primary standard of fairness for solving a problem of the commons, such as carbon emissions. If we agree that equitable cap and trade is fair, we must reject all carbon tax subsidies. But again we must check that a capitation tax subsidy cannot remedy some sufficiently-substantial unfairness in equitable cap and trade.

Consider a subsidy for coal mines or oil refineries. Equitable cap and trade provides no such subsidy to fossil suppliers. Could this be unfair? Do coal mines and oil refineries deserve rights to the commons? More precisely, do stockholders of, say, coal mines deserve extra rights to the climate to compensate them for losses they may incur when carbon pricing is imposed? Although rewarding those who have profited from over-use of the commons seems backwards, this type of reward is so common with cap and trade proposals that it deserves a careful look.

When carbon pricing is imposed unexpectedly, it causes a loss in stock value as the information (the bad news) is revealed. Once the new situation is fully understood, the loss will be complete.[3] From that point on, although revenues and emissions will be lower, the return on equity value will be normal (otherwise the equity value would have dropped further). This demonstrates that the loss is not due to the company's shortage of climate rights, but rather to the unexpected change in government policy. Had limits on climate rights been known years in advance, the limit would have caused no losses to stockholders.

Since the harm to fossil producers comes from the unexpected behavior of the government, and not from the limitation of rights to the commons, there is no logical connection between the two. Although the coal mine may deserve compensation, there is no reason to rethink the fairness of climate rights. Compensation should be funded in the normal way—not by a capitation tax.

To make this more concrete, consider a farmer who lacks mineral rights to his farm and suffers from mining operations conducted by the owner of those rights. One day the Supreme Court

3 Of course the stock market may over- or under-value the loss, so there may be future adjustments, but on average the loss will be complete once the policy information is fully available.

overturns the law that supports the mineral rights and the mining must cease. One can argue that the mining operation deserves compensation, but it makes no sense to say this should be paid for out of the farmer's newly restored mineral rights. The two are simply unrelated.

In the case of cap-and-trade revenues used to subsidize conservation and alternative energy development, the connection may seem more apparent. This time the subsidies may not primarily make certain people richer—which would not seem fair—but instead the subsidies may pay for discovering new energy-efficiency technologies. These discoveries will not lower the cap, but will make it easier to meet the cap. This will lower the price of permits and benefit above-average emitters most. It will not benefit, and may harm, those who have no tendency to overuse the commons and have rights to spare. Subsidizing energy efficiency research is worthwhile, but it is a subsidy to heavy emitters. This should not be funded by taxing rights to the commons, because such a tax is an equal-dollar-per-citizen tax—a capitation tax. (A seeming-exception to this rule is discussed in the appendix.)

A Generalization

So far we have considered only what I have termed equitable-carbon-pricing policies because these are simplest to evaluate. Generally the equitable policy is fair enough to carry the argument by a wide margin. This suggests there are likely many similar policies that would also be preferable to a carbon tax shift or a carbon-based business subsidy. The existence of a wide range of preferred policies suggests that our approach can be generalized.

Consider a carbon tax that is refunded on an equal-per-person basis within each state, but which varies from state to state in proportion to the state's emissions. Call this a state-untax. A similar calculation to the one above shows that

Carbon tax shift = state-untax & state-capitation tax shift

Here a state-capitation tax is defined as a capitation tax that varies from state to state in proportion to the carbon emissions of each state. A state-capitation tax shift would appear to be quite unfair, and a state-untax would appear to give no offense that would cause society to reverse its judgment about state-capitation taxes. While these two positions are less standard than the ones regarding equal individual rights and standard capitation taxes, they nonetheless seem quite secure. If they are agreed to, then a state-untax must be judged preferable to a carbon tax shift.

This result shows that there are other carbon-pricing refund policies that are likely superior to a carbon tax shift or a carbon-pricing-based subsidy. Superior refund policies will be similar to equitable carbon pricing policies or will deviate from these in directions that appear to be relatively fair.

These other preferable policies may or may not be preferable to equitable carbon pricing policies. This provides a graphic reminder that we have not shown which policies are best, only that equitable policies are preferred to those commonly under consideration.

Summary and Conclusion

Two ideas lie behind these results. First, the atmosphere is common property and everyone has at least a roughly equal right to it. Second, a capitation tax is considered unfair, in fact so unfair that even though a capitation tax swap is known to increase efficiency, it enjoys essentially no support.

Some will suggest modification of the idea of equal rights, but most of these suggestions will tend toward giving extra rights to those with greater need or giving fewer rights to those with greater ability to pay. Both of these suggestions support, rather than undermine, the results presented here.

It would undermine these results to argue that the poor, or those who emit less, deserve fewer rights to the atmosphere. But those views seem unlikely, as does the view that those who pollute more should get more rights because of their pollution. The most likely argument for overturning these results arises from the view that those who lose profit in a transition to a system

of fair rights should be compensated with value from the atmospheric commons. But, because their loss is caused by an unexpected change in government policy, the remedy, if one is appropriate, should be paid for, not with an allotment of climate rights, but with normal government revenues.

When rights are owned equally, taking away these rights represents a capitation tax, a policy that has been broadly rejected in the United States for at least a century. But why has this not been recognized? Recognition requires comparison of proposed policies with a fair policy that does not exist, such as an untax. But proposed policies are habitually compared with the status quo, and that comparison reveals no imposition of a capitation tax. Comparing policies only with the unfair past can never reveal that they are inferior to another new proposed policy, such as the untax or an equitable cap-and-trade system.

Quite likely, some will object that carbon pricing proposals should only be compared to the status quo and not to a new, unimplemented proposal. That is less mean-spirited, but just as illogical as suggesting the loot from a robbery should be given to a well-established charity, because returning the loot to the particular victim of the crime is just a hypothetical possibility.

Appendix: The Exception that Proves the Rule

This note may seem to imply that carbon-pricing revenues should never be used to subsidize energy-efficiency research or similar projects. That is not quite the case. Rather, the efficient level of revenues should be given out equally and not used for such purposes. The efficient level is the full revenue stream from the level of rights that maximizes the common value.

There is a subtle difference between these interpretations, and to reduce the chance of confusion, this appendix makes it explicit. Under certain circumstances, the government, by exercising its natural monopoly power over climate rights, can increase the revenue they generate beyond the optimal fair level. If this increase in revenue is taxed away (but no more) and used for, say, energy-efficiency research, there may be nothing unfair about the policy. Of course, as with other taxes, an inefficiency will result from this tax increase. If the resulting revenues are not used in a sufficiently cost-effective manner, this is still not a good idea.

So the message of this note is: Do not confiscate revenues that would come from giving out the optimal set of rights. Instead give these out on an equal-per-person, or similar, basis. But carbon pricing revenues that go beyond this level can, perhaps, be treated as any other tax revenues.

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