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Using Taxes to Improve Cap and Trade, Part I: Distribution

by David Gamage and Darien Shanske

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In this article, the first in a series, Gamage and Shanske examine carbon taxes and the distributional issues involved in implementing cap and trade, primarily focusing on how California AB 32’s structure disadvantages low-income residents without advancing any policy goals. The authors make recommendations on how to alleviate or avoid the burden placed on those residents.

Introduction

A large part of the global warming debate has focused on choosing the best policy instrument to combat the trend. If given one instrument to choose, most economists would reach for a carbon tax. However, carbon taxes are not terribly popular with voters or politicians. Australia, one of the few countries to have imposed a carbon tax, abolished it in July. On the bright side, we live in a world of multiple policy instruments, and those instruments can interact with each other in ways that can produce superior results as compared with what any one of those instruments might produce in isolation. This article is the first in a series in which we will explore how state-level cap-and-trade regimes can be improved by incorporating tax elements.

Our central purpose in these articles is to critique aspects of California’s cap-and-trade regime (AB 32) and to suggest how this regime should be reformed in light of our critiques. We also intend for these articles to be instructive as to important issues involved in the design of cap-and-trade regimes outside California — especially in other U.S. states.

Throughout this series, we primarily want to make three pragmatic, and perhaps surprising, points about the state of market-based mechanisms to control greenhouse gas emissions. All of these points relate to how tax-system-like elements can be introduced into a cap-and-trade regime. Our first point — the focus of this article — is to explain how those tax elements can improve a cap-and-trade regime by making the regime fairer. Second, we will explain how tax elements can mitigate a cap-and-trade regime’s impact on economic growth and thereby make the regime more efficient for everyone. Our third point will be to explain how states might incorporate border adjustments into a cap-and-trade regime (another tax element, but one found more commonly in the context of value added taxes). This third point is important because without border adjustments a state that imposed a robust price on carbon would find itself at a competitive disadvantage.

In this article, we will focus on the distributional issues involved in implementing cap-and-trade regimes. Specifically, we will argue that the structure of California’s AB 32 will unnecessarily disadvantage lower-income Californians under the announced plan to give away approximately half of the permits to businesses and pollution-emitting entities.

The Basics on Instrument Choice

Air pollution is perhaps the classic negative externality. For instance, imagine that one manufacturer reaps all the benefits of pollution while others suffer the costs.

Footnotes continued on next page.


4This series of articles grows out of policy advisory work regarding AB 32.

5This discussion follows the standard presentation in public finance textbooks. See, e.g., Jonathan Gruber, Public Finance and Public (Footnote continued on next page.)
profits from producing a good but is forced to cope with only a small fraction of the costs it is imposing on all of us — say, medical costs — because of reduced air quality. The classic solution is to force the polluter to internalize those costs, and the classic instrument is a corrective tax. If each unit of production causes $X of harm, the tax must be $X so that the producer gets the right price signal and produces the socially optimal amount of pollution. Note that if we knew what the socially optimal level was, we could also achieve the same thing by regulating the quantity of pollution.

That last point indicates an important subtlety. If we are unsure about the optimal quantity of greenhouse gases we want to permit given the economic cost of restricting their emissions, which is better — tax or regulation? It turns out that it depends on our best guess as to the cost of guessing wrong. If we absolutely do not want to be wrong, then a regulation is preferable; that is presumably how most people think about nuclear accidents. We have regulations that essentially try to set the accident level at close to zero. Most economists think the damage done by greenhouse gases does not increase as dramatically compared with a nuclear accident. Thus, there is a danger that we might pay for more mitigation than would be optimal. In that kind of situation, the better choice is typically thought to be a tax. We know roughly how much money the tax will raise; we can then see how much reduction is achieved for that cost and adjust later as appropriate.

Taxing and command-and-control regulation are not the only two options for mitigating externalities, especially in a more complicated scenario more closely approximating the real world. There is also cap and trade. In terms of political economy, that is a very fortunate development given that taxes are arguably the better tool but are more politically fraught.

To understand how cap and trade can mimic a tax, suppose there are two factories, one that can reduce pollution cheaply and one that can only do so expensively. We want the factory that can reduce emissions cheaply to do so first. If we impose a straight tax per ton of pollution, the factory that can reduce emissions cheaply will have a greater reduction in its carbon emissions — up until the point when the cost of reducing one more ton would equal the cost of the tax per ton. The dirtier factory might make a few cheap improvements but would generally do better just paying the tax. A cap-and-trade system can achieve the same result as a carbon tax. The less polluting factory will have an easier time staying under the cap and would then sell its leftover allowances to the dirtier plant.

One complexity created by a cap-and-trade regime versus a tax is that the legislature or a regulator must decide how many allowances there should be and which businesses should receive them and in what quantities. There is also the more fundamental question of whether the allowances will be given away to emitters, sold, or a mixture of both.

AB 32 in California is a cap-and-trade solution to the negative externality caused by greenhouse gases. It places caps on the emission of global warming gases within California. AB 32 came into effect in 2013 for the electricity and large-industry sectors. In 2015, AB 32 will be expanded to transportation fuels. AB 32 requires that applicable entities purchase or otherwise obtain allowances for each ton of global warming gases emitted. The California Air Resources Board (CARB) is scheduled to gradually reduce the total number of available allowances beginning in 2015, such that the impact of AB 32 on California’s economy should increase annually beginning in 2015.

If AB 32 is successful in reducing California’s greenhouse gas emissions, California consumers will necessarily face higher prices for gasoline, electricity, industrial products, and a host of other goods and services that involve greenhouse gas emissions.

AB 32 has been subject to a great deal of litigation. Significantly, the state recently won a decision upholding AB 32’s low carbon fuel standard against the charge that the standard discriminated against interstate commerce. We plan to discuss this case further in a later article.

If AB 32 is successful in reducing California’s greenhouse gas emissions, California consumers will necessarily face higher prices for gasoline, electricity, industrial products, and a host of other goods and services that involve greenhouse gas emissions. That is the price being set by the cap-and-trade regime on the negative externality. Some portion of that economic cost of AB 32 will be borne by workers and by the owners of businesses and capital. Nevertheless, because lower-income Californians tend to spend
a larger portion of their incomes on goods that involve greenhouse gas emissions, most analyses suggest that the economic impact of AB 32 will disproportionately fall on lower-income Californians, unless allowances are sold and the revenue is used to benefit this group. In other words, to the extent that allowances are given away to emitters, rather than sold, the economic impact of AB 32 is likely to be regressive.

**Revenue Potential and Distributional Effects**

In theory, both carbon taxes and cap-and-trade systems can raise revenue that can be used for a variety of purposes. Carbon taxes raise revenue through the straightforward mechanism of requiring emitters to pay the tax. Cap-and-trade systems can similarly raise revenue to the extent that allowances are sold to emitters, rather than given away. Depending on what percentage of allowances are sold and on the price charged per allowance, a cap-and-trade system has the potential to generate the same revenue as a carbon tax. However, CARB plans to give away about half of all available allowances through 2020.8

Both cap-and-trade regimes and carbon taxes increase consumer prices in a manner likely to be regressive. That is, poorer people are likely to spend a higher portion of their income on those items made more expensive by the imposition of a cap and trade — for example, energy to heat one’s home. With a carbon tax, this issue can be readily mitigated, perhaps reversed, through dedicating the revenue raised by the tax to programs that aid the poor, such as tax credits. The revenue generated by selling allowances under a cap-and-trade regime can be similarly used.

Selling allowances to emitters, rather than giving them away, might result in larger increases to consumer prices because emitters would spend more acquiring the allowances. Yet simply giving allowances away is a crude approach for mitigating the impact of AB 32. For instance, CARB is giving away allowances to California utilities to mitigate any sudden rate increases.10 Yet those allowances protect rich Californians as well as poorer Californians, and only limited protection is thus provided to those who need it the most. To be sure, unexpected rate increases possibly cause an independent harm, but, as a general matter, that is clearly not the most effective way to aid poorer taxpayers.

A similar example is that most states exempt many food purchases from their sales taxes so as to mitigate their regressiveness. Clearly the food sales tax exemption mitigates the tax’s regressiveness, but that is a clumsy and expensive way to pursue that policy given that wealthier people tend to consume more expensive foods than lower-income people. It is not as if we do not have an instrument that measures taxpayer ability to pay, at least roughly. That instrument is called the income tax, and the information it collects should be leveraged to maximize the distributive benefit of any revenue resulting from cap and trade or a carbon tax.

Of course, there are many options for how the revenue from selling allowances might be used. But it is important to understand that all of those options involve trade-offs among minimizing the distributional harm to lower-income Californians, minimizing the harmful impact on economic growth, and furthering other policy goals.11

The distributional harm to lower-income Californians from cap and trade could be minimized by using revenue raised to provide targeted payments, such as tax credits or refunds.

The distributional harm to lower-income Californians from cap and trade could be minimized by using revenue raised to provide targeted payments — such as tax credits or refunds — to lower-income California taxpayers or to fund spending for the benefit of lower-income Californians. In contrast, the harm to economic growth from AB 32 could be minimized by using the revenue to reduce the rates of existing taxes or to fund spending programs that could benefit California’s overall economy. Combining the two policy goals might suggest that revenue should be used to reduce the rates of existing regressive taxes — such as the sales tax. Another possible combination could be to fund projects that help the state economy generally but lower-income residents particularly. Public transportation, which also aids AB 32’s goal of reducing greenhouse gas emissions, is a plausible candidate.

Importantly, using revenue to promote other policy goals — for instance, combating fiscal volatility — at least partially comes at the expense of reducing the distributional

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10CARB, Allocation Allowance (last updated Aug. 1, 2014).

11There is an additional limitation governing how allowance revenue might be used in California, with its limitations on the ability of the State Legislature to increase taxes. A California superior court has upheld the selling of allowances by holding that they do not constitute a tax for purposes of Art. XIII, section 3, of the California Constitution. The judge called the question “close,” and that decision is now being appealed. California Chamber of Commerce v. California Air Resources Board, No. 34-2012-80003133 at *16 (Cal. Super. Ct. 2013). If California were to treat the revenue as ordinary general fund revenue, which it has not done, that likely would affect whether the allowances are considered taxes. It is possible that several of the expedients we discuss are therefore not practical options for California, which is unfortunate. For further analysis of this legal risk, see Deborah Lambe and Daniel Farber, “California’s Cap-and-Trade Auction Proceeds: Taxes, Fees, or Something Else?” Berkeley Law Center for Law, Energy & the Environment (2012).
impact on lower-income taxpayers. The most volatile of California’s tax bases are also the most progressive tax bases.\(^\text{12}\) Certainly, it is possible to further multiple goals by using portions of the revenue for different purposes. For instance, using the majority of revenue to fund refunds to lower-income taxpayers, while reserving a portion for a rainy day fund, could advance both distributional and fiscal volatility goals. Ultimately, however, there is only one revenue pie that can be divided, and there are trade-offs among the various purposes for which revenue might be used.

A substantial portion of the potential revenue pie from allowances is scheduled to be given away to businesses and to other emitters of greenhouse gases. In our view, that is a poor policy choice. Giving away allowances unnecessarily exacerbates the harmful impact of cap and trade on lower-income Californians and does so without substantially advancing any other important policy goals.