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“Taxation and Global Cap and Trade”

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(All sessions meet Thursday 4:00-6:00 pm, Furman-120, NYU Law School)

1. January 15 – Daniel Shaviro, NYU Law School. “The Long-Term Fiscal Gap: Is the Main Problem Generational Inequity?”
2. January 22 – Alan Auerbach, Berkeley Economics Department and NYU Law School. “Understanding U.S. Corporate Tax Losses.”
<http://www.nber.org/papers/w14405.pdf>
3. January 29 – Edward Kleinbard, Joint Committee on Taxation. “A Reconsideration of Tax Expenditure Analysis.”
4. February 5 – Amy Finkelstein, MIT Economics Department, “EZ-Tax: Tax Salience and Tax Rates.”
5. February 12 – Dorothy Brown, Emory Law School. “Shades of the American Dream.”
6. February 19 – Yoram Margalioth, Tel Aviv University Law School and NYU Law School. “Employing Statistical Stigma As a Welfare Ordeal.”
7. February 26 – Leslie McCall, Northwestern University Sociology Department. “Americans’ Social Policy Preferences in the Era of Rising Inequality.”
8. March 5 – Michael Doran, University of Virginia Law School. “Managers, Shareholders, and the Corporate Double Tax.”
9. March 12 – David Duff, University of Toronto Law School. “Tax Fairness and the Tax Mix.”
10. March 26 – Emmanuel Saez, Berkeley Economics Department. “Details Matter: The Impact of Presentation and Information on the Take-Up of Financial Incentives for Retirement Saving.”
11. April 2 – Lily Batchelder, NYU Law School. “Savings Incentives with Insurance Objectives: A Bankrupt Approach?”
12. April 9 – Mihir Desai, Harvard Business School and NYU Law School. “Investor Taxation in Open Economies.”
13. **April 16 – Mitchell Kane, NYU Law School. “Taxation and Global Cap and Trade.”**
14. April 23 – Thomas Brennan, Northwestern Law School.

Taxation and Global Cap and Trade

Mitchell A. Kane*

The motivation behind market-based approaches to climate change is simple. If our goal is to reduce greenhouse gas concentrations, it makes sense to seize upon the least cost emissions abatement opportunities first. Within the framework of a cap and trade regime, one relies on the price of permits or allowances to signal which abatement opportunities are cost effective, in light of the overall cap. Just like any market where we use price signals to achieve allocative efficiency, taxation is a looming problem. To the extent that taxes distort prices, the market may break down. Of course, this is always true, or at least almost always true, in a world with taxes. The goal, then, is not necessarily to eliminate distortions but to understand their genesis so that we can structure laws that minimize costs. In structuring permit trading markets, then, an important question is how one ought to tax the permits themselves, both in the case where the holder of a permit uses it and in the case where the holder trades it.

As compared to the overall level of attention being paid to the architecture of permit markets, the level of attention devoted to the *taxation* of such markets has to date been relatively thin.¹ This relative lack of analysis regarding the taxation of permit trading may be perhaps best

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1. Major contributions in the literature on taxation of permit markets include Carolyn Fischer, *Multinational Taxation and International Emissions Trading*, 28 *Res. and Energy Econ.* 139 (2006); Ethan Yale, *Taxing Cap and Trade Environmental Regulation*, 37 *J. Leg. Stud.* 535 (2008); Thomas Eichner and Ruediger Pethig, *Efficient CO₂ Emissions Control With National Emissions Taxes and International Emissions Trading*, CESifo Working Paper No. 1967 (2007); Jonathan Remy Nash, *Taxes and the Success of Non-Tax Market-Based Environmental Regulatory Regimes in Critical Issues in Environmental Taxation* (Vol. V); and Gerald Auten, Edith Brashares and Horst Frisch, *Would Taxes Reduce the Benefits of a Tradable Emissions Permit Program for Greenhouse Gases*, NTA Proceedings 92d Annual Conference 85. Of these contributions, Fischer's paper as well as Eichner's and Pethig's paper address multi-jurisdictional issues, which are the chief concern of this paper, directly. I discuss Fischer's paper further *infra* _____. Eichner's and Pethig's paper is a formal modeling paper which considers the interaction of cap and trade *with* national level emissions taxes that differ by jurisdictions. The types of distortion that this can create are similar to the allocative effects I discuss in my paper, though my analysis does not assume the existence of emissions taxes.

understood as the product of a false, or at least imperfect, analogy. It is tempting to conclude that we already understand everything we need to know about the tax implications of permit markets. Tradable permits bear a resemblance to valuable property rights. Upon initial inspection, then, permits may look just like any other asset that firms purchase in the course of their production activities. The tax issues, then, would be the familiar ones. What is the holder's initial basis in the asset? Over what period will the basis be recovered? What rate will apply to any taxable gain or loss? These may be familiar questions but the principles underlying their resolution are not.

I make two basic claims in this paper. First, one cannot determine the proper tax treatment of permit markets through sound principles of taxation alone. Rather, it is imperative that one analyze the tax treatment of permit markets against the backdrop of the particular *regulatory* function that the permits are meant to serve. That is, tradable permits are meant to harness market forces to achieve the particular regulatory goal of minimizing abatement costs. The tax rules should be designed, I will argue, with this regulatory function in mind. Second, the particular tax issues that must be addressed with permit markets demand a different analysis in the multi-jurisdictional setting than in the single jurisdiction case. Understanding the particular tax issues that arise within the multi-jurisdictional context is essential. The theory of permit trading tells us that, in principle, the bigger the better. That is, if one wants to capture the least cost abatement opportunities, then it is best to expand the market -- across sectors, across time, across method of abatement, and of central importance to this paper -- across jurisdictions. Absent an increasingly multi-jurisdictional approach, it is likely not possible to achieve sustainable levels of greenhouse gas concentrations at acceptable costs.² The associated tax issues are likewise international in scope.

My analysis contains three parts. In Part I I first describe general possible approaches to permit taxation strictly as a matter of tax logic. I then take up the tax-regulatory interaction, describing two ways in which taxation of permit markets can be structured so as to avoid allocative

2. [Cites.]

distortions. In Part II I undertake a more comprehensive analysis of allocative issues. The conditions for allocative efficiency are unlikely to be met in real world permit markets, largely because of likely differential treatment of actual abatement costs across jurisdictions. I first describe why we should attempt to structure the taxation of permit markets to redress this problem, notwithstanding the fact that there may have been independent reasons to tax various abatement costs differently. I suggest that this is a particularly pressing issue in the multi-jurisdictional setting. In this part of the paper I also offer some preliminary thoughts on how we might design the tax system to redress allocative distortions. In part III I consider the issue from a distributional standpoint. I describe here the way in which plausible real world cap and trade systems could pass the cost of funding environmental tax incentives in developed countries to developing countries, through the operation of permit markets. These effects have important ramifications for the ability of developed and developing countries to enter into multi-jurisdictional cap and trade arrangements in the first instance.

I note a couple of limitations at the outset. The issues considered in the paper are complex, as they involve the interaction of many national tax systems with an overarching regulatory scheme. The task is further complicated by the fact that the relevant regulatory scheme does not yet exist. One could focus simply on the principles embodied in the Kyoto protocol, or on the mechanical operations of the European Trading System, but it would seem that a more generalized analysis is called for. To make the project more tractable, I have made some limiting assumptions about the tax systems at issue. First, I assume throughout that jurisdictions apply a corporate income tax and that abatement occurs within the corporate form. The analysis would look very different if we assumed radical global tax reform, such as universal elimination of entity level taxes. Second, I largely focus in this paper on issues that arise in one period models.³ This reflects the fact that I am chiefly

3. That is, the operation of income tax principles within a single period of many. If we assume away the other periods completely then we can have no savings, and the import of focusing on an income tax drops away.

interested here in the ways that tax can distort the optimal location of abatement activity across jurisdictions. One faces a similar issue with inter-temporal distortion, and I believe that much of what I say in this paper carries over to the inter-temporal context. If we were to reconceive of jurisdictions as temporal periods, then as a formal matter the analysis offered below would seem to be largely applicable. The complication is that the underlying policy rationales for inter-jurisdictional and inter-temporal tax differences are quite distinct. Given the importance of allocative efficiency across time in abatement activities, it will be crucial to return to this issue in future work.⁴

I. Tradable Permits, Tax, and Regulation

The bulk of the discussion of standard economic models of tradable permits is typically silent on questions of taxation. Conversely, most tax analysis of tradable permits, to the extent it exists at all, pays scant attention to the underlying regulatory function of having a permit market in the first place.⁵ My goal in this part of the paper is to show why we need to pay greater attention to the interaction of permit taxation and regulatory purpose. It is a mistake to think of permits simply like any other property right. To the extent that practical guidance exists, the exercise is viewed as one of drawing the appropriate analogy to the right type of property. For example, ought we to think of permits as intangibles held in a trade or business, or as intangibles giving rise to passive income, or perhaps as commodities?⁶ Once we shoehorn the permits into the right “property box” then we can apply the relevant doctrine. This is an understandable mode of doctrinal analysis, but if

4. For a discussion of tax issues relating to multi-period models see Yale, *supra* note ____.

5. The key exception to this is the scholarship which addresses the “zero basis problem.” The issue there is the potential market lock in that has been thought to arise when permit holders have a zero or low basis in permits and thus are deterred from trading by built in tax costs. See, e.g., Jonathan Remy Nash and Richard Revesz, *Markets and Geography: Designing Marketable Permit Schemes for Local and Regional Pollutants* 28 *Ecology L. Q.* 585 (2001). For a counter-view of the zero-basis issue, see Yale, *supra* note ____, at _____. I situate the zero-basis problem within the broader scope of my project below.

6. The first guidance issued by the IRS on trading of carbon permits was PLR 200825009. The issue presented was whether a CFC has subpart F income in virtue of permit trading in the European Union. The IRS approached the question, understandably, as one of placing the permits in the right property box and then proceeding from there.

we stop the tax analysis there then we risk selling the regulatory enterprise short. My argument here has a number of steps. First, I describe what I consider to be the proper tax treatment of permits simply from the standpoint of principles of standard tax logic regardless of the type of property analogy that one draws. Second, I describe two sets of sufficient conditions for the tax system to be consistent with the regulatory goal. Finally, I discuss some implications that follow from combining the analysis of stand-alone tax logic and the analysis of regulatory purpose.

A. Tax Logic and Two Baselines.

Imagine that tax lawyers and scholars were set to the task of determining the “correct” tax treatment of permit markets but that they were given only a limited set of information. Specifically, suppose that the tax experts were provided with information about the nature of the legal rights and obligations (and accompanying financial consequences) that arise in a permit trading market but were ordered *not* to consider the broader regulatory purpose for which the market is created. What set of rules under a firm level income tax would the tax experts produce?

To get a handle on this question, let’s consider a very simple scenario to start. Imagine a one country model in which a government either auctions permits or awards permits gratis to sources of emission. Thereafter we observe trading of permits among sources of emission. For simplicity, assume there is no secondary market for permits held by parties other than emissions sources. Finally, assume this is a one period model. Thus there is no banking of permits but rather all permits are surrendered to the regulatory authority at the end of the time period.

Most regulatory regimes seem to pose no particular conceptual problems under an income tax. If we imagine that regulations impose incremental costs on the business operations of regulated entities then such costs will properly be reflected as deductible costs of earning income. Matters are somewhat more complicated with a permit market. The complication arises chiefly because of the possibility that the government may issue at least some permits gratis, which one

could think of as a partial or total absolution of regulatory burden, depending upon the relationship between quantity of permits issued and the taxpayer's level of emissions in the absence of regulation. Moreover, such partial or total absolution of regulatory burden is alienable.

In light of these features, one must resolve a preliminary question about the appropriate baseline for measuring income. Stated simply, ought the baseline to *include* the applicable regulatory burden or not? At the highest level of abstraction one can phrase the question, from the standpoint of an income tax, as follows: If one day the government imposes a new regulatory burden on a group of taxpayers but then says to a taxpayer within that group that it does not have to bear some or all of the cost of the regulation, does that taxpayer have income? There is no correct answer to this question. From a pre-regulation baseline it does not look as though such a taxpayer has income. If compliance with the regulatory regime can be achieved by tendering some official documentation, say a regulatory permit, then one can make that point in fairly strong terms. That is, if the government hands you a piece of paper today and takes it back tomorrow, it seems a stretch to say that there is income. To take a more colorful example, suppose the government prints a special set of purple \$100 bills, hands them out to select parties, and stipulates that the bills are not legal tender but that recipients can use them at year end to pay the new purple fine. Again, this does not look like income. But one should acknowledge that the resolution of the issue is arbitrary. From a post-regulation baseline, absolution from the regulatory burden is going to begin to look like income, particularly if the government provides that the absolution is alienable, say through a tradable permit.

If most typical regulatory contexts present no particular conceptual hurdles with respect to baseline, it is because we happily, perhaps even unknowingly, adopt what I am calling a pre-regulation baseline. This is why we are happy to conclude that a party who has an incremental expense under the regulation takes a deduction. Similarly, if some parties face regulatory costs and

others face none, we would think it very odd to ask whether the party who does not face a cost has income in virtue of this. From the standpoint of the pre-regulation baseline we would never even think to ask the question. But when we embody the absolution from regulatory burden in something like alienable property, the regulatory framework forces the tax system's hand. Now we must address the baseline question. The grant of absolution now looks like windfall property, which perhaps should be included in income. The choice we make will have ramifications not only for the proper tax treatment of the initial receipt of permits from the government but also for downstream transactions in the permit market.

Importantly, taxpayers in permit markets are engaged in two types of fundamentally different transactions. One set of transactions relates to the acquisition and surrender of permits vis-à-vis the regulatory authority. The second set of transactions relates to market trades. The tax principles properly applicable to these types of transactions are different. The taxation of the interactions with the government properly stem from the answer that one gives to the baseline issue just adduced. The tax principles applicable to market trades are independent of the baseline. At the very least, regarding market trades it would seem that the proper approach here is to ensure that we appropriately measure income, *assuming* a given baseline. Perhaps a biblical analogy will assist in demonstrating the central issues. Suppose we think of a permit issued gratis like manna falling from heaven. This will tempt us into thinking that the recipient has received windfall property that should come into income. That would be the view consistent with the post-regulation baseline, under which we would ignore the fact that you have to give the manna back. But from the standpoint of the pre-regulation baseline we would say that *because* the manna is later taken back then on the whole the recipient of the manna is no better off and should not be treated as having income. Whatever the baseline, though, if the recipient can use the manna to make some additional manna before returning the initial grant then we might rightly think that the increment ought to come into taxable

income. If this analogy is apt, it tells us that gains or losses from market trades warrant a different analysis from the analysis that determines the appropriate treatment of interactions with the government.

In light of the discussion above it is not surprising that one of the first practical tax issues raised when dealing with permit markets is whether the issuance of permits gratis gives rise to taxable income. Various regimes have provided different answers to this question, typically with little analysis of the issue.⁷ The baseline issues above show why there is no correct answer to this from the standpoint of tax policy. One has to make the initial arbitrary decision about baseline. Once you have made that decision, one can articulate a set of internally consistent tax rules that would implement the choice. However, as we shall see the set of rules that would implement the post-regulation baseline are unlikely to win acceptance.

1. Pre-regulation Baseline.

From the standpoint of a pre-regulation baseline recall that the basic goal is to ensure that a taxpayer who is granted some amount of relief from the nominal regulatory requirement does *not* have income in virtue of this fact.⁸ However, the premise is that the tax system should measure gains and losses that arise in virtue of price fluctuations in the market in the period between permit issuance and permit surrender. We can implement these goals with a couple of internally consistent principles.

Upon issuance of a permit from the regulatory authority the recipient should reflect in its basis any amounts paid to the government as well as any amount included in income in virtue of a spread between the amount paid and the then-market value of the permit. Note that in a one period

7. [Cites.]

8. Note that the implication is that governments only transfer permits gratis at BAU levels or lower. That is a likely description of the real world. If permits are issued gratis at above BAU levels then one cannot analyze this as “regulatory absolution.” It is, rather, a straight transfer. To call on my example from the text above, it would be as if the government issued a taxpayer \$100 purple bills, indicating that the recipient was *not* subject to the purple fine (even though others are). That state of the world raises a totally different question about whether a given government transfer (compare social security benefits) should be included in the income tax base or not.

model it is irrelevant whether any amount *is* actually included in income to reflect any spread. As long as we reflect any income inclusion in basis and are faithful to our chosen baseline at the time of permit surrender then we will reach the correct result. Specifically, the key to implementing a set of tax principles that adopts the pre-regulation baseline is that when a party surrenders a permit to the government this should be treated as a realization event in which the amount realized by the taxpayer is zero. This is consistent with the meaning of the pre-regulation baseline; the taxpayer who satisfies the regulatory burden by tendering a piece of paper is not viewed as better off, given that the baseline is one in which the regulatory burden did not exist.

The tax principles applicable to market trades present no particular issues. Upon a trade, the transferor should realize gain or loss based on the differential between the amount received and its basis; the transferee should take a cost basis in the permit. Note that adherence to these principles will accurately implement the relevant baseline, notwithstanding the fact that the party that originally receives regulatory absolution (via *gratis* or discounted permit grant) may not be the party who tenders the permit to the government. This set of rules achieves this result through proper tracking of basis through permit trades and through instantiation of the general principle that the out of pocket costs of meeting the regulatory burden (i.e., the costs of actual abatement) will be deductible.

We can consider a simple numerical example to see how this set of principles works. Suppose a permit is issued *gratis* to a source at a time when market value is determined to be \$100. The recipient could be treated as having 0 income on grant and a 0 basis.⁹ If the permit is held until the time of surrender, then such surrender will be treated as a realization event but since there is 0 basis and 0 realized, there would be no further tax consequences. If the price of the permit fluctuates in the interim, the result would be the same. Against the pre-regulation baseline it would still not look as though there is any income; it's still just a piece of paper given to the source and then handed back to the government at the end of the period.

⁹ Or, \$100 of income and a \$100 basis.

Now we can add trading to the picture. Suppose the issuance of the permit is the same as above but now we imagine the permit is later transferred for \$102. The transferee source holds the permit until surrender, at which time the permit is trading for \$105. We can now consider the treatment of the two sources in turn. Upon transfer the first source would realize a \$102 gain. However, the fact that the trade occurs means that the source can abate at less than the market price. If we are at the equilibrium point (i.e., allocative efficiency for abatement costs), then the first source would also face \$102 of actual abatement costs on the margin. Thus the \$102 gain from transfer is precisely offset by the deduction that arises from actual abatement. This is again consistent with the meaning of the pre-regulation baseline. If we are not at equilibrium, such that the source can sell a permit for \$102 and abate for something less than this amount, say \$100 for purposes of illustration, then the source will have a \$102 income inclusion and a \$100 deduction, yielding a \$2 net gain. This is again consistent with the pre-regulation baseline, given that the source is \$2 better off than the case in which the regulatory regime is not put in place. Applying these principles to the second source we would observe the source taking a \$102 initial basis in the permit. Upon surrender to the regulatory authority, the source would be treated as realizing zero and thus would have \$102 of basis recovery. Note that we do *not* take account of the fact that the then-market value is \$105. The fact that the source holds the permit rather than selling means that its actual cost of abatement must be equal to at least \$105. The proper way to think about this, given our chosen baseline, is that the second source also is granted something like partial absolution from the regulatory requirement. It is able to satisfy a regulatory requirement that in effect costs \$105 for only \$102. This \$3 “gain” however is ignored under the pre-regulation baseline.

I think that even this simple example with trading reveals an important point that has been ignored in prior analysis of permit markets. If the government transfers a permit gratis that has market value of \$100, then it is tempting to view this as if the government has given away \$100. But

we can only analyze what the government has given away in terms of the overall operation of the market and the regulatory regime. In the above example, what the government has done in the aggregate is impose a \$100 regulatory cost (the actual cost of abatement) and granted \$105 of regulatory absolution (i.e., accepting a permit worth \$105 in satisfaction of regulatory burden even though it charged nothing for it). Note that the aggregate tax liability in this case is \$2 of gain reported by source 1 and \$102 cost reported by source 2. This nets to a \$100 aggregate loss, which simply reflects the fact that under this baseline the government allows a deduction for actual costs but ignores regulatory absolution.

2. Post-regulation baseline.

The principles that would effect the post-regulation baseline are somewhat more complex. To implement the post-regulation baseline the treatment of initial issuance of a permit is the same as above. The distinctions arise when a source surrenders or transfers a permit. When a source surrenders a permit (to the government) it should be treated as realizing an amount equal to the then market value of the permit. This is consistent with the meaning of the post-regulation baseline, which tells us that absolution from regulatory burden (tendering paper rather than abating) should be treated as income. Crucially, however, in a market trade we must preserve the same result. That is, the amount realized in virtue of permit transfer must reflect not only the cash or other property tendered for the permit *but also* an amount reflecting the market value of the permit. The logic behind this is to remember that the permit holder stands in relation to both the government and other participants in the market. Under this baseline, we are taking into income the value of regulatory absolution embodied in the permit. If a source receives a permit and holds it until surrender it has income under this baseline. That is, it has income in virtue of having complied without incurring out of pocket expenditures. To maintain consistency with the baseline, if the source sells a permit and uses the proceeds to pay for actual abatement, we would want to maintain

the result that the source has income. Since the receipt of the purchase price (income item) will be offset by the actual cost of abatement (deduction item), we must provide for an additional inclusion reflecting the value of the regulatory abatement. Finally, we need a rule to make sure that sources that do *not* benefit from regulatory abatement (i.e., downstream purchasers of permits) are not taxed as if they are. Purchasers of permits should thus take a cost basis reflecting not only the purchase price paid *but also* an increment reflecting the then market value of the permit. These rules may seem counterintuitive. To my knowledge no jurisdiction applies such a set of rules, but this is the package of rules (or one with like economic impact) that one would require to implement the post-regulation baseline.

We can see the operation of these rules by revisiting the numerical example discussed above. If a single source received a permit worth \$100 and then surrendered it to the regulatory authority when it had value of \$100, then the source would have \$100 of income.¹⁰ If that source surrendered to the regulatory authority when the permit had market value of \$102, then the source would reflect \$102 of income. Again, this is consistent with the baseline. The source is absolved of a regulatory burden worth \$102, all of which comes into income.¹¹ If we encounter a trade under the terms described above then matters become more complicated. Suppose the source who initially received the permit gratis when market value is \$100 can sell for \$102 and can abate for a cost of \$100. In this case we could treat the source as having a 0 inclusion and an initial basis of 0.¹² When it sells it would realize \$102 from cash *and* \$102 from the value of regulatory abatement; it would also have a \$100 expense deduction and thus \$104 of income total. (This preserves the correct

10. We could achieve this either (i) by having a \$100 income inclusion upon issuance, \$100 basis in the permit and \$100 amount realized upon surrender or (ii) 0 inclusion upon issuance, 0 basis in the permit and \$100 amount realized upon surrender. In a one period model there is no difference between these two approaches. In a multiple period model that would no longer be the case.

11. One might ask why we don't measure the regulatory abatement at the time of issuance rather than at the time of surrender. The fact that the source holds the permit rather than selling it tells us that the actual cost of abatement must be at least equal to \$102. Thus this gives us the lower bound for compliance through actual abatement and the precise number for compliance through the holding of a permit.

12. Or, once again, a \$100 inclusion and \$100 basis.

relative treatment compared to the source who surrenders to the government when market value is \$102. That party must have actual cost of \$102 or it would have traded so this is the value of abatement. For the transferor we also realize this amount but in addition \$2 of trading gain.) The second source would take a basis of \$204 (i.e., an amount reflecting \$102 cash paid and \$102 of abatement value) and upon surrender it would be treated as realizing \$105, thus yielding a \$99 aggregate loss.¹³ Across the two taxpayers the government will see \$104 of income (source 1) and \$99 loss (source 2) for an aggregate amount of \$5. We can observe two points about this aggregate result. First, it can be viewed as combining the tax effect of a \$100 expense item (i.e., the cost of actual abatement in this example) and a \$105 income item (i.e., the total value of regulatory abatement, which is split between the two sources \$102/\$3). Second, recall that the aggregate tax result in the example discussed under the pre-regulation baseline was a net \$100 loss. This is \$105 less than the aggregate tax base under the post-regulation baseline, reflecting precisely the fact that one base excludes the value of regulatory abatement and the other includes it.

3. Pure Traders.

The above analysis involved sources of emission only. We must also consider rules for pure traders. With respect to traders there are no special issues to consider under a pre-regulation baseline. At least assuming that pure traders do not receive any permits gratis but rather only by purchase at market cost, then under this baseline the simple rule will be that the trader takes a cost basis in the permit and then upon disposition realizes an amount equal to the sales price. Recall that under the pre-regulation baseline the rules operate to ensure that sources are charged with trading

13. This double basis rule looks very strange to anybody who has spent 10 minutes in a basic income tax class. It is worth spelling out the intuition. The underlying premise of the rule is that at the time of surrender we will want to apply a *uniform* rule regarding the amount realized. Since initial recipients of (gratis) permits and downstream purchasers necessarily have different amounts of abatement gain (which we are trying to reflect in the tax base under the post-regulation baseline), we reflect such difference by giving the downstream purchaser a basis adjustment. An alternative possibility would be a variable rule regarding the amount realized upon surrender. Such a rule would require the amount realized to be a function, in part, of purchase price and would look at least as strange as a double basis rule (and arguably would be more difficult to administer under real world conditions).

gain. The same result would arise for pure traders. As above, however, matters are again more complicated under the post-regulation baseline. The question that arises here is whether a pure trader, like a source of emission, should adjust cost basis and amount realized to reflect what I call the absolution from regulatory burden. *If* we require the trader to do this then from the perspective of the trader it will look like the rules operate to double any trading gains (or losses). I think this is the wrong result in light of the rationale for the post-regulation baseline. Because the pure trader is, by definition, not subject to the regulatory regime, it does *not* benefit from regulatory absolution when it holds a permit during a period when permit value appreciates. Rather, it benefits only from market gain. Indeed, to the extent that a pure trader holds the permit during a period of permit appreciation it could be said that *nobody* benefits from the relevant regulatory absolution and thus this amount is properly excluded, even under the post-regulation baseline.

A numerical example which modifies the one discussed above may be useful here. Suppose we have a case where source 1 receives a permit gratis at a time when market value is \$100. It later sells to a pure trader at a time when market value is \$102 but it then abates for an actual cost of \$100. The trader sells to source 2 at a time when the market price is \$104. Source 2 holds the permit and surrenders it to the government at a time when market value is \$106. Under the post-regulation baseline, source 1 has \$104 of aggregate gain (\$102 of absolution gain and \$2 of market gain), the market trader has at least \$2 of market gain, and source 2 will have an aggregate \$102 loss (representing \$104 of expense and \$2 of absolution gain). If we stick with these numbers then across the whole system we observe \$106 of gain and \$102 of loss for \$4 of net gain. This reflects the fact that we have encountered \$100 of actual abatement cost and \$104 of absolution gain. The open question is whether we should treat the trader as having an addition \$2 of absolution gain, bringing total absolution gain to \$106. The answer suggested here is no. It is true that the government accepts a permit with value of \$106 for which it received nothing. However, unlike the

cases involving only sources, in this fact pattern \$2 of appreciation occurs at a time when the permit is held by an unregulated entity and thus there is arguably no absorption gain with respect to that amount.¹⁴

4. Banking.

Although I generally am bracketing timing issues in this paper, it makes sense to analyze the question of banking here because it has bearing on what seems to be the otherwise arbitrary choice between treating initial permit transfers as giving rise to an income inclusion (with basis adjustment) or not. Issues of timing should not bear on the choice between the pre-regulation baseline and the post-regulation baseline. Within each baseline, however, one must make a decision about how to deal with the question of whether to treat the recipient of a permit gratis as having an income inclusion (with upward basis adjustment) or rather as having no income inclusion (and a zero basis). As we have seen above, within the confines of a one period model the choice between these two ways of handling basis is irrelevant. Whatever choice you make, under a pre-regulation baseline the absorption gain stays out of the base and under a post-regulation baseline the absorption gain comes into the tax base. The key issue from a timing perspective is whether we account for the time value of including or excluding the absorption gain. That is, from the standpoint of the pre-regulation baseline the question is whether we include the value of the permit upfront, in which case the taxpayer would essentially be taxed on the value of the absorption gain pending realization at which time it recovers the associated basis. From the standpoint of the post-regulation baseline, the consideration runs in the opposite direction. Here, the question is whether we should ignore the income inclusion on the front end, which will have the effect of deferring the tax on absorption gain pending realization. As with much of the above discussion I think it is difficult to choose one method or the other for reasons stemming simply from tax logic. A case could be made, however,

14. If, however, one thought that pure traders brought detrimental effects to the market (i.e., the harm from speculative activity outweighs the beneficial effects of traders as arbitrageurs), it might be possible to use the post-regulation set of tax principles to drive pure traders out of the market.

that perhaps once one has chosen a given baseline it makes sense to not have timing issues erode the import of the relevant choice. If that is correct then from the standpoint of the pre-regulation baseline we might say that given the decision has been made to exclude absolute gain, then it makes sense *not* to include the value of permit issuance in the taxpayer's income. Likewise, we could say that from a post-regulation baseline, given that we have decided to tax absolute gain, perhaps it makes sense to tax it at the outset, rather than to defer the tax.¹⁵

5. Comparing the Baselines.

As mentioned above I think the choice between the pre- and post-regulation baselines is essentially arbitrary. It would not appear that we could choose between them simply on the basis of tax principles alone. Notwithstanding the arbitrariness, we could still make a few observations about likely outcomes in the real world.

First, the very distinction between the two baselines is a feature of what I have been calling regulatory absolute gain. This arises most clearly where the regulating authority issues permits gratis. This suggests that to the extent we are in a world where permits are issued only by auction then the distinction between the baselines will tend to drop out of the picture. In other words, to the extent that we just have firms paying money to meet regulatory burdens this just looks like the common scenario where we assume the pre-regulation baseline without much, or any, analysis. I think this observation is essentially correct. In a world with only auctions we would almost certainly adopt the pre-regulation baseline. However, I note an important caveat here. Even in a world where all permits are issued by auction we are not quite in the typical regulatory framework. That is, we would still observe absolute gains where a firm surrenders a permit at a time when its market

15. In a common theme, the issue seems once again more complex under the post-regulation baseline. It is easier to say during which period a taxpayer does *not* have income (presumably all of them) than to say when a taxpayer does have income (pick your period). That is, we might ask the question when the taxpayer, under the post-regulation baseline, actually benefits from the absolute gain on which we are basing the income inclusion. This is a difficult question. If the taxpayer banks a permit then presumably it is undertaking actual abatement costs on the margin. This would push us in the direction of bringing the absolute gain into income in the period of issuance. On the other hand, the taxpayer may bank a permit because it predicts rising permit prices.

value exceeds the price paid for it. The choice of baseline would determine whether we capture this in the tax base or not.

Second, even if substantial permits are issued gratis there will be an understandable reluctance to adopt the post-regulation baseline full throttle. The idea of absorption gain in downstream transactions is a novel one. The required mechanic of doubling the taxpayer's cost basis and amount realized will strike many as weird, if not outright wrong. And yet, I suspect that as long as some permits are issued gratis there will be a push in at least some quarters to view the taxpayer who receives a permit gratis and then surrenders it as having taxable income equal to the value of the initial permit grant. In a thick market it will look like the taxpayer received a valuable transfer at no cost and thus should have income. That is to say, there will be a pressure to implement at least a portion of the post-regulation baseline. If we are not willing to make the required adjustments to basis and amount realized, however, we will end up with what is essentially an inconsistent system. Compare two parties who receive permits gratis with market value of \$100. One party is inclined to hold the permit because its actual cost of abatement is \$101, while the other party would like to sell because its actual cost of abatement is \$99. Partial implementation of the post-regulation baseline will leave us with the result that the first source has \$100 of income (under the post-regulation baseline), while the second source has \$1 of income (under the pre-regulation baseline). This is an odd result: the tax system would treat the first source as \$99 better off than the second source, even though as an economic matter the second source is actually better off than the first (i.e., both sources are in compliance and source two has an additional \$1 of cash).

Finally, and consistent with the overall theme of the paper, given that both sets of tax rules are internally consistent, it may make sense to defer to broader regulatory considerations in making the choice between the two. For example, the choice between the two frameworks can have important distributional considerations. Whether we want recipients of absorption gain to benefit

from this amount on a pre-tax basis or only a reduced after-tax basis is a question the tax system cannot answer. The tax expert is likely to say that from a distributional standpoint it doesn't even really matter given that we can adjust distributional consequences elsewhere in the system. But from a political standpoint it may matter crucially. Whether any parties benefit from absolute gain and which parties benefit, if any do, are questions that have important political ramifications that can affect whether and in what form a permit trading system gets off the ground in the first place. From this political perspective taxing the gain or not may well affect the relevant dynamics. I will have more to say about such issues later in paper when I take up distributional consequences generally.

B. Tax and Regulatory Purpose.

I have set out above two competing sets of what I call internally consistent tax rules. I have also suggested that depending on the manner in which permits are initially distributed (i.e., the degree to which we observe permits distributed gratis) there may be pressures to adopt elements of each, yielding essentially an inconsistent system. But so far we have just analyzed permits in abstraction, ignoring their underlying regulatory purpose in bringing us to an equilibrium point where overall costs of actual abatement are minimized. I now take up the question of what is required of the tax system in order to be consistent with the overall regulatory goal of a permit trading system. I suggest that there are two different approaches that one could take. Surely there are better labels for the approaches, but I will propose to call them the "no clienteles approach" and the "harmonious clienteles approach."

1. The No Clienteles Approach.

Under the "no clienteles approach" we need two things to be true of the tax system in order for it not to distort the efficient allocation of abatement activity: (i) all actual abatement costs must receive the same tax treatment (regardless of the firm which undertakes them and regardless of the

jurisdiction where the abatement occurs) and (ii) all permits must face the same tax treatment (regardless of the firm which holds them and regardless of the jurisdiction to which they are surrendered). I call this the no clienteles approach because where we satisfy these conditions there is no *tax* reason for any source either (i) to engage in a particular abatement activity or (ii) to hold permits for surrender in a particular jurisdiction (i.e., to *not* engage in a particular abatement activity). Clientele effects are important here both because there may be firm-specific low cost abatement opportunities and because there may be jurisdiction-specific low cost abatement opportunities. If tax differentials create a clientele effect where firms with firm-specific low cost abatement opportunities are encouraged to hold permits then this will have an efficiency cost. We will face the same problem if tax differentials create a clientele effect such that firms in a jurisdiction that has generally low cost abatement opportunities (which are not necessarily firm specific) are encouraged to hold permits.

Consider a situation in which there are only two sources of emission, call them source 1 and source 2.¹⁶ The standard economic models, which are premised on zero transactions cost Coasean bargaining, predict that regardless of initial allocation of permits, we should observe trading of permits up to the point where the marginal cost of abatement for source 1 (MC_1) and the marginal cost of abatement for source 2 (MC_2) are equal. At this equilibrium point, permit price, p , must equal both MC_1 and MC_2 . These standard models generally do not discuss taxation.

Let's suppose that the two sources face an identical tax regime with a single tax rate on income, t , and that all costs related to abatement yield a full deduction. Each source would now view marginal cost as equal to $MC_1(1-t)$ and $MC_2(1-t)$. (In other words, because abatement costs give rise to deductions, the after-tax costs is lower than the pre-tax cost.) Following the logic of the basic model, the after-tax permit price should now settle such that $p = MC_1(1-t) = MC_2(1-t)$. This

¹⁶ My discussion here tracks closely the analysis in T.H. Tietenburg, *Emissions Trading: Principles and Practice* (2006). As Tietenburg shows, the insights that one can gain from a two source model can be extrapolated to the multiple source model. See *id.* at 25-40.

assumes there is no tax consequence to buying, redeeming, or selling permits. Of course, it is more likely that we would grant full cost recovery for the purchase price of a permit (by auction or by trade). In that case, we should observe $p(1-t) = MC_1(1-t) = MC_2(1-t)$.

Allocative efficiency is satisfied so long as pre-tax marginal abatement costs equalize. In a world without taxes the permit price, as we have seen, will settle where marginal abatement costs are equal and there are no further problems. In a world with taxes the after-tax permit price must settle where after-tax marginal abatement costs are equal. Taxation of the permit itself will have a price effect on the pre-tax cost of the permit, but will not alter the allocation of actual abatement so long as permits have the same tax value in the hands of all sources regulated under the system. If this is not the case then tax costs or benefits of permits will not be fully priced and we can observe lock in effects. For example, suppose allocative efficiency requires a holder of a permit to sell the permit and abate. If the relative *tax* gain from the current holder owning the permit is greater than the (after-tax) cost savings from shifting actual abatement, then we will observe inefficient lock-in.

Another way to make this point is that having removed all tax differentials with respect to actual abatement costs we should observe no clientele effects arising from this aspect of the tax system. If that is the case, however, then we also need to remove clientele effects from the other side of the market, that is the holding of permits.

Note that to achieve allocative efficiency under the no clienteles approach it is *not* required that we tax permits the same as actual abatement costs. This may seem counterintuitive. On the margin the emissions source views the purchase of additional permits and the incurrence of incremental abatement costs as substitutes. Generally, we think that if we differentially tax substitutes, then we get inefficient substitution into the tax-favored option. In this context, for example, such reasoning would seem to suggest that if a source of emission received a deduction for actual abatement costs but no deduction for the purchase of a permit, then we would observe

inefficient substitution away from permits. But of course that does not happen in a permit market because the quantity of permits is impervious to the operations of the market, or the taxation thereof. The quantity of permits, rather, is fixed exogenously by regulatory fiat.

If we satisfy the above conditions, the price of the permit would simply fully capitalize the chosen tax treatment. To take an extreme example, suppose we imposed a \$1 million tax penalty anytime the holder of a permit sold it on the market. At first glance we might assume this would lead to terrible lock-in problems and thus an inefficiently illiquid market in permits. So long as the purchaser of the permit were granted an offsetting \$1 million tax bonus, however, no lock-in will occur.¹⁷ Assuming the holder of the permit is the relatively high cost abater on the margin, the price of the permit should simply rise by \$1 million and the parties will make the efficient Coasean bargain.

Admittedly, the above analysis of price effects cannot be a general equilibrium result because I have ignored the supply side of the abatement market. The relationship between pre-tax and after-tax abatement costs is not a simple function of tax rate. Once we consider taxation on the supply side of inputs to abatement it is certainly possible that we would observe effects on the pre-tax price of inputs (i.e., the seller of inputs is able to pass forward some of the tax cost to purchasers). Such general equilibrium effects could throw off the overall efficiency of the permit market (e.g., if they altered the pre-tax prices of inputs to different abatement alternatives differentially) or not (e.g., if all abatement costs were affected in the same manner).¹⁸

2. The Harmonious Clienteles Approach.

17. Note that this example satisfies the condition that permits face the same tax treatment regardless of the identity of the holder in the sense that the permit always gives rise to a \$1 million improvement in the holder's tax position, compared to the case where the holder does not have the permit.

18. One might also observe that it would be possible to remove the supply side of the abatement market entirely by analyzing the sole means of abatement as curtailment of production. In that case, the meaning of the tax effect for the abater would simply mean that foregone income would reflect the fact of less tax liability. Here, there is no supply side in the abatement market because there are no incremental deductible costs, only foregone income for the emissions source. This could capture an important aspect of the abatement process but would also miss a lot since many of the most important abatement opportunities are thought to involve something less costly than curtailment of production.

What if we fail to satisfy the two conditions above? Will taxes necessarily bring us off the desired regulatory equilibrium? Interestingly, in this case the answer is no. Given the operation of permit markets one can structure the system to have one type of tax distortion precisely offset the other. The condition that one must satisfy under the harmonious clienteles approach is that any given source face the same tax treatment of actual abatement costs and the permits which operate as substitutes for *that* abatement. This condition does not require that a given source face the same tax rate on all possible methods of abatement and permits that it might acquire. The point rather is that when a source faces the choice between any particular method of abatement versus holding an additional permit on the margin, then the tax treatment of such abatement and of such permit be the same. Note also that it is *not* required, however, (as it is required in the no clienteles approach) that methods of abatement be taxed the same regardless of who undertakes the abatement *or* that permits be taxed the same regardless of who holds them.

The conceptual backbone of this approach is that it uses clientele effects to offset one another. If we differentially tax methods of abatement then this will, in isolation, cause an inefficient clientele effect. Sources who can undertake the tax preferred method of abatement will over-abate relative to those sources who cannot. The tax-favored sources, in other words, abate too much, which is the same as saying they sell too many permits. If we exactly offset the tax advantage of actual abatement with a tax *dis*advantage from transferring permits then we should create a balancing clientele effect for holding permits and thus re-achieve the efficient equilibrium. In this state of the world the pre-tax permit price should settle exactly where it would in a world without taxes.

C. *Melding Tax Logic and Regulatory Purpose*

We have now seen that there are two internally consistent ways in which one could approach the problem of permit taxation from the standpoint of tax logic, and we have also seen two ways in

which the tax system could avoid distorting a permit market's goal of allocative efficiency. We can now make three further observations regarding how tax logic and regulatory purpose fit together.

First, the pre-regulation baseline and the post-regulation baseline are each consistent with either the no clienteles approach or the harmonious clienteles approach. As we have just seen the no clienteles approach requires like tax treatment of actual abatement costs and like tax treatment of permits. The baselines are, of course, silent on the first issue as they do not deal with the direct tax treatment of actual abatement costs. They are crucial, however, with respect to the issue of like treatment of permits. To be clear, the baselines are not *sufficient* conditions for like treatment of permits. They say, nothing, for example, about how different holders of permits might face different tax rates *generally* with respect to permits. What they tell us, however, is that the tax treatment of absolute gain within a given baseline will be impervious to trades. Thus by adhering to one of the baselines we remove, at least, the possibility that differential tax treatment of absolute gain will cause distortions to the market.

Similarly, under the harmonious clienteles approach, each of the baselines is consistent with the conditions necessary to satisfy that approach. What matters here is that any given source face the same tax treatment for permits and actual abatement on the margin. As with the no clienteles approach, the baselines obviously are not *sufficient* conditions for this. But what they do, once again, is to ensure that the particular treatment of absolute gain is the same for any taxpayer regardless of whether it holds permits for surrender or whether it transfers permits and abates. The baselines thus render emissions sources tax-indifferent, with respect to the issue of tax on absolute gain, between permits and actual abatement.

Second, exposition of the relationship between tax logic and regulatory purpose suggests that a portion of the existing analysis on these questions is somewhat misguided. Two of the issues that arise repeatedly are the question of whether to include the transfer of permits issued gratis in

income and the related question of whether sources that take a zero basis in permits upon issuance will be deterred from making efficient trades because of the tax cost of transfers. In a one period model the initial inclusion issue is irrelevant. As long as we reflect any inclusion in basis, the only substantive issue we face is whether a permit holder realizes income upon surrender of a permit or not. As we have seen, income realization would be consistent with the post-regulation baseline; no income realization would be consistent with the pre-regulation baseline. Consistency matters more here than choice of baseline, which I have suggested is essentially arbitrary. A corollary of the statement that the initial inclusion rule is irrelevant is that the zero basis problem is *not* the problem that it is sometimes thought to be. If the market exhibits allocative distortions it is *not* because permit holders have low bases and face tax costs from permit transfer. So long as we satisfy the conditions required for either the no clienteles approach or the harmonious clienteles approach the market should exhibit allocative efficiency. Low or zero basis issues are not relevant.¹⁹

Third, if we assume we are likely to be in a world where in fact we are *not* going to satisfy either the no clienteles approach or the harmonious clienteles approach, then how should we best structure the tax system? Can we make meaningful progress in structuring a second best set of tax principles? Perhaps this is a fruitless task. We are accustomed to the reality that all real world taxes have distortionary effects. But it is worth at least exploring the question how we can best structure the tax system to meet our regulatory goals. It may be possible to design tax systems that decrease the distortions to allocative efficiency, even accepting we will not be in a state of the world described by the no clienteles approach or the harmonious clienteles approach. Likewise, to the extent that

19. Commentators have made this point previously. For example, Ethan Yale concludes that tax does not cause allocative distortions in a one period permit trading market. See Yale, *supra* note ____, at ____. Yale models the after tax return of *not* selling a permit as $m(1-t) + bt - k(1-t)$ and the after tax return of selling a permit as $m(1-t) + bt - m(1-t)$, where m is the marginal price of permits (which must equal the marginal cost of actual abatement), b is the tax basis, k is the market price of permits, and t is the tax rate. These expressions are assumed to capture the choice faced by all firms in the market. The model is thus consistent with both the no clienteles approach (all actual abatement costs are taxed at rate t and all permits are taxed at rate t) and the harmonious clienteles approach (any given source will view the tax rate on actual abatement as t and the tax rate on permits as t).

our choice of tax rules has distributional consequences, it may not be sufficient to say that we can address these elsewhere in the tax system. If we don't fully understand the distributional consequences, this may hinder our ability to get a permit trading system off the ground in the first place -- a problem that is particularly pressing when it comes to multi-jurisdictional arrangements that attempt to bring under one umbrella jurisdictions at very different stages of economic development. It is to these issues I turn in the remainder of the paper. I first consider issues of allocative efficiency and then turn to distributional consequences. In each case I am particularly interested in the way the relevant issues and problems become different and more complex as we shift into a multi-jurisdictional framework.

II. Tax and Allocative Efficiency

Real world tax systems, as applied to permit markets, are likely to violate all three of the margins that are relevant under the no clienteles and the harmonious clienteles approaches. Under the no clienteles approach we are concerned with two margins: the margin between different instances of actual abatement and the margin between different instances of permit holding. Real world systems are bound to tax the range of actual abatement costs differentially. This is especially likely in a policy space that is increasingly focused on green initiatives. The incentives for politicians to put forward various tax credits or other favorable tax rules for specified activities that will reduce carbon emissions has proven, and will continue to prove, attractive. Second, in real world systems regulated parties will not face the same tax consequences with respect to permits. This is the case because various regulated parties will inevitably face different effective tax rates and thus place different after-tax value on permits. Under the harmonious clienteles approach the margin we care about is that between actual abatement and permits for any given source. Under real world systems we are likely to observe distortions along this margin as well. As in the case just discussed, this is

particularly likely to the extent that certain abatement activities receive targeted tax preferences. To be sure, under the harmonious clienteles approach such differential treatment is not problematic in itself. One could still achieve allocative efficiency under this approach if a given source had the same tax treatment for permits and actual abatement on the margin. If the tax treatment of actual abatement varies then the tax treatment of permits would have to vary in like fashion. Real world tax systems, however, are unlikely to instantiate such matching. It is difficult to imagine what a workable system with such a goal would even look like.

These facts about real world tax systems suggest that under either approach a key problem is the fact that we are likely to observe variable treatment of actual abatement costs. This raises an initial question about whether we should affirmatively try to use tax policy to, in effect, counteract the allocative effect of differential tax policies regarding different methods of abatement. The secondary question, assuming an affirmative answer to the first, is how we should go about doing so.

A. Differential Tax Treatment of Abatement Costs and the Bubble Argument

Differential tax treatment of underlying abatement activities may pre-date, and in some sense stand apart from, the permit trading regime. Does this mean that such differentials should have some type of independent validity in the sense that they form part of a tax policy that is *meant* to alter allocative consequences?

Suppose that prior to the advent of a cap and trade regime the tax system provides for a valuable tax credit for a certain type of activity that results in abatement of carbon emissions. We could easily imagine that the policy rationale for the favorable tax treatment is that the abatement activity would yield a positive externality related to climate change. Suppose, in addition, that there is a range of other abatement activities, which would also yield positive externalities but which do not benefit from the preferential tax treatment.

Once we introduce a cap and trade regime, the question arises whether this tax differential

between different approaches to abatement is problematic or not. We have seen from the above discussion that the differential may skew abatement activity, as compared to a world with cap and trade and no firm level income tax. But does this in itself provide an argument for attempting to correct the distortion? We can begin by making the assumption, perhaps heroic, that the tax credit accords with sound tax policy prior to the advent of the cap and trade regime. That is, the cost of the tax preference is justified in terms of the associated externality.

In a world with cap and trade and a firm level income tax, after-tax marginal abatement costs will equalize in equilibrium. Because we have posited varying tax treatment of different abatement costs before the advent of cap and trade, it must be the case that at equilibrium under the cap and trade system the pre-tax marginal costs of abatement methods will differ.²⁰ There are two ways that one might analyze this state of affairs.

On the one hand it would be possible to say that with the advent of the cap and trade, what was previously sound tax policy remains so. If the tax cost of steering activity into the preferred abatement activity was sound policy before, then there would not seem to be anything that has actually changed. The cap and trade system has merely incorporated the various tax differentials that were present previously.

The second way to view the matter, however, is that the advent of the cap and trade system actually changes the relevant question for what counts as sound tax policy. At least to the extent that differential tax treatment at the level of the actual abatement opportunity *is* justified in terms of climate change externalities, note that this runs counter to the entire premise of the cap and trade approach in the first place. That is, cap and trade is premised on the idea of allowing the market to locate least cost abatement opportunities. Once you have entered that world it runs counter to the market-based approach to be using tax policy within the confines of that market to steer activities in

20. The exception to this statement is where the tax differential on actual abatement is exactly matched by differential treatment of permits, as under the harmonious clientele approach.

a particular direction. Of course, one might be tempted here to revisit the initial assessment that the tax preference was sound tax policy *prior* to the advent of cap and trade. That is, if the tax preference steers abatement activity away from relatively low cost options to higher cost options, then it might seem that the policy was unsound to begin with. But this recasting of the problem mistakes what is supposed to be the plausible policy space with cap and trade and the plausible policy space without it. We have been assuming that the cost of a given tax preference could be justified because of the (higher) value of the externalities that it captures. Of course, if it were possible to capture the same externality at a lower cost then this would be preferable. If tax policy steered activity away from the lower cost option, then this would count as an argument against the policy. However, what this fails to appreciate is the limited information available to the regulatory authority in the world absent cap and trade. The whole rationale for implementing a cap and trade system in the first place is that it is not possible, through a command and control regulatory approach, to identify the least cost abatement opportunities. The relevant tax policy question in a world without cap and trade should *not* be whether the tax system is being used to achieve abatement at least cost. Rather, in the absence of the information necessary to answer that question, the tax policymaker should adopt a lower bar for what counts as sound tax policy: Is the benefit greater than the cost?

But with cap and trade the question becomes a different one. Since the whole rationale is to find least cost abatement opportunities through the market, then it would seem that *any* attempts to spur incremental abatement directly through the tax system is bad policy, in light of the inferior information that the policymaker has regarding relative abatement costs. We might call this the bubble argument. Ideally, from a tax standpoint we should have a bubble around the permit trading market and the actual costs of abatement. Within the bubble we should adopt a set of tax principles

consistent with the guidelines described in Part I.²¹ If this is correct then we still face two problems.

One complication that arises here is that there are likely to be ways in which the tax system differentially treats different abatement activities for reasons that do *not* relate to climate change. For example, perhaps a tax preference for investment in renewables is justified in part by externalities relating to national security, rather than climate change. In that case, the tax preference at the level of the investment itself would not, by itself, be inconsistent with cap and trade. This makes the assessment of tax policy quite complicated as the goal would not be to remove *all* tax differentials that affect different abatement costs but rather to remove such differentials as would be justified by climate change externalities. This leads directly to the second issue, which is the political context surrounding the area. Politicians are unlikely to view cap and trade and direct preferences for eco-friendly activities as inconsistent. As the current political dynamic in the United States makes plain, politicians are more likely to view the revenue from one (i.e., the auction of permits) as the revenue source to fund other. For the foreseeable future it seems plausible that legislatures will continue to enact tax preferences *directly* for activities related to abatement of carbon emissions; that such policy will be justified at least in part by reference to climate change; and that such policies will survive should more expansive cap and trade regimes continue to arise.

The above analysis of the bubble argument applies in a closed economy. It would seem that the problems become worse once we shift into a multi-jurisdictional context. Once we are within that context, and if we assume variance of tax rates that one observes in the real world, the differential tax treatments for various abatement costs will be far more pervasive than in the closed economy. Moreover, tax differences would rarely reflect anything about underlying environmental policy. More typically, rather, tax differentials will merely reflect the fact of different national tax

21. A handful of articles have reached precisely this conclusion in arguing that national level emissions abatement incentives in the EU are obsolete after the advent of the European Trading System. See J. Sijm, *The Interaction Between the EU Emissions Trading Scheme and National Energy Policies*, 5 *Climate Policy* 79 (2005); Scientific Council to the German Federal Ministry for the Economy, *On Subsidizing Renewable Energies* (Jan. 16, 2004).

rates. Unlike the type of tax differential described above, which plausibly could be defended as sound environmental and tax policy prior to the advent of cap and trade, mere differences in national tax rates, and the accompanying result on location of abatement activities, could not be similarly justified. The effect of different national tax rates should be to steer actual abatement activities into relatively high tax jurisdictions, where associated deductions will have more value.²² This effect should arise both (i) for a given multinational that is attempting to determine where to locate a given amount of actual abatement activity and also (ii) as between firms where the firm in the relatively high tax country would place higher after tax value on the abatement activity and thus would be encouraged to sell permits to the firm in the relatively low tax jurisdiction (where the after-tax abatement value is lower).²³ There are, admittedly, a number of assumptions at work here. If tax rates correlate with pre-tax abatement costs (e.g., suppose high tax jurisdictions also have higher actual abatement costs), then the above effect could be reversed to some extent. Also, there could be income effects to consider. If the abatement activity gives rise to incremental income that must be allocated to the jurisdiction, then the benefit of more valuable deductions could be offset by the detriment of more costly inclusions. Without meaning to deny the possibility, or even likelihood of such possibilities, the point here is that holding such factors constant we should observe some shifting of actual abatement to relatively high tax jurisdictions.

Supposing this effect does exist and we were to observe a systematic bias towards location of actual abatement activities in high tax jurisdictions, this understandably would lead one to another iteration of the “So What?” question. Of course, there is nothing novel in the idea that differential tax rates can affect firm decisions about the location of capital deployment. The question immediately arises, then, whether policymakers should think of the tax effects on location of

22. See Fischer, *supra* note ____.

23. As the preceding discussion has suggested, we could reverse this effect with the right set of rules regarding taxation of permits. I return to this below; the argument in the text is meant simply to address the question about how much we should even care about allocative effects.

abatement activity as a distinct type of distortion, calling for a distinct type of approach. I think the answer to this question is that although the international allocation of abatement activity is in certain ways analogous to the international allocation of capital, there are, in fact, crucial differences that we ought to heed when forming tax policy.²⁴ To get a handle on these distinctions we might focus on two reasons why international tax policy has, over time, moved away from the idea that a jurisdiction might attempt to set its international tax policy *unilaterally* with the goal that disparities in international tax rates not distort the capital allocation decisions of home country firms. Specifically, the idea that international tax policy should be set according to a principle of “capital export neutrality” has been called into question on, *inter alia*, two grounds. First, empirical evidence has suggested that outbound capital investment is not a substitute for domestic investment.²⁵ This means that to the extent low tax rates draw capital away from relatively high pre-tax domestic investments then the prediction is that other (foreign) capital will step in to fill the hole. Thus the supposed ill associated with the violation of capital export neutrality (foregone high pre-tax domestic investments) does not in fact come to pass. Second, the advent of well-developed international portfolio capital markets presents a leaky bucket problem for any country that would like to enforce capital export neutrality on a unilateral basis. In other words, if a country tries to maintain relatively high rates on the foreign income of home country firms, then the prediction is either that home country firms will invert their ownership structure or else capital that was otherwise flowing through the home country firm will, through the portfolio markets, be channeled through foreign firms that can benefit from low source country tax rates. Interestingly, neither of

24. That is to say, I hope to lay the groundwork for an argument that tax policy should be set to the extent possible to avoid tax distortions to the location of carbon abatement across jurisdictions. I am loathe to introduce another acronym into the international tax policy landscape, though carbon abatement neutrality (CAN) does occur to me. I intend to remove this footnote from future drafts, but I figured the conveners of the tax policy colloquium, if skeptical of the concept, might find it linguistically efficient to tell me to “Can CAN,” or, if the reaction is more favorable, “Yes, we CAN.” If the term were to stick, this would still leave CUN to future colonizers in the field.

25. [Cites.]

these important features would seem to apply to the allocation issue that arises in the context of multi-jurisdictional cap and trade.

With respect to the issue of substitutability one could certainly phrase the analogous question: if tax differentials cause actual abatement to be undertaken abroad rather than at home, then do we observe other firms assuming the otherwise foregone (low cost) abatement opportunities? In other words, should we reject, as we might in the case of capital allocation, the idea that foreign abatement is a substitute for domestic abatement? There are important differences that counsel against drawing that conclusion. The efficient result under a cap and trade system involves a certain set of actual abatement responsibilities. If tax differentials result in actual abatement efforts being undertaken which are *not* members of the efficient set of abatement opportunities, then there is no way to recover this efficiency loss through the operation of other parts of the system. Part of the distinction from the capital case is that the level of actual abatement is fixed by reference to the cap. Once you make the “wrong” choices we cannot go back and correct. It is not as if parties are going to abate over and above the cap just to capture some otherwise relatively cheap abatement opportunities. (By contrast, when a home investment is foregone under conditions that violate capital export neutrality it is always possible that on the margin the aggregate supply of capital increases because savings decisions are sensitive to available returns.)

With respect to the question of unilaterally enforcing something akin to capital export neutrality the case of abatement allocation again looks different from the case of capital allocation. Two features operate to drive the distinction. First, at least under a Kyoto-style multi-jurisdictional cap and trade approach we would observe fixed abatement responsibilities assigned to jurisdictions. Obviously, the whole point of trading is that actual abatement may occur elsewhere. But we should not lose sight of the fact that each jurisdiction remains responsible for covering the difference

between BAU emissions and its national cap, whether by actual abatement or by purchase of additional permits. There is no escape from this obligation through corporate inversion or portfolio capital markets. The second factor of relevance, which follows from the first, is that the jurisdiction has two instruments to work with (tax on actual abatement and tax on permits). If tax encourages a firm to substitute permits for actual abatement, for example, a jurisdiction could attempt to reverse the effect with its tax policy on the substitute. This is not an option when tax, for example, causes capital to flee a jurisdiction. As we shall see below, such a strategy is crucial in implementing something like a harmonious clienteles approach in the international setting.

B. Structuring Tax Policy to Improve Allocative Efficiency

I take up in this section the question of how policy might affirmatively attempt to deal with the types of allocative distortions discussed above. My focus here will be on the multi-jurisdictional cap and trade open economy setting. A domestic economy might plausibly forswear tax differentials regarding different abatement costs and tax differentials across permits, thus meeting the conditions for the no clienteles approach. In the multi-jurisdictional setting I take that option to not be on the table. So long as we have non-harmonized corporate tax rates it will not be possible to achieve allocative efficiency through the no clienteles approach. Rather, we must pursue a strategy that would seek to implement the harmonious clienteles approach, or to the extent that we fail to do so, pursue policies that correct for these failures. I break the discussion into two parts. I first address implementation details for a harmonious clienteles approach, that is where jurisdictions tax actual abatement costs and permits the same. This is the relatively easy case, though we still face a few details of implementation that must be attended to. Second, I take up the more likely real world case where jurisdictions exhibit some differential tax treatment between permits and actual abatement. On its face this makes satisfaction of the harmonious clienteles approach not possible; I explore, however, alternate approaches that one might take here.

1. Satisfaction of Harmonious Clienteles.

One crucially important set of technical issues that will arise in a multi-jurisdictional setting relates to the question of how to allocate or source expenditures incurred on actual abatement expenses on permits. With multiple jurisdictions, one will have to address the issue that arises when a firm that is treated as tax resident in one jurisdiction incurs expenses that either relate to actual abatement undertaken in a different jurisdiction or to the purchase of permits that originate in another jurisdiction (which could be the case either with permits that were initially issued in another jurisdiction or with permits that relate to project-based offsets of credits that take place in another jurisdiction). For the familiar reasons, this determination will be crucial both for countries that apply exemption systems (in which case allocation of an expense to the foreign source category may result in disallowance of the deduction) and for countries that apply a credit system (in which case allocation of the expense to foreign source may have the effect of reducing claimable foreign tax credits). For actual abatement costs we can imagine a number of obvious possibilities: the jurisdiction where the relevant abatement occurs, the jurisdiction where the the abatement costs are incurred (this could differ from the jurisdiction of abatement where, for example, monies are expended in one jurisdiction to create valuable technology that is used to achieve abatement in another), or the residence of the firm undertaking the abatement. Similarly, in the case of permits, one can list a number of possible candidates: the jurisdiction of initial permit issuance, residence of permit seller or buyer, jurisdiction of abatement activity that creates the permit (in the case, for example of a project-based offset or credit), and the jurisdiction of permit surrender.

I am assuming for purposes of this discussion different tax rates across countries. In this state of the world it will be impossible to achieve identical tax treatment of all actual abatement costs. The only route to allocative efficiency, then, is through the harmonious clientele approach. How ought we answer the above questions about allocation in light of this goal?

We can clarify the issues by again thinking about a two country model. To best capture the real world dynamic that is likely to present the biggest potential problem here, let's call one jurisdiction Developed and the other jurisdiction Developing. Further let's assume that Developed has a relatively high corporate tax rate compared to Developing, which is generally a net capital importer and has adopted low corporate tax rates in an attempt to attract capital. We can posit that Developing has many relatively low cost carbon abatement opportunities compared to Developed. In order to get Developing to agree to a bi-jurisdictional cap and trade system, however, it was necessary to grant Developing an initial permit allotment equal to 110% of BAU levels whereas Developed agrees to cap at 80% of BAU levels. Finally, let's suppose that the BAU level in Developing is 100 units and the BAU level in Developed is 200 units. The global cap is thus 270, or 30 units of total abatement compared to aggregate BAU levels. Allocative efficiency requires the parties to trade until their (pre-tax) marginal abatement costs are equal. Imagine that this condition holds where Developing abates 20 units from BAU levels (for 80 units total) and Developed abates 10 units from BAU levels (for 190 units total). Thus we require a sale of 30 permits from Developing to Developed.

How will tax affect these results? As permits shift from Developing to Developed, actual abatement, of course, shifts in the opposite direction. The potential problem is that the possible *lower* tax value of expenses in Developing operates to put a brake on the transfer so that we do not reach the equilibrium point of 30 permits transferred. That is, the mere tax rate differential creates a clientele effect for actual abatement. To reverse this we need an offsetting clientele effect for permits. To achieve this the proper set of allocation rules should provide that permit costs be allocated or sourced to the jurisdiction of permit surrender and abatement costs be sourced to the jurisdiction where the actual abatement occurs.²⁶

26. This is the set of rules that is implicit in Carolyn Fischer's work, which to my knowledge is the most complete theoretical treatment of these issues in the multi-jurisdictional setting. Fischer concludes that with international permit

If one focuses on actual abatement expenses first, then one might at first glance favor a rule which would source actual costs to the residence jurisdiction of the firm undertaking abatement. In the example described above we might imagine a Developing country firm holds permits covering emissions in the home country and also in Developed. Assume further that in each jurisdiction permits are below BAU levels and that the allocation of actual abatement is efficient. The firm, however, is tempted to shift actual abatement, inefficiently, to Developed because expenses will have higher tax value there. If we required the firm to allocate the expenses to domestic source then the expenses would retain their relatively low tax value and would seem to remove the tax distortion. But this is simply to fall into the trap of trying to satisfy the conditions of the no clienteles approach. That is, we would be trying to achieve tax neutrality between one method of abatement (applied in Developed) and another method of actual abatement (applied in Developing). We might be able to achieve this in isolated cases but by assumption this cannot be achieved across the board in a world with different tax rates. Another way to see this point is to acknowledge that at least some actual abatement methods are *not* firm specific. (This is particularly the case with project-based credits or allowances). If we try to tax neutralize actual abatement by making a firm indifferent between domestic and foreign abatement, then the result will simply be that other firms will undertake abatement in the high tax jurisdictions and then sell permits into the low tax jurisdiction.

The preferred approach, then, is to follow through with the harmonious clienteles approach.

The requirement under this approach is that the firm not view a tax differential between permits and

trading (and arm's length transfer pricing) we get allocative efficiency. Her model assumes that a firm faces a uniform home country tax rate on actual abatement at home as well as on permit surrenders at home. Conversely, the model assumes that the home country firm faces a uniform foreign country tax rate on actual abatement in the foreign country and on permit surrenders to the foreign country. See Fischer, *supra* note ____, at 148. Thus the model fully implements the harmonious clienteles approach and the allocation rules discussed in the text. I thus concur with Fischer's central result that we get allocative efficiency with international trading, provided these conditions are met. My key point of departure is to focus on the question of what our tax policy should look like when these conditions are *not* met, particularly when the tax rate, for example, on home country abatement and home country permit surrender is *different*. This is the issue I turn to below.

abatement costs which are substitutes for one another. The key here is to remember that permits allow one to *not* abate. To zero in on the relevant margin we must examine the tax treatment of a permit alongside the putative tax treatment of the abatement that the firm does *not* have to undertake when it holds the permit. Thus if we are going to source actual abatement costs to the jurisdiction where abatement occurs (i.e., where emissions are reduced) then we must source permit costs to the jurisdiction of surrender. To follow through with the example above, if the Developing country firm moves actual abatement to Developed and we tax this at the (high) Developed country rate then the permit this releases for surrender in Developing must be taxed at the (low) Developing country rate.²⁷ This is consistent with the harmonious clienteles approach because the relevant substitutes are the abatement costs in Developing which the firm did not have to incur (would have been taxed at a low rate) and holding permits for surrender in Developing (taxed at a low rate). The increased demand for the long position on actual abatement in Developed will then be offset by the increased demand for the short position in permits in Developing.

I should stress that I mean these as general principles only. I recognize that in the real world there are going to be substantial problems of application. Firms will hold permits which are fungible; will possibly surrender them to many countries; and will have differential costs for different permits depending on fluctuations in market price and time of acquisition. In practice then we will need some method of allocating overall permit costs to specific permit surrenders. There will also be informational issues regarding market trades where the trader lacks information about the jurisdiction of surrender. This will be true of pure market traders (i.e., non-regulated entities under the cap and trade regime) as well for regulated entities that buy and then sell permits, rather than surrendering them. The approach called for here would presumably be to source the relevant items

27. Note that what I am suggesting is not a *residence* rule for permit taxation. We must distinguish between residence of the firm and the jurisdiction of permit surrender. For example, it is certainly possible that we could observe a foreign corporation with a domestic branch that surrenders a permit to cover branch emissions. The proposed rule here would allocate the expenditure to the jurisdiction of the branch (i.e., the jurisdiction of surrender) rather than the jurisdiction of corporate residence.

under generally applicable principles. Market traders are intermediaries trading on market swings but the ultimate supply and demand schedules should be determined by the regulated entities, which at the end of the day must engage either in actual abatement or permit acquisition. If the proper tax treatment is accorded to these transactions then it is not necessary also to apply the sourcing rule for permits to intermediate traders.

2. Failure to Satisfy Harmonious Clienteles.

The likely hurdle to satisfaction of the conditions required by the harmonious clienteles approach in the multi-jurisdictional setting is the same as the issue that is likely to cause problems in the closed economy. If green policies capture the attention of the public, an inevitable result will be special interest lobbying to secure tax preferences for specific types of activity that lead to reductions in carbon emissions. It is difficult to see how as a practical, political, or technical matter legislatures would similarly extend tax preferences to the costs of acquiring permits. To see how this plays out we can elaborate on the example introduced above.

Suppose that the Developed country government thinks that in order to achieve its agreed cap of 80% BAU levels, it is wise policy to pass a tax provision that gives the purchaser a deduction equal to 1.5 times the cost of some newly invented, but fairly expensive to build, energy saving machine. To claim the tax benefit the machine must be placed in service in Developed.²⁸ It does not alter its policies regarding permit surrender. Thus costs of permit acquisition are deducted in the normal fashion at the regular rate under the corporate income tax. The effect of this provision will be to introduce a new clientele effect for actual abatement in Developed. As we have seen, *if* permits likewise received the preferential treatment then we would create an offsetting clienteles effect. The tax benefit from incremental machine purchases would be offset by the foregone tax benefit from *not* acquiring a permit. With differential treatment of permits and abatement costs, however, we don't get this counteracting effect. Even with unlimited international trading we would

28. Compare, for example, the US rules that deny favorable depreciation schedules for tax-exempt use property. [Cites.]

observe too much abatement in Developed, from the standpoint of allocative efficiency. The question that arises, then, is how we might structure matters to move back towards the efficient equilibrium. I suggest a number of possibilities one might explore below. These are very lightly sketched, with no attempt to spell out technical details.

a) *Indirect equalization of permit and abatement costs.*

My working assumption is that domestic political pressures will operate as a persistent influence to drive a wedge between tax treatment of actual abatement costs and the tax treatment of permits. If direct equalization of the tax treatment is indeed off the table then we might consider something more in the nature of an indirect approach. One idea that might be worth exploring is something like a unified expense allowance for environmental capital. I have in mind something modeled after Ed Kleinbard's proposals for a cost of capital allowance (COCA).²⁹ If we adopted something like a cost of environmental capital allowance (perhaps a COECA), and calculated the base by reference to tax basis of the relevant assets (including permits), then the system, like Kleinbard's COCA, would be at least partially self-correcting.³⁰ Accelerated cost recovery of an item would yield faster deductions when depreciating an asset but would also reduce the base for purposes of the COECA. In order to avoid double counting expense items, one would also need a disallowance provision for general interest expense at the firm level, tied to the amount of environmental capital treated under the COECA. One key challenge, obviously, would be finding a way to wall off the taxpayer's "environmental" capital from all other capital. This may be an impossible task, though one way to approach it would be to define the relevant assets precisely in terms of those assets that receive tax preferences under the Code. If the rate allowed under the COECA were the same as the rate allowed for costs receiving no preference under the Code, then it

29. See, e.g., Edward D. Kleinbard, *Rehabilitating the Business Income Tax*, Hamilton Project Discussion Paper 2007-09 (June 2007).

30. The qualification in the text refers to the fact that tax preferences must be reflected in the taxpayer's basis in order for the self-correcting feature to kick in. This would likely be the case with many tax preferences but it is not conceptually required.

would not matter if we failed to include such non-preferred items in the environmental capital base. In a certain sense this proposal is preposterous and the characterization of it as “indirect” qualifies as understatement, to say the least. The proposal would involve introducing great statutory complexity that could be achieved directly simply by repealing the tax preferences for the actual abatement costs. If one is a realist about the legislative process, however, we see that this proposal would allow rent seeking at two levels (the actual abatement costs and the rate applicable to the COECA), all in the service of furthering the efficiency of the cap and trade regime.³¹

b) *Marginal versus Inframarginal Abatement Costs.*

I have suggested that to satisfy the harmonious clienteles approach it is necessary to have the same tax treatment of permits and abatement costs. More specifically, though, what should matter is the tax treatment of the alternatives at the margin. What we need is the *marginal* abatement cost to be taxed in the same fashion as permits. This is a much less stringent standard and more easily in reach, even accepting real world political pressures. That is, even with tax preferences for actual abatement costs on the books, this should not cause a problem if firms are, in effect, fully exploiting such opportunities and are then turning to non-tax favored abatement opportunities. At the extreme, if the firm can only abate by curtailing production and this shows up as reduced income then we would typically expect reduced income to have the same tax effect as a deduction for permit costs on the margin. I think this is an important point and one that may give substantial leeway to provide tax preferences directly to abatement activities without running afoul of the overall purposes of the cap and trade regime to begin with. The only word of caution is that we ought not to overstate the importance of this point. For example, it would be incorrect to identify some instancs of curtailed production in the aggregate economy, and then infer from this fact that at the

31. Note that one could offer a preferential rate for environmental capital through the COECA without inviting inefficient allocation between environmental capital and non-environmental capital. If we satisfy the conditions of the harmonious clienteles approach there should not be over-expenditure on environmental capital (at least if one takes the cap as a given). A preference at the level of the COECA would, however, have beneficial distributional effects for firms purchasing environmental capital.

margin firms are not engaging in tax-preferred abatement opportunities. The problem here ties back closely to the political dynamics that are likely to give rise to the issue in the first place. Specifically, tax preferences for actual abatement activities may well be firm specific or perhaps sector specific, reflecting the fact that specific interests lobbied for the preferences. If specific firms are taking advantage of tax-preferred abatement activities at the margin then we are still going to run afoul of the conditions required under the harmonious clienteles approach and thus create allocative inefficiencies.

c) *Tax Policy on Permits in Otherwise Low Tax Countries.*

The basic paradigm that leads to an inability to satisfy the conditions for the harmonious clienteles approach involves a high tax country that taxes actual abatement preferentially compared to permits. This creates a clientele effect for actual abatement in that country. The premise of harmonious clienteles, as we have seen, is that we can reverse this by creating a clientele effect for permits in the high tax country. The most obvious way to do this is to adjust the tax treatment of permits in the relatively high tax country. Interestingly, though, one could achieve the same effect by adjusting the tax treatment of permits in the relatively low tax country. This would look odd as a matter of tax policy. To get back to the efficient equilibrium would require the taxpayer who buys a permit for surrender in the relatively low tax country not to take a deduction but rather to pay a surcharge tax in virtue of the purchase. In other words, the problem when we are off the efficient equilibrium is that the permit holder in the relatively high tax country is putting too low a price on permits and the would-be permit purchaser in the relatively low tax country is putting too high a price on the permit. We can fix this either by raising the value in the eyes of the former (giving better tax treatment to match the tax treatment of actual abatement) or lowering the value in the eyes of the latter (giving worse tax treatment to offset the beneficial tax treatment of actual abatement in the other country). Realistically, we are not going to see this type of tax surcharge to

fix the problem. Nonetheless, it is interesting to observe that if we are off the efficient equilibrium in this type of case *any* move in the direction of restricting the tax value of permits for surrender in the relatively low tax country should move the market in the direction towards the efficient equilibrium.

d) *Market Segmentation.*

The last possibility I consider in terms of remedies for failure to satisfy the harmonious clientele approach goes not so much to tax policy as it goes to the overall architecture of the system. One interesting aspect of the overall discussion is that it calls into the question the general mantra under cap and trade that the bigger the market the better. Bigger *is* better *if* we can get to the efficient equilibrium point where (pre-tax) marginal abatement costs are equal. In that state of the world leaving certain abatement opportunities off the table by curtailing the market gives one no benefit, while raising at least the possibility of a cost from foregone cheaper abatement opportunities. This all changes if we are off the efficient equilibrium due to tax considerations. The question now becomes quite a different one. It may actually be efficient to segment the markets, that is not to allow trade between various countries. This would be the case if we thought we could set national caps in a system with no trade that came closer to the allocation under the efficient equilibrium than does an international trading system that has cross-country distortions. I obviously have no answer to either of the relevant questions: (i) how far off the efficient equilibrium will we be in a world with international trading and tax distortions and (ii) how far off the efficient equilibrium would we be in a world where we set national caps with no international trade. I would close only with the observation that it seems difficult to conclude on *a priori* grounds that the system with full international trading is necessarily better. Moreover, note that by market segmentation this would not necessarily require segmenting at a country level. One could also imagine that the optimal result would involve segmentation of the world into permit trading blocks. For example, if a group

of countries had relatively similar tax systems then we would expect relatively fewer tax distortions from cross-border trading of permits. This would point us in the direction of grouping such countries into a trading block so as to best capture low cost abatement, as under the standard story. Again, with full acknowledgment that this presents immense informational and political problems, it is still important, I think, to observe that at least in a world where we hold tax systems constant, and assume variation across tax systems, the optimal result from the standpoint of allocational efficiency may well involve some market segmentation, though not necessarily segmentation down to the individual country level.

III. Tax and Distribution

A. The Distributional Consequences of Clientele Effects

The same features of tax systems discussed above that result in potential efficiency consequences also will produce important distributional consequences. We can most readily see this by observing the likely price effects on permits in equilibrium, under various assumptions. This type of analysis would require us to make an initial assessment, or perhaps the better word is guess, about what the price of permits would be, assuming a given cap, at the efficient equilibrium in a world with no tax distortions. This is obviously a very difficult task. We will have trouble predicting the price both because we do not have adequate information about the shape of the marginal abatement cost curves at the relevant margin. Even if we had such information at the time we were designing a cap and trade system, subsequent (unpredictable) factors are likely to have substantial effect on the shapes of the marginal cost curves. Notwithstanding these difficulties, there is an obvious point of reference we can use to guide our analysis. In essence we might ask at what rate would we set a uniform global carbon tax if our goal were to achieve the amount of actual abatement that is to be

embodied in a global cap and trade regime. That level of tax is what we could think of as our best guess about the undistorted pre-tax price of permits at the efficient equilibrium.³²

From that baseline we can consider three possible cases: (i) taxes under a global trading system implement the harmonious clienteles approach; (ii) taxes under a global trading system implement the no clienteles approach; and (iii) taxes under a global trading system implement neither the no clienteles approach nor the harmonious clienteles approach.

We can dispose of the first case easily. Under the harmonious clienteles approach each source puts the *same* pre-tax price on permits and actual abatement. Thus once we trade to equilibrium and we reach the point where marginal pre-tax abatement costs are equalized, this will also yield the pre-tax permit price. In other words, the permit price is identical to what it would be in a world where we taxed neither abatement nor permits. There are no distributional effects.

The satisfaction of the no clienteles approach is a bit more complicated. Recall that in this case we ensure allocative efficiency by taxing all abatement the same and all permits the same. However, because we may tax actual abatement differently from permits the pre-tax price of actual abatement and the pre-tax price of permits may be different at the efficient equilibrium. This is much like a case discussed earlier in the paper. To take an extreme case, if all abatement costs are taxed the same and every permit yields a \$1 million tax bonus then this will have no effect on allocative efficiency but will surely drive the price of permits way up. This could have distributional effects, though not ones that are particularly interesting. If permits are sold at auction then the tax effect of permits will be priced into the initial purchase price. If permits are transferred gratis then the tax effect on permits will be priced only through later trades. However, I take this to be of not much interest for two reasons. First, the distributional issue would be transparent. That is, the price effect follows directly from the tax treatment of *the permit*, which is readily discernible. Second,

³²I suggest this as a pure thought exercise. The real world complications accompanying the design details of such a tax are immense. For a comprehensive discussion of these design issues see Gilber Metcalf and David Weisbach, *The Design of a Carbon Tax*, John M. Olin Law & Econ. Working Paper No. 447 (2009).

because of this transparency, to the extent there were cross-border distributional effects then the likely outcome would be to drive one *away* from the efficient equilibrium conditions. To stick with the unrealistic example introduced above, suppose that all abatement costs are taxed identically and that all countries offered a \$1 million tax bonus on permits. If a jurisdiction were to issue permits gratis then on a cross-border transfer of a permit, the transferee jurisdiction would in effect bear the cost of the tax preference because its home country firm would pay the tax-adjusted (very high) price. Net transferee jurisdictions would not tolerate this. They would repeal the tax preference, thus making its firms unwilling to buy permits at the price that transferor country firms would require to be made whole. That is to say, the differential tax policy regarding permits in the transferor and transferee countries would create a clientele effect for permits in the transferor country, thus violating the necessary conditions of the no clienteles approach.

Finally, we come to the most interesting case, where we satisfy neither the conditions for the no clienteles approach nor the harmonious clienteles approach. This surely best describes the real world situation we will encounter under a multi-jurisdictional cap and trade regime. In this circumstance the pre-tax price of permits *cannot* return to the predicted price at efficient equilibrium. If it did, we wouldn't be off the efficient equilibrium point. The question is whether this price effect on permits creates interesting or problematic distributional effects.

To see that the answer is yes, let's return again to our two country Developing--Developed example. Let's suppose that Developed offers preferential tax treatment for actual abatement costs relative to permits. Moreover, these preferences are effective at the margin.³³ Let's also assume that Developing, not particularly interested in green policy, offers no preferential tax treatment for actual abatement costs, relative to the way it taxes permits. Each yields a deduction at the regular corporate income tax rate. In this simple fact pattern we cannot be at an efficient equilibrium, even with trading. We violate the conditions of both the no clienteles approach and the harmonious clienteles

33. See discussion *supra* ____.

approach. What can we say about price effects in this case? Recall that because of the clienteles effect we will see too much abatement in Developed and too many permits in Developing. Put another way, the market price of the permit must be “too low” to compel sufficient transfers of permits from Developing to Developed in order to get to the efficient equilibrium. The equilibrium permit price is lower than would be our chosen carbon tax. To put this effect in the most provocative terms the green tax policy in Developed regarding actual abatement will drive *down* the equilibrium market price of permits. In other words, because the permits and abatements costs are just opposite sides of the same market, Developed can in effect shift the tax cost of its green policy onto Developing which will hold excess permits now trading below the price that would hold at the efficient equilibrium. Moreover, unlike the distributional effect discussed above (i.e., price effects that can arise even when we meet the conditions of the no clienteles approach), this effect is anything but transparent.

B. Normative Implications

The next question we might consider is the normative implications of the distributional effects described in the previous section. One might say that the normative implications here are both more problematic *and* less problematic than what we are accustomed to in traditional tax policy discussions of the interaction between efficiency and equity.

They are more problematic in the sense that we cannot take the normal approach of cleaving off distributional issues. That is, the standard approach in domestic tax analysis would suggest that we not worry about the isolated distributional impacts of policies that improve the allocative result because we should assess the distributional effects with respect to the overall system. The problem in this context, though, is that the distributional effects arise across different countries and there is no “overall” system. There is no global Musgravian “distribution branch,” which raises the stakes when we encounter distributional effects that result from the interaction of decisions

made by various national level Musgravian “allocation branches.”³⁴ The second reason potential distributional effects are a particular problem here is that the system I am analyzing (a truly global cap and trade system encompassing the key countries from the developed and developing world) does not yet exist. The predicted distributional effects of the system are likely to play a crucial role in determining whether countries can reach an agreement in the first place. In other words, if we think one of the key ways in which developing countries could be enticed into the system is by allocating to them an excess of permits, then clearly it will be of great import to the political dynamic if developed countries can subsequently devalue such permits by unilaterally enacting domestic green tax policy -- such tax policy enacted in the name of trying to meet the developed country’s relatively onerous, it was thought, national cap!

The normative analysis is *less* problematic in this, circumstance, however, because it is a situation in which allocative and distributional effects are in fact perfectly aligned. At least to the extent that we view the perverse distributional effect as arising from the price effects on permits in equilibrium note that we *reduce* that effect just to the extent that we adjust policy to embrace the conditions required to reach allocative efficiency.³⁵

I have no particular wisdom or insight regarding the best way to approach the normativity underlying the distributional issues. We could say, of course, that we should structure policy in the efficient way, and this will have the salutary effect of making the distributional problems disappear. But we won’t. This leaves us with the difficult question about how to proceed. From a strictly academic perspective the answer would surely be that at the very least transparency is to be valued. Where we lack transparency, we should then do our best to figure out what the actual imbedded effects of our various policies happen to be. An apt analogy here is David Bradford’s proposal that

34. [Cite.]

35. See discussion *supra* regarding distributional effects where we satisfy either the harmonious clienteles conditions or the no clienteles conditions.

cap and trade is inferior to what he called the “global public good purchase” approach.³⁶ Bradford critiqued global cap and trade on the grounds that the setting of national level caps and initial permit allocations obscured the distinct distributional and allocational issues. He suggested, therefore, that a better approach might be simply to issue all countries permits at BAU levels and then have an international bank purchase the permits back. The funding of the international bank would be analogous to the funding of other global public goods, such as international peacekeeping efforts. This would make the distributional breakdown of the cost of the global public good explicit. In the context I have been discussing in this paper we have a similar issue at play. The only addition is that the likelihood of confusion about the distributional effects in a global cap and trade system is likely even greater than we may have previously appreciated. But turning from the academy to politics we are wise to recall Bradford’s observation that transparency may, or may not, facilitate the conclusion of international agreements.³⁷

I conclude with a final observation on normativity that raises far more questions than it answers. The bulk of the tax commentary to date on climate change has been concerned with the carbon tax versus cap and trade debate.³⁸ This paper has been concerned instead with the tax treatment of a global cap and trade regime, putting aside the issue of a carbon tax. It is certainly worth considering, however, whether the observations in this paper shed any light on the ongoing cap and trade versus carbon tax debate. The most important insight here might be that the distributional impacts of the two approaches are different in ways that have not been previously explored. If we map the various policy choices from the above examples onto a carbon tax universe we might imagine a world in which Developed and Developing each provide a deduction for the

36. David F. Bradford, *Improving on Kyoto: Greenhouse Gas Control as the Purchase of a Global Public Good in the Design of Climate Policy* 13-36 (ed. Guesnerie and Tulkens 2008).

37. *Id.* at ____.

38. For a discussion of the relevant issues and literature see Reuven S. Avi-Yonah and David M. Uhlman, *Combating Global Climate Change: Why a Carbon Tax is a Better Reseponse to Global Warming than Cap and Trade*, University of Mich. Pub. L. Working Paper No. 117 (2008).

carbon tax under their domestic corporate income taxes. In addition Developed offers a tax preference for certain carbon abating activities. If we set the uniform global carbon tax at the supposed level that would have been required to achieve the optimal level of abatement, then what result with these set of policies? Developed will abate too much because it will put a relative tax preference on actual abatement compared to non-abating (because the cost of the carbon tax just gives rise to a simple deduction). Unlike cap and trade, however, Developing does not reduce its overall abatement in virtue of Developed's over abatement. Thus in the aggregate we get too much abatement across the world. At first blush this may seem distributionally favorable for Developing compared to the cap and trade approach. Too much abatement in Developed means lower carbon tax revenue. Abatement in Developing remains at the efficient level so it does not forego carbon tax revenue as compared to the baseline without income tax distortions. But the story is more complicated than this. One could say that Developing has borne an adverse distributional impact in the sense that it is bearing the cost for abatement over and above what had been determined as the optimal amount of aggregate abatement. This will come with its own set of political and implementation pathologies. The plausible response by Developing, for example, might be that the carbon tax rate should be lower in Developing. It could make the case, for example, that in light of Developed country direct tax preferences for actual abatement costs, a split rate global carbon tax is actually required not to overshoot the desired amount of aggregate abatement.

IV. Conclusion

[To Come.]