





ISSUE BRIEF 8

**ADDRESSING COMPETITIVENESS
CONCERNS IN THE CONTEXT OF A
MANDATORY POLICY FOR REDUCING
U.S. GREENHOUSE GAS EMISSIONS**

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SUMMARY

A variety of mandatory policies to reduce U.S. greenhouse gas (GHG) emissions—principally cap-and-trade systems, occasionally carbon taxes, and sometimes standards—are now being seriously debated at the federal level. A frequent concern raised in these debates is the potential for adverse impacts on the competitiveness of U.S. industries, particularly on firms or in sectors that face high energy costs and significant international competition. This issue brief examines the advantages and disadvantages of five strategies or options for addressing competitiveness concerns in the context of federal climate legislation. The first of these options would involve the design of the policy as a whole; all of the remaining options attempt to target industries or sectors that would be particularly vulnerable to adverse impacts under a mandatory program to reduce GHG emissions:

- Weaker overall program targets
- Partial or full exemptions from the carbon policy
- Standards instead of market-based policies for some sectors
- Free allowance allocation under a cap-and-trade system
- Trade-related policies, including some form of border adjustment for energy- or carbon-intensive goods

We arrive at the following observations:

- Cost-effective policies that allow access to inexpensive mitigation opportunities throughout the United States and potentially around the world will generally minimize the economic costs of achieving any given emission target and could be viewed as a first response to competitiveness concerns.
- A weaker overall policy—less stringent emissions caps and/or lower emissions prices—represents the least focused approach available for addressing competitiveness impacts. This approach has the advantage that it does not require policymakers to identify vulnerable sectors or firms and thus avoids the potential for a “gold rush” of industries seeking relief. The disadvantage, obviously, is that less ambitious emission-reduction targets will produce smaller environmental benefits and weaker incentives for technology innovation.
- Simply exempting certain sectors or types of firms provides a direct response to competitiveness concerns and the most relief to potentially affected industries, but it is also the most costly option in terms of reducing the economic efficiency of the policy.
- More traditional (non-market-based) forms of regulation—such as emissions standards or intensity-based regulations—can be

used to avoid direct energy price increases and deliver some emissions reductions. Regulated industries will still face compliance costs, however. Meanwhile, the overall cost to society of achieving a given environmental objective using these forms of regulation will tend to be higher than under a single pricing policy.

- Free allowances can be used to compensate adversely affected industries (even if those industries are not directly regulated under the policy) without necessarily losing the efficiency of a broad, market-based approach. Different forms of free allocation—for example, an allocation based on historic emissions or energy use (“grandfathering”) versus an updating allocation tied to current output—will have very different incentive properties and may respond more or less effectively to concerns about retaining production capacity and jobs in the United States. The consequences of different allocation methodologies and their relative advantages and disadvantages in relation to competitiveness concerns and other policy objectives must therefore be carefully considered.¹
- Trade-related policies (such as border adjustments for energy- or carbon-intensive goods) can both protect vulnerable domestic firms and industries and create incentives for nations without similar GHG policies to participate in emissions-reduction efforts. However, such policies also risk providing political cover for unwarranted and costly protectionism and may provoke trade disputes with other nations.
- In general, the more targeted policies (that is, all options noted above except an overall weaker policy) will be difficult to police and many industries will have strong incentives to seek special protection by taking advantage of these various mechanisms without necessarily being at significant competitive risk.

Introduction

Due to the great diversity of GHG sources, addressing global warming will—of necessity—involve many different types of actors, including industries, governments, and individuals. In general, pursuing a cost-effective approach that minimizes the overall cost to society of achieving a particular emissions-reduction target will minimize the burden imposed on businesses and consumers. Broad, market-based strategies

that effectively attach a price to GHG emissions, such as an emissions tax or cap-and-trade program, in particular offer significant cost and efficiency advantages. As a result, it is widely assumed that this type of policy—and most likely emissions trading—will be part of the core policy response to climate concerns in the United States. As part of a broad pricing policy, the use of additional flexibility mechanisms—such as recognizing offset credits from sectors or gases not included under the cap and/or from projects undertaken in other countries—can lower overall program costs while further ameliorating the potential for adverse impacts on particular sectors or the economy as a whole.² Close attention to cost and efficiency considerations in the design of an overall policy could thus be viewed as a first step to addressing competitiveness concerns.

At the same time, even a cost-effective strategy for reducing U.S. GHG emissions will likely increase production costs for some domestic producers and will give rise to competitiveness concerns where those producers compete against foreign suppliers operating in countries where emissions do not carry similar costs. These concerns are likely to be most acute in trade-sensitive, energy-intensive sectors (examples might include certain types of manufacturing). The question will likely be asked: why should U.S. firms be disadvantaged relative to overseas competitors to address a *global* problem? The difficulty, moreover, is not just political: if, in response to a mandatory policy, U.S. production simply shifts abroad to unregulated foreign firms, the resulting emissions “leakage” could vitiate some of the environmental benefits sought by taking domestic action.

One option is for the United States to impose trade-related sanctions, both to protect domestic industries and reduce the potential for GHG leakage by prodding other countries to take steps they would not otherwise take to limit emissions. Other options involve modifications to the domestic policy itself. These might include adding particular design features to an economywide cap-and-trade system or, possibly, substituting standards or other regulatory mechanisms for market-based policies in certain sectors. As policymakers consider these options, however, an important caution is in order. As compelling as the argument for protecting vulnerable firms or industries might be, few provisions or program modifications designed to accomplish this can be implemented without some cost to the environment (in the sense that they result in higher emissions) and to the overall economy (in the sense that they will result in more expensive

¹ Issue Brief #6 provides more detail concerning specific issues related to allocation.

² See Issue Brief #15 concerning offsets.

abatement options being used to achieve the same emissions result). Nor are trade-related actions costless: they might raise legality concerns under World Trade Organization (WTO) rules and risk provoking countervailing actions by other nations.

This issue brief examines the advantages and disadvantages of five potential strategies for addressing competitiveness concerns in the context of federal climate legislation. Our assumption here, as in other issue briefs, is that such legislation will feature a market-based cap-and-trade or carbon tax system as the primary mechanism for limiting future U.S. GHG emissions. Both domestic-policy modifications and specifically trade-oriented provisions are considered. We also discuss some of the complexities involved in identifying which industries are particularly susceptible to competitiveness concerns while noting that additional attention is given to this issue in a companion brief on measuring competitiveness impacts.

Alternative Competitiveness Policies

Efforts to address competitiveness concerns in the context of a mandatory domestic climate policy typically involve one or more of the following options:

- Weaker overall program targets
- Partial or full exemptions from the carbon policy
- Standards instead of market-based policies for some sectors
- Free allowance allocation under a cap-and-trade system³
- Trade-related policies, including some form of border adjustment for energy- or carbon-intensive goods

Weaker Overall Program Targets

This option involves adjusting the stringency of the policy as a whole such that it results in a lower economy-wide emissions price (we assume that this would be done without regard to the obligations of specific industries). In the case of a cap-and-trade system, a lower price can be achieved by allowing a greater quantity of emissions under the cap or by including a safety valve or other mechanism designed to limit emission prices to a desired maximum level (the lower the safety-valve price, the weaker the policy and vice versa). Other options for making the policy more flexible (such as allowing a larger role for offset credits) can also help to reduce domestic emissions costs—whether they do so in a way that risks undermining environmental objectives depends on how they are designed and implemented. Under a tax system, lower prices can be

achieved very simply by reducing the amount of the levy. In both cases, the question of program stringency has a temporal dimension: a policy that is weaker in the short run can be made more aggressive at a later point in time.

Pros

The lower emissions price associated with a less stringent policy will produce smaller economywide costs and price impacts, and should ameliorate the competitiveness concerns of trade-sensitive firms or industries. The principal advantage of this option is that it does not require the government to identify particularly vulnerable firms or industries, thereby avoiding the need to distinguish truly disadvantaged parties from those who simply seek preferential treatment or regulatory relief. Further, this option does not require additional mechanisms or special provisions, nor does it diminish the cost-effectiveness of the underlying policy.

Cons

The principal disadvantage of a weaker policy is that it also produces weaker results—not only in terms of emissions reductions and technology innovation, but also in terms of the perception that the United States is taking serious action. By its very nature, an overall weakening of the policy does not target cost reductions to the most vulnerable firms or industries. And unless emissions prices and reduction targets are dramatically lowered, competitive issues will remain.

Discussion

Different climate-related legislative proposals would have widely varying cost and price impacts; in this context, the appropriate overall level of stringency for U.S. policy remains a subject of active debate.⁴ To help inform this debate, MIT researchers recently analyzed the costs associated with achieving different emissions reductions targets.⁵ The emissions trajectories modeled resulted in total emissions from 50 percent to 80 percent below 1990 levels by 2050, consistent with the range of targets contained in proposals currently pending before Congress. Using their Emission Prediction and Policy Analysis model, the MIT researchers estimated that permit prices in the year 2015 would need to reach \$30–\$50 per ton of carbon-dioxide equivalent (CO₂-e) to achieve these targets, with the higher end of the price range corresponding to the more ambitious reduction targets modeled. According to the same analysis, permit prices in the year 2050 would be higher by roughly a factor of four to achieve the mid-century targets modeled.

³ Note that the equivalent of free allowance allocation under a cap-and-trade system can also be achieved under a system that instead taxes emissions. In this case, tax rebates or credits, or some other mechanism that effectively returns a portion of revenues collected under the tax can be used to compensate adversely affected industries.

⁴ This is discussed at length in Issue Brief #2 on domestic mitigation targets.

⁵ This analysis is discussed at greater length in Issue Brief #3 on mitigation costs.

While a Congressional majority has yet to coalesce around any particular emissions-reduction goal, the trend in the last year or more has been toward more stringent targets. To take just one example, the bi-partisan National Commission on Energy Policy (NCEP) recently strengthened the widely-cited climate-policy recommendations it first put forward in late 2004. While this earlier proposal called for an initial phase (to the early 2020s) during which emissions growth would merely slow, the group in April 2007 recommended a 15 percent reduction below current (2005) emission levels to be achieved by 2030. The updated NCEP recommendations also increase the proposed starting price of the safety valve (from \$7 per ton CO₂-e in the group's earlier proposal to \$10 per ton in the current proposal), along with the rate of escalation of the safety-valve price (whereas NCEP's 2004 proposal called for the safety valve price to increase at a rate of five percent per year in nominal terms, the current recommendations specify that the same rate of escalation should be implemented in real terms—that is, at a rate of five percent per year above the rate of inflation). One of the more prominent legislative proposals introduced in the 110th Congress, by Senators Bingaman and Specter (S. 1766), is modeled on the NCEP proposal but calls for an even higher starting safety-valve price—\$12 per ton.

Interestingly, the inclusion of a safety valve—the term applies to a mechanism that directly limits costs under a cap-and-trade program by making an unlimited number of additional allowances available for sale at a fixed, pre-determined price—will affect the policy differently, depending on the price level adopted. Set at a high price, the safety valve will function primarily as an insurance policy—one intended to limit economic impacts only in cases of unexpectedly high mitigation cost. By contrast, a safety valve price set at a relatively low level will tend to determine both environmental and economic outcomes and is generally equivalent to adopting a weaker emissions-reduction target.⁶ If competitiveness concerns are primarily motivated by the potential for adverse consequences at the extremes of potential policy cost—extremes that could be induced by bursts of economic growth, unusual weather or other conditions that lead to a spike in energy use, disruptions in the supply of lower-carbon fuels, or by the failure of new technologies to come online as anticipated—then even a relatively high safety-valve price may be adequate to address these concerns without much effect on the emissions reductions expected from the policy.

⁶ Put another way, if the safety valve price is set sufficiently low, the emissions target becomes irrelevant because the marginal cost of abatement can be expected to exceed the safety-valve cost cap long before emissions targets are reached. At that point, program outcomes are more or less entirely driven by the safety valve price.

An obvious option for addressing competitiveness concerns is simply to exempt certain industries from the broader GHG-reduction policy. The key challenge in implementing this approach is determining which firms or sectors are particularly vulnerable.

In sum, weakening the overall policy may address the concerns of the most vulnerable industries, though if the objective is primarily to provide insurance against extreme policy impacts, other mechanisms—for example, a safety valve somewhat above expected prices—can be used to protect industry while largely maintaining the integrity of the environmental objective. Other options, considered below, attempt to deal more directly with vulnerable industries and would presumably be implemented as an alternative to weakening the overall policy.

Partial or Full Exemptions from the Carbon Policy

An obvious option for addressing competitiveness concerns is simply to exempt certain industries from the broader GHG-reduction policy. The key challenge in implementing this approach—or indeed, any of the targeted policies discussed in the remainder of this issue brief—is determining which firms or sectors are particularly vulnerable to cost and competitiveness concerns and should, as a result, qualify for special treatment (in this case, a full or partial exemption). Applying a very high threshold for exemption risks excluding vulnerable producers, while setting the threshold too low opens the door to unlimited lobbying for more favorable treatment.

The mechanics of actually providing exemptions, by contrast, are relatively easy. In a cap-and-trade system where downstream entities—primarily energy users—are regulated, exempt firms would face reduced requirements (or perhaps none at all) to submit allowances to cover their emissions. In the case of a carbon tax, eligible firms would face a reduced levy (or possibly none at all). Exemptions could also be provided to downstream firms or sectors in a system that regulated upstream entities (i.e., energy suppliers). In that case, a procedure would need to be established to credit exempt downstream entities based on their emissions or fuel use. The credit could be payable in allowances (in the case of a cap-and-trade system) or via a tax credit or rebate (in the case of an emissions tax).

Pros

The principal advantage of exemptions is that they can be used to protect vulnerable firms or industries in a convincing and targeted way, potentially making it politically possible to adopt a more stringent economywide GHG-reduction target.

Cons

The principal disadvantage of this approach is that it would likely increase the total, economywide cost of achieving a given emissions target because exempting certain firms or sectors would almost certainly leave at least some inexpensive mitigation options untapped. As a result, the program would be both less efficient and more costly overall. This approach may also raise equity concerns: if the same national target is pursued but some industries or firms are exempt from participating, this clearly places a greater burden on the remaining non-exempt industries. Finally, the difficulty of identifying truly vulnerable firms or industries cannot be overemphasized. Politically and technically, it will be extremely challenging to adjudicate requests for exemptions on the basis of vulnerability to competitive harm.

Discussion

Interestingly, two proposals currently under consideration in Congress already call for significant exemptions but do not limit these exemptions to sectors that would seem most obviously at risk of suffering a business disadvantage under a mandatory domestic climate policy. For example, a bill introduced by Senators Feinstein and Carper (S.317, 110th) covers only the electricity sector—almost 40 percent of U.S. emissions—and therefore exempts primary (non-electricity) energy use by households and the industrial sector along with all transportation related emissions. A

Compared to an allocation based on grandfathering, an updating allocation can have important differences in terms of creating incentives to maintain (or even expand) domestic production.

bill introduced by Senators Lieberman and McCain (S.280, 110th), by contrast, covers all large facilities—defined as facilities in the electric power, industrial, and commercial sectors that emit at least 10,000 metric tons CO₂-e per year or more—plus transportation fuels at the refinery or importer (this program would cover an estimated 70-75 percent of the total U.S. emissions). Only households, agriculture, and small non-transport emitters are exempt. In both these cases, however, the less than full coverage envisioned in the proposals appears to be motivated more by practical and political considerations—for example, that it might be easier to start by focusing on the electric power sector or on larger sources—than by competitiveness concerns per se.

For a cautionary lesson concerning the political hazards of exemption, one could look to the energy (Btu) tax proposed by the first Clinton administration in 1993. At that time, many firms and industries made claims of business hardship. As a result, the final House legislation included a long list of exemptions added at the request of members or recommended by the administration. Ultimately, of course, the Btu tax was defeated in the Senate and the policy was never implemented—in part because its effectiveness was undercut by the exemptions.

Performance Standards Instead of Market-based Policies for Some Sectors

Performance standards come in many varieties and may include minimum, average, and tradable standards for

emissions or energy use per unit of output.⁷ Unlike broad, market-based CO₂ policies, they do not produce a direct increase in energy costs—therefore, they do not create as much pressure for firms to raise product prices. For this reason, performance standards may seem less likely than market-based policies to raise competitiveness concerns for industries that face international competition and to create incentives for shifting production abroad.

Pros

Well-crafted performance standards have the potential to encourage efficiency improvements without putting as much upward pressure on domestic production costs. In doing so, they may reduce the potential for domestic production to shift to countries without mandatory GHG-reduction policies (and thus avoid the emissions leakage that would result from such shifts). In general, efficiency and cost considerations argue for corporate average standards rather than facility-level standards. Tradable performance standards—such as were used to effect the phase-down of lead in gasoline in the 1980s or as exemplified by current proposals for a national renewable energy portfolio standard (RPS)—provide even more flexibility and are even more cost-effective.

Cons

Performance standards are more costly than broad market-based approaches because they do not encourage end users to reduce their consumption of GHG-intensive goods, and do not balance the cost of emissions reductions across different sectors. Relying on standards instead of market-based instruments to achieve emissions reductions will leave behind some low-cost abatement opportunities, thereby raising the overall cost incurred by society to achieve a particular emissions target. From an implementation standpoint, standard setting can be contentious and may require government to estimate technology costs in a particular sector more precisely than would be required to implement a broad-based cap-and-trade program or emissions tax.

Discussion

The academic literature provides abundant evidence that market-based mechanisms, especially broad-based ones, provide lower-cost emissions reductions than standards do.⁸ Some of the most important benefits of market-based instruments are often not realized immediately and become manifest only over a long period of time. Unlike performance standards, market-based instruments provide a continual

incentive to reduce emissions—thus they promote technology innovations that, by their nature, take time to develop and deploy. Market-based instruments also offer maximum flexibility in terms of the means used to achieve reductions including, for example, the shift to new technologies that occurred in the U.S. sulfur dioxide program. In the case of GHGs, where emissions are not concentrated in a single sector, the flexibility afforded by a broad, price-based system would be expected to provide even greater cost and efficiency benefits relative to more traditional regulatory mechanisms.

Notwithstanding these observations, it seems that firms and industries, particularly competitive ones, often prefer standards to market-based policies. They may fear that it will be more difficult to pass along increased energy costs under a market-based CO₂ policy; in addition, they may expect to be in a stronger position to negotiate the form and stringency of a regulatory program that is tailored to specific sectors rather than designed for the economy as a whole.

Using Free Allowance Allocation to Address Competitiveness Concerns

Allocation refers to the approach used to distribute permits or allowances under an emissions trading program. Here, two decisions are important at the outset. The first concerns how many allowances (or what share of the overall allowance pool) will be given away for free. The second concerns the *methodology* to be used in apportioning free allowances to different industry sectors and—within sectors—to individual firms. In most existing emissions trading programs, the great majority of allowances has been given for free to directly regulated entities, primarily on the basis of historic emissions (an approach often called “grandfathering”). More recent climate-policy proposals, however, (in addition to providing for a larger auction) have proposed to allocate free allowances in a way that recognizes firm-level changes over time, typically based on an emissions, energy use, or output measure. The latter approach is known as updating allocation. Compared to an allocation based on grandfathering, an updating allocation can have important differences in terms of creating incentives to maintain (or even expand) domestic production—thereby reducing the potential for emissions leakage—and in terms of the effect on shareholder value.

Pros

The principal advantage of using a free allocation of allowances to address competitiveness concerns is that it can compensate firms for losses suffered as a result of the new policy without excluding those firms’ emissions from

⁷ See also Issue Brief #10 on technology deployment policies.

⁸ For a recent review see Freeman, Jody and Charles D. Kolstad (eds.), *Moving to Markets in Environmental Regulation: Lessons from Twenty Years of Experience*, Oxford University Press, New York, 2007.

the broad-based cap. Thus it avoids the efficiency losses or reduction in environmental benefit associated with other options for responding to industry concerns (such as weakening the overall policy, exempting some industries, or relying on traditional standards-based forms of regulation in some sectors).

In terms of the methodology used to distribute free allowances to individual firms, traditional grandfathering—which leaves the allocation fixed over time regardless of whether a business changes operations or even shuts down—can compensate firms owners for losses in value but does not necessarily discourage firms from retiring or moving their emissions-producing operations overseas to avoid costs associated with the regulatory program going forward.

The alternative of an updating output-based allocation, where allowance shares are continually adjusted to reflect a firm's changing output,⁹ effectively subsidizes production. That is, firms stand to gain a larger allocation of free allowances if they expand their operations and a smaller allocation if they move off-shore, downsize, or shut down. While incentives of this type are generally regarded by the economics literature as distorting and hence inefficient—because they induce firms to produce above the level that would otherwise make economic sense¹⁰—they may be attractive in the context of concern about competitiveness impacts precisely because they tend to encourage domestic production and discourage firms from moving operations (and emissions) overseas. The subsidy benefit generated by an updating allowance methodology accrues to domestic consumers as well as to firms that face competition from foreign suppliers, either (or both) in markets at home and in export markets abroad.

Cons

The principal case against free allocation is that it misses the opportunity to auction allowances and use the revenue to provide broad, offsetting benefits for the economy as a whole. From the standpoint of maximizing economic efficiency, it would make more sense to auction all allowances and use the proceeds to reduce taxes on income or investment. Compelling arguments can also be made for auctioning allowances and using the revenues to support other public policy objectives, such as funding energy R&D, offsetting the impact of higher energy prices on consumers (and especially

low-income households), and supporting efforts to adapt to the impacts of climate change.

Another concern is that, if too generous, free allocation based on historic emissions (grandfathering) risks conferring windfall gains on some firms, especially in cases where a firm is able to pass most of the costs of regulation through in the form of higher prices for its products. In that case, giving the firm free allowances would amount to a transfer of wealth from consumers—who will face higher prices for the firm's goods—to business owners or shareholders who do not really bear a substantial share of the cost burden associated with the policy.

An updating free allocation that subsidizes domestic production also gives rise to the same concerns noted in connection with other targeted responses that distort behavior relative to what would happen under a broad CO₂ pricing policy. Namely, allocation decisions in practice may fail to target truly trade-sensitive firms or industries and thus end up subsidizing emissions-intensive industries that are not really at risk of shifting their operations overseas, such as electric utilities. In that case, an updating allocation will create efficiency losses and increase the overall cost of the policy to society, while providing only limited benefits in terms of maintaining domestic production, preserving U.S. jobs, and reducing the potential for emissions leakage.

Discussion

Relative to targeted exemptions or to relying on performance standards instead of market-based approaches, using free allowances to compensate vulnerable industries as part of a broad, cap-and-trade or emissions tax program generally maintains efficiency. Among these three options, an allocation-based approach remains the most cost-effective because it preserves the ability to trade off emission reductions throughout the economy—without excluding some sectors—so that the environmental objective is achieved by exploiting the least expensive abatement opportunities. Tying free allocation to future production—or even to future employment, as proposed in legislation recently introduced by Senators Bingaman and Specter (S. 1766)—provides a way to not only compensate firms for unrecovered costs under the regulatory program but to also provide inducements for maintaining domestic production. The principle disadvantages are (1) that government will forgo revenues from auctioning allowances that could be used for other purposes and (2) that it will be difficult, as with all targeted measures for addressing competitiveness concerns, to identify truly vulnerable sectors. Moreover, free allocation involves

⁹ Note that, in theory, an updating allocation could also be based on emissions or energy use. Most discussions of this approach, however, assume that an updating allocation will be based on output so as to avoid providing incentives for emissions or energy use. Indeed, proponents argue that an important advantage of the updating, output-based approach is that it provides incentives to become more efficient (or less carbon intensive) by maximizing output per unit of emissions or energy use.

¹⁰ By the same token, economic theory may favor any allocation based on past behavior over an updating methodology because it avoids creating incentives that change behavior going forward. Allocation issues are discussed in more detail in Issue Brief #6.

difficult and politically contentious decisions about how many allowances should be given away for free and how those allowances should be divvied up, not only across industry sectors but also among individual firms within a sector.

Trade-related policies

The principal aim of trade-related policies is to level the competitive playing field between domestic and foreign suppliers. In this case, efforts to level the playing field would likely involve using a tariff or some other mechanism to impose roughly equivalent costs on imports into the United States—presumably based on their embedded carbon or energy content—as the climate policy imposes on domestic production. A similar mechanism—presumably involving some type of export subsidy—could be used to level the playing field for U.S.-produced goods that compete in foreign markets against goods produced in countries without mandatory emissions policies, though this option is not discussed as often. A recent proposal by American Electric Power and the International Brotherhood of Electrical Workers (AEP/IBEW) would require importers from countries that do not have emissions-reduction requirements comparable to those of the United States to submit emissions allowances to cover the carbon content of certain products.¹¹ This mechanism would only engage after a certain amount of time, during which the United States would encourage its trading partners to undertake emissions-reduction efforts; would only apply to bulk, energy-intensive goods; and would account for free allocation to domestic industry by reducing the import obligation.

Pros

If they can be successfully defended under WTO rules, border adjustments would protect U.S. firms or industries against adverse competitiveness impacts related to the implementation of a mandatory domestic climate policy. The approach would provide the added benefit of creating real incentives for major trading partners to adopt similar policies or otherwise take steps to reduce GHG emissions. Once authorized in U.S. legislation, even the threat of such adjustments might trigger some favorable policy responses from other nations.

Cons

Even if they can be successfully defended under WTO rules, border adjustments have several disadvantages. To the extent they act as barriers to trade (beyond correctly accounting for the cost of emissions), such adjustments are inherently

inefficient and costly to U.S. consumers and industries that depend on imported goods. Moreover, because of the difficulty of accurately measuring embedded energy or carbon content for specific items, implementing such a policy could be both expensive and controversial in practice. More importantly, there is a risk that the system could be abused by firms or industries—or even by other nations if they use it as grounds for instituting their own system of border adjustments—for purely protectionist reasons unrelated to climate policy. These actions, in turn, could work against long sought after free-trade objectives. They could also undermine the trust and good relations necessary to foster international cooperation and agreement on future global efforts to address climate change risks.

Discussion

Since any directly trade-related action risks a challenge by U.S. trading partners before the WTO dispute settlement body, the first issue to consider is what kind of policy would be WTO-legal (consequences of illegality are mentioned below). Even though WTO law is vague on this issue, the United States might be able to address the problem of offshore emissions associated with imported products (so-called process emissions) by applying to imports a carbon tax or emissions-permit requirement that is *equivalent* to the requirements imposed on U.S.-produced goods under domestic policy. Arguably, if this equivalent policy does not discriminate against imports versus domestic products, or disadvantage some imports relative to others, it could be seen as an extension of U.S. policy. In that case, it would likely pass WTO scrutiny without reference to the environmental exceptions provided for under Article XX in the General Agreement on Tariffs and Trade.¹²

Further complexities arise in developing administrative procedures for assigning process carbon emissions to specific imported products. On the one hand, the border adjustment policy might be considered more acceptable if it were based on the processes and fuels used in the United States—the so-called U.S. predominant method of production. At the same time, however, it might be necessary to establish procedures that would allow foreign producers to make different claims concerning assumed process emissions based on the submission of technical data. Such determinations would be more defensible—and easier to calculate—if the focus were on basic products, such as steel, aluminum, and cement,

11 This proposal was incorporated in S.1766 by Senators Bingaman and Specter.

12 If an Article XX exception was required, the justification would center on whether the border adjustment is applied on a variable scale that takes account of local conditions in foreign countries, including their own efforts to fight global warming and the level of economic development in developing countries. In either case, it would be easier to defend a border adjustment for carbon taxes or other price-based measures such as a cap-and-trade program rather than for traditional regulation.

rather than on automobiles, appliances, or other finished goods.

The amount of any border adjustment might be diminished to the extent that domestic producers are effectively subsidized by a free allowance allocation. Thus, for example, if 50 percent of available allowances under a domestic cap-and-trade program are allocated for free to affected industries, an importer might have to surrender allowances equal to only half of estimated process emissions associated with the imported product. If a carbon tax were imposed, without exemptions, importers would presumably face an equivalent adjustment at the border and there would be no need to account for offsetting benefits to U.S. producers. A variety of other issues might also complicate the use of border adjustments, including the question of how to treat imports from a country or region with some form of domestic carbon policy versus imports from countries that lack such a policy altogether. Such issues, however, lie beyond the scope of this issue brief.

In the best case, a policy of border adjustments will effectively protect vulnerable domestic firms or industries against adverse competitiveness impacts from a domestic climate policy while simultaneously creating incentives for other nations to reduce their emissions. To improve the prospects for a successful WTO defense, great sensitivity must be shown on a number of issues when designing such a policy, including the need to put major trade partners on notice and provide sufficient time for them to develop viable domestic emissions-reduction policies of their own if they do not already exist. Such sensitivities define many of the parameters suggested, for example, by the AEP/IBEW proposal. Once legislation was in place, U.S. customs would need to establish a substantial infrastructure to assess the carbon footprint of imported products and apply border adjustments accordingly. Interestingly, even if a U.S. policy of carbon-based border adjustments was ultimately found to violate WTO law—by no means a certainty—the only available remedy is for the United States to change the law or suffer retaliation. No damages for past harm are due.

Identifying Vulnerable Industries

Identifying the specific industries that are most likely to be adversely affected by a mandatory domestic GHG-reduction policy is complex, both in terms of the data and the analytical tools needed to make this assessment. At a minimum, information would be needed on the emissions and energy intensity of firms; their ability to reduce emissions and energy use; their ability to pass through costs to customers, which depends in part on the elasticity of consumer demand for the product in question if prices rise; and, importantly, on the nature and extent of international competition. Often, firms themselves do not have good estimates of these parameters. The capacity of the public sector to obtain such data may be even more limited.

Issue Brief #7 on competitiveness impacts discusses different approaches for identifying industries that warrant concern and measuring their degree of vulnerability. Three different approaches are considered. The first examines the energy and emissions intensity of production in different industries and computes the impact of a CO₂ price on their cost structure. The second, using a model of the U.S. economy that accounts for international trade, considers the effects of a change in cost structure on domestic production. The third method discussed relies instead on historical data to characterize energy use and output across multiple industries and countries and to examine how domestic (and foreign) energy-price changes might impact production. In addition to describing these different methodological approaches, Issue Brief #7 provides estimates for different industries of the likely magnitude of competitiveness impacts under a domestic climate policy.