Peterson Institute for International Economics

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Executive Summary

As political momentum surrounding climate change builds in the United States, policymakers are taking a fresh look at national climate policy and America's involvement in multilateral climate negotiations. And as in years past, the potential economic impact of any US effort to reduce greenhouse gas emissions stands as a central question in the Washington policy debate. Of particular concern is the effect climate policy would have on carbon-intensive US manufacturing. Many of these industries are already under pressure from international competition, particularly large emerging economies such as China, India, and Brazil that are not bound to reduce emissions under the current international climate framework. As the US Congress takes up domestic climate legislation, policymakers are looking for ways to avoid putting US carbon-intensive manufacturing at a competitive disadvantage vis-à-vis countries without similar climate policy, lest a decline in industrial emissions at home is simply replaced by increases in emissions abroad.

While this objective would be best achieved through a harmonized international climate policy, the differences between countries in level of economic development, political conditions, obligations stemming from historic emissions, and responsibilities arising from future emissions mean harmonization is still a long way off. The question then, in the design of domestic US climate policy today, is how to level the playing field for carbon-intensive industries during a period of transition—where trading partners are moving at different speeds and adopting a variety of policies to reduce emissions—and how to do so in a way that does not threaten the prospects for a broader international agreement down the road.

Gauging the Impact on International Competitiveness

Climate policy, by imposing a cost on greenhouse gas emissions, has the potential to negatively affect carbon-intensive manufacturing industries that compete with foreign producers, either at home or abroad, and for which energy (particularly carbon-intensive) is a significant share of total production costs. In the United States, five industries fit this bill: ferrous metals (iron and steel), nonferrous metals (aluminum and copper), nonmetal mineral products (cement and glass), paper and pulp, and basic chemicals. Together these five account for more than half of all carbon dioxide (CO_2) emissions from the manufacturing sector, though their direct emissions account for less than 6 percent of the US total. Under a domestic cap-and-trade or carbon tax regulatory regime, these industries could see a decline in output and lose market share to foreign competitors if they are unable to reduce emissions and must pass carbon costs on to downstream consumers.

While the degree of impact is a topic of considerable research and debate, the fate of these industries has become a key consideration in domestic policy design. Yet it is important to keep in mind that these five industries combined account for only 3 percent of the country's economic output and less than 2 percent of nationwide employment. Many options for protecting carbon-intensive manufacturing do so at the expense of other industries or by increasing the cost to consumers of reducing US emissions overall. Climate policy creates economic winners as well as losers in the international marketplace. Incentives to develop low-carbon technology and services at home help make US firms more competitive in carbon-constrained markets abroad. Options for safeguarding the competitiveness of US carbon-intensive manufacturing should be addressed in the context of their broader economic effects.

Evaluating the Domestic Policy Response

In considering measures to level the playing field for carbon-intensive US manufacturing under a domestic climate regime, policymakers seek to (1) prevent a decline in output by US producers in the face of higher costs, (2) guard against "emissions leakage" (migration of US industrial emissions to other parts of the world) from a loss of market share to more carbon-intensive foreign producers, and (3) create incentives for other countries to reduce emissions. This book evaluates the effectiveness of a wide range of policy options in achieving these goals as well as their impact on other industries, the overall environmental effectiveness and eco-

nomic efficiency of domestic climate policy, and the prospects for reducing emissions internationally.

Cost Containment Mechanisms

One way to level the playing field for domestic carbon-intensive producers is to reduce the cost of complying with climate policy. Adopting a market-based regulatory mechanism like cap-and-trade or a carbon tax goes a long way toward ensuring that emissions reductions are achieved at the lowest cost possible, both to carbon-intensive manufacturing and the economy as a whole. Within a cap-and-trade system, including the ability to bank and borrow emissions allowances and use offsets can further reduce costs for individual firms without weakening the environmental effectiveness of the policy overall. Free allocation of emissions allowances also maintains the integrity of the domestic cap but may not prevent emissions leakage to other countries. Manufacturers may choose profits over market share by basing the price of their products on the cost of allowances on the market, even if they received their allowances for free. Free allocation of emissions allowances to nontraded sectors, such as electric power, neither enhances international competitiveness nor guards against emissions leakage.

Other measures reduce costs for carbon-intensive manufacturing but do so at the expense of overall emissions reductions. Price caps in particular are an incredibly blunt instrument if safeguarding the competitiveness of vulnerable industries is the goal. With all of the complexity of a cap-and-trade system and no environmental certainty, price caps create a safety valve for 94 percent of US emissions sources, which are not at risk of losing market share to international competition. Under a carbon tax, credits can be targeted specifically at the less than 6 percent of emissions emitted directly from the five carbon-intensive industries that most need them, though emissions reduction goals for these sectors are compromised in the process.

The most successful cost containment mechanisms, in terms of safeguarding the competitiveness of carbon-intensive manufacturing without sacrificing environmental goals, may be those that reduce other costs within the firm. As opposed to free allocation of emissions, which protect profits more than employment levels, and carbon tax credits, which increase emissions, using allowance auction or carbon tax revenue to reduce healthcare costs, decrease payroll taxes or reduce other labor-related costs for vulnerable industries creates incentives for firms to both maintain employment levels and lower emissions. The cost of such relief is a fraction of the amount of foregone revenue that would result from the free allocation of emissions allowances considered under most proposals and justified on competitiveness grounds.

Trade Measures

The second approach to leveling the playing field for US industry is to impose similar costs on foreign producers at the border. Trade measures can be used under either a cap-and-trade or carbon tax system, though their design and implementation differ within each system. European policymakers first put forward the notion of imposing border tariffs on imports from countries that are slow to reduce emissions and targeted them at the United States. But as the United States starts drafting its own climate policy, the discussion of trade measures is focused clearly on China. Advocates of such measures claim they will both protect domestic industry and provide US negotiators with the leverage of market access to force developing countries to the bargaining table. As designed, and if taken unilaterally, such measures will likely fail on both counts.

While policymakers have China in mind when considering the use of trade measures, only 14 percent of cement, 7 percent of steel, 3 percent of aluminum, 4 percent of paper, and less than 1 percent of basic chemicals imported into the United States come from China. Canada is the largest source of imports in all carbon-intensive industries considered in this book except one (Trinidad and Tobago is the largest for chemicals), with Europe and Russia not far behind. In most proposals, the imposition of border tax adjustments or allowance requirements is conditioned on whether the trade partner has enacted domestic climate policy "comparable" to that in the United States. Europe and Canada, the two largest sources of carbon-intensive imports, would likely pass this test with flying colors. And among developing countries that are less likely to have adopted "comparable" policy at home, many have industries that are cleaner, on average, than those in the United States. As opposed to relatively carbon-intensive Chinese producers, many firms in Latin America and oil-exporting countries have newer and more efficient equipment and use low-carbon energy sources like hydropower and natural gas. Leveling the carbon playing field via trade measures, while good from a climate standpoint, would put some industries in the United States at a competitive disadvantage.

In addition, the threat of losing access to the US market for carbon-intensive goods alone provides little leverage in inducing a change in the policies of other countries. While China accounts for 32 percent of global steel production, only 8 percent of the 353 million tons produced in 2005 was exported. Less than 1 percent was sold to the United States. The US market accounts for 3 percent of Chinese aluminum production, 2 percent of paper production, and less than 1 percent of both basic chemicals and cement. Most of the demand for carbon-intensive products comes from developing countries, China in particular. The United States accounts for only 10 percent of global demand in the five most carbon-intensive industries, the imported share of which accounts for less than 3 percent.

That said, trade measures could, if properly tailored, create positive incentives for foreign firms to reduce carbon emissions individually even if the measures do not provide enough leverage to convince their governments to do so through policy. Under most proposals, the carbon embedded in imported goods would be assessed using a national average for the country of origin. As exporting firms from countries such as China are often the best in class, such calculations create little incentive for exporters to get cleaner. Assessing embedded carbon at a firm, rather than nationwide, level would avoid this trap but would require the voluntary participation of the exporting company or its home government in tracking and monitoring emissions. Fortunately, the prospects for eliciting such international participation are more promising than many believe.

Options for International Cooperation

It is unlikely that multilateral negotiations will produce a perfectly harmonized international climate policy within the same timeframe as the implementation of climate legislation in the United States. Yet while developing countries are reluctant to agree to the same type of absolute caps on emissions expected of the developed world under a post-Kyoto framework, there is considerable scope for other forms of commitments that could, in fact, be even more successful in leveling the carbon playing field internationally.

China, the source of much of the concern in the US climate policy debate, is working aggressively to curb the growth and improve the efficiency of its carbon-intensive industries, out of local environmental and energy security concerns. Policy actions taken already include changes in tax policy equal to the imposition of a $50 per ton carbon tariff applied to exports of Chinese steel. Building on these steps, international agreements to reduce industrial emissions from key sectors, whether through product standards, emissions targets, or a direct tax, would be more successful in addressing competitiveness concerns and reducing emissions than trade measures imposed unilaterally. Indeed, during the last round of climate negotiations in Bali, Indonesia, in December 2007, industry-level agreements garnered support from developed and developing countries alike.

The rules and institutions of the international trading system may well have a role to play in leveling the carbon playing field in the years ahead. If approached multilaterally and in conjunction with a broader international climate framework, trade policy could create additional incentives to reduce greenhouse gas emissions. To be successful, a trade regime that included climate considerations would require the willing participation of both developed and developing countries. Such multilateral involvement would promote an accurate assessment of embedded carbon both by product and by producer, so that low-carbon goods and production

processes were adequately rewarded. Absent broad multilateral action, the use of trade measures to address competitiveness concerns and emissions leakage will have only limited success and could put considerable strain on the international trading system we rely on to boost economic growth in developing countries and deliver the technology required to make that growth green.