"The Threat to Free Trade Posed by Climate Change Policy"[1]
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Thank you for the opportunity to speak to you this morning. As we just heard, in many ways, addressing the climate change challenge we face presents opportunities for the developing world. But I want to talk this morning about some of the challenges that climate change presents as well.

The Costs of Climate Change

The most obvious is that the costs of climate change will be borne most in developing world. For example, estimates by the Intergovernmental Panel on Climate Change indicate that a doubling of GHG concentrations would reduce economic activity in the developed countries by about 1 percent, but many times that amount in developing countries, which depend heavily on agriculture. Other papers similarly find significant negative effects of higher temperatures concentrated in poorer countries.

The Benefits of Free Trade

But a less obvious challenge is the threat that climate change may pose to free trade. That's a problem because trade is driving economic growth throughout the world, lifting hundreds of millions of people out of poverty. Openness to trade and investment can facilitate growth, and growth and poverty reduction go hand in hand.

Free trade, of course, is already under attack in the United States and elsewhere. There is a growing protectionist backlash against free trade from both sides of

[1] Parts of this speech draw on Jason Bordoff, "International Trade Law and the Economics of Climate Policy: Evaluating the Legality and Effectiveness of Proposals to Address Competitiveness and Leakage Concerns," *Climate Change, Trade and Investment Conference: Is a Collision Inevitable?*, Brookings Institution: Washington DC (June 2008); Jason Bordoff and Jason Furman, *Progressive Tax Reform in the Era of Globalization: Building Consensus for More Broadly Shared Prosperity*, 2 Harv. L. & Pol'y Rev. 327 (2008).

the political aisle. There are many reasons for that, but I believe the most important is the lack of broadly shared economic growth. As median wages stagnate and income inequality rises, people see the benefits of the global economy accruing to those at the very top. I won't go into further detail now about this point, but you can read more about it if you want in an article I recently coauthored with Jason Furman in the Harvard Law and Policy Review. Grant Aldonas, who is here with us at this Forum, also coauthored an influential paper on this point for the Financial Services Forum last year.

On top of this protectionist backlash, there are other potential barriers to expanded trade, one of which may be how we respond to climate change. Let me start by describing how trade policy has been thrust into the climate change debate and then discuss some of the implications of that, why I think it's potentially quite harmful, and what some alternative approaches might be.

Background on U.S. Climate Change Policy

As you surely know, climate change has moved to the top of the American political agenda recently, and there is a debate now about how we will address the problem. The leading approach is to implement a cap-and-trade program, like that created by the European Union, and the U.S. in the past to deal with sulfur dioxide emissions. Such a bill was voted on in the Congress this year, but failed, and is likely to be brought up again next year. Both presidential candidates are on record supporting such a program.

The purpose of cap-and-trade, like a carbon tax, is to send a price signal that makes individuals internalize the external harm caused by their carbon emissions. A cap-and-trade system makes energy more expensive—thus inducing fuel substitution and demand reductions. I think one of the signs of progress is that there's much greater acceptance of the use of market mechanisms today, which economists largely agree is the most cost-effective way to reduce carbon emissions. But, as you might imagine, raising the price of energy also makes for some difficult politics.

Climate change is the ultimate tragedy of the commons problem—because a ton of carbon emitted in Beijing contributes to global warming just as much as a ton of carbon emitted here in the lovely Alps. The global nature of the problem means that ideally we'd want a multilateral response to climate change. Unilateral action by any one country or group of countries not only will be insufficient to address the problem, but also raises the concern that unilateral

policies to put a price on carbon could disadvantage domestic industrial firms or undermine the measure's environmental objective.

These two concerns, in effect flip sides of the same coin, are referred to as "competitiveness" and "leakage", respectively. And they've become quite important to the cap-and-trade debate in the U.S. Congress.

- The competitiveness concern is that U.S. products, particularly carbon-intensive ones like steel, cement, chemicals, glass and paper, will be at a competitive disadvantage relative to foreign-made goods if the U.S. unilaterally imposes a carbon price policy and thus raises production costs for U.S. firms.
- Related to this concern, emissions leakage occurs when a policy that raises the price of carbon-intensive domestic goods causes domestic production to shift abroad and domestic consumption to shift to more carbon-intensive imports, thus undermining the policy's effect on reducing global greenhouse gas (GHG) levels. Leakage also may occur as a result of reduced domestic demand for fossil fuel products, which depresses fuel prices in the global market and thus results in increased consumption.

So the argument would be why raise the price of domestic steel if the result will be to harm the U.S. steel industry, but not actually do anything to reduce carbon emissions because more carbon-intensive steel will just get made in China instead.

It's important that you understand that this is a big deal in the United States. Unions and industry are complaining loudly about the drubbing they'll take if we put a price on carbon.

<u>The Link Between Climate Change and Trade</u>

So what does this have to do with trade? The link to trade is that the Lieberman Warner cap-and-trade bill proposed to address these leakage and competitiveness concerns by using border adjustments—requirements to purchase allowances in the US cap-and-trade system at a price equal to the market price for US permits—in effect a carbon tax levied at the border. These would be imposed on carbon-intensive importers, and perhaps other goods as well, from countries that have not taken comparably effective actions to deal with climate change.

While perhaps sound in theory, the benefits of border adjustments are more dubious when weighed against the costs.

The Potential Benefits of Border Adjustments

The ostensible benefit is that it will reduce leakage and competitiveness impacts—but evidence suggests those are not very large concerns.

Leakage estimates vary, but are in the range of about 10 percent.[2]

- More importantly, according to a recent EPA analysis, a border adjustment on carbon-intensive manufactured imports, like that originally proposed in Lieberman-Warner, would only reduce that 10 percent by about half a percentage point.[3] Other estimates also find small environmental gains.
- To keep the environmental benefit of preventing leakage from carbon-intensive industries in perspective, consider that only six percent of total U.S. emissions comes from these industries.[4] Moreover, if the U.S. unilaterally implements a border adjustment, it is easy to envision other

[2] The EPA estimates U.S. emissions leakage rates under Lieberman-Warner of approximately 11 percent in 2030 and 8 percent in 2050. EPA Analysis of the Lieberman-Warner Climate Security Act of 2008 *S. 2191 in 110th Congress* March 14, 2008 [hereinafter EPA Analysis S. 2191], at 84, available at http://www.epa.gov/climatechange/downloads/s2191_EPA_Analysis.pdf. Paltsev estimates leakage rates of 10.5 percent from Annex I countries under their Kyoto caps, though he estimates U.S. leakage rates (under never-ratified Kyoto targets) of only 5.5 percent. Sergey V. Paltsev. 2001. *The Kyoto Protocol: Regional and Sectoral Contributions to the Carbon Leakage* THE ENERGY JOURNAL, Vol. 22, No. 4. McKibben et al. estimated in 1999 that if the U.S. unilaterally adopted Kyoto targets, leakage rates would be roughly 10 percent in 2010. Warwick J. McKibbin et al., *Emissions Trading, Capital Flows and the Kyoto Protocol* (1999). Brookings Institution, Washington, D.C. The IPCC surveys a number of multiregional leakage estimates, finding a range of 5 to 20 percent. Intergovernmental Panel on Climate Change (IPCC). 2001. *Climate Change 2001: Mitigation: Summary for Policymakers*. Geneva: IPCC.

[3] EPA analysis S. 2191, *supra* note 2, at 84. In a scenario where Annex II countries take no action on their own, but the U.S. unilaterally adopts an emissions reduction policy, the International Reserve Allowance Requirement in the Lieberman-Warner Climate Security Act reduces leakage from 361 $MtCO_2e$ to 350 $MtCO_2e$ in 2030 (or from 11.6 percent of U.S. reductions to 11.3 percent) and from 412 $MtCO_2e$ to 385 $MtCO_2e$ in 2050 (or from 8.2 percent of U.S. reductions to 7.6 percent). The EPA's ADAGE model does not allow it to break out how much of the emissions leakage is from each of these various sources. In his paper measuring the emissions leakage from implementing the Kyoto protocol, however, Paltsev finds that leakage from Annex I demand reductions, which lead to reduced world prices and thus increased Annex II consumption, accounts for about one quarter of total leakage. Paltsev, *supra* note 2, at 68.

[4] TREVOR HOUSER ET AL., LEVELING THE CARBON PLAYING FIELD xiv (2008).

countries reshuffling their trade to avoid the border charge. For example, the U.S. might import more from Europe and less from Brazil, China, and India, while these developing countries just send more to Europe. Provision in bill to prevent that behavior, but may be difficult in practice.

- While some argue that border adjustments will induce developing countries to adopt greener practices, only a very small fraction of carbon-intensive products made in China are exported to the United States, so a border adjustment in the U.S. would be a small stick with which to pressure China to implement more costly low-carbon production processes. While China accounts for one-third of global steel production, less than one percent was sold to the United States; the U.S. market also accounts for just three percent of Chinese aluminum production, two percent of paper production, and less than one percent of both basic chemicals and cement.[5]

The other supposed benefit is that border adjustments can protect certain industries by leveling the carbon playing field relative to carbon-intensive imports.

- Overall, competitiveness concerns need to be kept in perspective. Most of U.S. emissions occur in non-tradable sectors, such as transport and residential housing. Further, most firms use little energy relative to other factors that may be more important in determining the location of trade.[6] Even in carbon-intensive sectors, it is estimated that production will decline in response to a carbon price more because of a reduction in domestic consumption than because of a shift to imports or offshoring of production—in other words more because people will use less steel if it gets more expensive, not because they'll switch to Chinese steel.[7]
- Still, it is true that certain specific carbon-intensive industries may be protected by border adjustments. The Environmental Protection Agency, for example, estimates that U.S. carbon-intensive imports from Annex II countries (those not subject to the Kyoto Protocol caps) would be roughly

[5] *Id*. at xvi.

[6] For example, energy costs in most manufacturing industries are less than 2 percent of total costs. Richard D. Morgenstern et al., *Competitiveness Impacts of Carbon Dioxide Pricing Policies on Manufacturing*, RFF Issue Brief 7, Washington DC: Resources for the Future, 2007.

[7] Joseph E. Aldy and William A. Pizer (2008), "Competitiveness Impacts of Climate Change Mitigation Policies," RFF Discussion Paper 08-21. Washington, DC: Resources for the Future.

12 percent higher in 2050 without a border adjustment than they would be with one.[8] The work of other leading economists finds similar benefits.

So, in short, border adjustments won't do much to prevent carbon leakage, but they can help protect a few carbon-intensive industries, like steel and cement, that compete heavily with imports from emerging economies.

Imposing Barriers to Free Trade

So what's the problem? First, border adjustments curtail free trade by imposing tariffs on some imported goods and raising the administrative costs of trade—barriers that could be even higher if U.S. firms abuse border adjustments for purely protectionist reasons.

Some dismiss these concerns. Initially, there was a sense that this talk of border adjustments was really just a negotiating posture. They didn't even take effect for 8 years. But in the version of L-W that actually came to a vote, the Boxer substitute, that time period was reduced to 2 years. So two years after passage, if it were determined that countries like China and India had not taken comparably effective measures to address climate change, the U.S. would have to charge border tariffs based on the carbon content of imported steel, for example. So the risk of trade barriers is serious.

Such carbon tariffs are also administratively very difficult, and thus raise the costs of trade. How are we to determine the carbon content of imports, for example? Foreign manufacturers asked to provide detailed carbon content information may be unwilling to do so, or even unable given the increasingly disaggregated global supply chains of production. Also, the amount of carbon emitted in making industrial products can vary dramatically depending on such factors as the source of energy, such as nuclear versus coal, and the production process, such as low-carbon steel mini-mills versus higher-carbon integrated mills.

As if that weren't enough, the revised U.S. cap-and-trade bill not only imposed border adjustments on carbon-intensive primary goods, like steel, but also finished products made from those goods. So now we might have to figure out how much carbon was emitted in making a whole car, not just the steel we import to make cars. You can just imagine the enormous administrative challenges there, where different parts are made with different methods in different countries and then shipped to another country to assemble.

[8] EPA Analysis S. 2191, *supra* note 2, at 85. See also Morgenstern et al., *supra* note 6.

Another administrative problem is how to determine whether a country has taken comparably effective measures to deal with climate change—because you wouldn't want to impose border adjustments on their products if they have. Some nations may choose to use a market mechanism, while others may opt for command and control regulations like mandates and subsidies, so how do you compare? You might say just look at the results—have you reduced CO2 emissions by an equivalent amount—but it's easy to see India or China, for example, arguing that the United States bears a greater responsibility for cumulative emissions and is still a much larger emitter on a per capita basis. China might also argue that emissions should be measured by geographic location of consumption, not production. China, after all, now produces half of the world's cement and flat glass and a third of its steel; industry accounts for 71 percent of energy demand in China, as compared to 31 percent in Europe and 25 percent in the U.S. Finally, short-term measurements of carbon emissions ignore that it may be economically efficient for a country to cut emissions more sharply in the future and less now—the long-term cumulative nature of climate change means that the marginal benefits of reducing emissions vary little year to year, while the costs might vary greatly. Determining whether a country had taken comparably effective measures by measuring GHG emission reductions also fails to take into consideration the impact of land use changes and deforestation, which account for roughly one-fifth of global GHG emissions.

The Potential Risk to Free Trade

Far more worrisome than the *actual* impediments to trade that border adjustments present, however, are the *potential* risks to the free trade system. Let me briefly mention three:

Retaliatory Tit-for-Tat Trade Wars

First, and most significantly, there is a real risk, in my view, that border adjustments could lead to retaliatory tit-for-tat trade wars—which is worrisome at a time when free trade is already facing a protectionist backlash.

It's easy to see how, if the U.S. starts to slap border tariffs on imports based on their carbon content, it could start to look like a policy that has little to do with the environment and much more to do with protecting U.S. industry—a perception that the evidence supports, as noted above.

And it's easy to see how other nations could then respond with tariffs of their own, and trigger a trade war. At a recent conference on this topic at Brookings, for example, a representative of the Chinese government responded to the

discussion of border adjustments by saying, well we have higher fuel efficiency standards than you do and higher energy efficiency standards for our appliances, so perhaps we should put a tariff on your cars and appliances.

You can even envision where border adjustments set the precedent for use of border tax adjustments to compensate for other competitive disadvantages. For example, perhaps a country could impose them on another that does not have equally generous minimum wage or health care regulations. The harm of using trade barriers as such a weapon would be severe.

Failure to Act Could Mean Border Adjustments Backfire

The second potential risk is to the country that imposes border adjustments itself because I think border adjustments may backfire. In the U.S., for example, it certainly has not escaped the notice of all of you that, to date, we have taken relatively little action to address climate change compared to many Kyoto countries, and there is a risk that any eventual climate change policy would have limited effectiveness once Americans understand the true impact of cap-and-trade on energy prices and political pressure then builds to ease that pain. As the economy weakens, unemployment and prices rise, and wages stagnate, it will only be that much harder to garner political support for a carbon price policy. In that case, introducing border adjustments as a legitimate tool to address climate change may encourage other nations such as those in the EU that are doing more to curb emissions to impose them on the U.S.

WTO Retaliatory Tariffs

Finally, there is a risk that a border adjustment would be illegal under World Trade Organization (WTO) law, which could potentially lead the WTO to authorize retaliatory tariffs. I won't dwell on the WTO legal issues—I have a paper on the Brookings website for anyone interested—but in brief, I think the question would be whether border adjustments are a permissible exception under GATT Article XX.

- *National Treatment*: It's not clear that they would be consistent with National Treatment obligations since they would impose a higher tariff on steel made in a carbon-intensive way than on steel made in a low-carbon way, even though two rolls of steel would be considered "like products". The WTO generally does not distinguish based on a how a product is made—so-called process and production method restrictions—but evaluates those under Article XX, as it did in the Tuna Dolphin and Shrimp Turtle cases.

- *Most Favored Nation*: It's also not clear that border adjustments would pass muster under the Most Favored Nation Treatment obligations of the GATT because that provision prohibits discrimination between different WTO members, but border tariffs would be imposed on some countries that had not taken stringent enough climate policies, but not on other countries that already had climate policies in place.
- *Article XX*: So that leaves us with whether it's a permissible exception under Article XX—which allows measures that otherwise violate GATT obligations if they are "relating to conservation of exhaustible natural resources" and made in conjunction with similar domestic restrictions.
    - There's a lot to say about the legal analysis here, but ultimately I think it boils down to whether the measure violates the introductory clause of Article XX—which prohibits arbitrary or unjustifiable discrimination. Basically, the question for the Appellate Body is whether the measure is being exercised in good faith to address a real environmental problem or whether it is really disguised protectionism. Remember—there's no exception in Article XX for protecting domestic industry, only for protecting the environment. And, as I noted at the outset, the available evidence suggests that border adjustments would do little to reduce carbon leakage—and thus have very little environmental benefit—but *would* do something to help a few specific manufacturers in carbon-intensive sectors. For that reason, along with others I won't go into, it's not clear these would pass WTO muster. And in that case, the Appellate Body could authorize retaliatory tariffs that really could trigger a trade war.

<u>Alternative Way Forward</u>

As I said, most observers think it's inevitable that some form of border adjustments will be included in domestic cap-and-trade legislation. But it may be possible to prevent that by finding other ways to compensate adversely affected industries. One way to do that would be through the use of free allocations in a cap-and-trade system. A cap-and-trade system can potentially raise hundreds of billions of dollars if the emissions allowances are auctioned off, and I think most of that should be used to address the distributional impacts of raising energy prices, but some small portion may be used to compensate firms with free allocation. Free allocation is effectively a cash transfer to firms since the permits can be sold in a liquid secondary market. Because there is an opportunity

cost to using an allowance, firms will still pass on those costs to consumers, so we should still see demand reductions and fuel substitutions. Firms will just reap windfall profits. While not my preference, such an approach may be preferable to border adjustments given the risks that border adjustments pose to the already beleaguered free trade system. It strikes me as potentially less harmful to just buy off firms with a small percentage of auction revenue than to pour sand into the gears of the free trade system, potentially triggering retaliatory action that could spiral out of control, thus harming economic growth and development.

Conclusion

While I have focused on the United States, this is not only a U.S. phenomenon. There's talk of border adjustments in Europe as well. For those of us who believe that free trade contributes to economic growth and development, we should be paying attention to the climate change debate, and reminding people about the benefits of trade that may be lost or mitigated if efforts to protect domestic firms from the adverse effects of climate change policy lead to the imposition of trade restrictions. We can make more progress on climate change with a cooperative approach that recognizes the differing responsibilities and abilities of different countries than we can with sticks and threats that will ultimately be self-defeating.