



The politics of renewable energy trade: The US-China solar dispute



Llewelyn Hughes^a, Jonas Meckling^{b,*},¹

^a Crawford School of Public Policy, Australian National University, Lennox Crossing, Canberra 0200, Australia

^b Department of Environmental Science, Policy, and Management, University of California, Berkeley, CA, 94720 USA

ARTICLE INFO

Keywords:

Renewable energy
Solar photovoltaics
Trade
United States
China
Advocacy coalition

ABSTRACT

The Chinese and US governments played significant roles in the development of renewable energy industries, seeing them as key growth sectors and crucial to addressing climate change. While the US and China cooperated in renewable energy development, since 2011 the countries have engaged in a protracted and major trade dispute in the solar photovoltaics industry. We propose that the US government's decision to impose, and then expand, tariffs on a number of Chinese solar producers can be explained through a model of coalitional politics, drawing on Actor-Centered Institutionalism and the Advocacy Coalition Framework. We show that a coalition of domestic manufacturers and congressional interests formed a protectionist coalition that utilized US trade law to their advantage. In doing so they sidelined a free trade coalition representing the majority of US solar photovoltaic firms. The institutional design of US trade law also facilitated the successful application of trade remedies. Our analysis suggests that the domestic politics of renewable energy trade make trade conflicts a likely outcome, leaving limited scope for policy to carefully manage the trade-off between protecting parts of manufacturing through tariffs and lowering the cost of renewable energy technologies to mitigate climate change.

1. Introduction

China and the United States have high levels of installed capacity and investment in renewable energy technologies, including in the solar photovoltaic (PV) industry (REN21, 2016). Companies in both countries have invested billions of dollars into the development and deployment of solar PV, and the industry is an increasingly important employer (Schreurs, 2012; Deutch and Steinfeld, 2013). Globally, the importance of solar PV is expected to grow. The New Policies Scenario of the International Energy Agency, for example, suggests solar PV could draw USD 2 trillion of investment globally between 2015 and 2040, second only to wind power among all forms of electricity generation (International Energy Agency, 2015a, 320).

Historically, the US and Chinese governments cooperated in renewable energy development. The US-China Renewable Energy Partnership built on a history of bilateral energy cooperation (Wan and Craig, 2013). The US-Clean Energy Research Center also managed intellectual property rights in collaborative renewable energy research and development (Lewis, 2014a). Collaboration in renewable energy extends to industry. Notably, solar firms in the US and the EU are linked with Chinese firms through global supply chains (Nahm, 2017).

The emergence of global supply chains has enabled solar PV companies to specialize in specific stages of manufacturing, and to scale up global solar PV production capacity (Nahm and Steinfeld, 2014).

The protracted and major solar PV trade dispute that emerged between China and the United States in 2011, when the US government imposed anti-subsidy and countervailing duties against a number of Chinese solar module and cell manufacturers, thus stood in contrast with governmental and private sector cooperation. The dispute is also representative of a broader shift towards the use of trade remedies in renewable energy (Lewis, 2014b).² In the solar PV sector alone, for example, nine major bilateral and multilateral trade cases were brought forward between 2011 and 2015 (Center for Economic Policy Research, 2016).

We examine what led the US government to pursue trade remedies against Chinese producers, despite the links between many Chinese and US solar firms, and a history of bilateral governmental cooperation. The outcome is particularly puzzling because the majority of US solar firms opposed tariffs. We propose that the decision to implement, and then expand, trade remedies in the solar PV sector can best be explained by the incentives of domestic manufacturers and members of congress, and the distributional effects of the institutions governing US

* Corresponding author.

E-mail addresses: llewelyn@alum.mit.edu (L. Hughes), meckling@berkeley.edu (J. Meckling).

¹ Authors contributed equally to the paper.

² Trade remedies are defined as measures that “impose unilateral tariffs against goods from its trading partner found to be in violation [of domestic trade laws].” They commonly focus on countervailing duties and antidumping duties, with the former focused on producers benefiting from a subsidy (Wu and Salzman, 2014, 436).

trade disputes. We describe how a coalition of a small number of domestic manufacturers, and congressional members, successfully utilized US trade law to their advantage, sidelining a broader free trade coalition representing the majority of US solar photovoltaic firms. This outcome was enabled, we propose, by the fact that US law enables aggrieved companies to seek trade remedies with the relative ease by using domestic law, regardless of the economic impact potentially imposed (Wu and Salzman, 2014).

In explaining this outcome we employ a coalitional model of policy-making, drawing on standard concepts from two sets of public policy theories: Actor-Based Institutionalism (ACI), and the Advocacy Coalition Framework (ACF) (Scharpf, 1997, Sabatier, 1988). Our framework incorporating the incentives of both companies and policy-makers offers a more complete explanation, we propose, than alternative models of public policy formation. One possible alternative model, for example, is drawn from private interest theories of regulation, which proposes that “regulation is acquired by...industry and is designed and operated primarily for its benefit” (Stigler, 1971, 3). Yet in the case presented here the solar PV industry was divided over the merits of applying trade remedies, with differences reflecting the expected effects of remedies because of varying participation in global supply chains for solar PV. In aggregate, however, data show industry opponents were more numerous than firms supporting the imposition of trade remedy measures (Meckling and Hughes, 2017).

A second possible model focuses on theories of bureaucratic performance, specifically that bureaucratic agencies pursue organizational missions assigned to them (Dixit, 2002). It is plausible, for example, the Department of Commerce (DoC) may have been attempting to enhance its performative, procedural, or technical reputation by investigating alleged dumping and anticompetitive subsidy provision by the Chinese government (Carpenter, 2012). A focus on the mission of the DoC may help to explain why the US government pursued measures that harmed many US firms operating in the sector. It does, however, not explain why the final scope of the second ruling extended beyond that initially petitioned for by SolarWorld, the company claiming injury.

The paper contributes to research on the relationship between trade and climate policy, an increasingly important area of research (Weber and Peters, 2009; Holzer and Cottier, 2015). Recent studies focus on the rise of trade disputes over industrial policy for renewable energy industries (Lewis, 2014a; Wu and Salzman, 2014). Such renewable energy trade protectionism is controversial. On the one hand, tariffs could possibly support innovative domestic module manufacturing capacities (Zheng and Kammen, 2014). On the other hand, they harm large segments of the solar industry, and have the potential to increase the costs of key technologies to mitigate climate change. The latter also could reduce the competitiveness of solar compared to fossil-fuel based electricity generation. Collectively, political representatives thus face a ‘green dilemma’ between protecting parts of manufacturing through tariffs while potentially increasing the costs of key renewable energy technologies, and supporting others firms of the industry that benefit from open trade.

We can infer from the explanation offered here that international economic cooperation is unlikely to limit the application of trade remedies in renewable industries when two conditions are met. First, firms and policymakers have incentives to seek protection. This is the case when firms are not deeply integrated internationally, face import competition, and contribute economically within important constituencies. Second, trade institutions continue to enable remedies to be applied without taking into consideration the broad economic effects of such measures. The domestic politics of renewable energy trade thus implies that conflict is likely to be an enduring feature of renewable energy policy, so long as these conditions exist. This limits the scope for policy to carefully manage the ‘green dilemma’ of the politics of renewable energy trade.

The remainder of this article unfolds as follows. First, we show how

the globalization of the production of solar PV shifted over the past decade, resulting in the competitive dynamics we observe today. Second, we explain the evolution of the US-China case, demonstrating how a protectionist advocacy coalition shaped the outcome. In a third step, we explore the implication for policymaking at the intersection of global trade and renewable energy.

2. Background and literature review

2.1. The solar industry and global supply chains

The solar industry makes up the second-largest share of non-hydro renewable electricity generation globally. Installed capacity increased from 5.1 gigawatts (GW) in 2005 to 227 GW in 2015. Market growth initially centered on Germany, however China was responsible for 30% of total capacity additions in 2015 (REN21, 2016).

The rise in global installed capacity masks important changes in the location and organization of solar PV production. Solar PV production was initially linked to firms diversifying from the oil and consumer electronics industries, such as Sharp, Kyocera, and Siemens. Solar PV manufacturing thus initially occurred within dedicated business units located within horizontally diversified firms (Jones and Bouamane, 2012).

Industry growth saw the emergence of companies specializing in the production of polysilicon, and cell and module manufacturing. In addition, the entrance of Chinese manufacturers into solar panel manufacturing transformed the distribution of production globally (Gallagher and Zhang, 2016). Chinese firms’ annual PV module production increased from 1.34 to 25.6 GW between 2007 and 2013, and Chinese manufacturers captured 60% of the global module market by 2012 (European Photovoltaic Industry Association 2013). Module production in Germany, Japan, and the US continued to grow: from 747 MW (MW) to 1.7 GW in Germany, from 713 MW to 2.4 GW in Japan, and from 353 MW to 943 MW in the United States. Nevertheless, their relative shares of global module production fell from 18.5% to 4.2% (Germany), 17.7 to 6.1% (Japan), and 8.8 to 2.4% (United States), respectively (GTM Research, 2014b). Together, the emergence of vertically specialized suppliers, and expansion of production to China, also led to the rise of complex global supply chains characterized by an increase in cross-border trade in solar goods. A large number of the PV modules produced in China were manufactured for export, even as domestic capacity rapidly increased (Deutch and Steinfeld, 2013, 7).

The rise of Chinese manufacturing helped lower the costs of solar PV systems. Politically, however, it is associated with a series of trade disputes. In the United States two trade cases—in 2011–12 and 2013–14 respectively—led to the imposition of unilateral tariffs against a number of module manufacturers based in China. In 2012 the US government set preliminary unilateral tariffs on solar cells and modules following anti-dumping and anti-subsidy investigations of between 18.3% and 249.9%. Countervailing duties were set between 14.78% and 15.97%. The ruling left the possibility open that Chinese manufacturers import modules assembled in China with cells from Taiwan. That led to a second case, and in May 2014 the DoC expanded the scope of antidumping and countervailing duties, incorporating both Chinese and Taiwan-manufactured cells and modules, from 26.71% to 165% in the case of China, to between 11.45% and 27.55% for Taiwan (Department of Commerce, 2014).

2.2. Theory: advocacy coalitions and renewable energy trade policy choices

We propose that the imposition and expansion of trade remedies occurred because a small number of domestic solar PV manufacturers successfully forged a coalition with congressional members advocating the use of trade remedies, despite the opposition of the majority of

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