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The coming solar trade war: Obstacles to decarbonization from a political-economy conflict

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ABSTRACT

Will the United States 'Make Solar Expensive Again'? An active petition filed by the manufacturer known as Suniva now before the International Trade Commission would impose tariffs and a minimum price on solar panels, if acted upon by the executive branch of government. Renewed solar protectionism would reverse attained progress in cost reductions. For the nascent but burgeoning solar PV installation, construction, and operations sectors, higher prices would lead to decreased demand and fewer jobs. For the energy system as a whole, decarbonization would be delayed.

1. Introduction

Is the United States about to "make solar expensive again"? At the end of June 2017, much newspaper headline space was devoted to an announced intention to withdraw from the 2016 Paris agreement on climate change. Less attention was given to the U.S. International Trade Commission's (ITC) announcement that it will continue its investigation into solar panel imports and possible "serious injury" done to domestic manufacturers under Section 201 of the Trade Act of 1974, at the request of a firm known as Suniva. As Ed Crooks of the *Financial Times* noted, however, "it is the ITC investigation that is the much more serious threat" to the country's nascent solar industry:

> Solar power has boomed in the U.S. in part because of a steep decline in costs, helped by imports of cheap panels. The inquiry is likely to create an opportunity for the Trump administration to interfere with that success, if it chooses… If [the ITC] finds that imports have caused serious injury to solar manufacturing in the U.S., then Mr. Trump can choose how he wants to respond. The prospect that Mr. Trump will be making a decision that could have a huge effect on their future is unsettling for solar companies, and shows the real significance of last week's announcement for investors. If the president has walked away from the Paris agreement in the name of protecting fossil fuel jobs, people will ask, what more might he be prepared to do? (Crooks, 2017).

If the protectionist measures requested by Suniva's petition are applied, they would include tariffs and a minimum price for solar modules sold in the United States. This in turn would lower rates of installation and threaten the majority of industry jobs that operate in that sector.

The rationalization offered for imposing such measures is that inexpensive imports are unfairly injuring domestic manufacturers. It is therefore worth probing the premises of the argument for providing a remedy: (1) whether or not solar is cheap due to "unfairness" despite the existence of a competitive market; (2) the supposed effects of these developments; and (3) the likely consequences of a reversal in recent price declines, in the event that a new wave of protectionist trade measures occurs. To address the questions raised by propositions relating to each of these premises, we begin by asking how the current situation arose.

1.1. How did solar become cheap?

Aside from the policy shifts described in the introduction, the biggest news for the solar industry so far in 2017 has been the continued setting of new records in low prices for solar generation. Recent auctions such as one in Chile that sold electricity for at $29.10/MWh – "roughly half what it costs to generate power from a coal-fired plant these days, even with today's depressed coal prices" – suggest that "unsubsidized large-scale solar is beginning to beat not only wind but also coal and natural gas at current prices" (Electricity Journal, 2017, 67).[1]

Among the drivers of these cost reductions, one stands out: "low-cost Chinese manufacturers, who enjoy substantial subsidies from the Chinese government" (Electricity Journal, 2017, 3). But how exactly did subsidies benefit these Chinese manufacturers? After all, solar subsidy policies appear to have been common in developed countries

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[1] It is interesting to note how rapidly expectations about the cost-competitiveness of solar have changed: for example, as recently as 2012, the National Renewable Energy Laboratory's (NREL) comprehensive study on achieving 80% renewables in electricity generation by 2050 forecasted a larger role for wind than solar photovoltaics (PV) (see Shum, 2017, 2).

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over the past decade, ranging from the investment tax credit (ITC) and production tax credit (PTC) in the United States to the feed-in tariffs (FITs) of Germany and elsewhere in Europe. The difference among subsidy effects lay in the details: instead of more prominent policies encouraging the purchase and installation of solar panels as in the advanced industrialized countries, in China the focus until recently has been on "entrepreneurs [who] bought equipment from manufacturers in Europe and the United States, built big factories with government subsidies, and got down to business cranking out millions of solar panels for export" (Ball and Reicher, 2017). In other words, the subsidies of most interest in the Chinese case operated indirectly, through the availability of cheap credit offered by a statist banking system that prioritized the establishment of solar manufacturing capacity as industrial policy.

1.2. Is this 'unfair'?

Identification of this policy mechanism leads to questions about fairness, and of what might be appropriate responses to the possibly unintentional, cross-border consequences of subsidies. It is worth noting at the outset that use of the term "subsidy" is itself not as straightforward as one might assume. Among other options, Sykes (2005, 85) provides one possible definition for our consideration: "the term 'subsidy' may refer to the provision of a good or service at a price below what a private entity would otherwise have to pay for it." As intuitive as this usage may seem, however, Sykes also notes how it raises a host of further questions: is provision of a cheap public good or service then intrinsically wrong? Is provision of public education or security services, for example, unfair compared to the private provision of the same that prevailed in earlier historical time periods, or in some foreign countries today? Use of the term subsidy in this sense therefore leaves open the question of the utility or appropriateness of government support in developing emerging technologies.

It is, for example, possible that companies do not take into account the full social value of their investments in renewable energy technologies (Schneider and Goulder, 1997, p. 13). Potential sources of social value include not only reduced pollution, but also increased international security and fewer wars due to reduced fossil-fuel imports from volatile revisionist and terrorist-sponsoring foreign powers, as well as overall technological know-how that tends to diffuse outside of the individual pioneering firm making the original investment. Such missed opportunities to create social value – or, in other words, to realize positive effects that "spillover" from private investment in desirable technological sectors – might therefore justify policies to intervene in a market failure of underinvestment.

1.3. Industrial policy in practice

So much for economic theory. What does industrial policy in support of an emerging solar manufacturing sector look like in practice? Interestingly, lessons and parallels can be drawn from and between initiatives in both China and the United States. Contrary to conventional wisdom, Chinese policies were far from unique. Section 1.1 outlined the nature of Chinese industrial policy; more specifically, in 2010, "the China Development Bank (CDB) made $43.2 billion available to 15 solar companies" (Hopkins and Li, 2016).

In the meantime, in 2009 and in the wake of a housing-market collapse and financial crisis, the United States Congress had passed the American Recovery and Reinvestment Act (the ARRA, also colloquially known as "the stimulus bill"). It included funding of $37 billion (see Mazzucato, 2015, 138) for a loan guarantee program to provide "incentives for innovative [energy] technologies," and administered by the Department of Energy's (DOE) Loan Program Office (or LPO, originally created in 2005, during the second term of George W. Bush's presidency; see Title XVII of the Energy Policy Act of 2005, 42 USC Sec. 16511, et seq., Title XVII). These funds were to be disbursed over the next few years of halting recovery from recession.

These are comparable sums to fund cheap credit for commercial energy technology development: $43 billion and $37 billion. As is the case with many issues in the U.S., however, the DOE program was soon made to serve the cause of partisan polarization. The trigger for this politicization was an ill-fated solar manufacturing firm named Solyndra, which had been among the first beneficiaries of the program. Mazzucato (2015, 12) provides additional context for assessing this case within the larger DoE loan guarantee program and portfolio:

> In 2009, Solyndra, a solar-power-panel start-up, received a $535 million guaranteed loan from the Department of Energy; that same year, Tesla, the electric car manufacturer, got approval for a similar loan for $465 million. In the years afterward, Tesla was to a great degree successful, and the firm repaid its loan in 2013. Solyndra, by contrast, filed for bankruptcy in 2011… (2015, 12)

Indeed, given that the purpose of the program was to help fund risky and technologically unproven ventures that private investors were not willing to back, and yet could generate wider social value in the long term, individual bankruptcies should not be surprising – as they clearly are not in the field of private venture capital (Shum, 2015, 391). Nonetheless, in the course of the 2012 presidential campaign, including during televised debates, Republican candidate Mitt Romney prominently highlighted Solyndra's bankruptcy as an example to disparage government efforts at industrial policy as the futile "picking of winners and losers" (Shum, 2015, 391).

2. Results and likely consequences of policies for decarbonization

Insofar as the programs in both countries offered more and cheaper credit that decreased production costs for manufacturers, and in turn lowered prices for solar panels, the competitiveness of solar deployment and installation versus conventional fossil fuel and nonrenewable sources was likely to have been enhanced. In the case of Chinese solar manufacturing, the result appears to have been the realization of economies of scale and a much more rapid decline in prices for solar panels than most observers had anticipated. As Dr. Charles Donovan of Imperial College Business School in the UK noted, "What we were all hoping for 20 years ago when the idea of cheap solar was just a dream, was that someone would come into this on an industrial scale and drive down the cost. That is exactly what China has done." (Baraniuk, 2017).

Such effects are, however, easily overlooked amidst the twin political imperatives of ideological posturing and alarmism concerning international competitors. Indeed, the combination of the two leads readily to policy incoherence. As noted in Section 1.3, in 2012 the Republican candidate for president of the United States adopted the ideologically principled position of rejecting industrial policy and government intervention. In contrast, in 2016 Donald Trump made no such appeal, and warned instead that China is "killing us" with industrial policies that were implicitly worth emulating. We are thus left with an apparent contradiction: aggregating across the positions of these two candidates from the same political party, it would seem that their view is that industrial policy is wasteful and ineffective, except when it is deployed by the Chinese government, whereupon the perception becomes that of a devastating source of competitive advantage, which must in turn be countered by protectionist intervention.

2.1. The real choice

This kind of contradictory political rhetoric may serve to obscure the true industrial policy choices that are being made notwithstanding the vivid individual examples that are used in emotional, hot-button political appeals. Subsidies, especially in the form of tax incentives, are already widely used in American public policy; in a different context, the political scientist Suzanne Mettler goes so far as to describe similar policies as "a submerged state" (Mettler, 2011). In the issue-area of