



Trump's Solar Tariffs Create Far More Losers Than Winners

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January 23, 2018

Yesterday, President Trump announced the first sweeping tariffs of his administration, enacting tariffs on solar panels and components (as well as washing machines) from nearly every country in the world. The tariffs, which start at 30 percent, are scheduled to ramp down to 15 percent over four years and then expire.

One might generally chalk up tariffs to conventional regulatory capture—when powerful industrial interests coerce policymakers to pass policies that benefit them. But this case is qualitatively different. The Trump administration is in no way in thrall to the two insolvent solar manufacturers (Suniva and Solarworld) that pleaded for high tariffs. Rather, the administration appears to have used those firms' petition as a way to enact tariffs that demonstrate its commitment to upholding promises of America First trade protectionism.

This is regulatory capture not to an industry but to an ideology. The latter is not necessarily worse than the former—in this case, lower tariffs were desirable compared with higher ones (no tariffs would have been best). But what is striking about these neither-here-nor-there tariffs is that, in defiance of the normal rules of political economy, they create virtually no winners and a broad swathe of losers across the economy. The remainder of this article will survey four areas affected by Trump's solar tariffs, concluding that the tariffs will not generate material benefits in any of them.

Surveying the Damage

1. Domestic manufacturing

The stated goal of the tariffs is to boost U.S. manufacturing and level the playing field with Asian manufacturers—notably Chinese ones, which have benefited from government support. But the tariffs are too little and too late to revive the U.S. solar industry.

This is not the first time the United States has imposed tariffs on solar imports. In 2012, the Obama administration investigated allegations that the Chinese government had subsidized local manufacturers of solar panels and cells (components of panels). The investigation found evidence of government subsidies and concluded that the support had enabled Chinese firms to dump below-cost solar panels on global markets and drive U.S. manufacturers out of business. As a result, the Obama administration imposed tariffs on solar imports from China. The European Union came to a similar conclusion and also restricted Chinese solar imports. And in 2014, the United States enacted new tariffs on solar imports from Taiwan, finding that Chinese firms had offshored their manufacturing to skirt U.S. tariffs.



But by and large, the tariffs came too late. U.S. manufacturers' share of global solar production had already [plunged below 5 percent by 2011](#), down from over a quarter a decade earlier. Both established U.S. manufacturers of conventional silicon solar panels and venture-funded Silicon Valley start-ups developing new solar technologies failed in the face of a flood of cheap Chinese silicon panels.

It is possible that had tariffs been put in place a decade ago they might have helped level the playing field and even deter illegal Chinese state subsidies. But if Obama's tariffs closed the barn door after the horse bolted, then Trump's new tariffs amount to putting a lock on the door. In recent years, Chinese firms have learned to stand on their own two feet, as government largesse evaporated. The Chinese government shifted from subsidizing solar panel producers to subsidizing the deployment of solar power. And it let uncompetitive firms fail. For example, Suntech—once the world's largest producer of solar panels—went bankrupt in 2013 without government subsidies to prop it up. Those producers that have survived have harnessed economies of scale, automated their production lines, and wrung costs out of their supply chains to survive in a brutally competitive market. The cost of solar [has fallen 80 percent since 2010](#), as Chinese producers built up a formidable advantage over American ones.

Yesterday's tariff decision came at the behest of two insolvent manufacturers, Suniva and Solarworld. The companies—both of which are foreign-owned—complained that Chinese companies had offshored some production to countries such as Malaysia and the Philippines, and the resulting cheap Southeast Asian imports had made solar manufacturing unprofitable in the United States. To block these imports, the firms petitioned the International Trade Commission to erect formidable trade barriers, relying on a rarely-invoked provision of a 1974 trade law. Ordinarily, the executive branch would ignore such a request, since granting it would likely contravene international trade law. But the Trump administration directed the commission to investigate the case.

Based on its recommendations, the administration imposed a 30 percent tariff on solar products not just from China and Taiwan but from anywhere else in the world. The level of the tariff was less draconian than what the ailing firms had demanded, and it even exempted from tariffs a larger quantity of U.S. imports—about a quarter of the total imports in 2017—than most of the commissioners had recommended. And the tariffs are scheduled to ramp down to 15 percent over four years and then expire.

These tariffs are relatively moderate—certainly less extreme than many had feared. But as a result, they will minimally stimulate investments in domestic manufacturing facilities. [The tariffs might raise the cost of solar panels by 10–12 cents per watt](#), over the current price of 35–40 cents per watt for imports today. But [global prices were 45–50 cents per watt as recently as 2014](#), and U.S. manufacturers were not competitive then. Investors will be loath to fund new production facilities that might not be cost-competitive today and almost certainly will not be competitive as the tariffs ramp down and expire over four years.



Expect Trump to point out isolated examples of investment as evidence of the success of his tariffs—just as he trumpeted his success as President-elect in keeping a Carrier factory from moving to Mexico from Indianapolis. [Rumors are afoot](#) that a panel assembly plant might be built in Jacksonville—a result of the more generous tariff-free quota for cells that can then be domestically assembled into panels to avoid panel tariffs. Tesla might increase production from its existing solar panel assembly facility in Buffalo, though it will be difficult to disentangle the effect of the tariffs from what it would have done anyway. Finally, any production facilities that are built will likely be highly automated, minimizing job creation.

Overall, the tariffs will not materially stimulate U.S. manufacturing output or employment, and domestic production will remain a rounding error compared with the scale of Asian production. As for the two companies that sought the tariffs in the first place, the halfway remedy they secured will likely be a pyrrhic victory, a measure too small to pull them out of insolvency.

2. Innovation in Solar Technology

The United States will never revive its solar manufacturing industry by trying to support firms competing against Chinese behemoths in the production of silicon solar panels—a commodity product with razor-thin margins. Commodity production at massive scale does not play to America's strengths, nor is it often worth the effort. Rather, U.S. industries are world-beaters and enjoy handsome profits when they relentlessly innovate.¹ Unfortunately, these tariffs will do little to protect firms developing emerging solar technologies that need some insulation from the global solar commodity market to scale up their innovations. On top of this, the tariffs might curtail even the limited research and development (R&D) investments made today by U.S. innovators.

The state of U.S. solar innovation is grim today. A shakeout over the last decade saw billions of dollars of venture capital investment evaporate as innovative Silicon Valley start-ups wilted in the face of cheap Chinese imports. As a result, private investors are skittish about investing in new solar technologies. Yet exciting advances are being made in laboratories around the world that could presage revolutionary new solar products. [The frontrunner is perovskite solar technology](#), which could be printed as dirt-cheap rolls of high-efficiency solar coatings in a range of colors and transparencies. By midcentury, entire cityscapes could be wrapped in these electricity-generating solar materials.

¹ Booming domestic production of oil and gas might appear to undercut this thesis, but it actually proves two points. First, U.S. production of oil and gas—classic commodities—has boomed precisely because of the innovations that underpinned the shale revolution. And second, the boom did not depend principally on trade protection. That is not to say that government intervention has not helped the oil and gas industry. Lavish tax breaks help a little (but are wasteful) and federally funded research was a key enabler of the shale breakthrough. Still, booming U.S. oil and gas production did *not* result from the government erecting trade barriers to kickstart the industry. Such a strategy will not work for solar, either.



Trump's tariffs will not help entrepreneurs and scientists commercialize such technologies. New ventures would have benefited from the certainty that after several years of development, their products might enjoy a premium price in the marketplace; but the four-year ramp-down and expiry of the Trump tariffs will eliminate any incentive for investors to fund innovative start-ups. These tariffs are an indiscriminate policy tool that fails to target protection for the promising technologies that might underpin a U.S. manufacturing revival.

The tariffs might even set back innovation. The top two U.S. solar manufacturers have managed to stay competitive with Chinese producers by innovating. First Solar, which is the largest producer in the world of non-silicon solar panels (more than 90 percent of all panels are silicon, however), is actually exempt from the silicon-specific tariffs and so will happily continue to produce its panels in Southeast Asia and import them to the United States. SunPower, on the other hand, manufactures the world's most efficient silicon solar panels thanks to its longstanding commitment to R&D—its panels, produced in Southeast Asia as well, will be subject to tariffs. As a result, in a conversation we had last November, SunPower's CEO warned me that any loss in profit from reduced demand for higher-priced panels at home would directly affect his ability to continue funding R&D. That would be a shame, given that R&D is what gives SunPower its narrow competitive edge.

[There are far better policies to support innovation than Trump's tariffs.](#) Congress should invest heavily in R&D of new solar technologies, rejecting the administration's early attempt to slash funding in its first budget. The federal government should also invest in shared laboratories and manufacturing facilities to help start-ups develop and scale up production of their technologies. Finally, federal and state governments should use public procurement to preferentially purchase emerging solar technology products to provide an early market to demonstrate those products and attract follow-on private investment. Importantly, by supporting innovation at all stages—from R&D through scale-up, demonstration, and deployment—the United States can support local innovation *and* local manufacturing, unlike the model where SunPower and First Solar innovate at home and produce abroad.

3. Domestic Deployment of Solar Power

The most widely discussed effect of the tariffs is the prospective slowdown in deployment of solar power in the United States and the resulting employment effects. Indisputably, tariffs that raise the cost of solar imports will reduce demand for those panels and slow the pace of installations. And as a result, there will be fewer jobs created by solar deployment than in a scenario with no tariffs and an unhindered solar boom. Still, the US solar market will continue to grow, albeit at a slower pace. Estimates of the slowdown in U.S. solar deployment have ranged from [8 percent](#) to [15 percent](#). Importantly, those figures refer to the reduction in solar deployment relative to a scenario with no tariffs. In both scenarios, the U.S. solar market will continue to grow, though in the one with tariffs it may only grow at a snail's pace ([less than 10 percent over four years](#)).



Fewer workers will be employed to install and otherwise develop solar projects. The Solar Energy Industries Association [predicts that 23,000 jobs will be lost this year](#). That figure will swamp any gains from manufacturing, both because there will be limited investment in U.S. manufacturing and because the vast majority of U.S. solar jobs are in solar deployment and not manufacturing. The tariffs look set to put a damper on [the fastest-growing job category in the United States: solar panel installer](#).

There are still certain details of the tariffs that, once worked out, could change the projected impacts on deployment. For example, the Trump administration will now determine whether to grant any exceptions to the blanket tariffs for countries with which the United States has a free-trade agreement. The International Trade Commission had recommended that Canada and Singapore be exempted, and if the administration chooses to exempt them, that will effectively increase the quota of tariff-exempt imports and might reduce the average cost of solar panels in the United States.

4. Trade Retaliation and Disputes

Do not expect Trump's tariffs to go unpunished by the countries from which the United States currently imports solar products. China already demonstrated its willingness to retaliate against the Obama solar tariffs and is likely to do so once again; other exporting countries will dispute U.S. tariffs under international law. The United States will be hard-pressed to legally justify its tariffs in an international court, though that may be just as well.

Following the 2012 Obama tariffs on solar imports from China, China retaliated by imposing 57 percent duties on U.S. exports of polysilicon, the raw material that is used in silicon solar panels. As a result, from 2010 to 2017, [U.S. polysilicon production plummeted](#) from nearly 30 percent to just over 10 percent of the global total. This time around, it is not clear what U.S. export China might choose to penalize and whether it will be related to solar power—in 2016 a [Communist Party newspaper ominously warned](#) of limiting U.S. exports on airplanes, autos, iPhones, or agricultural products—but there is little uncertainty that China will retaliate.

In addition, the United States will soon find itself in international court. South Korea has already [announced](#) it will file a dispute at the World Trade Organization in protest over Trump's tariffs on solar products and washing machines. The U.S. legal justification for its tariffs is far from watertight. The Trump administration has justified its blanket tariffs under a safeguards provision in the General Agreement on Trade and Tariffs, an international agreement that later underpinned the World Trade Organization. That safeguards provision requires a country to demonstrate that “as a result of unforeseen developments,” increased imports of a product have caused “serious injury to domestic producers,” and that in order to “prevent or remedy such injury,” countries can impose tariffs that would otherwise be noncompliant with their international obligations.



The Trump administration performed some logical acrobatics to [argue](#) that “unforeseen developments” had in fact transpired. First, it expressed astonishment that China would pursue a “series of industrial policies, five-year plans, and other government support programs favoring renewable energy product manufacturing.” (China is now on its 13th Five-Year Plan and has made a habit of favoring industries for decades.) And second, the administration confided its shock that the 2014 Obama tariffs wouldn’t work at preventing offshoring of Chinese production to Southeast Asia. (Those tariffs were levied on Taiwanese imports after noticing that Chinese firms had offshored production to Taiwan.)

Regardless of whether the Trump administration has convincingly made the case for unforeseen developments, which the evidence suggests it has not, it is also far from clear why the proposed tariffs will reverse the injury that domestic producers have suffered. The tariffs are neither here nor there—they are too low to coddle manufacturers and too high to avoid angering international trading partners. The United States has lost several safeguards cases in the past, and this one is unlikely to go differently. If and when an international dispute winds its way through the courts after many years, Trump’s tariffs may well be deemed illegal. By then, the administration or its successor might perhaps proactively correct this flawed policy.

Predictably Unpredictable

Earlier, I mentioned that the tariffs were surprising because they did not arise from conventional regulatory capture by industrial interests, but rather resulted from devotion to an ideology. But just because this breaks the mold of what political economy might traditionally predict does not imply that the decision was unpredictable. (In fact, I predicted what tariff level and ramp-down schedule the Trump administration would choose in an [interview with Axios](#) on November 1, 2017.)

Indeed, this tariff decision suggests that the Trump administration’s policy approach is somewhat predictable. Now, political economy theory might suggest that one should look at the strength of interest-group support for a particular policy. That prediction would fail because basically the entire solar industry was against tariffs, along with a range of conservative voices from establishment free-traders to Sean Hannity. But by instead assuming that President Trump aimed to hold fast to promises he made, for example to be tough on China and trade, it was possible to predict that he would certainly choose tariffs. Then, by assuming that his administration would work within this constraint to moderate his approach and minimize collateral damage, it was possible to predict the level of the tariffs.

Unfortunately, this decision-making process has led to a tariff policy which offers little upside for U.S. interests. The only positive outcome here might be that in understanding how the administration makes decisions, analysts and advocates might craft a better strategy to guide it toward better policy outcomes.



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