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Now that Spain has put a cap on its solar policy, the briefly booming Spanish PV market is stunted. Nonetheless, President Obama has spoken of Spain as a model.

## Are renewables job killers?

**Labor market:** A Spanish study found that the money invested in renewables would create more than twice as many jobs elsewhere on the market. Major media in the U.S. and the UK quickly reported the findings. **pV magazine** asked economists to assess the study, which previously had not been peer-reviewed.

“Saving the planet and creating jobs may be incompatible,” wrote the British Economist in a review of the study. In the U.S., Fox News surmised, “Americans shouldn’t be depending on green jobs to help the U.S. economy.” And the New York Times wrote, “Álvarez posits that the programs creating those jobs resulted in the destruction of nearly 110,000 jobs elsewhere in the economy.”

That’s pretty good press coverage for a PDF that a group of economists posted on the web, considering that it hadn’t gone through the usual peer review. Entitled “Study of the effects on employment of public aid to renewable energy sources,” the PDF was released by Professor Gabriel

Calzada Álvarez and his team at Madrid’s Rey Juan Carlos University as a “draft: bibliography pending,” as the cover reads.

His study comes at a crucial time; he describes Spain’s boom in wind and solar as a “bubble.” He writes, “As President Obama correctly remarked, Spain provides a reference for the establishment of government aid to renewable energy.” Another reason why his study may have received so much coverage is that its principal finding can be so well formulated in a headline: “2.2 jobs lost for every new green job.”

Álvarez and his colleagues calculate the net effect of subsidies on the job market. A euro invested in one sector is then no lon-

ger available to other sectors. While Álvarez admits that the figures he provides for Spain will not directly translate to the U.S., he argues, “The U.S. should expect such an outcome ... in terms of jobs destroyed elsewhere in the economy.”

### The study’s findings

According to his calculation, some 259,143 euros of capital is invested in each worker in Spain in general. The figure is much higher for renewables at 571,138 euros – some 2.2 times higher. Álvarez says renewables increase energy costs, forcing energy-intensive companies to leave Spain. The example he gives is Spain’s Acerinox, a major global player in the met-

allergy sector (and itself a recipient of subsidies, though Álvarez does not mention it), which “has already reduced or avoided extending its presence in Spain because of the high energy costs.” The study found that wind energy requires “subsidies of more than one million euros per wind industry job,” and the study is particularly critical of photovoltaics: “The most paradigmatic bubble case can be found in the photovoltaic industry,” with the rate paid for solar being “seven times higher than the mean price of the pool.”

In a nutshell, these are the main contentions of the 41-page study. The charges are not new. For example, in February 2006, researchers from Germany’s Bremer Energy Institute published a study entitled “Renewable energies – environmental benefits, economic growth and job creation,” which also found that green job creation “is thwarted by reduction of jobs in other sectors due to displacement of financial resources.” In September 2006, the German Environmental Ministry responded with its own publication entitled “Impact of the expansion of renewable energy on the German labour market,” which concluded that “the net impact ... is also a clear and sustainable positive employment stimulus.”

So you simply change your methodology to produce whatever results you want? **pv magazine** asked four macro-economists and energy economists from across the political spectrum from Germany, Spain, and the U.S. to peer-review

the recent Spanish study. Their responses are given below.

### Peer reviews

The Cato Institute recommended Prof. Roger Meiners, a professor of economics and law at the University of Texas at Arlington. Cato describes itself as a research foundation “based on the principles of limited government, free markets, individual liberty, and peace.”

Each reviewer was asked to say whether the study’s methodology – not its findings – was sound enough to warrant publication. Meiners answered, “Yes; I oppose censorship.” He explained that “the things discussed seemed normal for an economic approach,” and added, “If we push billions of euros in one direction rather than another, something else must be given up. So the explanation made sense.” Meiners pointed out that not all of the calculations were explained in full in the study, but that did not bother him: “As usual, we presume people do not lie, as their reputations are on the line.”

Another review came from Jochen Diekmann, deputy head of the Department of Energy, Transport, and the Environment at the German Institute of Economic Research (DIW), which describes itself as a “leading research institute involved in basic research and policy advice.” Dr. Diekmann first expressed his surprise that a draft would receive such attention. He agreed with Meiners on one point: “The study is not based on

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Would the money invested in solar create more jobs elsewhere? Some critics think so.

Photo: Schott



Spain's sudden radical revision of its support for solar is cannon fodder for those wishing to prove that solar cannot survive without state subsidies.

the researchers' own calculations about labor market effects," but on previously published figures, such as from the EU's MITRE study. But this combination concerned Diekmann because, "in all likelihood, combining figures from different scenarios and time frames led to inconsistencies, which is generally also the case for the combination of MITRE results from 2003 and the more recent data the study uses elsewhere."

Diekmann did not find the Spanish study's conclusions to be logical: "The claim that '2.2 jobs are destroyed for every green job created' would only be a possible interpretation if the comparable situations had been described as alternatives to the energy policies under scrutiny." His verdict? "The study's findings on job effects are not methodologically sound."

Paula Mints, energy consultant at Navigant Consulting, had similar harsh criticism. She agreed with Diekmann and Meiners that "this work appears to be based on secondary research with no primary survey effort" and added, "Simply citing many secondary sources that tend to prove your theory is not research."

Mints also pointed out that the first two explanatory chapters of the study seem "slanted" against renewables, so that "the authors have reached a conclusion based on an initial bias," whereas "most indicate that markets that support renewables have additional jobs, not fewer." She thus did not support publication of the study: "The entire document appears to have been written and researched in order to prove the authors' point of view, which, to say the least, is not scientific methodology."

We asked Isabel Blanco Álvarez (no relation to the study's author) for some input from Spain. Blanco holds a PhD in energy economics and has taught macroeconomics at the University of Alcalá de Henares (Madrid) for the last ten years. She is also head of market regulation at Gamesa Energia, the well known Spanish wind turbine manufacturer. As such, she is one of the two peer reviewers (along with Mints) who actually have jobs that could be considered "green."

Blanco felt that too much had been left out of the equation: "The net effects of the support for renewables have to be put through an input-output table,

which measures the economic relations of one sector with others and the rest of the world." As she saw it, her Spanish colleagues had simply "compared the number of workers per investment unit in the renewable energy sector with those found in the Spanish economy as a whole." She also complained that the Spanish study did not say where the "green" investments would otherwise have gone: "The authors simply assume that public money should have gone somewhere else. But in the absence of renewable energy sources, what source would have provided the same service?"

Blanco also provided some insights into the Spanish market. She disagreed that all energy-intensive sectors in Spain have suffered recently: "Iron activities have decreased, but cement activities have increased. And some sectors that should have benefited from higher power prices (e.g. the coal industry, utilities) have reduced their staff, showing that the relation between those variables is not straightforward." Finally, she said that "the evidence shows that the impact of oil and natural gas on electricity prices

has been much larger” than the effect of renewables.

Overall, Blanco said that the study lacked “the level of quality required for publication in a scientific or technical journal in light of these methodological shortcomings.”

**Double standard**

The charges leveled against renewables in the Spanish study are never leveled against other sectors. If we divide the amount of state subsidies in a particular project by the number of jobs that project created in other sectors, the findings may speak out against these projects even more than those in renewables.

For instance, a semiconductor manufacturer has set up several production plants in Europe and has just announced that one will be built in the U.S. For one of its European plants, it received 545 million euros in subsidies; eventually, some 1,000 jobs were created there, putting the cost of each job at 545,000 euros, according to Álvarez’ calculation. Hence, investments in the semiconductor sector also offset some 2.2 jobs if his figures for Spain roughly hold true for Germany. The new U.S. plant will employ some 1,400 people and receive 1.2 billion U.S. dollars in subsidies – some 857,000 U.S. dollars per job.

Here, it becomes clear how much the Spanish study has omitted. Does the value of the semiconductors from those plants make these subsidies seem negligible? What does the state stand to get back in corporate and other taxes? If local jobs are created and foreign jobs offset, the over-

all effect is positive in any case - but the Spanish study does not take into account domestic jobs offsetting foreign jobs.

Finally, while the study quotes the CEO of Acerinox complaining that retail electricity prices had increased by 10.6 percent in just two years, that quote comes from April 2002. At the time, Spain only had a fraction of its current installed wind capacity – and practically no photovoltaics to speak of. Back then, renewables could not have been the main culprit. And Acerinox left Spain for a “free economic zone” in Indonesia, where it can escape much more than high energy costs.

This peer review seems to first suggest that it is surprisingly easy to get widespread, favorable publicity in the Anglo-Saxon press – a draft of a study suffices. Second, three of our four reviewers agreed that figures from different studies and surveys cannot be thrown together – and that this particular study seems to have chosen its secondary findings to suit a preselected conclusion. Finally, the study seems to prove that subsidies in general destroy more jobs than they create.

The public does not seem persuaded. In these days of government bailouts of traditional investors, many people find it odd to argue that the market knows how to invest better than the government does. Of the 35 comments posted under the Economist’s review of the Spanish study when comments were closed, 30 supported renewables. Still, policy makers must avoid repeating Spain’s mistake of creating a roller coaster ride for PV investors. ♦

Craig Morris

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Spain’s policy will only cover 500 MW of solar this year - less than a fifth of the growth in 2008.

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