

Economics and Environmental Policy Research Network

Research Symposium

March 1st – 2nd, 2018

Session Notes for Plenary II: Environmental Regulation, Carbon Pricing and Economic Competitiveness

1. Context of Discussion

This session provided a brief literature review of the important relationship between environmental regulation and competitiveness, and the presenters discussed the findings from their recent papers on the topic.

In the literature, there seem to be two ways to investigate the competitiveness impacts, a direct and an indirect approach. The direct approach is to investigate the ex-post effect of an actual policy while the indirect approach is to use the historical data on energy prices to predict or infer the impact of a policy. The first portion of the session presented empirical results using the direct approach, while the second part of the session presented empirical results from the indirect approach.

The first speaker investigated the competitiveness impact of the EU-ETS in France, the UK, the Netherlands, and Norway. They found that there is no statistically significant effect on employment or profits while the statistically significant positive effect on revenue and fixed assets. Just as the speaker emphasized that it is difficult to disentangle why they are getting the results they have, it is difficult to understand how it is possible to have positive effects for all variables despite their statistical significances. If there are positive effects on employment and fixed assets, then it also must be that their operating costs have gone up as well. Yet, there is the (insignificant) positive effect on profits. This is only possible if firms are selling more so that their revenues are a lot larger than their operating costs. However, the size of the effects presented might not be consistent with such explanations. What is interesting about this finding is that the results on employment differ from Wagner et al (2014). Wagner et al (2014) have examined the competitiveness effect of the EU-ETS for French manufacturing plants and found statistically significant negative employment effect in Phase II. However, when they re-did their analysis at the firm-level, such negative effect became statistically insignificant. Although they both find that the employment effects are statistically insignificant at the firm-level, their point estimates have the opposite signs. It is difficult to compare the insignificant results, but what might be interesting from comparing these two papers is that one study examines the multiple countries together while the other focus only on one country. In addition, Petrick and Wagner (2014) also looked the effect of the EU-ETS on German manufacturing firms. They find statistically insignificant positive employment effect and statistically significant positive effects on gross output and export, which are relatively similar to the findings presented by this speaker even though this work does not include Germany. Based on these papers, it seems that although the EU-ETS is the largest carbon pricing policy implemented in the world, it is difficult to investigate the competitiveness impact of the EU-ETS due to its coverage across multiple countries.

The remaining speakers presented papers on the competitiveness impact of the increase (decrease) in energy price. The second speaker focused on the electricity price increased in Canadian manufacturing while the third focused on the natural gas price decreased in the US manufacturing. What is different from the direct approach is that they use the historical price data, instead of the actual policy intervention. The second speaker found that the increase in the electricity price led to a decline in competitiveness while the third found that the decrease in natural gas price leads to a rise in employment. They both show that such effects are stronger for more energy-intensive plants.

Based on the evidence presented by these speakers, along with the previous papers in the literature, it seems that changes in energy prices would likely affect competitiveness in an expected way (i.e., negatively (positively) when the price goes up (down)) when studies use the historical energy price fluctuations as a proxy. On the other hand, when an actual policy is investigated, such as Yamazaki (2017), the evidence is still mixed. As pointed out during the discussion, this could be due to the fact that the actual policy often accompanies other reforms. For example, a carbon tax recycles its revenue back to the economy. Thus, it might be important to realize such differences between direct and indirect approaches when one is trying to interpret the results.

2. Research Questions Identified

Some suggestions for future research include:

- **What do we mean by “competitiveness”?** While understanding the competitiveness impacts of an environmental regulation is important, **we are still not sure what we mean by competitiveness**. This is because it is difficult to deliver a coherent and comprehensive message based on empirical findings using multiple metrics, such as output (revenue), employment, and export. Fundamentally, this "what" question seeks to address possible reasons why researchers can get different results when they look at different measures of competitiveness.
- **Why do we see the impacts on competitiveness that we do? In other words, when we find a positive impact on one variable and a negative impact on the other, how do we interpret these results, especially when the results are counterintuitive or inconsistent?** Perhaps, we need a theory to guide us figure out why we look at output (revenue), employment, and export as the competitiveness measures. On the other hand, the literature on the employment effect of environmental regulations is well established. This literature is based on the clearer motivation, i.e., does an environmental regulation kill jobs? Thus, perhaps what we need for the “competitiveness” literature is to break down the competitiveness impacts into sub-pieces, instead of all together.
- **Further research into the “job shift” hypothesis:** Investigating this hypothesis further using other policies around the world might be interesting. This “job shift” hypothesis ties back to the previous research question, looking at the “why” of competitiveness. This "why" question is about the costs of regulation and identifying possible losers, which has often focused on employment effects, with lost jobs being used as a political argument to oppose regulation. There are two counterarguments to this focus on lost jobs - one is that we should be comparing the benefits from the regulation with the costs (the regulation could be worth doing even if it has some costs) - the other is that there may be some winners as well as losers (look for other sectors that are gaining from the regulation). This

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winners/losers idea ties in with the "job shift" hypothesis, with the complication that some macroeconomic models take the long-run view that there is no involuntary unemployment - which defines away the problem of job loss (everyone eventually finds something to do).

- **Alternative measure for investigating the competitiveness impact:** An alternative approach to look at the competitiveness effect of the environmental regulation is to focus on the productivity impact, such as Greenstone et al (2012). While these productivity impacts are a good way to think about real competitiveness concerns, especially if we can measure total factor productivity accounting for all inputs, a concern with most such analyses (including Greenstone et al, 2012) is that they rely on comparing a treated group of regulated plants with a control group of unregulated plants. But if the "control" group includes some winners from regulation (either in terms of different geographic areas that face less regulation or industries that benefit from regulation) then the analysis could overstate the negative impacts.