

Highlights from the 11/16 ACEEE Conference on Energy & Economic Policy Models: A Reexamination of Some Fundamentals

Dick Munson

- The Hill needs clear, transparent analysis, but he sees a growing disconnect between politicians and economists.
- Most modelers never think about policy makers so the transfer of information breaks down.
- More generally, models often don't capture the real drivers of change. The story of Sam Insull is an excellent example.
- Dick asked if our current energy paradigm and our current energy models meet our future energy needs.
- He also asked if our models are able to capture the many innovations being developed by entrepreneurs throughout the world.

Paco de la Chesnaye

- Explained how EMF 21 (Multi-gas Mitigation & Climate Policy) used long-term scenario modeling to inform a complex and very important policy question: How important are non-CO2 GHGs (and sinks) to slowing and stopping climate change?
- The EMF process helps identify the differences between model inputs, methods, and outputs.
- Across the 19 models included in EMF21, it appears that
- non-CO2 gases may be responsible for 25% of Warming.
- 45 to 100% of the needed GHG reductions may be obtained by reducing non-CO2 gases, especially in the nearer term. (Significant CO2 reductions are still needed by 2100).
- Assumptions about global agriculture are large drivers of the outcome, but we don't know what they should be.
- Finally, EMF21 provided a useful reminder of an economic truism that can easily be forgotten when politics enters the picture: The more sectors and gasses that are included in a reduction regime, the lower the marginal costs. How much? EMF21 suggests that allowing multi-gas reductions could lower the price of reductions 50% in the near term, but CO2 becomes more important closer to 2100.

Marvin Horowitz

- At a National level, we can't describe EE.
- While EE does get a virtuous nod, it is not viewed as a serious solution.
- This invisibility leads to it being omitted from models and policy analyses. As a result, it is omitted from public policy.

- Marvin presented a cautionary tale of a study by Loughran and Kulick that did a regression on several imperfect datasets. One regression found DSM cost 6 cents/kWh while another regression using a non-comparable data set with fewer important explanatory variables led to 12 cents/kWh. Marvin cautioned that people widely cite the 12 cent figure instead of the 6 cent figure. This makes it harder for EE to be viewed as a meaningful source of supply.

Jim Barrett (Response)

- We see inefficiency everywhere.
- There are coefficients related to EE in our models that we set to zero. We know that zero and 100% are wrong. I'd choose 50%.
- We ignore congestion costs.

Neal Elliot

- There are many challenges to modeling manufacturing.
- To do it right, you need to understand the service demands at an engineering level, the economics are insufficient.
- An alternative approach is the theory of "Directed Innovation" (TRIZ).

Skip Laitner

- US unwillingness to participate in Kyoto was in part due to inappropriate modeling exercises.
- Transferring elasticities across models and methods can lead to misleading conclusions.
- The shape of the marginal cost curves used in our models may be wrong, or they could change over time.
- Be mindful of this issues because small changes in elasticities and MC curves can lead to big impacts.
- There are many cost effective technologies that can boost the economy and the environment. How we model the change in GDP that results from these technologies is crucial. Don't accept traditional approaches without questioning their implications.

Steve DeCanio

- Is economics the wrong language to address climate policy?
- Economic modeling has not led to consensus, yet we keep doing the same things and getting the same answers.
- Currently the debate is cast as a cost-benefit analysis. This is the barrier.
- Utilitarianism is the wrong way to look at climate. (Utilitarianism was developed to deal with poverty. It was helpful for that.)

- Why do economists like utilitarianism? Because it allows us to avoid the metaphysical and focus on computation. Utilitarianism also helps economists be more like a science which transcends religion and has a bigger influence on the instruments of power.
- However, economics and utilitarianism require advanced mathematics skills, it is not transparent, and complex technical frameworks allow economists to evade dispute.
- He believes the world's major religions have similar views of our duty to future generations. He thinks only utilitarianism has a different view.
- Conclusion, Cost-Benefit Analysis and utilitarian economics are the wrong tools to use for things that really matter.
- No one did a CBA to determine if the US should enter WWII. When things really matter, we don't use these tools.
- So, while economists and models can help illuminate options, economists have to avoid being the ultimate arbiter. Economists need to maintain a degree of humility so the real issues are discussed.

Kristen Sheeran (Response)

- We are the superior intellect, and also the moral authority.
- Once decisions are made, we need to use economics and CBA to compare implementation options.

Rachel Cleetus (Response)

- Humans experience pain and sympathy for others, but people limit their sympathy to those in our close circles. This makes climate change a difficult issue.
- What is the role of economists in the climate debate? Policy makers do not want the details. This leads economists to compromise their integrity and/or become too extreme. Policy makers and economists also often don't want to engage in the hard truths. For example, society is too quick to equate welfare with consumption and GDP even though we know they are not the same thing.

Questions & Answer

- The current debate doesn't include the urgency. WWII and the Montreal Protocol demanded quick action because there was an immediate perceived threat. Economists do have a big role in finding solutions once the decisions are made.
- The science is getting scarier. This is the real driver.
- Anyone who understands basic science and has a reasonably low discount rate sees action is needed. But economics doesn't tell us how much reduction is needed.
- Part of what makes climate hard is that we (society and individuals) are out of the habit of thinking metaphysically.

Jayant Sathaye and Christie Galitsky

- I just got back from Kenya. If reducing GHG emissions could be accomplished at a cost of 3% of GDP in 2100, what would this mean to India? How would you communicate that? So much uncertainty makes it hard to communicate.
- 1/3 of all residential energy consumption is affected the principal-agent problem.

Inez Azevado (Response)

- SSL is very important
- It is easier to for new products (SSL) to penetrate the commercial market than the residential market because of the Principal-Agent problems.

Duncan Callaway (Response)

- Integrated Assessment projections are good for what they include, but the problem is what is excluded. They simply can't capture many innovations like durable, long-life concrete and automotive light-weighting.
- Avoid over-precision; better to report results as a range of possibilities.
- Having a transparent methodology for assigning probability and uncertainty is very important.

Q&A

- Models need to look at more realistic policy options.
- Microeconomics assumes that a firms' discount rate is their cost of capital. Untrue. The scarcest commodity is managerial talent. This explains why firms sub-optimize.

Michelle Manion & Jason Rudokas

- When we have a hammer, everything looks like a nail.
- They ran NE-MARKAL for a range of discount rates (10, 20, 30, 40%). The biggest change in behavior comes when you raise it from 10% to 20%.

Michael Leifman

- Sorry, no notes.

Ben Sovacool

- Sorry, no notes.

John Hoffman

- Economic tenets are flawed
- Market acceptance is the key to innovation
- Energy models are flawed because they are static.
- Hardest thing to do it get “mindshare”
- Habit dictates most purchases.
- Buyers are not rational. No one tries to sell products based on NPV.
- Studies show people need to be exposed to an idea 27 times before they will buy it.
- Efficiency is a peripheral buying issue.
- Need to find a policy to reduce the first cost of products, so that the lowest true cost product has the lowest purchase price.
- Supply curves are downward sloping, not upward sloping.
- Experience with Efficiency standards shows that cost is always overestimates.
- Create a “National Energy Purchasing Corporation” that would sign 20 yr power purchase agreements. USG risk would not have that large unless the price fell.
- We use the wrong models to analyze our options. We should use evolutionary and thermodynamic models, not economic models.

Notes from Scott's Policy Panel Talk

- For the last 2.5 years, I have been in EERE's Planning, Analysis, and Evaluation office. Among other things, our office quantifies the benefits of the EERE portfolio as well as answers questions from our civilian and political leadership.
- With that in mind, I've listened to the last two days and I want to highlight some of the most important points I felt were made and finish with a few of my own.
- [See previous notes on pages 1-5.]

"Different horses for different courses"

- Use models that are appropriate for the questions you want to answer and that are appropriate for the audiences you want to reach. "Different horses for different courses".
- Sometimes the key issue to selecting a model is the type of question it can answer, the level of sector detail, the methodology, the assumptions, the baseline, or the run time. One model will never be able to address all of these needs.
- Finding a better combination of models to meet these needs may help address some of Richard Munson's concerns about helping lawmakers.

Clear and Concise Communications

- Clear and Concise Communication is crucial.
- We all develop jargon and it becomes extremely hard for us to realize it and avoid it when we most need to. This is especially true if we need to use someone else's jargon to be effective.
- Different audiences require different communication strategies.
- We all love to hate the "One Pagers", but realize that these are a function of the environment. As ideas are exchanged, ideas need to be presented quickly to some and in detail to others. Both types of communication are critical. Learn to do both.
- Make sure to plan for/budget for communications in your projects. If you don't, few will ever learn about your work and its implications.
- Ultimately, to change policy, you have to tell a clean, concise, and compelling story. Consider Insull's marketing and hucksterism. Doing this requires good analysis, communications skills, and an understanding of the context which often has many layers. And of course the context always changes, so you need to listen carefully and be nimble to respond to changes.

Multiple Perspectives, Don't Herd

- While we all realize there is value in multiple perspectives, we all also believe our own models more than others. We need to work against that because other approaches (including those that are much simpler) may be no better and no worse than our own.
- Resist the desire to agree with others simply because it is awkward to be an outlier. This is true for inputs (such as Skip's example of misusing elasticities) as well as modeling

outputs (like the EMF). While the outliers are clearly sometimes wrong, some may be onto something fundamental or innovative.

- The emerging field of “information cascades” and “rational herding” provides important insights that crowds are not always right.
- An example would be the securities analysts who trumpeted Enron’s strong performance because a writer at Fortune magazine got a tip from a hedge fund suggesting they write an article asking how Enron made money.

Use Models to ID shaping and hedging strategies

- At the risk of preaching to the choir, I’d like to finish by reminding us that models are the best tool we have for trying to steer us toward the future we would like to see. They can help us identify hedging strategies to avoid undesirable futures as well as shaping strategies to move us toward the good ones. But we must always remember they are imperfect representations of the future for the reasons many speakers have pointed out. For that reason know their limits, but argue for their value.