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Confessions of an Energy Economist

My career in energy policy revealed the power of politics.

BY AHMAD FARUQUI

In the July/August 2022 issue of *Foreign Affairs*, Harvard economist Jason Furman contributes an essay, “The Quants in the Room.” The subtitle is especially provocative: “How Much Power Do Economists Really Have?”

Furman chaired the White House Council of Economic Advisers during the Obama administration, so one would think he believes that economists have considerable influence over public policy. Yet, he argues that economists don’t have as much power as they think. He backs up that assertion with examples from health economics (citing Nobel laureate Kenneth Arrow) and environmental economics (the inability of economists to get legislation passed on a carbon tax).

Furman’s article made me reflect on my own journey as an economist. Over the past four decades, I worked on issues involving energy. I focused on such topics as demand forecasting, demand-side management (including energy efficiency), electrification (such as electric vehicles), pricing (often called rate design), and distributed energy resources (such as solar panels and battery storage). In my experience, Furman is right: in energy, politics guides policy, not economics.

A QUANT, DISILLUSIONED

In high school, I took classes in advanced physics and chemistry. I intended to become an engineer. But while I aced the theory sections, I did poorly in the lab. I decided to get a degree in economics instead, hoping to qualify ultimately for a job in the elite civil service of my native Pakistan.

As an undergraduate student in economics at the University of

Karachi in the early 1970s, I came to believe that economics is the queen of the social sciences. Within economics, the “quants” who prepared mathematical models of the economy and had minors in mathematics and statistics got the most respect. I excelled in the subject because of my background in physics and chemistry. I took minors in mathematics and statistics.

We had quantitative data at our disposal whereas the neighboring departments in political science, sociology, and psychology did not—or so I thought. We believed that students who were

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not admitted into the economics department ended up in those departments. We lumped them in with students in international relations, languages, and fine arts, whose departments happened to be housed next to theirs.

As a graduate student at the University of California, Davis, in the mid-1970s, these views about the supremacy of the quants were reinforced. Econometrics reigned supreme.

But this view was shattered when I finished my coursework and joined the California Energy Commission (CEC) in 1978 as a postgraduate researcher while working on my dissertation. I was in the Assessments Division of the CEC, developing logit models to forecast appliance choice, under the direction of future Nobel laureate Dan McFadden. I also worked on systems of demand

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models to study inter-energy substitution within California's manufacturing sector and forecast the industrial demand for energy, working under renowned University of California, Davis economist Leon Wegge.

The CEC was located at 1111 Howe Avenue in Sacramento in those days. That's where I met engineers who were developing end-use models while working closely with their counterparts at national labs at Oak Ridge and Berkeley. I also discovered the CEC's Conservation Division was developing codes and standards for appliances and buildings and something obscure called load management. There were other divisions responsible for siting power plants and so on. When all was said and done, the other divisions staffed by experts from a variety of other disciplines seemed to have more influence on the development of energy policies in California than the work of the Assessments Division.

In 1979, I moved to the Electric Power Research Institute (EPRI). I soon found myself among a relatively small band of economists amidst a large firm of engineers. We were outnumbered by at least 10:1. I also found that the same was true in just about all the electric utilities that funded EPRI and with which I regularly interacted. Initially, I was assigned to the Rate Design Study. That brought me into contact with regulatory commissioners and staff. Most of them also were not economists. I met utility staff with titles such as "rate engineer," and few if any of them, too, were economists.

At the time, the big policy debate was about using marginal costs versus average costs in designing time-of-use rates. Of course, the economists pushed hard for marginal costs, whereas rate-setting commissions had long used average costs. It soon became clear ours was a vain quest. Even as learned and respected a man as Alfred Kahn, then the chair of the New York Public Service Commission, concluded that it was going to be very hard to effectuate such change. (See "A Professor and a Performer," Spring 2011.) Even today, most rates are based on embedded costs based on accounting concepts, with marginal costs playing a slender role here and there.

In the 1980s, demand-side management (DSM) emerged as a big policy issue. It was an umbrella term that included energy efficiency, load management, load building, and load shifting. The economists argued that only cost-effective DSM programs should be implemented. But there was more than one way of measuring cost-effectiveness. Most economists argued for using the Rate Impact Measure (RIM) test, which most energy efficiency programs would not pass if marginal costs were lower than average costs, which was the case for most utilities. Only load management and load building programs would pass the RIM test, which did little to please the energy efficiency advocates.

The advocates argued for using the Total Resource Cost (TRC) test, which granted approval if overall system costs went down by a greater amount than the cost incurred to implement

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the programs. In the end, the energy efficiency advocates prevailed. Today, energy efficiency is primarily judged by the TRC test in 49 of the 50 states, with Florida being the exception. The economists totally lost this battle.

As I attended and spoke at conferences, workshops, and seminars throughout the globe, I saw this same phenomenon over and over. Regulatory policies were designed, dissected, and evaluated mostly by non-economists. Doubts began to form in my mind that economics had much of an influence on policymaking.

FLICKER OF HOPE

Once in a while, there would be a flicker of hope. Halfway into my career, there came the California energy crisis of 2000–2001. (See Special Section, Fall 2003.) It triggered renewed interest in dynamic pricing as the best way to balance demand and supply. At the time, I was back working at EPRI. We were doing a fair bit of work on real-time pricing.

Our work caught the attention of state senator Tom Torlakson, who invited me to testify before the California State Senate. My presentation was well received, and afterward Torlakson sent me a handwritten note thanking me for my “excellent testimony” and telling me that I helped advance dynamic pricing for electricity.

The congratulations were short-lived. All that happened was the Statewide Pricing Pilot, with time-of-use (TOU) and critical-peak pricing, was designed and launched. It ran for two years. Several stakeholders took part in it. I was one of the consultants engaged to design the pilot and test its effects. The results were very encouraging. In aggregate terms, price-responsive demand was real. Advanced Metering Infrastructure to make dynamic pricing possible was rolled out. Two decades later, only 2% of customers are on it. It was inadequately marketed because the utilities really didn’t want to do it. They were fearful of a customer backlash.

Today, two decades after the crisis, a diluted TOU rate design has been rolled out as the default rate to millions of customers. When large-scale power outages befell the Golden State on August 14–15, 2020, I thought that the time for dynamic pricing had finally arrived. But has it? I anticipate more pilots with complex real-time pricing will be carried out to “let off steam.” A handful of customers will go for it. For the vast majority, the status quo will prevail.

POLITICAL REALITY

Throughout my career, I worked on more than 150 engagements for more than a hundred clients spread out over five continents, testified more than 70 times before regulatory commissions and legislative bodies in the United States and abroad,

and appeared more than a dozen times before government agencies. I interacted with countless regulators, utility executives, independent system operators, legislators, governors, and heads of state.

In the late 2000s, I spoke at an energy conference at the College of William and Mary School of Law. The other speakers included a utility executive and a consumer advocate. Over dinner the night before, I spoke with an executive of the local utility and asked why there was so little dynamic pricing in Virginia. She answered that the commission didn’t support it. Later, in the same gathering, I put that question to the chair of the regulatory commission. He said the utilities did not want to do it. The session that took place the next day was intellectually rich but inconclusive. I was unable to change anyone’s mind. Everyone held on to his or her preconceptions.

In 2010, I was invited by the Kellogg School of Management

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at Northwestern University to debate dynamic pricing with Mark Toney, the head of TURN, which is the consumer advocate in California. He’s a sociologist by training. A large audience listened to us. The debate was inconclusive.

In 2011, I spoke at a conference organized at Rutgers University on the ethics of dynamic pricing. The sponsoring professor was housed in the Department of Moral Philosophy. I was really surprised that the topic had been elevated to the realm of philosophy. I gave the opening talk and was followed by Harvard energy economist Bill Hogan, who was generally supportive of what I had said. A roundtable discussion followed, involving four regulators, four utilities, and four consumer advocates. All hell broke loose. On my initiative, several of the papers were published in the *Electricity Journal*. But I failed to move the needle.

Around that time, I ran into California governor Jerry Brown at a wedding. The timing was interesting. He had just been re-elected for a third term, so I asked him about his ideas on energy policy, specifically on dynamic pricing. He was interested in the topic, but his wife, standing next to him, interrupted us. Looking at Brown, she said simply, “Jerry.” He knew what she meant. Brown invited me to send him a letter with my thoughts. I did. No response came. None was expected. Nothing changed.

I also had a chance to compare notes with the CEO of PJM

Interconnection, the largest transmission operator in the country. We met at a conference that PJM organized on the future of the grid. I was one of four panelists in a session on “Getting Demand Back on the Demand-Side.” I spoke to him afterward. He said it was a great session intellectually, but he couldn’t count on price-responsive demand. I was surprised by this because he had worked with me on real-time pricing when he was directing the pricing function at a very large utility just a few years before. He said that he had a different job now: to keep the lights on. If the lights went out, he would be out of a job.

MOSTLY POLITICS

Hoping to make an impact, I kept writing regularly on the topic of electricity pricing. Thus far, there have been nearly 6,000 citations of my articles, but not much has changed in the real world.

As I look back at these interactions, I am convinced that economics is in the backseat when it comes to policymaking. Several examples of this from my career stand out:

- In one U.S. state, I was told by my client after government hearings on a dynamic pricing proposal had ended that the three-part rate I had supported would not see the light of day. The company would be happy if it just got a higher fixed charge. Even that did not come to pass.
- In another state, a staff member walked with me to my car after a discussion of dynamic pricing and said that, as a fellow economist, he understood the logic of my remarks. He thanked me for flying in from the Bay Area but warned me that “they were just going to kick the can down the road.”
- In yet another state, the consumer advocate took me aside and told me that while he, as an economist, agreed with my points, he would oppose them publicly.
- In another state, a former head of the regulatory agency, an economist, told me that he had been unable to implement dynamic pricing in the state because “there was no advocate for it on the commission staff.”
- And in another state, the public service commission attorney was concluding what had been an intense and grueling two hours of cross examination of me by him and the commissioners. Unable to get me to bend on my position, despite his citing a paper by my friend, energy consultant Jim Lazar, he asked me if rate design was as much art as science and therefore experts could agree to disagree. Looking at the commissioners, all of whom were elected, I said, “It’s mostly politics.” The room burst into unrestrained laughter.
- In one Canadian province, when I was summarizing the results of three stakeholder meetings dealing with innovative rates at a workshop, a regulatory staff member interrupted me and said the rate-setting board also had the

option not to change anything. I was visibly annoyed. But all he was doing was trying to prepare me for my appearance before the board. When I appeared before the board, they asked me a wide range of very good questions about my recommendations. In my naivete, I thought they were ready to innovate. However, when the decision came out, it simply reaffirmed the status quo.

- In another Canadian province, I was convinced that innovation was likely to happen based on all the questions that had been asked of me during the hearings. Yet, the final decision was to preserve the status quo.
- And in a third Canadian province, which had rolled out mildly time-differentiated TOU rates to the entire population, I suggested adding a dynamic element through critical peak pricing. The staff of the agency was interested in the idea and convened a workshop to discuss it. But there was no support for that move other than from the handful of economists in the room. Once again, the status quo was triumphant.

What really drove the point home for me was when I shared a presentation with utility executives and regulators from around the globe. The head of one of the regulatory boards told me that he totally agreed with one of my central points, that in the end “rate design was mostly politics.” He said that was the most important point in my presentation and I should make it the first point. He said he was impressed that I, as an economist, was making that point.

As I look back at my work in North America as well as in Australia, New Zealand, Malaysia, Jamaica, Hong Kong, Philippines, Bahrain, Egypt, and Saudi Arabia, I have come to conclude that economics carries little weight in the final decision. Is all that economic research involving pilots and data science simply a check-list exercise? Has the decision already been made behind the scenes?

My journey has been focused on a narrow area: energy policies involving the customer, with a sharp focus on the pricing of electricity. Is my skepticism about the role of economics in public policy equally applicable in the broader spectrum of policy making? Furman’s *Foreign Affairs* article suggests it is.

Economists may have a lot of persuasive power in the classroom, in peer-reviewed journals, and on the opinion pages of major newspapers. Their views can hold sway in professional society meetings of economists. But they appear to have relatively little power in the real world. R

READINGS

- “The Ethics of Dynamic Pricing,” by Ahmad Faruqui. *Electricity Journal* 23(6): 13–27 (July 2010).
- “The Quants in the Room: How Much Power Do Economists Really Have?” by Jason Furman. *Foreign Affairs*, July/August 2022.
- *Thinking Like an Economist: How Efficiency Replaced Equality in U.S. Public Policy*, by Elizabeth Popp Berman. Princeton University Press, 2022.