KEN ROSE: AN EXAMINATION OF RTO CAPACITY MARKETS

Comments by
John Kwoka
Northeastern University

December 2011
INTRODUCTION

Capacity markets are one of most contentious issues in electricity deregulation

• Purpose, design both in dispute
• Aggregate, distributive effects not in dispute

Rose paper examines two basic economic questions:

(1) Why do we have capacity markets?
   • What is the problem we are trying to solve?

(2) How are they performing?
   • Do capacity markets in fact solve the problem?
WHY CAPACITY MARKETS?

Capacity markets are intended to provide

• Adequate reserve capacity in short run
• Necessary capacity investment for the future

Ordinarily, market process achieves these objectives

• This is Rose’s first point

In electricity, market said not to work because of factors such as fluctuating demand

But fluctuating demand does not defeat market

• Telecom and other utility/infrastructure industries
• Hotels, airlines, and other common products and services
Consider any market with fluctuating demand

High demand and low demand periods command different prices
Low demand period pays close to variable costs “c” only
High demand period pays variable costs plus unit capital cost

\[ = c + X \]
Capital costs recovered during high demand periods
Sum of payments over time = payment to capital
  • If total payments just equal capital cost, amount of capital is optimal
  • If payments fall short of costs, too large an amount of capital
  • If payments exceed costs, indicates net demand for more capacity

No need for separate market for “capacity”
ELECTRICITY MARKETS

Why does this not work in electricity markets?
  • Joskow, Stoft, Cramton, Hobbs, Oren

Various rationales offered
  • Fluctuating demand
  • Uncertainty
  • Lack of demand response
  • Need for reliability
  • Imperfectly competitive markets
VARIOUS METHODS

Price-side methods: lump sum, uplift payments

Quantity side methods: operating reserve margins, ICAP

Administrative methods:

- “must-run” arrangements
- requirement that LSEs purchase capacity above load
- public funding of incremental generation (NJ, MD)
- public ownership of reliability capacity
WHY CAPACITY MARKETS?

This is second question posed by Rose:
• Of these methods, why choose/use capacity markets?

Capacity “markets” are unusual method for ensuring adequate capacity
• Involve separate determination of future capacity needs
• Artificial demand construct (CONE)
• Intersected with supply offers
• Results in separate revenue stream (“market”)

Rose questions the notion of pricing input separately from energy output
• Difficult to think of any other market where input separately priced and purchased
EVEN IF SOMETHING NECESSARY...

Capacity markets do not seem to work well

1. Should permit energy prices to more closely approximate marginal cost

   But evidence from great many studies casts doubt on this

   Seems unlikely that capacity markets have led to lower energy prices
2. Should elicit incremental generation

But evidence shows very little truly new capacity

Most “new” generation is

- added capacity at existing plants
- old generation coming out of retirement, i.e., reworked incumbent generation

Very little new entry/construction

- PJM data compiled by Synapse suggests maybe 4% of total
3. Should be efficient method to achieve goal

But fraction of total charges represented by capacity rapidly rising

• In PJM, this has gone from 6% in 2007 to 20% in 2009 and 18% in 2010

90-99% of capacity market payments in PJM have gone to incumbent generators, not new construction

• Any incremental investment achieved at 10-100 times the necessary payment

Rose estimates $800 per PJM customer for this modest amount of new generation
WHY SUCH HUGE PAYMENTS?

Answer: Sharply rising cost of output (SR) or capacity (LR)
Even steep price rise elicits little added quantity
DISTRIBUTION OF PAYMENTS

Most of total payments go to incumbent suppliers

- Not necessary, or intended, or deserving
- Merely windfalls to incumbents
GOOD POLICY

Public policy should balance benefit in terms of new generation against total cost of plan. By this standard, capacity markets are deeply flawed:

• Achieve little of intended benefits
• Do so at enormous cost and shift of cost
CONCLUSIONS OF PAPER

This is Ken Rose’s conclusion as well:

• Policy is ineffective in terms of stated purpose
• Very expensive to consumers

Clearly a need to rethink method for ensuring short-term and long-term capacity