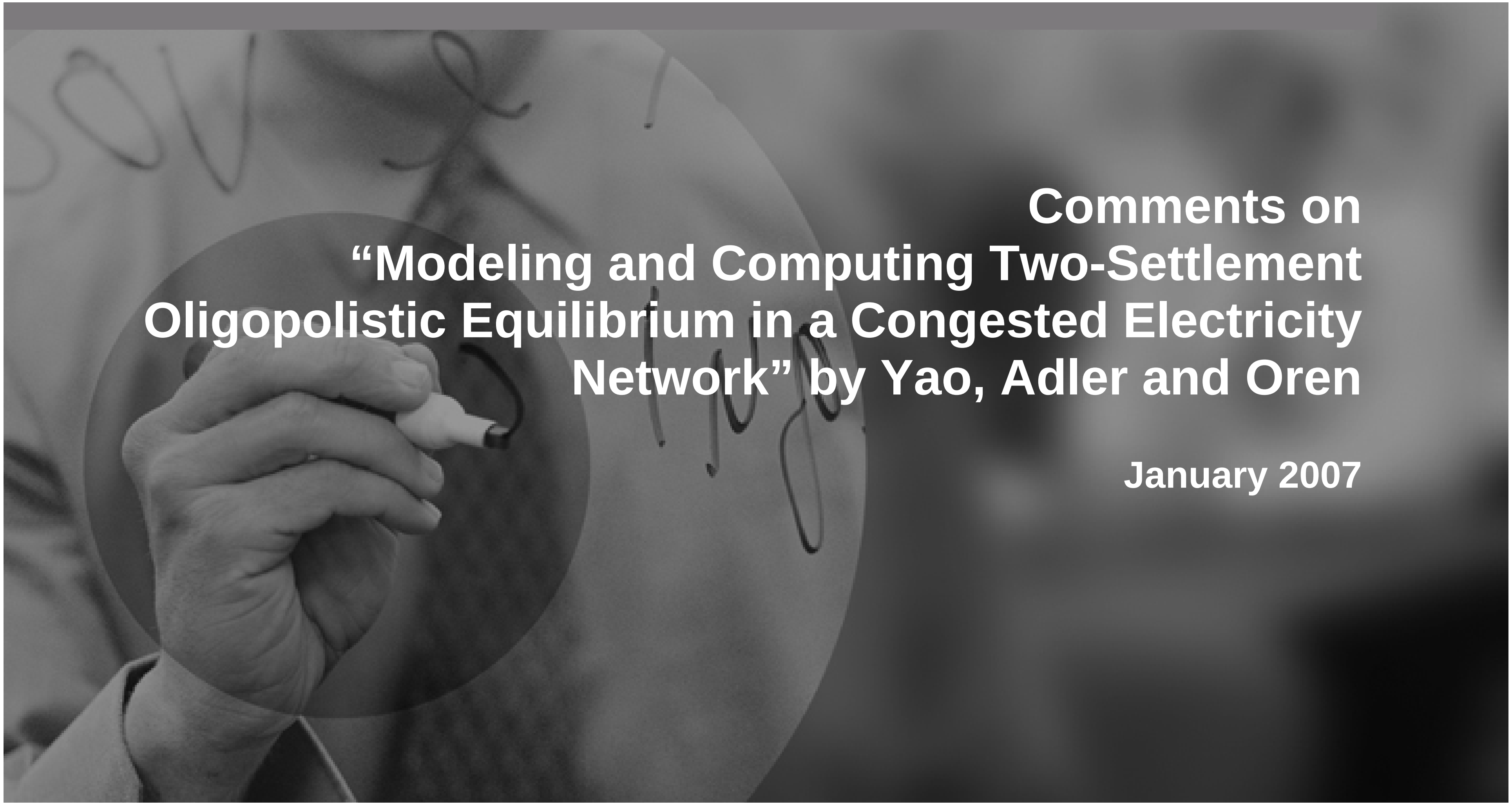

Comments on “Modeling and Computing Two-Settlement Oligopolistic Equilibrium in a Congested Electricity Network” by Yao, Adler and Oren

January 2007

Seabron Adamson

CRA International

CRA INTERNATIONAL

Features of this Nash-Cournot model

- **Full lossless DC representation network representation and locational marginal prices**
- **Endogenous forward contracting levels by firms in a two-settlement market**
- **Stylized representation of demand, supply and transmission uncertainty**
- **Forward trading at zonal hub prices calculated from weighted average of nodal prices**

CRA INTERNATIONAL

Advantages of the solution technique

- **Solution to period 1 "spot" equilibrium where each firm solves for its own q's (recognizing that they affect hub prices used for forward contract settlement)**
- **Solves for nodal prices using a formulation akin to the original formulation of spot prices in Schweppe et. al. (1988)**
- **Solve for equilibrium problem in period 0 where each firm's individual MPEC is solved iteratively and with parametric representation of other firm's decisions**

CRA INTERNATIONAL

Limiting assumptions

- Risk neutral generators
- No bid demand in period 0 market – perfectly elastic demand for forward contracts at expectation of weighted nodal prices
- In real electricity markets, are forward speculators risk-neutral?
- An quick example from the NYISO two-settlement market suggests they may not be or that transactions costs are important

Variable	Obs	Mean	Std. Dev.	Min	Max
da_lmp	42359	57.04077	26.06277	-79.26	485.33
rt_lmp	42359	55.49997	44.74061	-328.27	1803.66

(data from Jan 2002 to Oct 2006 for NYISO Zone G node)

CRA INTERNATIONAL

Questions to explore

- Paper provides a computationally-elegant means of solving a very difficult problem in reasonable time
- Can be applied to actual two-settlement markets in US where there is accessible data? Can the model help explain the actual level of forward contracting in these markets?
- Do concepts developed in the iterative MPEC/EPEC solution scheme have an economic interpretation?