

Competition with Forward Contracts: A Laboratory Analysis Motivated by Electricity Market Design *

Jordi Brandts [†] Paul Pezanis-Christou[‡] Arthur Schram[§]

Abstract

We use experiments to study the efficiency effects for a market as a whole of adding the possibility of forward contracting to a pre-existing spot market. We deal separately with the cases where spot market competition is in quantities and where it is in supply functions. In both cases we compare the effect of adding a contract market with the introduction of an additional competitor, changing the market structure from a triopoly to a quadropoly. We find that, as theory suggests, for both types of competition the introduction of a forward market significantly lowers prices. The combination of supply function competition with a forward market leads to high efficiency levels.

Keywords: Electricity Markets, Forward Markets, Experiments, Competition

JEL: Classification Numbers: C92, D43, L11, L94

*Financial support by the European Union through the TMR research network ENDEAR (FMRX-CT98-0238) and the Spanish Ministerio de Ciencia y Tecnologia (SEC2002-01352) is gratefully acknowledged. We thank Ed Kahn, Tanga McDaniel, Steve Rassenti, Robert Wilson, participants at the Seventh Annual Power Conference in Berkeley and at the ESA Conference in Strasbourg for helpful comments.

[†]Institut d 'Anàlisi Econòmica (CSIC), Campus UAB, 08193 Bellaterra, Barcelona, Spain. email: Jordi.Brandts@uab.es

[‡]Institut d 'Anàlisi Econòmica (CSIC), Campus UAB, 08193 Bellaterra, Barcelona, Spain. email: ppc@iae.csic.es

[§]CREED, Universiteit van Amsterdam, Roetersstraat 11, 1018 EB Amsterdam, the Netherlands. email: Arthurs@fee.uva.nl