Rockets and Feathers or Efficient Markets? Evidence from Gasoline Markets

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The Rockets and Feathers Paradigm:

When crude oil prices spike upward, gasoline prices shoot up like a ROCKET.

When crude oil prices tank, gasoline prices drift downward like a FEATHER in the wind.

The Policy Implications:

If Paradigm true:

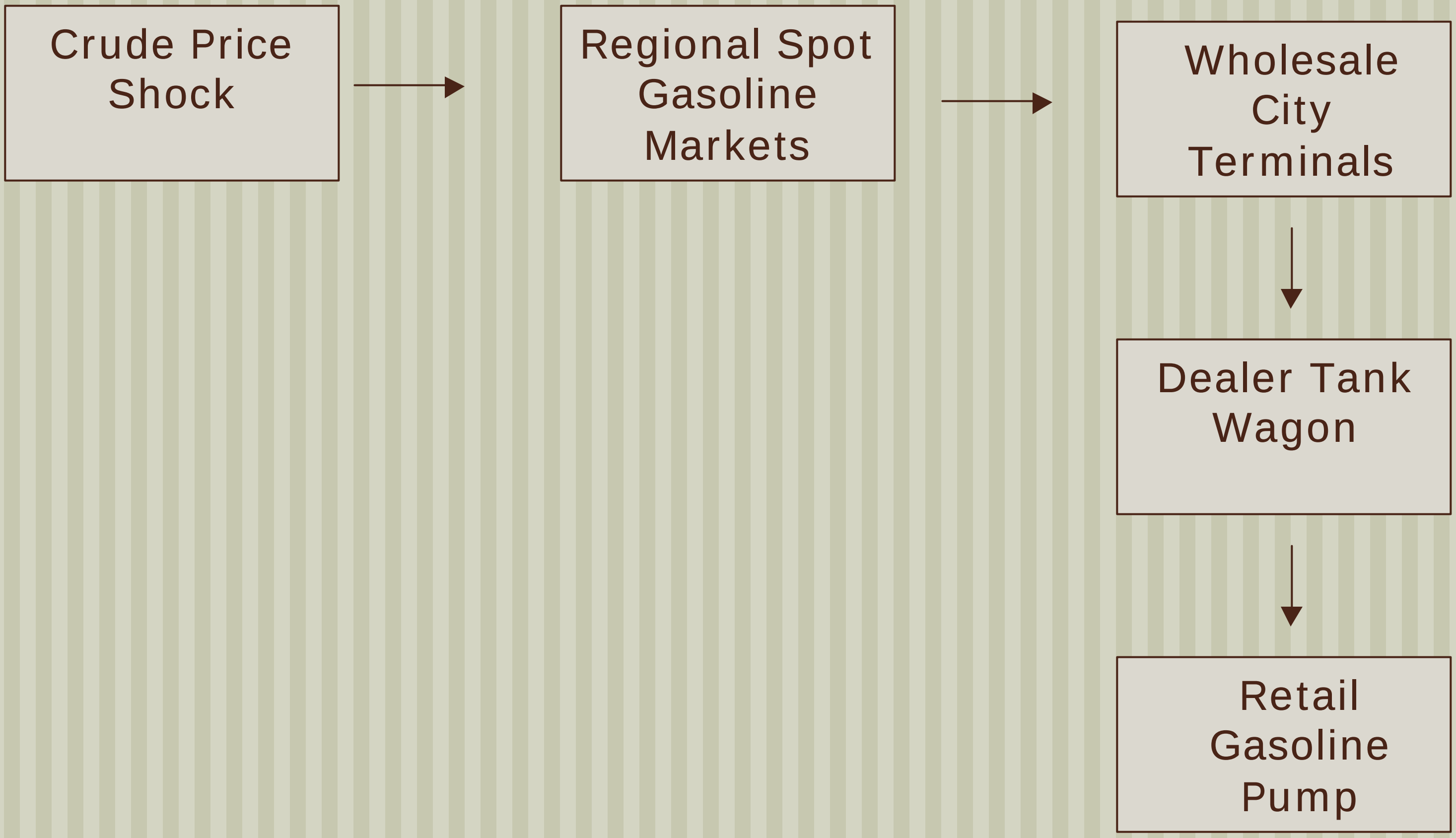
>Oligopolistic Behavior?

>Inventory Adjustment Costs?

If Paradigm false and gasoline price responses are RAPID and SYMMETRIC

>Support for “Efficient Market Story”

Asymmetries can Occur at Various Stages



Previous Findings Regarding Regional Bulk Gasoline Markets

	Data	Model	Finding
Borenstein Cameron & Gilbert (QJE '97)	Weekly US	First difference	Asymmetry
Bacon	Bi-weekly UK	Levels	Slight at Retail
Balke, Brown & Yucel	Weekly US	Levels First difference	Symmetry Asymmetry
EIA	Weekly	First difference	Symmetry

Our Approach:

1. To test for asymmetries, must use a first difference specification.
2. Daily Data preferred to weekly data

   Feb. 85 – Nov. 98 – Period of Instability
3. Basic Error Correction Model:

   Symmetric Version:

   $$D\mathbf{PG_t} = bD\mathbf{PC_t} + q\left[\mathbf{PG_{t-1}} - g_{\mathbf{0}} - g_{\mathbf{1}}\mathbf{PC_{t-1}}\right]$$

   Asymmetric Version:

   $$D\mathbf{PG_t} = b^{+}D\mathbf{PC_t} + q^{+}\left[\mathbf{PG_{t-1}} - g_{\mathbf{0}} - g_{\mathbf{1}}\mathbf{PC_{t-1}}\right]$$

   $$+ b^{-}D\mathbf{PC_t} + q^{-}\left[\mathbf{PG_{t-1}} - g_{\mathbf{0}} - g_{\mathbf{1}}\mathbf{PC_{t-1}}\right]$$

Impulse Responses for 1985 – 98 (Daily Data)

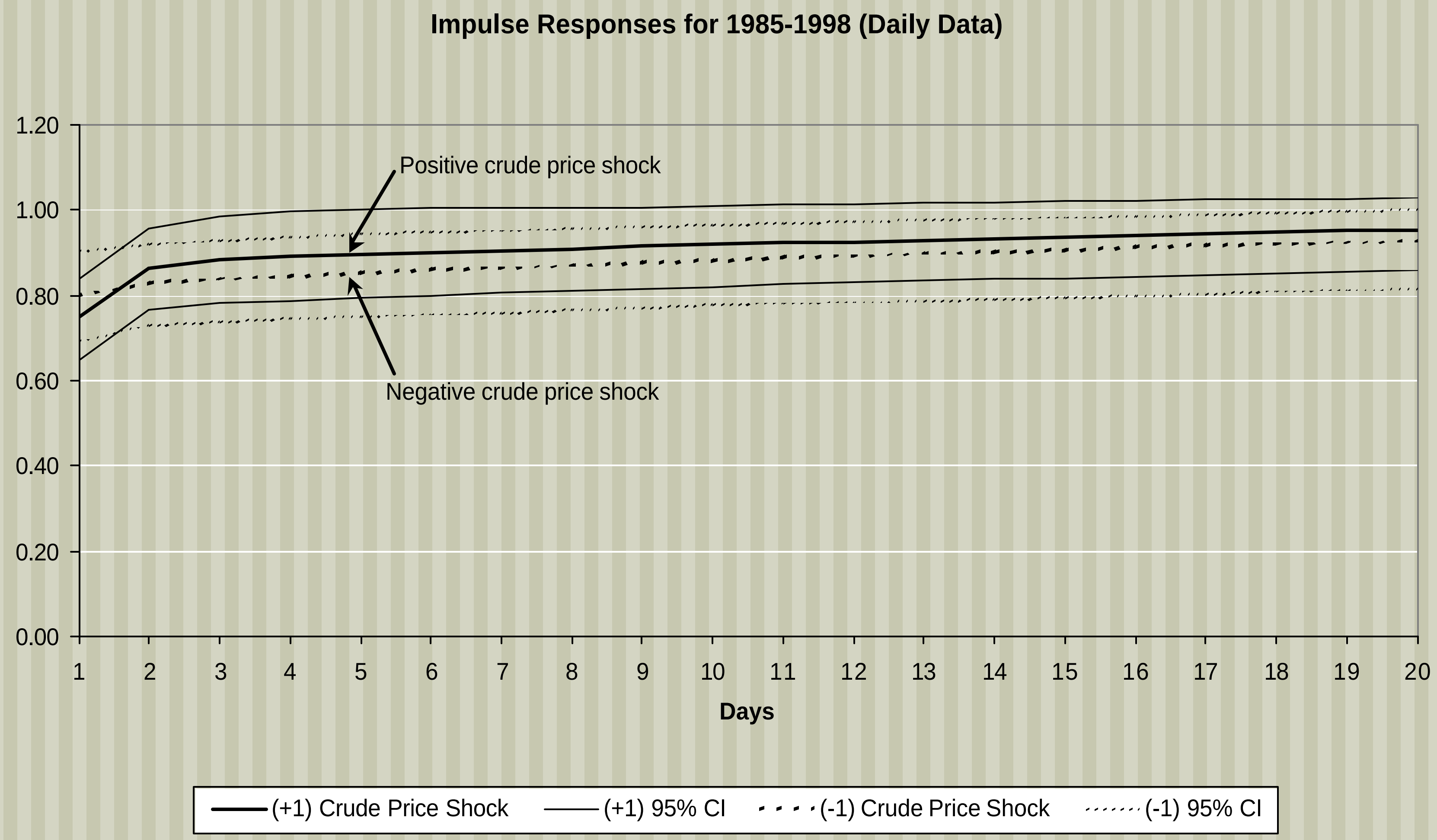


Figure 1

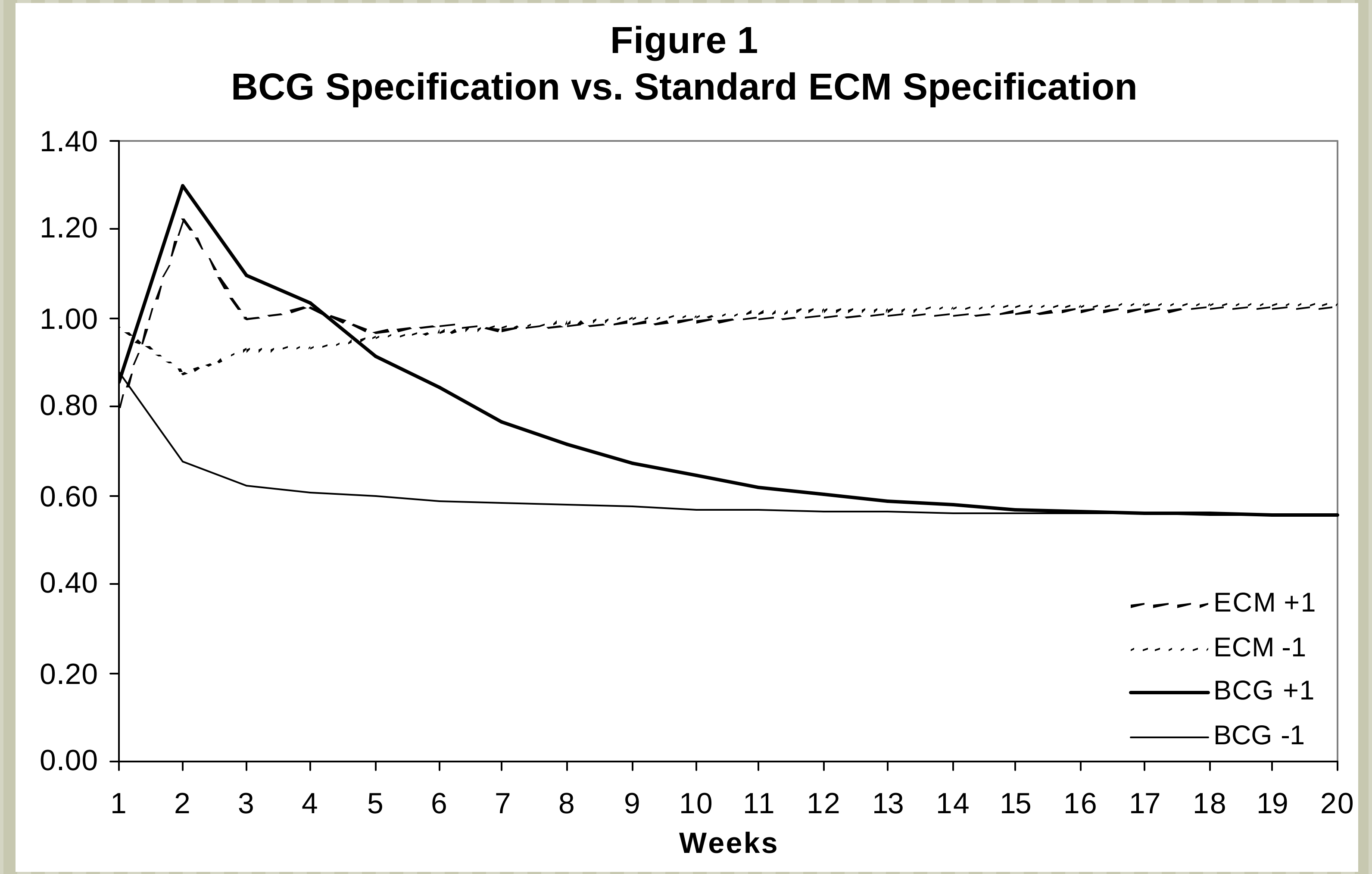


Figure 1
BCG Specification vs. Standard ECM Specification
1.40
1.20
1.00
0.80
0.60
0.40
0.20
0.00
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20
Weeks
ECM +1
ECM -1
BCG +1
BCG -1

Figure 2

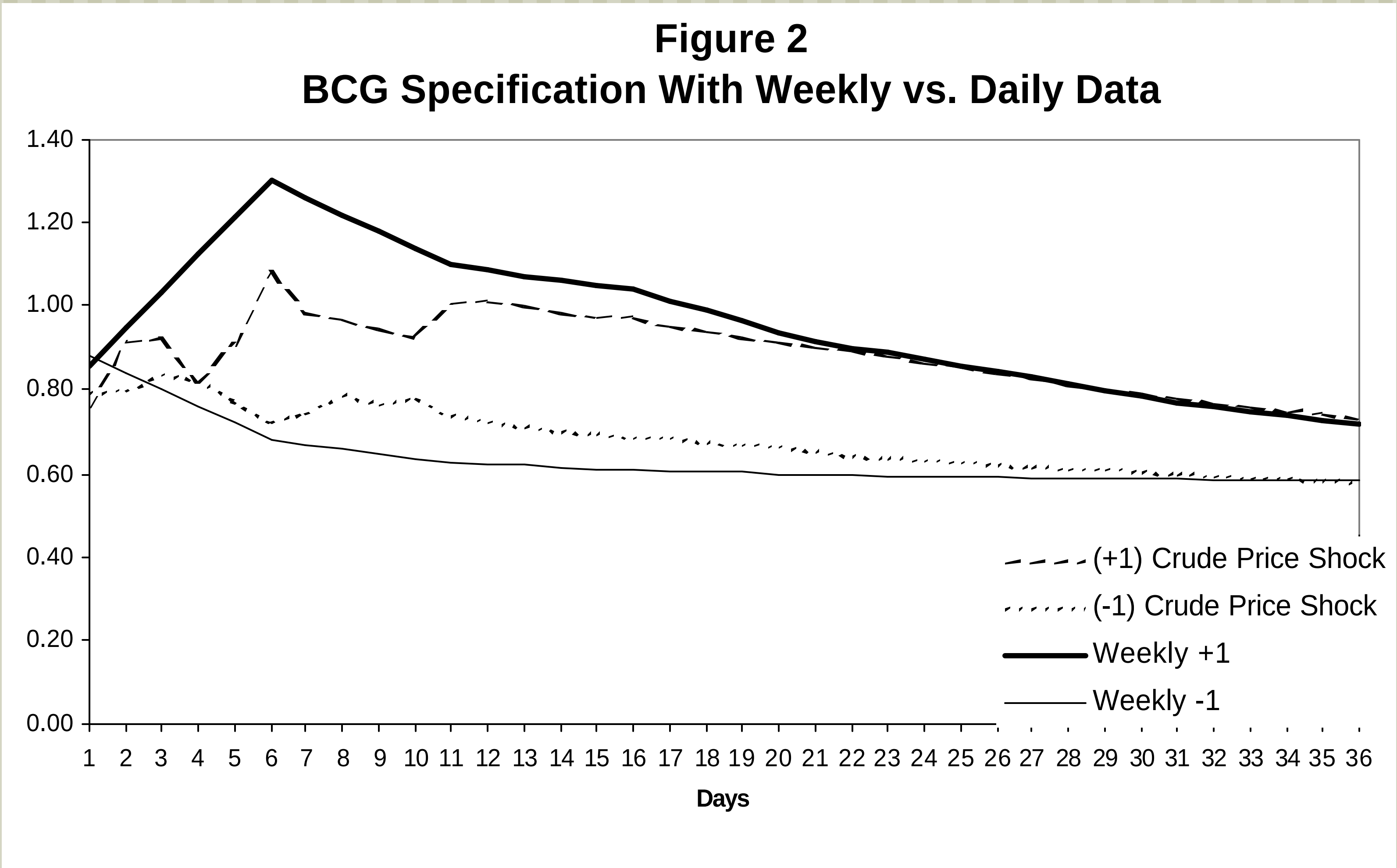


Figure 2
BCG Specification With Weekly vs. Daily Data
1.40
1.20
1.00
0.80
0.60
0.40
0.20
0.00
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36
Days
(+1) Crude Price Shock
(-1) Crude Price Shock
Weekly +1
Weekly -1