Edgeworth Cycles (see Maskin and Tirole):

1. Firms produce homogenous products; if two firms have different prices, consumers will purchase from firm with lower price.
2. A firm has a strong incentive to undercut its rival to realize a large immediate increase in market share before its rival can respond.
3. This swing in market shares is so great the rival will respond quickly (within the same day) by matching or undercutting the rival.
4. This undercutting continues at a rapid pace, until prices fall to the wholesale price or to some lower bound that is a function of the wholesale price. At this point, one of the firms sacrifices short-term profits by raising price to initiate a new cycle. The rival follows this increase after a short lag but will not raise its price as far as its opponent.

**Hurtado and J. Gonzalez, “Price differences within retail gasoline markets”**

* Lewis (2009):
  + Asymmetric pricing at the city level
  + Median of daily price changes (calculated from the citywide *average* prices), to classify market-level cycling
  + Cities with asymmetric price cycles should exhibit frequence negative price changes, relatively infrequence positive price changes
  + Lewis categorizes cities as ‘cyclers’ if median of daily changes in citywide average prices is negative
* Hurtado and Gonzalez:
  + Develops new “cycling indicator”, relies on 3 fundamental characteristics of station-level asymmetric pricing:
    - Gradual price decreases follow sharp price increases for stations using price cycles
    - In presence of cycling behavior, price jumps are large in percentage changes
    - Stations using asymmetric pricing show significant proportion of price changes

They build an interesting algorithm:

**Byrne and De Roos’s Definitions (Australian Context):**

\*\* cpl 🡪 cents-per-liter

1. **Station-level price jump:**
   1. Station i on date t if \delta p\_{it} \geq 6 cpl
2. **Station-level price cycle:**
   1. Station i on date t if \delta p\_{it} \geq 6cpl. This is “day 1” of the station-level cycle. Days 2, 3, 4 of the station-level cycle correspond to the undercutting phase…continues until next station-level price jump occurs and a new cycle starts
   2. **Station-level cycle length**: number of days between station-level price jumps
3. **Market price jump:**
   1. On date t if median(\delta p\_{it}) \geq 6 cpl
4. **Market cycle:**
   1. Commences on date t if median(\delta p\_{it}) \geq 6 cpl). This is “day 1” of the market cycle. Days 2, 3, 4, … of the market cycle correspond to the undercutting phase
   2. **Market cycle length:** number of days between market price jumps
5. **Cycling station:**
   1. Station I is a cycling station in year y if \delta p\_{it} \geq 6 cpl at least 15 times in year y