**Bacon (1991)**

Data period/frequency: 1982 to 1990, fortnightly

Data sources: UK city-level retail prices (uses London), Rotterdam wholesale prices

Model: Partial Adjustment Model (Quadratic term to account for asymmetry)

Conclusion: “The differences in the mean lags identified for cost increases and decreases, although statistically significant, are not sufficiently great, at around one week, to lead to decisive rejection of the view that the UK retail gasoline market is highly competitive.”

**Borenstein, Cameron and Gilbert (1997)**

Data period/frequency: 1986 to 1992, semimonthly for retail prices (Fridays)

Data sources: Average of unleaded regular prices in 33 US cities east of the Rocky Mountains, WTI crude oil, spot gasoline, city level terminal prices

Model: ECM

Contribution: Disentangle asymmetry along the supply chain

Conclusion: some terminal-retail asymmetry but explains less than half of the overall adjustment asymmetry (very little asymmetry between spot gasoline prices and branded terminal prices so asymmetry is also found between crude oil and spot gasoline). Hypothesis on terminal-retail asymmetry: Benabou and Gertner (1993) about consumer search… or oligopoly with imperfect monitoring.

**Eckert (2002) - Retail Price Cycles and Response Asymmetry**

Data period/frequency: 1989 to 1984, weekly

Data sources: avg gasoline price of sample of stations in 1 city in Ontario (Canada), Toronto unbranded rack prices

Model: ECM and probit motivated by theoretical model

Conclusion: Asymmetry with cycles not necessarily bad, “may be indicative of relatively aggressive pricing compared with markets in which cycles are not observed”, referring to a collusive model such as that of Green and Porter (1984)

**Eckert (2003) - Retail Price Cycles and the Presence of Small Firms**

Data period/frequency: 1989 to 1984, weekly

Data sources: avg gasoline price for 12 cities in Ontario (Canada), Toronto unbranded rack prices

Model: OLS to check extension of Maskin and Tirole (1988)

Conclusion: "In this paper, I extend the alternating-move duopoly model of Maskin and Tirole (1988) to examine the role of the division of retail outlets across firms in determining when price cycles and constant prices will be observed. Within an example, I demonstrate that price cycle equilibria can be constructed for a wide range of relative firm sizes. On the other hand, if the difference between the sizes of the two firms is too large, constant price equilibria cannot exist. These findings broadly support the empirical finding that the rigidity of prices is negatively related to the presence of small chains."

**Eckert, West (2004) - A tale of two cities: Price uniformity and price volatility in gasoline retailing**

Data period/frequency: March 1 to October 25, 2000, daily prices

Data sources: gas stations in Vancouver (426 gas stations) and Ottawa (262 gas stations) Metropolitan areas (website, user reported prices so far from comprehensive observations)

Conclusion: “The purpose of this paper is to begin the search for explanations for different patterns of pricing behavior in retail gasoline markets in Canada by examining market structure and conduct in different retail gasoline markets. (…) While in Vancouver, retail prices display uniformity, rigidity, and a tendency toward endings of nine-tenths of a cent, prices within the Ottawa area are dispersed and follow a cyclical pattern. The degree of price uniformity also varies within the metropolitan area. Localized competition in each metropolitan area is at least partly responsible for the observed differences in pricing patterns in Vancouver and Ottawa. These patterns are consistent with an economic theory in which firms in Vancouver are tacitly colluding, while firms in Ottawa are engaged in an ongoing battle over market share. The absence of evidence consistent with tacit-collusion in Ottawa is argued to be the result of the presence of Suncor, an integrated refiner owning the retail chain Sunoco and 50% of the Pioneer chain. In Vancouver, the switch from cyclic prices to rigidity and uniformity coincides with BP Amoco’s acquisition of ARCO, a firm with a reputation for undercutting other major brands. The behavior of Suncor and ARCO highlight the importance of ‘‘maverick firms’’ in determining the sustainability of tacitly collusive behavior. (…) One issue that has not been explored in this paper is the role that location plays in determining whether or not particular outlets follow the market mode price. A station may be expected to be less likely to set the same price as the majority of firms in the market if it is in an isolated location, and more likely if it is located near other stations charging the mode price.”

**Eckert, West (2004) - Retail Price Cycles across spatially dispersed gasoline stations**

Data period/frequency: July 27 to December 31, 1999, daily prices

Data sources: 404 stations across 8 regions in the Vancouver Metropolitan Area (Canada). Same website, user reported prices hence not comprehensive

Conclusion: “The ideal data set for a study of retail gasoline pricing behavior in a city or metropolitan area with a high degree of price volatility would contain multiple observations per day on prices for every station within the entire geographic area. (…)The price cycles examined have several features that could not be identified by the sorts of data sets that were previously used to study price volatility. The initiation of price restorations occurs almost exclusively on Tuesdays and Wednesdays, which suggests that demand factors may be more important in driving volatility than previously believed and that the proximity to wholesale costs is less important. Such an observation could not be made using weekly data. Furthermore, prices in a price cycle have a spatial pattern, increasing uniformly throughout a metropolitan area but decreasing at different rates in different regions. This finding suggests that explanations for gasoline pricing that presume that commuting by consumers eliminates spatial product differentiation are incorrect and that the incentives to undercut a rival are in fact determined by local market characteristics. Also, the data do not reject the hypothesis that price reductions during the cycle are initiated in areas with many ARCO/Tempo stations and spread to other regions over time. Again, such a finding would not have been identified with weekly averaged data or with station-specific high-frequency data that sample only a small set of stations. Finally, we consider the ability of a weekly survey of prices at a sample of stations to accurately measure weekly price levels in a market. We find that because of the strong relationship between the timing of price increases and the days of the week, prices are lowest on Tuesday mornings, precisely when these surveys are conducted. Therefore, such surveys can give a misleading picture of the competitiveness and profitability of price cycle markets and could therefore lead to inappropriate policy conclusions.

**Hastings (2004) - Vertical relationships and competition in retail gasoline markets**

Data period/frequency: February to December 1997, Monthly

Data sources: gas station level, Los Angeles (510 gas stations) and San Diego (119) Metropolitan Area

Conclusion: “The analysis shows that the presence of independent retailers acts to decrease local retail prices. This effect is separately identified from any potentially confounding covariates at the station level, or the city level over time. The analysis does not find evidence that increases in the market share of company-op stations leads to higher prices. (...)The empirical results are consistent with a model of differentiated products with consumer brand loyalty. This model predicts that, when independents are replaced by branded integrated stations, price competition in the market is softened, resulting in higher local market prices.