



**INEOS/Kerling
ACE Conference 2008**



INTERNATIONAL

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Outline

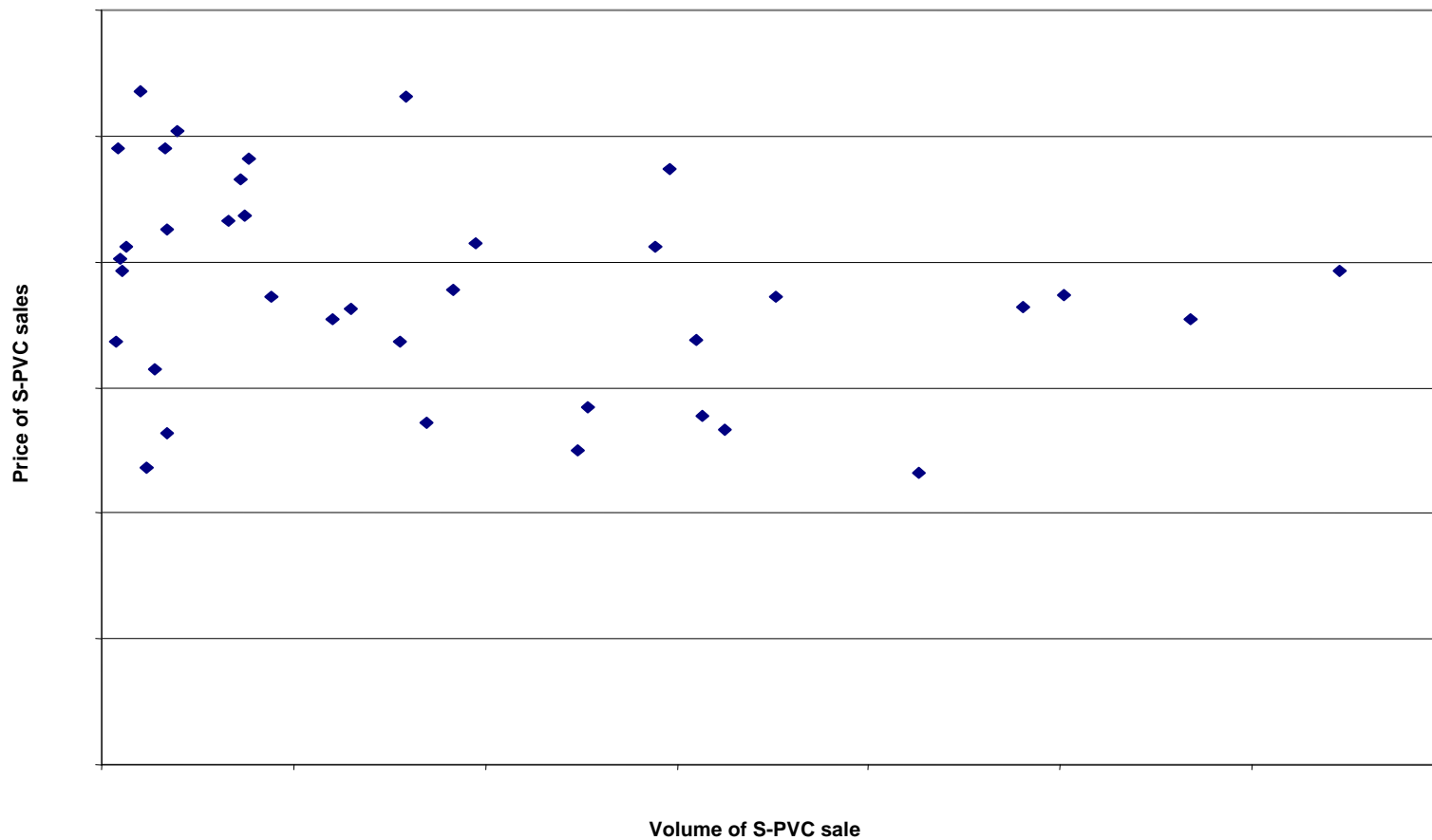
- **Background to case**
- **Critical loss and residual demand analysis**
- **Price analysis – stationarity of relative prices**
- **Natural experiment**
- **Analysis of customers' purchasing patterns**

Background

INEOS/Kerling – fairly typical industrial merger

- **Both produce suspension-PVC**
- **Main inputs are ethylene and chloride**
 - There are several steps in the production process and producers are vertically integrated
 - Production also involves the co-production of other products, such as caustic soda
- **S-PVC is used as an input in a range of industries, including the manufacture of;**
 - Window frames
 - pipes
 - Mouldings
- **Prices are set in a number of ways – contract/spot, fixed price contracts, prices linked to published price indices, etc**
 - Quite a lot of price dispersion

Prices and volumes of UK sales of S-PVC in 2006



Key competition concern

Merger to monopoly in the UK or part of a wider European market?

- **INEOS & Kerling are the only two UK producers of S-PVC**
 - Number of UK customers claimed the market was not wider than the UK
- **Parties' share of UK sales of S-PVC is about 65%**
 - INEOS about 26% & Kerling about 40%
 - Merged firm would also have 100% of sales in Norway and 97% of sales in Sweden (Kerling's has a plant in Norway), but the overlap was small
- **UK imports between 35-40% of its S-PVC requirements**
 - Shows that transport costs and access to UK customers not an issue
- **Number of other S-PVC producers located in NW Europe, and there is substantial trade in S-PVC throughout the EEA**
- **Merged firm's share of any wider geographic definition, such as NW Europe would be less than 30%**
- **Product market definition not an issue – commodity S-PVC**

Critical loss analysis

- **Commission undertook a critical loss analysis to address the question of geographic market definition**
- **Estimated the break-even and profit maximising critical losses**
 - Incremental margin hard to estimate due to co-production and vertical integration
- **Wide range for estimated critical loss, partly because parties submitted two estimates of the incremental margin**
 - 5% price increase: 43-87kt, 8-16% of all UK sales
 - 10% price increase: 70-140kt, 13-26% of all UK sales

Residual demand analysis (1/2)

- **To estimate the actual loss, the Commission attempted to estimate the *partial* residual demands of the merging firms**
 - Partial residual demand shows how demand for a firm's product changes once all other firms *except* the other merging party, have reacted
- **Large demand for data from the parties**
 - Had to clean transaction databases for returns, rebates and samples
 - Commission required the data to be aggregated by customer size
- **Standard approach is to compare the estimated elasticities from the *partial* residual demand curves with the estimated elasticities from the *total* residual demand curve**
 - The total residual demand shows how demand for a firm's product changes once *all* other firms have reacted
- **This comparison provides estimates of the extent to which the two merging firms constrain each other - the unilateral effects of the merger**
 - Commission intended to do this – para 103 of the Decision

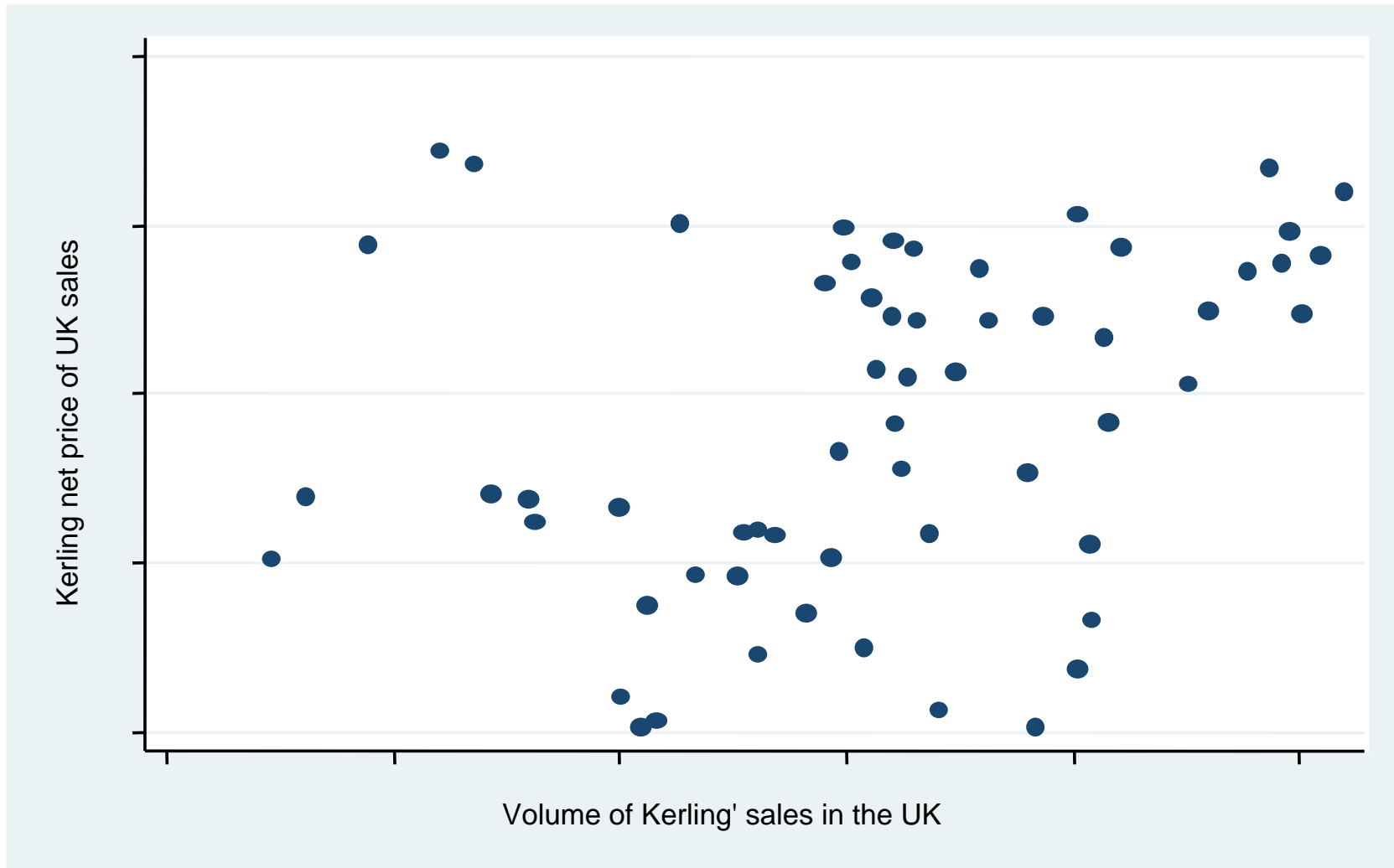
Residual demand analysis (2/2)

- **Commission also intended to use estimates from the partial residual demand curves to estimate the actual loss if the parties increased prices by 5-10%, apparently to answer the question of geographic market**
- **Can the estimates of a partial residual demand curve be used to answer the SSNIP question?**
- **Standard interpretation of the SSNIP test assumes that other prices are constant (e.g. the CC merger guidelines in the UK), or that the SSNIP is a relative price increase (Commission Notice on Market Definition)**
- **However, the partial residual demand curve assumes that all other firms respond to the price increase, except the other merging firm: i.e. other prices are not constant and do not know by much relative prices have increased**

Results of residual demand analysis

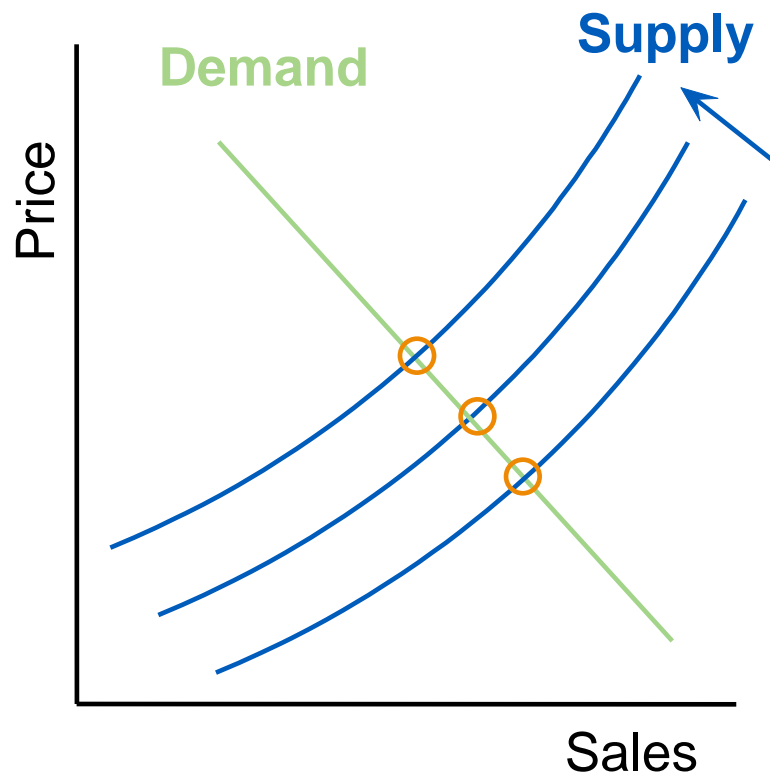
- **“However, the econometric analysis carried out by the Commission turned out to be statistically non-significant, meaning that it has not been possible to estimate the elasticity of the partial residual demand in a way that can be considered, from an econometric point of view, as a reasonable and robust estimate”**
- **To estimate a residual demand curve the key requirement is data on firm specific cost or demand shocks to use as instrumental variables and identify the residual demand**
 - If no firm specific cost or demand shocks, then very difficult to identify the firm’s residual demand
- **However, the main shocks that hit S-PVC suppliers over the period were increases in the cost of ethylene and energy, and these were largely common to *all* S-PVC producers (i.e. no firm specific cost or demand shocks)**
- **Other possible issues/difficulties are that prices are non-stationary while firm outputs are stationary, and conceptually does it make sense to estimate a demand model in an industry where a lot of prices are individually negotiated?**

The econometric problem

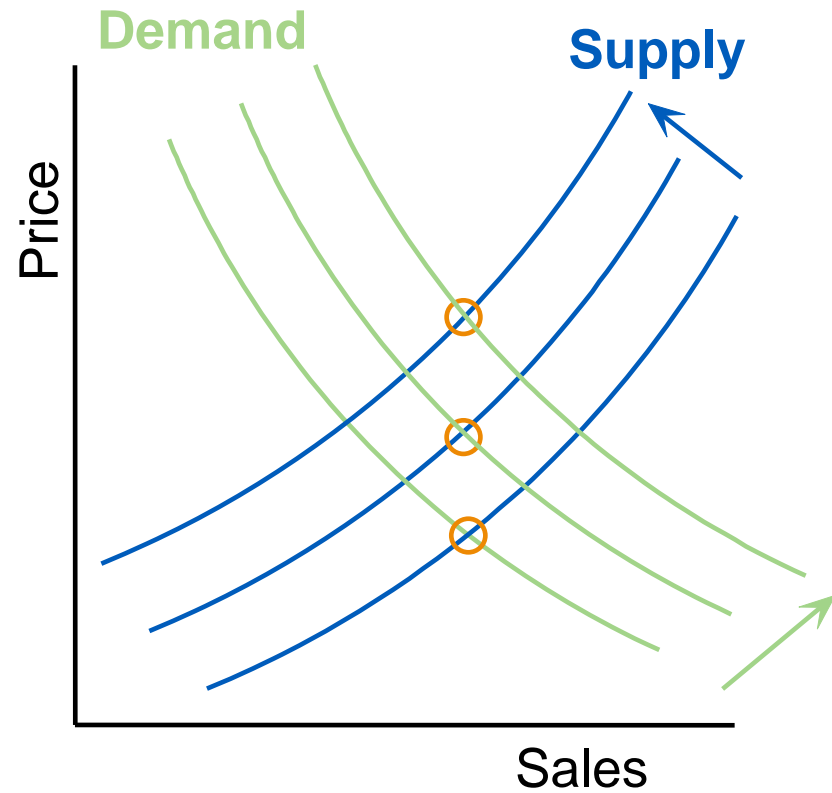


Identifying the demand curve

Want to see this...



... But might be seeing this?



Price analysis

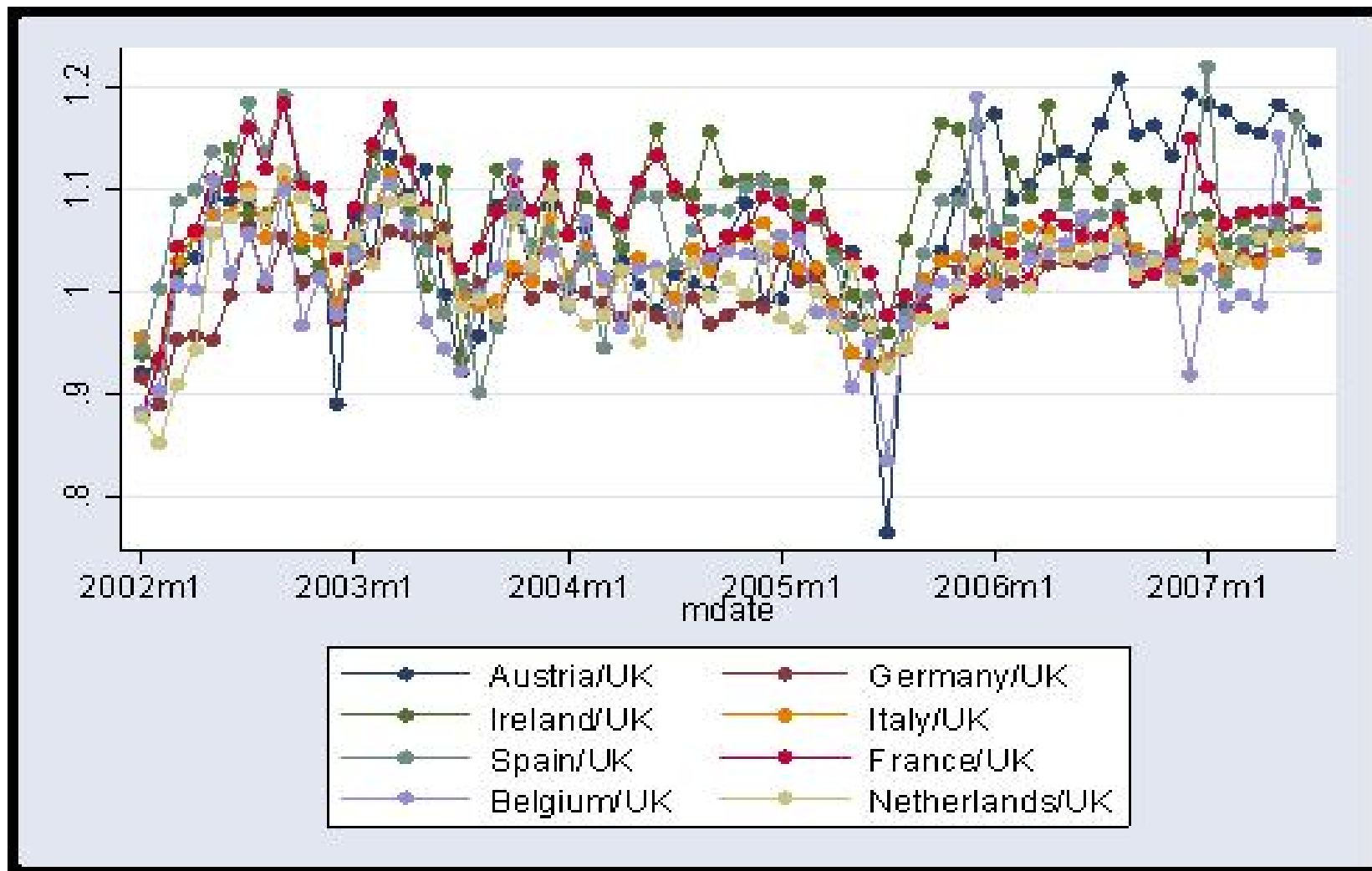
- **Frequently price analysis is dismissed by competition authorities on the grounds that it does not directly answer the SSNIP test**
- **Clearly an analysis of *just* how prices move over time cannot answer the SSNIP test as it does not provide estimates of demand elasticities**
- **However, with the exception of exception of demand analysis, most empirical analyses do not directly answer the SSNIP question as they do not provide an estimate of the demand elasticities**
- **The relevant question is whether, in the context of what else we know about demand and supply in the industry, and especially the demand and cost shocks hitting these prices, can we infer anything about substitution from the price analysis?**
- **In this case there are material trade imports of S-PVC into the UK, and to a large extent it is *not* INEOS or Kerling, but third parties (customers and rival producers), who are importing this S-PVC**



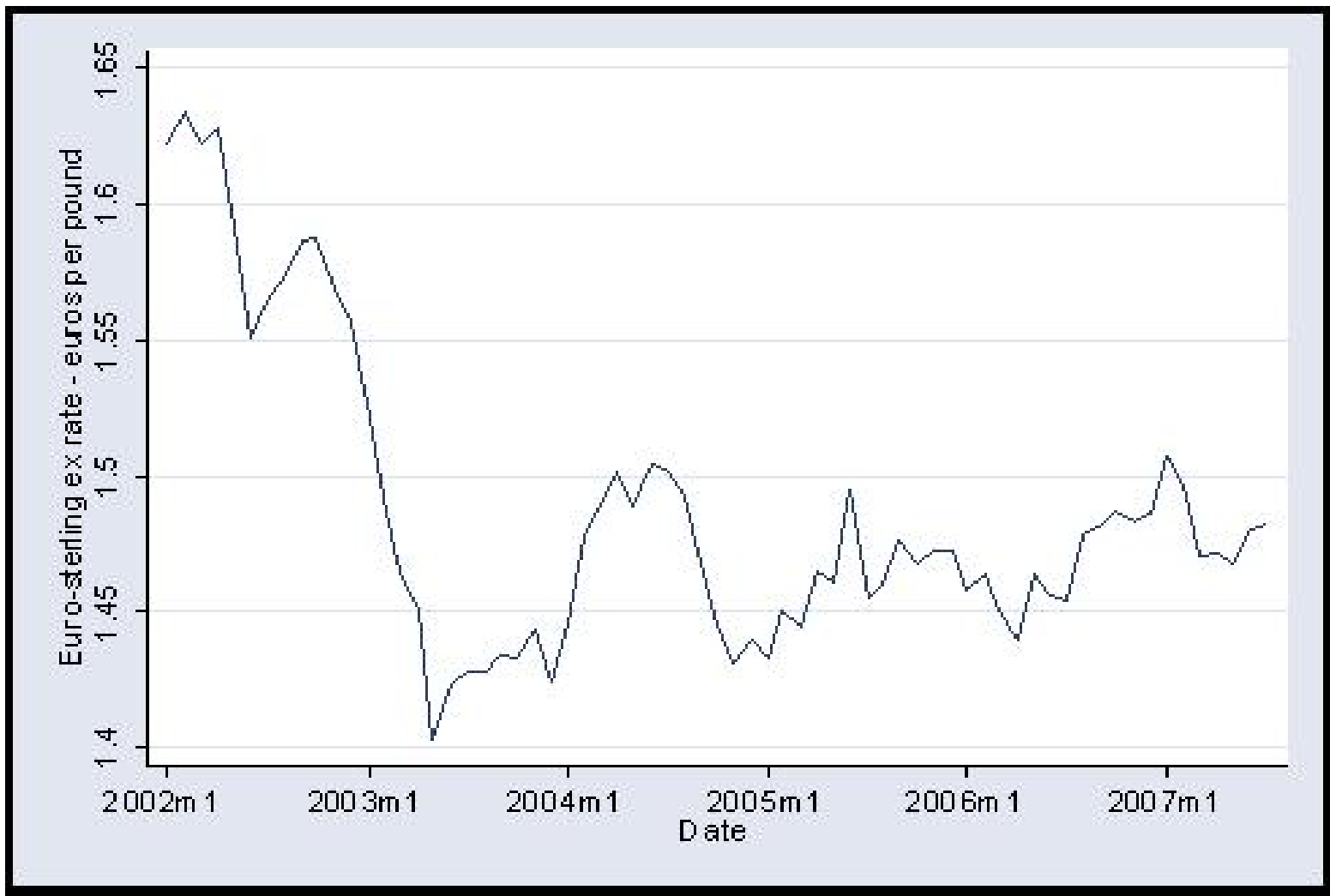
Correlation and Stationarity Analysis (1/2)

- **Correlation analysis – the parties submitted a correlation analysis in Phase 1, but did not remove common costs**
 - In this case it was difficult to remove the common costs due to nature of the supply-chain
- **In Phase II, the parties showed that prices of S-PVC in various EEA countries relative to the UK were stationary**
 - Effectively testing whether the law-of-one-price holds
- **In particular found relative prices were stationary despite the large depreciation in sterling that occurred in the second half of 2003, and the gradual appreciation of sterling between 2004-2007**
 - If the UK was a separate market we would have expected the sharp depreciation in sterling to lead to an increase in European prices relative to UK prices
- **The common cost shocks coming from ethylene and energy will lead to non-stationary prices if cost-price pass-through rates differ in the two markets**

INEOS's average prices in Continental European relative to the UK



Euro/Sterling exchange rate, 2002-2007



Correlation and Stationarity analysis (2/2)

- Commission notes these results in the Decision, but says
“this fact does not fully prove the hypothesis of S-PVC market wider than the UK”
- Instead, the Commission notes that
“import trends during the period of the sterling depreciation were slowly declining which is supportive of assuming a certain degree of elasticity of supply”
- Commission wants to observe a quantity response to accept that correlation/stationarity analysis is informative. But, may not observe a quantity response if prices do the adjusting, and this may be why prices are highly correlated/stationary

Natural experiment

Outage at INEOS plants

- **Major production outage at INEOS' Barry and Runcorn plants in the summer of 2004, lost about 40% of S-PVC production**
- **Commission found:**
 - While there was some increase in Kerling's sales, there was also an increase in third-party imports
 - While both INEOS' and Kerling's prices increased, there was a major increase in the cost of ethylene in this period,
 - There was no increase in Kerling's gross margins
- **Other issues to consider**
 - Did INEOS increase S-PVC imports from its European plants?
 - Was Kerling able to increase S-PVC prices over and above the increase in ethylene prices during this period?

Analysis of customer purchasing patterns

- **The prices of many S-PVC sales (and in some cases the volumes as well), are determined by negotiation, and as a consequence there is considerable variation in prices across customers**
- **Given this, how appropriate is it to do analyses such as demand estimation and stationarity analysis which assume there is one price for all customers?**
- **Since just a small number of customers account for the bulk of UK sales, an alternative approach is to look at the purchasing patterns of these customers. In particular**
 - The extent to which they already purchase imports, and
 - Instances when they switched to/from imports and between the parties
- **The parties did not systematically collect this information, so had to use their sales databases and information from their sales teams**

Analysis of customer purchasing patterns (2/2)

- **Main findings of this analysis were:**

- Many customers multi-source from domestic suppliers and importers
- Numerous examples of customers switched either wholly or in part between importers and the merging firms
- No evidence that there were any customers “captive” to UK supplies (customers of all sizes and from all industry groups source from importers and/or switch)
- Customers relying entirely on UK supplies did not pay more (i.e. no evidence of market power for the “UK duopoly” resulting in higher prices for “UK only” customers pre-merger)

- **The Commission verified this by talking to customers, and stated in the Decision**

“this evidence is indicative of the extent to which importers are present and the competitive pressure they exert in the UK”

Final thoughts

- **This case highlights the very real difficulties involved in trying to do sophisticated econometric analysis, such as demand estimation in many cases**
- **It shows that simple analyses are often informative, even though they do not directly answer the SSNIP question or directly estimate the unilateral effects of the merger**
- **It raises the question of whether it is appropriate or informative to estimate demand systems or do correlation/stationarity type analyses in a market where prices are negotiated**

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