

A New Approach to Hospital Merger Analysis

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Introduction and Review

- Purpose of antitrust merger analysis is to forecast the impact of the merger on consumer welfare
 - Principle measure of welfare is price
 - A merger reduces welfare if it will increase price(s) without offsetting improvements in 'quality'
- Traditional *Merger Guidelines* based approaches provide a framework to indirectly infer price effects but ...
- New approach outlined here bypasses many of the steps of the *Guidelines*
- Price effects are directly estimated
- Accounts for the competitive institutions of the hospital industry and data driven
- Application: Proposed merger between Inova and Prince William Hospital

Horizontal Merger Guidelines Approach

- A little art and a little science
- 5 step program to traditional merger analysis:
 - ① Define a product and geographic market using SNIP test
 - Conclusions usually flow from relevant market definition
 - ② Identify market participants and shares
 - ③ Calculate HHIs and apply threshold rules
 - What are the right thresholds?
 - ④ Perform entry/supply response analysis and examine mitigating circumstances
 - ⑤ Tell pricing effects narrative (unilateral v. collusion)
- Pricing impact is indirectly inferred
- Internal consistency conflicts with common notions of 'markets'
- Little empirical guidance over appropriate thresholds (likely industry/market specific)

A New Approach

- Based on Town and Vistnes (2001) and Capps, Dranove and Satterthwaite (2003) – Willingness-to-Pay (WTP)
- Logic: Cut out the middleman of market definition, share calculation, etc.
 - Underlying idea dates to the "new empirical IO"
 - Froeb and Werden (1994), Berry, Levinsohn and Pakes (1995), Nevo (2000) and others in traditional differentiated products markets
- Directly estimate the impact of merger by modeling competitive interaction between hospitals and third-party payers
- Let the data speak directly to the question of competitive effects – removes much of the subjectivity that underlies market definition
- Complementary to traditional *Guidelines* approaches (for now)

A New Approach – How does it work?

- Approach assumes that:
 - Hospitals are differentiated along geographic, 'quality' and service lines
 - Compete for inclusion in third-party payers (TPP) provider networks
 - Insured patients do not pay (directly) for hospitals services
- The more valuable a hospital / hospital system is to potential patients (and hence their employers), the greater their bargaining power
- WTP captures the hospital's bargaining power by measuring the incremental value the hospital/hospital system brings to the TPP's network
- Integrates theory with empirical analysis – Internally consistent

Constructing WTP

- WTP accounts for geographic and product differentiation
- No need to specify a specific market – data will inform about the substitutability of hospitals
- Use inpatient discharge records to estimate the utility that potential patient receives from different hospital network configurations
 - Inference regarding the value of hospital networks is made using actual patient hospital choices
 - Standard econometric methods (multinomial logit)
- In math: $WTP_j = V_N - V_{N-j}$ where V_N is the value of the hospital network with hospital j and V_{N-j} is the value without hospital j

Using WTP to Estimate the Impact of a Hospital Merger on Price

- Estimate the relationship between inpatient prices and WTP
 - $p_{ij} = f(WTP_{ij}, x_j, z_i) + e_{ij}$ where i indexes payer
- Data on inpatient prices is very helpful
- Impact of a merger between hospital j and k on WTP:
$$\Delta WTP = WTP_{j+k} - WTP_j$$
- Price impact of a merger on payer i is:
$$\Delta p_{ij} = f(WTP_{ij+k}, x_j, z_i) - f(WTP_{ij}, x_j, z_i)$$
- Caveats

Application – FTC v. Inova

- Background:
 - Inova (5 hospital system, 1,892 beds) in N. VA sought to acquire Prince William Hospital (170 beds)
 - Pre-merger HHI = 5,635 and $\Delta HHI = 539$
- I estimated a WTP model (lots of important econometric issues to resolve)
- Estimated price effects were what you would expect given the FTC was filing suit
- Previous merger experience (Loudoun Hospital) to test the model
- Resolution: Parties abandoned merger after FTC filed suit

Conclusions

- Future hospital merger analysis will likely rely (at least in part) on WTP analysis
- WTP approach has a number of advantages over traditional merger analysis
- Takes modest econometric knowhow to implement, relies on data agencies can obtain and the results make economic sense
- Open question: how will the courts view this analysis?