

The effect of market consolidation on innovation in the HDD industry

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KEYWORDS: mergers, innovation, R&D, patents, evaluation

BACKGROUND

- Do mergers reduce or boost innovation?
- There is a large body of literature on the retrospective analysis of individual mergers but they tend to focus on price impact and there is very little on how they affect innovation.
- We look at two 2011/12 mergers in the hard disk drive (HDD) market: Seagate/Samsung, and Western Digital/Hitachi. The two mergers reduced the number of firms in the market from 5 to 3.

METHODOLOGY

- The paper estimates the impact of the mergers on R&D spending, patent activity, the number of new products, and the unit cost of new products.
- We construct a system of difference-in-differences models for these four dependent variables.
- We then make causal inferences from estimating this system sequentially and simultaneously.
- As a novel approach to measuring patent activity, we look at a large number of different measures of patenting and then analyse the distribution of estimated effects.

KEY FINDINGS

- We find no evidence that the two mergers reduced innovation. On the contrary, we offer evidence that the consolidation actually boosted Seagate's innovation activity.
- We also offer evidence that higher R&D goes hand-in-hand with both an increased number of new products, and lower unit costs.
- We offer a number of methodological contributions as well; most notably that R&D intensity, but not patent activity, is a good predictor of the number of new products and unit costs.
- More generally, we demonstrate that the ex-post evaluation of the innovation impact of mergers is a feasible (conditional on data availability) and worthwhile task.

POLICY ISSUES

- Our interpretation of the main finding (no loss in innovation) is that the competitive pressure from another technology - solid state drives (SSD) - is so strong that the HDD sector remains competitive, despite having only three firms.
- However, at the time of the mergers, this external competitive pressure was dismissed in the European Commission's analysis, and the HDD market was considered in isolation. This is particularly important today, when there are talks of a newly forming innovation theory of harm (ITOH) at the European Commission for concentrated markets.

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- Our findings reinforce the view that in innovative markets, however concentrated, an ITOH would fail to consider the dynamic nature of markets, and that instead of an ITOH, there should be a case-by-case evaluation of each proposed merger.

SUGGESTED CITATION

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