

Title: “Strategic Excess Capacity? An Empirical Exploration of Domestic Oil & Gas”

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Abstract:

In the United States, the drilling of oil and gas fields is largely contracted out to independent, third party firms who own, crew, and operate a fleet of drilling rigs. These contractors often maintain an operational (“marketed”) fleet well in excess of their current and recent project load. This “excess capacity” is costly as the contractor must not only maintain the unused marketed rigs (as opposed to “stacking” them in storage) but also pay the idled crews. Microeconomic theory offers several possible motives for observed costly “excess capacity.” The “excess capacity” may be precautionary or speculative, an artifact of uncertain demand for drilling services. It may also stem from efforts by the firm to avoid cost non-convexities – labor hiring and firing costs. Finally, “excess capacity” may have strategic value, as a preemptive strike on rivals and/or enforcement mechanism for tacit collusion. Using firm-level and market aggregate panel data for the major U.S. drilling markets and firms, from 1999 to 2008, we analyze the extent to which each of these motives helps explain the observed “excess capacity.”

The behavior of these land rig contractors provides fertile ground for the empirical study of excess capacity. Land rig contractors make frequent capacity decisions. There are no dominant adjustment costs muting the capacity response of firms to more modest changes in their economic environment. Firm perception of demand uncertainty is relatively well understood, through the commodities futures markets. The market structure of major (geographic) U.S. drilling services markets is best characterized as an oligopoly with a competitive fringe, with the relative position of the oligopolists varying across markets; this, along with observed firm heterogeneity in rig fleets, facilitates the study of the strategic value of excess capacity.

The welfare implications for observed excess capacity differ by motive. Strategic uses of excess capacity worsen economy-wide welfare as resources are spent, essentially, on transfers and not the expansion of total surplus. Preliminary results provide some evidence for this motive but also of non-strategic uses, especially cost smoothing, that may be welfare improving. The welfare implications of the empirical analysis are informative about the recent industry move toward consolidation. We consider the applicability of our analysis to other industries with observed “excess capacity,” including other energy industries.