Deregulation and Market Concentration: An Analysis of Post-1996 Consolidations

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I. THE ISSUE

For several decades, U.S. policy in telecommunications and electronic mass media focused on the encouragement of competition. This policy, usually known as deregulation but more accurately described as liberalization, is aimed at an opening of the market to competitors and a reduction of market power. There were numerous elements and proceedings to this policy by the Federal Communications Commission ("FCC"), the states' public service commissions and legislatures, the courts, and Congress. Of these actions, none was more comprehensive than

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the Telecommunications Act of 1996 ("1996 Act").

What has been the impact of this policy? In this Essay, I will focus on one dimension: the impact of liberalization on market concentration.

This question has acquired some urgency in light of the meltdown in the telecommunications sector following the boom years of the 1990s. That downturn may be temporary, and the industry will recover. But the more fundamental issue is that the telecommunications industry may have entered into a pattern of boom-bust cycles.

While business cycles are traditional to many industries, in telecommunications they are a new phenomenon. Telecommunications used to be less volatile than the economy as a whole. It grew steadily, with long planning horizons hardly ruffled by the business cycle. But today, in sharp contrast, the telecommunications sector is potentially more volatile than the economy, more like the airline business and less like water utilities.

Perhaps the major reason for instability has been the fundamental economic characteristic of many network industries with high fixed costs and low marginal costs. The telecommunications industry is characterized, on the supply side, by huge investments followed by tiny costs of serving additional customers, plus positive network externalities on the demand side. This creates economies of scale, scope, and networking. The resultant incentives are to be large and to expand early, which in the aggregate creates industry-wide overcapacity. Price competition then drives down prices to unprofitable levels. In telecommunications, price differentiation and asset redeployment are difficult, much harder than for airlines. Bust cycles follow. We have encountered the first of these cycles, but surely not the last, because the factors of instability will remain: low marginal costs, high fixed costs, inelastic demand, positive network externalities, lags in supply, disinvestment and regulation, and a Wall Street short-term perspective that amplifies industry cycles.

If instability will be part of the environment, what will telecommunications companies do? The textbook responses are to cut costs, lower prices, differentiate products, and increase innovation. But these strategies can be expensive and will quickly be matched by competitors, which will leave every supplier firm even worse off.

The other major strategy will therefore be to raise prices above competitive levels, and to reduce competition and the commodification that lowers profitability and future investments. To do so requires market power by a single firm or an oligopoly.

II. THE CHANGING INDUSTRY STRUCTURE

We have, so far, concluded that industry concentration is a likely response to competition. Let us now turn to the empirical evidence for such concentration in telecommunications and related information industries. To provide an empirical answer, we looked at the market concentration trends in the American information sector for 100 separate industries.[1] Examples for such industries are long-distance telecommunications, cellular mobile communications, broadcast TV, cable TV, film distribution, daily newspapers, and Internet service providers. For each of these industries, we tracked and calculated individual firms' market shares and revenues in this particular industry, using a variety of sources, for a period of twenty years.

These market shares were then used to calculate concentration indices and to follow them over time. The major concentration index used was the Herfindahl-Hirschman Index ("HHI") of the U.S. Department of Justice.[2]

$$HHI = \sum_{i=1}^{f} S_i^2$$

Where f = number of firms participating in an industry; Si = each firm's market share; i = firm in a given industry

The U.S. government's antitrust enforcement guidelines classify market concentrations according to their HHI score:

HHI < 1,000: Unconcentrated Market
1,000 < HHI: Moderately Concentrated Market
1,800 < HHI: Highly Concentrated Market

The HHI is the sum of the squares of the market shares. For example, if a market is shared by three firms with 30% each, and five firms of 2% each, the HHI is $3 \times 900 + 5 \times 4 = 2720$.

We then tracked these indices of concentration over time, from the years 1983 and 1984, just before and just after the AT&T divestiture. The

1. *See* ELI M. NOAM, MEDIA CONCENTRATION IN AMERICA (forthcoming 2006) (detailing the research conducted).

2. A second index was also used to cross-check the HHI. The C4 index is the combined share of the top four firms in a market.

$$C4_j = \sum_i^4 s_{ij}$$

Where: S_i = firm's i market share of a given industry $j,$ where firms are ordered by size of market share.

year 1996 was the important midpoint, permitting a comparison of the trends preceding and following the 1996 Act.

We then proceed to aggregate the individual industries along the dimensions of broader sectoral categories such as telecommunications or mass media, and along the dimensions of regulated industries, such as whether they are regulated telecommunications industries or not. The weighted aggregate HHI is defined as:

$$WAHHI = \sum_{j=1}^{n} \frac{m_j}{\sum m_j} \sum_{i=1}^{f} S_{ij}^2$$

Where j = an industry; m_j = total revenue of an industry; S_i = each firm's market share of an industry; n = number of industries in a specific subset of the information sector; f = number of firms in an industry.[3]

We look at the four major subsectors of the information sector: (1) Telecommunications, (2) Mass Media, (3) Internet, (4) Information Technology ("IT"). For each of those sectors, we define two categories of industries: (a) Regulated (e.g., local telecommunications, TV stations); (b) Unregulated (e.g., film distribution, fax machines).

III. EMPIRICAL FINDINGS

For the telecommunications industries, the findings can be seen in Graph 1.[4]

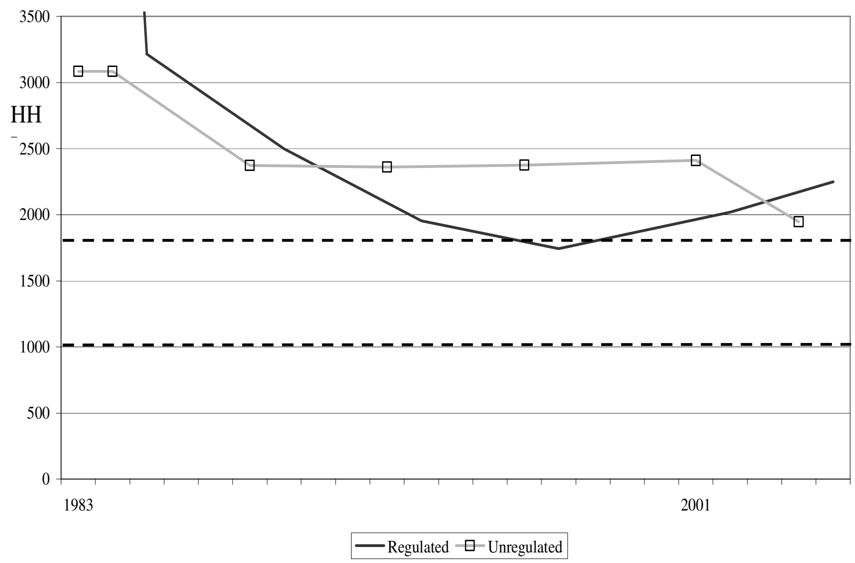
3. The formula for the C4 aggregation that is used as a cross-check

$$WC4_k = \sum_{j=1}^{n} \frac{m_j}{\sum m_j} \sum_{i=1}^{4} S_{ij}$$

Where j = a industry j within a larger segment
m_j =total revenue of an industry j
i = firm in an industry
S_i = market share of firm in a given industry
k = segment of industries
n = number of industries

4. Regulated telecommunications industries include: local service, long-distance service, international service, mobile telephony, radio dispatch, paging, backbones, and broadband providers. Unregulated telecommunications industries include: handsets, fax machines, mobile handsets, PBX, central office switches, multiplexers, fiber optical cable, copper wire and cable, microwave equipment, cellular infrastructure, and IP telephony providers.

Graph 1: Telecom Industries Market Concentration (HHI)



Points below the lower horizontal line are below HHI of 1000, i.e., in the range of unconcentrated industries. HHI points above the upper horizontal line are in the concentrated range of >1,800. Unregulated telecommunications industries decline in concentration in the 1980s, after the AT&T divestiture, which opened equipment and long-distance markets. The trend is flat after 1988, and industry concentration is high. After 2001, with the large equipment makers in decline, market concentration dropped still further.

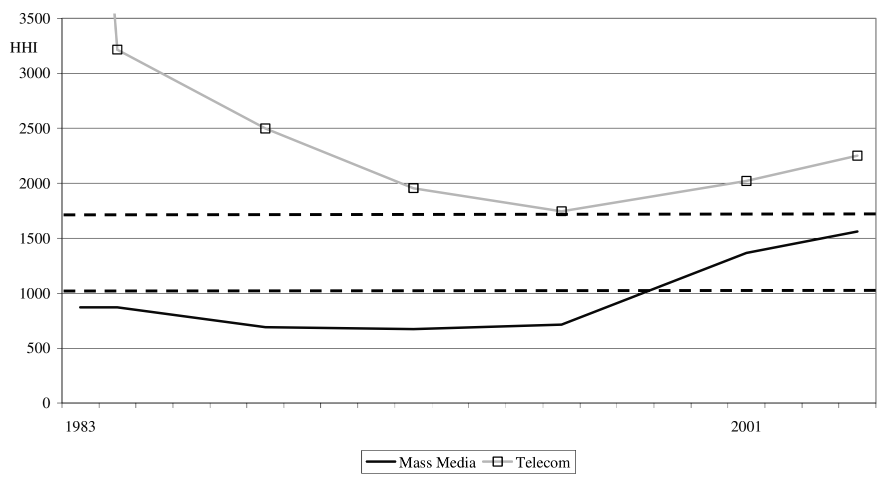
But most interesting is the concentration trend of the regulated telecommunications industries: starting at highly concentrated levels in the early 1980s, overall concentration declines, especially after the 1983–84 AT&T divestiture, but also thereafter until 1996—the year of the deregulatory 1996 Act. Around that time, the concentration level is at its lowest, though barely touching the bottom range of high concentration. But following that period, concentration rises again.

We also conducted similar calculations for the mass media industries.[5] Several of these were also affected by the 1996 Act. Graph 2

5. The category of regulated mass media industries includes: TV prime time production, radio stations, TV stations, DBS providers, cable TV operators, and TV networks. The category of unregulated but materially affected industries includes: DBS equipment, cable TV set-top converters, radio networks, TV syndication, cable TV

reports concentration trends for regulated mass media and telecommunications industries.

Graph 2: Market Concentration of All Regulated Information Sector Industries



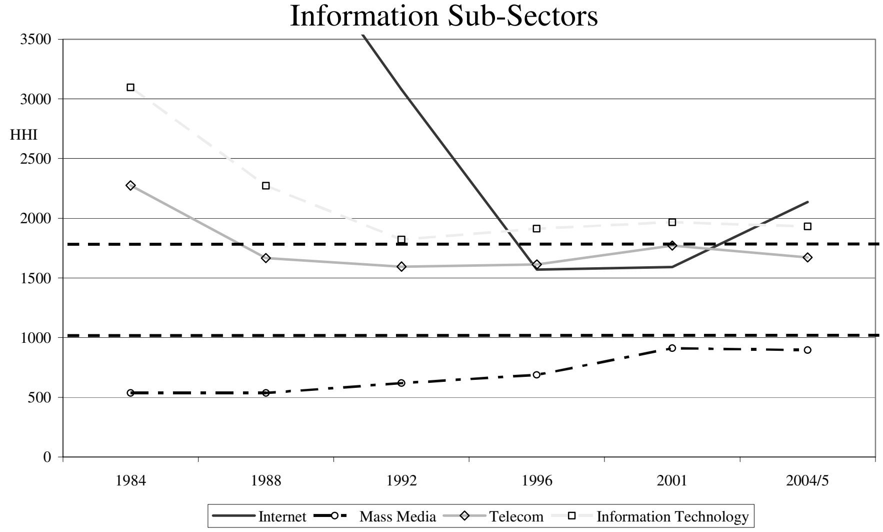
The concentration of regulated mass media industries first declines in the 1980s, is flat in the early 1990s, and rises around 1996 and continues to do so until 2004–05. Its levels are much lower than those for telecommunications industries. Regulated mass media industries concentration increased steadily, from low levels in the 1980s and early 1990s—maintaining low levels perhaps by regulation—and rose rapidly after 1996, which experienced an intermediate level of concentration. Concentration levels for both regulated telecommunications and regulated mass media have increased steadily after 1996.

To contrast these findings, we next look at the unregulated mass media and telecommunications sectors and also at the Internet and IT subsectors, both of which are unregulated. The findings in Graph 3 show that unregulated industries' concentration was mostly flat after 1996. The exceptions were the Internet industries that consolidated and moved to a

channels, pay TV channels, and music cable channels. The category of unregulated mass media industries includes: video game hardware, PC entertainment software, games software, television sets, VCR players, DVD players, PVR players, camcorders, CD players, audio systems and radio, movie production and distribution, movie theater chains, home video, video rental, music publishing, performance rights, record labels and distributors, music retailers, daily newspapers, educational books, trade and paperback books, other books, books retailing, magazines, academic journals, printing services, MP3 players, media player software, online book retailing, and online information services.

model, in each subindustry, to dominance by a few players.[6] We conduct the same analysis for the Internet sector in Graph 3.[7]

Graph 3: Market Concentration of All Unregulated Information Sub-Sectors

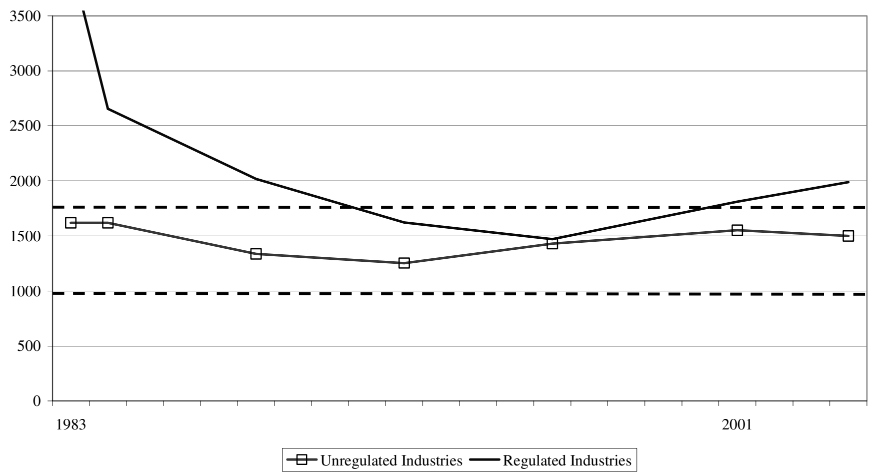


Next, we group all unregulated information industries together and contrast them with all regulated information industries.

6. *Cf.* Eli M. Noam, Oxford Internet Inst., The Internet: Still Wide Open and Competitive? (2003), http://www.oii.ox.ac.uk/resources/publications/IB1all.pdf (examining the competitive pressures of the internet market).

7. Internet industries include: backbones and broadband providers, media player software, internet search engines, portals, and browser software. Industries that are unregulated but materially affected by regulation include: ISPs, IP telephony providers, and internet working equipment.

Graph 4: Market Concentration of All Regulated and Unregulated Information Industries



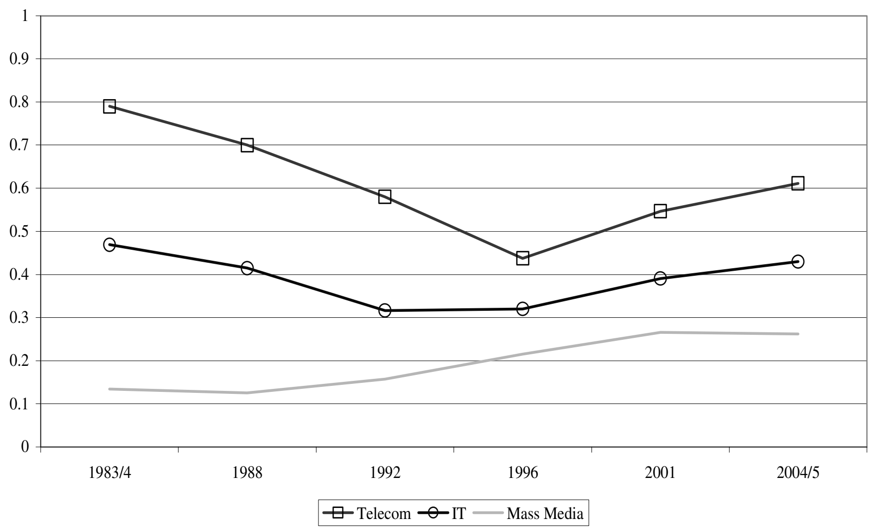
What the results show is that the concentration level in the unregulated information industries is moderate and almost flat. For the regulated and affected industries, on the other hand, concentration is high and declining in the 1980s and early 1990s, and rising after 1996. It is still lower than it was after the AT&T divestiture.

A. Vertical Concentration

Next, we look at vertical concentration trends. If the same small set of companies expanded their activity from one industry to several others, vertical concentration would rise. Regulation might restrict such expansion, and deregulation would permit it. What has been the trend over the past twenty years, especially after 1996? Graph 5 shows the shares of the top five companies in each of three sectors. Consistently, the top five telecommunications firms have a higher sector share than that of IT and mass media.[8] This share of the top five in telecommunications was virtually 100% in 1983. After the divestiture this share came down to about 75%. It dropped further with new entrants and technologies such as wireless and rose again after the mid-1990s. In the mass media sector, the share of the top five firms rose gradually and steadily, slowing down after 2001. It more than doubled since 1988, but is lower than for telecommunications or IT. For IT the trend is U-shaped, rising after the mid-1990s.

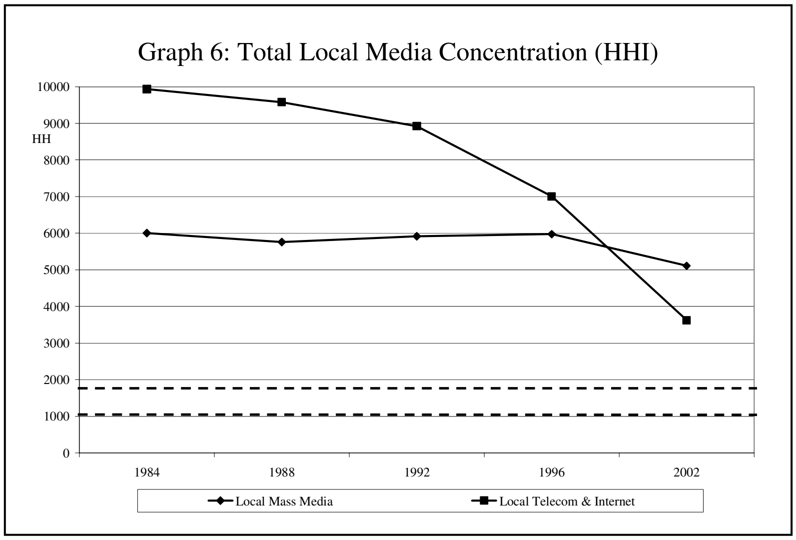
8. The Internet sector is too young for such calculations to be meaningful. However, the share of the top five firms has strongly increased.

Graph 5: Share of Top 5 Companies in their Respective Sectors



B. Local Concentration

Lastly, we look at the concentration on the local level. Using national markets to measure concentration is not always a meaningful measure of consumer choice. A company owning a handful of daily newspapers might have a tiny share of the national market, yet totally dominate its local newspaper markets. We therefore also measure the trend of local concentration of seven local media: local telephone service, cellular mobile service, cable TV, local newspapers, magazines, TV stations, and radio stations. The result, for the period between 1984–2002, is shown in Graph 5. Aggregate concentrations declined, in particular for telecommunications. But they are quite high nevertheless, with the HHI for local telecommunications a still very high 3,500.



IV. INTERPRETATION OF RESULTS

Thus, we find that regulated communications industries are substantially more concentrated than unregulated ones, and they are increasing in concentration after 1996 following a period of deconcentration in the 1980s and early 1990s.

Why is that so? In general, regulated industries are often concentrated. This may be the reason, after all, that they are regulated—to protect the public from the negative results of market power. But the causality flows both ways. Regulation has traditionally also protected firms from competitive entry, especially in telecommunications and television industries. The process of regulation, often captured, has been used to stabilize industries.

But the data also shows that concentration is not merely high, but that it has increased around the period of the deregulatory 1996 Act and subsequent to the 1996 Act. This was certainly not the intended effect.

There are two nonrival explanations for this trend: (1) The 1996 Act raised concentration by relaxing ownership restrictions; and (2) The 1996 Act and its FCC implementations, by encouraging entry, created incentives for companies to merge in order to re-establish control in their markets.

There is little in the 1996 Act supporting explanation (1). It is true that the law eliminated the national cap on ownership of radio stations and raised it somewhat for TV stations. This resulted in higher concentrations in these specific industries, but that was all when it comes to horizontal merger restrictions. These two industries are only slices in the much larger media pie. The 1996 Act, on its face, was not so much proconcentration as procompetition. However, the effect of such competition was to drive companies to defensive moves along the lines of explanation (2), and concentration became a major strategy to regain market power.

We can also conclude that in enacting the 1996 Act, public policy projected the deconcentration trends of the 1980s and early 1990s. Further liberalization was seen as the means to continue this trend. But as the data show, it may have contributed to the opposite—to a more concentrated information sector.

V. OUTLOOK

For a generation now, liberalization, deregulation, and competition have been the keystones of telecommunications policy. But one volatile business cycle later, competition has been giving way to consolidation. The traditional system of regulated market power and concentration is returning to some new equilibrium level which is not the hoped for competition, but one of market power, maybe to a natural oligopoly instead of a natural monopoly. And with it, inevitably, comes some regulation of the negative effects of oligopoly. These oligopoly problems are much harder to conceptualize and will lead to a new round of policy disputes.