



Consumer Federation of America

BUSINESS DATA SERVICES:

**Another Failure of Free Market Fundamentalism
to Promote Competition or Prevent Abuse of Market Power**

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Abstract

Business Data Services (BDS) have been growing at a rate of almost 15% per year for a decade and a half, driven by the fact that high capacity, high quality, always-on connections are vital to a wide range of businesses and economic activities. Affected services include not only communications – mobile, broadband and video – but all forms of high capacity connection for hospitals, ubiquitous networks like ATMs, and the evolving Internet of Things. The point at which the ocean of data coursing through the digital network becomes a stream directed to each individual consumer is the new chokepoint in the digital communications network.

This paper uses a traditional antitrust approach embedded in the structure-conduct-performance paradigm to describe the industrial organization of the digital communications sector. It argues that the inherent economic conditions in communications markets combined with a long period of lax antitrust enforcement and weak regulation to allow the emergence of a “Tight Oligopoly on Steroids” in which BDS plays a central role.

The paper uses the characteristics of BDS as a long standing, but increasingly important “chokepoint” in big Broadband networks as a background for the analysis of a “new” chokepoint in the digital communications sector – big data platforms, which are the topic of a separate paper.

High concentration is a problem, but the problem is magnified by several other characteristics that are well recognized in the antitrust literature. The same four firms constitute the tight oligopoly across four communications product markets, meaning that the number of firms needed to engage in parallel and reciprocal conduct is very small. Their history prior to the Telecommunications Act of 1996 and their pattern of expansion since have resulted in geographic separation of home (fortress) territories, technological specialization, and product segmentation. These are the steroids that enable them to dampen rivalry.

The paper documents the severe and unique problem in the BDS market through three sets of data

- the evidentiary record compiled in the FCC’s decade long Special Access proceeding,
- the FCC’s reading of that data in a Final Rule and FNPRM, and
- a unique data set from New York that sheds light on the BDS market in the largest state served by Verizon that fills gaps in the record.

The data show that the BDS market is not only one of the most concentrated markets in the entire digital communications sector (with four firm concentration ratio [CR4] values close to 100% and HHI indices in the range of 6000 to 7000), but also that it is rife with market power abuse in contracting practices. Contracting practices are critical in the BDS market because it is a crucial: wholesale market, where sellers of numerous potentially competitive and complementary services need access to the network. The firms that dominate the BDS market (like AT&T and Verizon), have a near monopoly derived from the long-standing franchise services offered and the ubiquitous deployment of the network during the legal monopoly period. New entrants could not overcome the huge advantage of a fully deployed network and the anticompetitive practices implemented by the incumbents. Analysis of price, cost and profit shows that market power is being exercised to yield excess prices that produce profits that are not merely “supranormal,” but persistent and astronomical. Analysis of contracting, bundling, and other qualitative conduct indicates that market power is being exercised along both horizontal and vertical dimensions to undermine competition.

The paper concludes with a brief critique of the fundamental flaws in the recent FCC Flip-Flop order that sweeps 20 years of abuse under the rug and ensures that abuses will continue. The theory of “sufficient” competition adopted by the FCC bears a striking resemblance to an earlier discredited theory of hypothetical competition (perfect contestability) that did a great deal of policy harm before rigorous empirical analysis proved it was inapplicable to the real world. In this case, the FCC has the empirical record before it, but failed to read that record in a reasonable manner. The FCC’s declaration that it is “time for a new start,” is correct, but this analysis shows that by ignoring the empirical record, disregarding well-established analytic models and violating legally mandated administrative procedures the FCC has headed in the wrong direction. The sector needs updated regulation, not deregulation that is tantamount to repeal of the Communications Act of 1934.

PART I.
INTRODUCTION

1. PURPOSE AND OUTLINE

THE CENTRAL ROLE OF BUSINESS DATA SERVICES IN THE DIGITAL COMMUNICATIONS SECTOR AND THE CONTINUING CHALLENGE OF THE ABUSE OF MARKET POWER

This paper examines the two-decade long saga of the regulatory (mis)treatment of Business Data Services (BDS). Originally known as special access, when the Telecommunications Act of 1996 was passed, it was renamed Business Data Services in a recent FCC proceeding to properly reflect the growing and pervasive nature of these services:¹ what was once “special” access is now a significant part of everyday life.

Business Data Services epitomize the challenges of building a dynamic, competitive communications sector in the digital age. They were among the first services deregulated after the 1996 Act, under a theory (hope) that competition would quickly develop once it was allowed. The decision was immediately contested and has been under almost constant review ever since. Ironically, AT&T, as a standalone long-distance company, filed the original complaint about the premature and ill-considered deregulation decision. Once AT&T became an integrated local and long-distance company, however, it steadfastly opposed any moves toward regulation. Ironically, this was the same flip-flop AT&T made with regard to network neutrality, as discussed in a separate paper.

Business Data Services are symbolic in two other ways. First, the dramatic growth of these services and their shift from traditional technologies to new communications protocols (IP) and infrastructures (broadband) parallels the dramatic growth and shift of demand over the course of the digital revolution. As such, they embody the immense progress that has taken place. Second, however, these services exhibit continuing problems in market structure, conduct and performance that have not been eliminated by the technological revolution. To the contrary, they have become a key chokepoint in the communications sector. BDS’s abuse of their chokepoint power and the ways to control this power provide lessons for another chokepoint that has emerged in the sector, big data platforms.

The ultimate significance of the treatment of BDS lies in the fact that the FCC’s recent deregulation (“flip-flop”) is based on the rejected theory of “contestable markets,” which is one of the central tenets of Free Market Fundamentalism. After two decades, it is clear that the theory of contestable markets was wrong on three counts. Entry was much more difficult than the theory admitted and the dominant incumbents had many tools to make entry even more difficult. A threat of competition that never materialized was not strong enough to prevent the pervasive abuse of market power.² Thus, as this paper shows, it is not only a deep economic literature that contradicts the FCC’s theory of “sufficient” competition, the hearing record contradicts the FCC’s Flip-Flop order.

Along with wireless, broadband, and multichannel video, Business Data Services are one of the pillars of a “tight oligopoly on steroids” that has come to dominate the digital communications sector. The two largest local “telephone” companies, AT&T and Verizon, dominate the BDS market and wireless communications in their home (formerly franchise) territories. The two largest cable companies, Comcast and Charter, dominate multichannel video

programming and broadband in their home (formerly franchise) territories, while they self-supply BDS. Business Data Services teach an important lesson. Technological change and the expansion of supply during a technological revolution are no guarantee against the abuse of market power nor against the existence of other market imperfections and failures. Like the digital revolution of which it is part, Business Data Services are a silver cloud with a dark lining.

Digging into the structure, conduct and performance of Business Data Services, as revealed in the record of the Federal Communications' proceeding, this paper shows that these services have been the beneficiaries of massive cross-subsidies from local ratepayers. Those cross-subsidies have been used in a thoroughly anti-competitive fashion. The dominant incumbent local exchange carriers (ILEC, or Baby Bells) continue to possess a near monopoly in many of these services based upon the legacy of market power they had amassed as franchise monopolies. The immense barriers to entry that inhibit competitive entry into these services and the long history of anticompetitive practices in which the dominant firms have engaged have perpetuated their market power.

As a result, these services have been used to earn massive excess profits on the vertically integrated, unregulated services that rely on BDS as a key input. At the same time, local rates have been increased to make up for fictitious losses on local services. Those losses are fictions because they rest on misallocated costs and a failure of cost-causing services to bear their proper cost burden. Worse still, the leverage these firms enjoy over this key chokepoint and the luxury of cross-subsidies have been used to impose a price squeeze on potentially competitive services that must rely on BDS to sell their products, undermining competition.

While the analytical and historical evidence is important in understanding how the treatment of Business Data Services has been bungled, it is at least as important to recognize that the abuse of market power that has developed imposes large economic costs on consumers and the economy. The continuing abuse of market power in Business Data Services will cost consumers about at least \$170 per year per household, with some estimates as high as \$340 per year per household. These overcharges result in excess profits that constitute just over 25% of overcharges that consumers pay for communications services and services that rely on BDS. Macroeconomic losses, due to the distortion introduced by abuse pricing, generally double the pocketbook impact.

OUTLINE

In order to build the case for this view of the digital communications sector, Chapter 2 of **Part I**, presents the analytic framework used in the paper. It starts from contemporary principles of market structure analysis embodied in the Department of Justice (DOJ)/Federal Trade Commission (FTC) *Merger Guidelines*, which are practical analytic tool used by many federal describe markets and assess their performance. It notes their relationship to the economic framework that has been the cornerstone of the analysis of industrial organization for almost a century – Structure, Conduct, Performance. It also points out their support in the work of almost two dozen Nobel laureates in economics that received this honor in the past three decades. Finally, it describes the justification for dual oversight of the market power in the BDS market in very traditional terms (Alfred Kahn, (1988) classic text on regulation). These justifications not

only apply to BDS and network neutrality, but as shown in another paper, they apply to Big Data Platforms.

Part II starts in **Chapter 3** with an overview of the central location of Business Data Services in the emerging digital communications network. It then presents a detailed analysis of Business Data Services. It begins with an account of the lax regulatory policy that allowed BDS to be prematurely deregulated. It then provides quantitative analysis of the structure, conduct and performance of BDS over two decades from the first of three perspectives. It describes the data supplied over the past ten years to document the key attributes of structure (concentration), conduct (anti-competitive behaviors) and performance (excessive prices and profits).

Chapter 4 examines the strong support for the findings of market power and its abuse in the BDS, as documented in the FCC's May 2016 order by the FCC's extraordinary data gathering undertaking. The data set created by the FCC was recognized as among the largest data gathering efforts it had ever undertaken. Although the FCC only reached a final rule on some issues involving anticompetitive conduct, all of the evidence is part of the broader record on which any rule must be based. It constitutes an important milestone in the analytic terrain. Finally, Section V reviews this evidence through the lens of annual reports filed by Verizon in New York. This analysis fills an important gap in the FCC data. The Verizon analysis provides a unique perspective both because it is a state, rather than a federal, view and because New York continued to collect annual financial data from Verizon, data that the FCC had ceased gathering or making public.

Chapter 5 concludes this part with a discussion of the transformation of economic and social relationships of which it is a part. As is the common approach to all the papers in the working paper series, this emphasizes the immense benefits of the digital revolution. However, as is the practice in all of the working papers, the chapter also analyzes the immense harms that inadequate oversight has unleashed in the market. Thus, it shows the both the silver cloud and the dark lining. The discussion of BDS focuses on aggregate data on the price-cost gap that has grown over the course of the digital transformation of communications. This price-cost gap is the classic indicator of market power. The section concludes with a brief discussion of consumer dissatisfaction with the services, another indicator of market failure. This chapter also describes the how lax antitrust enforcement and weak regulatory oversight since the passage of the Telecommunications Act of 1996 allowed a "tight oligopoly on steroids" to develop in the digital communications sector.

Part III shows why the FCC's Flip-Flop order is incorrect on every count. It has survived court scrutiny only because of the deference that the courts give to the agency. History, facts and law all argue against the FCC decision, so any future order that seeks to restore FCC authority is certain to be upheld by the courts.

Chapter 6 points out that the FCC's order under the Trump Administration is not only inconsistent with the evidence in the record, but its theory has been thoroughly rejected by the economic literature. The Chapter reviews the extensive evidence that rejected all of the key elements of the Free Market Fundamentalism approach.

Chapter 7 demonstrates that the FCC's claim that two competitors is enough is wrong. It leaves the majority of market power abuse (measured by supra-competitive prices and profits) in the pockets of the dominant firms. It also undermines the growth of competition, which imposes even greater harm on the public.

Thus, the FCC's declaration that it is "time for and new start," is correct, but this analysis shows that, in ignoring the record and violating well-established and legally grounded procedures, the FCC's Flip-Flop order has headed in the wrong direction.³ An updating of strong regulation to prevent abuse is needed, not a total deregulation.

Draft. Not for Citation or Circulation

2. CONCEPTUAL AND EMPIRICAL FRAMEWORK TO ANALYZE CORE CONCERNS ABOUT MARKET POWER

Although our focus is on the empirical evaluation of the BDS market's performance, it is necessary to start with practical empirical tools that provide a grounding for analysis. This is particularly important in the current policy environment, when a great deal of attention is being devoted to a problem that is characterized as the return of "monopoly."⁴ The problem is very real and large, resulting from the fact that markets have become highly concentrated and dominated by a small number of very large, vertically integrated firms. However, the use of the word monopoly is incorrect and can discredit the claim that a problem exists. It does not take a monopoly to abuse market power. A tight oligopoly, which is what the digital communications markets have become, is capable of imposing severe harm. Using the wrong term makes it too easy to dismiss analysis that starts from the wrong, monopoly assumption about market structure. Moreover, analysis shows that the problem is not just a tight oligopoly, but a tight oligopoly on steroids.

In this section, we describe our approach to market structure analysis, which is primarily based on the DOJ/FTC *Merger Guidelines*. The guidelines were first issued by the Nixon Administration, then revised by the Reagan, Bush, Clinton, and Obama Administrations. Market structure analysis conducted by the DOJ/FTC in the course of merger reviews is particularly relevant as a starting point for describing industry structure and markets for two reasons. First, the antitrust laws are the primary statutes intended to prevent abuse of market power in the economy. Second, merger review is one of the few areas where the antitrust laws empower the agencies to be proactive in their job of ensuring that the economy remains competitive. Restraints on trade are the bread and butter of antitrust policy, and mergers are ideal tools to restrain trade by removing competitors. Here, antitrust authorities can act to prevent abuse rather than try to clean it up after it has caused harm.

However, while the *Merger Guidelines* provide a rigorous starting point for defining markets and concerns about the abuse of market power, it is important to identify limitations of the antitrust approach and policy space. This holds particularly true where markets are found to be inherently highly concentrated, as is the case with communications markets. Market power is an endemic problem here. In these markets, mergers that increase the market share of large firms even slightly are considered to be a severe competitive concern because the markets are inherently vulnerable to abuse. Public policy responses are not limited to merger review. Depending on the nature and importance of the market, regulation may be deemed necessary to prevent abuse. That is the case in the communications sector.

BASIC STRUCTURAL ANALYSIS AND CONCERNS

Market Definition

The DOJ/FTC *Merger Guidelines* are concerned about market power, defined as "a seller [with] the ability profitably to maintain prices above competitive levels for a significant period of time. Sellers with market power also may lessen competition on dimensions other than price, such as product quality, service or innovation."⁵

The reason the antitrust authorities are concerned about market power is that it results in a transfer of wealth from consumers to producers and the inefficient use (misallocation) of resources. Economists call the latter “deadweight loss” in the economy. Neither wealth transfers nor deadweight loss would take place in a competitive market, although the presence of externalities (another source of market failure, might alter this simple conclusion, delivering societal value that far exceeds deadweight loss). While monopoly is clearly a big concern, most antitrust analysis focuses on circumstances in which there are a small number of sellers. With small numbers, coordinated or parallel activities, and even unilateral actions, can impose these harms.

[In] some circumstances, where only a few firms account for most of the sales of a product, those firms can exercise market power, perhaps even approximating the performance of a monopolist, by either explicitly or implicitly coordinating their actions. Circumstances also may permit a single firm, not a monopolist, to exercise market power through unilateral or non-coordinated conduct.... In any case, the result of the exercise of market power is a transfer of wealth from buyers to sellers or a misallocation of resources.⁶

Definition: The first step in the effort to examine the extent of competition for a product is to define the market to be evaluated. The key is to identify products that are close substitutes. This has two dimensions. The attributes of the product must be such that they can replace one another with similar qualities and functionalities at similar prices. The products must also be available in the geographic location of the market. In many cases, the geographic dimension is defined by transportation costs. If transportation costs are high or the ability to move products nonexistent, out-of-market products cannot compete on price.

Structure: The second step in the analytic process is to describe the market structure. The objective is to understand how structure affects the conduct of the firms in the market. The smaller the number and the larger their size, the less likely they are to compete. The extent of concentration is frequently measured by the Hirschman-Herfindahl Index (HHI). Other factors are considered, too, including unique barriers to entry, history (e.g., long-term dominance by incumbent firms, other distinctive patterns of anti-competitive practices), anti-competitive contracts, or the presence of disruptive firms (mavericks).

Performance: The performance of the market is measured primarily by price, cost, and profits. Prices that greatly exceed costs yield excess profits. We do not expect to observe supranormal profits in competitive markets. We expect any sign of supranormal profits to elicit quick responses from firms in the market or new entrants attracted by the profit opportunity. They offer substitutes at lower prices to steal customers, thereby quickly competing away excess profits. If supranormal profits are sustained, they indicate the existence and persistence of market power. In the current environment, the negative effect of market power on innovation and quality of service are of equal, if not greater, concern as price.

Thresholds for Concerns about Market Power

Identifying the situations in which a small number of firms can exercise market power is not a precise science. After the product and geographic market is defined, concentration is

measured by the HHI. This index has a direct relationship to the existence of market power, as shown in Table 2-1, the thresholds used in the *Guidelines* were recently raised and have “common sense” referents.

TABLE 2-1: DESCRIBING MARKET STRUCTURE

Department of Threshold Definitions	Type of Market	HHI	Equivalents in Equal- size Firms	4-Firm Market Share (CR4)	Concern about anticompetitive effect of increases in market power: a significant, non-transitory increase in price (5%) for two years
	Monopoly ^{a/}	10,000	1	100	
	Duopoly ^{b/}	5,000	2	100	
(Old) Dominant Firm	65% share	4,650	2	100	HHI increase: 200 points—presumed to be likely to increase market power
<u>New Highly Concentrated</u>		2,500	4	100	100–200 points—potentially raises significant competitive concerns
(Old) Highly Concentrated		1,800	5.5	72	HHI increase: 200 points—potentially raises significant competitive concerns
<u>New Moderately Concentrated</u>		1,500	6.6	61	
	Tight Oligopoly			60	
(Old) Moderately Concentrated	Loose Oligopoly	1,000	10	40	
Unconcentrated	Atomistic Competition		50	8	

Sources and Notes: (a) Antitrust practice finds monopoly firms with market share in the 65% to 75% range. Thus, HHIs in monopoly markets can be as low as 4,200. (b) Duopolies need not be a perfect 50/50 split. Duopolies with a 60/40 split would have a higher HHI. Sources: U.S. Department of Justice, *Horizontal Merger Guidelines*, revised August 2010, for a discussion of the HHI thresholds; William G. Shepherd, *The Economics of Industrial Organization* (Englewood Cliffs, NJ: Prentice Hall, 1985), for a discussion of four-firm concentration ratios.

For most of the period of this analysis (i.e., until the revision of the *Guidelines* in 2010), an HHI above 1,800 was considered a highly-concentrated market. A market with six equal-size competitors would have an HHI of 1,667.⁷ Meanwhile, a market with an HHI below 1,000 was considered unconcentrated. A market with ten equal-size competitors would have an HHI of 1,000 and would be competitive. A market was considered moderately concentrated when it fell between the highly concentrated and unconcentrated thresholds (i.e., had an HHI between 1,000 and 1,800). This reflected a belief that when the number of firms falls into the single digits, there is cause for concern. “Up to six firms one has oligopoly, and with fifty firms or more of roughly equal size one has competition; however, for sizes in between it may be difficult to say. The answer is not a matter of principle but rather an empirical matter.”⁸

Under the recently revised guidelines, the unconcentrated threshold was raised to 1,500 while the highly-concentrated threshold was raised to 2,500, or the equivalent of four equal-size firms. These thresholds (old and new) correspond to long-standing characterization of the ability of firms to increase prices to raise profits. Shepherd describes these thresholds in terms of four-firm concentration ratios as follows:⁹

- Tight Oligopoly: The leading four firms combined have 60–100% of the market. Collusion among them is relatively easy.
- A dominant firm, with almost two-thirds of the market, would create a highly-concentrated market and be a particular source of concern.
- A firm as a purchaser of goods or services with a 30% market share is deemed to have monopsony power, i.e. the ability to “make or break” a sell of goods or services.
- Two firms splitting the market in a duopoly also creates highly concentrated markets and raises strong concerns.
- Loose Oligopoly: The leading four firms combined have 40% or less of the market. Collusion among them to fix prices is virtually impossible.

The upper bound of a moderately concentrated market would correspond to a tight oligopoly, which was defined as a market where the top four firms (the four-firm concentration ratio, or CR4) had more than 60% of the market.¹⁰ The lower bound of a moderately concentrated market with ten equal-size firms would fall at this threshold.

PRIMARY CONCERNS ABOUT THE NEGATIVE EFFECTS OF MARKET POWER

Competitive Effects

In evaluating the impact of mergers, antitrust authorities focus on small but significant, non-transitory increases in price (SSNIP). The price increases that trigger concern are relatively small (5%), sustained for a relatively short period (two years).¹¹ The DOJ defines the critical concern as follows:

Highly Concentrated Markets: Mergers resulting in highly concentrated markets that involve an increase in the HHI of between 100 points and 200 points potentially raise significant competitive concerns and often warrant scrutiny. Mergers resulting in highly concentrated markets that involve an increase in the HHI of more than 200 points will be presumed to be likely to enhance market power. The presumption may be rebutted by persuasive evidence showing that the merger is unlikely to enhance market power.¹²

While highly concentrated markets trigger the greatest concern, moderately concentrated markets are also a concern.

Moderately Concentrated Markets: Mergers resulting in moderately concentrated markets that involve an increase in the HHI of more than 100 points potentially raise significant competitive concerns and often warrant scrutiny.¹³

The recent revision of the *Guidelines* reflects a view based on the theory of non-cooperative games that “four is few and six is many.”¹⁴ Given the long history of the thresholds, and the analysis below, we believe a better summary rule of thumb should be that “four is few, six may be enough, and ten is many.”

Coordination Effects and Incipient Competition

The *Guidelines* devote a considerable amount of attention to the effect a merger can have in facilitating coordination among the firms in a sector. The *Guidelines* describe the competitive concern about coordination as follows.

Coordinated interaction involves conduct by multiple firms that is profitable for each of them only as a result of the accommodating reactions of the others. These reactions can blunt a firm's incentive to offer customers better deals by undercutting the extent to which such a move would win business away from rivals. They also can enhance a firm's incentive to raise prices, by assuaging the fear that such a move would lose customers to rivals.¹⁵

The *Guidelines* identify three types of coordination:

- (1) explicit coordination (which in itself would violate the antitrust laws),
- (2) a "common understanding that is not explicitly negotiated but would be enforced by detection and punishment of deviation" and
- (3) "parallel accommodating conduct not pursuant to a prior understanding."¹⁶

Although the *Guidelines* note that "coordinated interaction includes conduct not otherwise condemned by the antitrust laws," they argue that merger review should reach this behavior.

The ability of rival firms to engage in coordinated conduct depends on the strength and predictability of rivals' responses to a price change or other competitive initiative. Under some circumstances, a merger can result in market concentration sufficient to strengthen such responses or enable multiple firms in the market to predict them more confidently, thereby affecting the competitive incentives of multiple firms in the market, not just the merged firm.¹⁷

The importance of coordination underscores another aspect of merger review – the role of incipient competition and maverick firms. The *Guidelines* mention incipency twice – once in the general introduction and once in the section on "coordination."¹⁸ The section on coordination introduces the concern with reference "to the Clayton Act's incipency standard"¹⁹ because an individual firm can play a particularly important role in providing competition. This role can be heightened in the situation of systemic stress to the business model.²⁰

Whether one believes incipency is restricted to the narrow concern with coordination or a broad-based concern under the antitrust laws, it demands consideration in analyzing the communications sector. In this case, a new technology has recently entered the market and competitive models are nascent, while the incumbents—who have resisted the technology—control crucial inputs and continue to have high market shares. The number of firms that control these crucial inputs is quite small, the threat of harm to competition through the abuse of enhanced, and unilateral market power or coordination is considerable.

NON-HORIZONTAL MERGERS AND MARKET STRUCTURE CONCERNS

At one level, the *Non-Horizontal Merger Guidelines* involve many of the same issues as the *Horizontal Merger Guidelines* – concentration, entry conditions, price increases – but the

impacts are more complex. They are akin to the coordination effects in the horizontal analysis in two ways. First, they place significant emphasis on the market-level impact of the merger, rather than the individual firm-level impact. Second, they launch from the discussion of potential competition, which is akin to the incipency starting point.

Vertical Integration and Leverage

Vertical integration is a key characteristic of some industries,²¹ where the act of producing a product can be readily separated from its distribution and sale. Production is referred to as the upstream; distribution and sale are referred to as the downstream. The concerns vertical mergers raise involve anticompetitive effects across markets – foreclosure, price squeeze, vertical restraints, exclusion, tying of products, evasion of regulation. Because vertical integration involves the elimination of a (presumably market-based) transaction between two entities, it has been the focal point of a great deal of analysis. Some argue that vertical integration engenders economic efficiencies due to the elimination of transaction costs. Others fear that excessive or unjustified vertical integration can result in inefficiency and potential abuse of the ability to leverage vertical market power.²²

Vertical integration may become the norm in the industry, making it difficult for unintegrated producers to survive. Vertically integrated entities may capture the market for inputs, inhibiting independent entities from obtain the factors of production necessary to deliver competing products. Also, with vertically integrated entities dominating a sector, reciprocity and forbearance rather than competition may become the norm.

Conglomeration

The problem of conglomerate mergers²³ is also viewed cautiously since any anticompetitive effects flow from strategic inter-firm and overall market impacts, which are difficult to assess. That said, the key conditions that are cited as making conglomerate and vertical mergers a source of competitive concern are exactly the conditions we show exist in the communications market.

Viscusi, Vernon and Harrington list the competitive concerns about conglomerate mergers to include reciprocity, opportunities for predatory pricing, eliminating potential competition, and undesirable giant size.²⁴ They argue these are difficult concepts to demonstrate empirically, but the list of conditions that make such concerns possible are clearly prevalent in communications markets: high concentration, entry barriers, and a small number of potential competitors.²⁵

Shepherd identifies similar competitive concerns, emphasizing mutual restraint based on multi-market contact²⁶ and adding cross-subsidy.²⁷ Shepherd argues that dominant firms engaging in conglomerate mergers pose a significant threat to competition due to a number of factors. Competition can be reduced by creating greater potential for cross-subsidy,²⁸ enhancing reciprocity in the industry,²⁹ reducing potential competition,³⁰ and creating spheres of influence that fosters mutual restraint.

The threat to competition from conglomerate mergers is heightened where the dominant firm has the ability to recapture the apparent losses that cross-subsidy seems to require. The firm

does so by shifting the cost onto captive customers or regulated customers in the core franchise service. Cross-subsidization becomes possible,³¹ although this is by no means the only available instrument of anti-competitive conduct. Vertical integration facilitates price squeezes and enhances price discrimination.³² Firms can impose higher costs on their rivals or degrade their quality of service (withholding flagship programming) to gain an advantage.

This could happen, if, for example, the conduct of vertically integrated firms increased risks for nonintegrated firms by exposing downstream specialists to regular or occasional price squeezes or made it difficult for upstream specialists to find a market for their output in times of depressed demand.³³

The final behavioral effect is to trigger a rush to integrate and concentrate. Being a small independent firm at any stage renders a company extremely vulnerable to a variety of attacks.

Oligopolies often settle down into behavioral patterns in which price competition atrophies, even though some or all sellers suffer from excess capacity. Non-price rivalry then becomes crucial to the distribution of sales. One form of non-price competition is the acquisition of downstream enterprises which, all else (such as prices) being equal, will purchase from their upstream affiliates. If acquisition of this sort deflects significant amounts of sales, disadvantaged rivals are apt to acquire other potential customers in self-defense, and reciprocal fear of foreclosure precipitates a bandwagon effect in which the remaining independent downstream enterprises are feverishly sought.³⁴

STRUCTURE, CONDUCT, PERFORMANCE AND THE ANALYSIS OF MARKET FAILURES

The dominant paradigm over the last century – the one behind the *Merger Guidelines* – is the Structure-Conduct-Performance (SCP) paradigm. I have examined the relationship of this paradigm to the analytic framework in earlier papers.³⁵

Just as the *Guidelines* have evolved, so too has the market imperfection/market failure aspect of the Structure-Conduct-Performance framework. As shown in Table 2-3, over the course of the last several decades, a broad critique of the assumptions underlying the market fundamentalist view of how markets work (or fail) has come into existence. The broad critiques strengthen the case for considering the conditions under which markets perform poorly. It follows that policy interventions to correct market imperfections and market failures are appropriate. One can chart the growth of this criticism in a series of almost two dozen Nobel Prizes.

The critiques are overwhelmingly American. Five-sixths of these Noble Prizes were awarded to economists identified with the United States (although a few also listed other nations). Of all prizes in economics awarded to those who list the U.S. as an identifier, just under half were for this critical work. The home-grown critique of conservative economics calls into doubt not only free market fundamentalism's assertions about market functioning, but also its assumptions about underlying economic motivations. Moreover, it does not result in a rejection of markets. The broad critiques strengthen the case for considering the conditions under which markets perform poorly,

TABLE 2.3: NOBEL LAUREATES ON MARKET IMPERFECTIONS

<u>Structural & Societal Flaws</u>	<u>Endemic Tendencies</u>	<u>New Institutional & Transaction Cost Economics</u>	<u>Behavioral Economics</u>	<u>End of Value-free Economics/Return of Political Economy</u>
Structural Flaws Krugman, 2008; Heckman, 2008; Deaton, 2015 Technological Change (innovation) Solow (1956) Nordhaus, 2018, Romer, 2018	Stiglitz, 2001; Spence 2001; Tirole 2014; Hart & Holstrom, 2016	Coase, 1991; North, 1993 Fogel, 1993; Ostrom, 2009 ; Williamson, 2009	Human Behavior Simon (1957); Akerloff, 2001; Kahneman, 2002; Smith, 2002 Shiller, 2013; Strategic Conduct: Nash 1991; Selton, 1994; Harsanyi, 1994; Thaler, 2017	Sen, 199*; Banerjee, Duffo & Kremer, 2019

MAJOR CATEGORIES OF MARKET IMPERFECTIONS

SOCIETAL Expanded Role of Externalities, 7, 41, 55 Network Effects, 29 Innovation Economics 29, 65-66	ENDEMIC Information Asymmetry 8, 29-30, 35, 87-88 Incentive Problem 14, 49, 59, 65-66, 87 Perverse Incentives 11, 20, 30 Inequality of Capital 7 Financial 63, 90-102 Physical 68, 83 Human Capital Macroeconomic Imbalances (<i>Keynes</i> 22) Income Demand Insufficiency Investment 9, 16, 23 Instability	NEW INSTITUTIONAL/ TRANSACTION COST 33, 49, 91, 106 Search & Information Imperfections Bargaining costs Incomplete Markets 5, 6, 34, 38, 42-43 Risk 67 Future 65 Enforcement 67-68	BEHAVIOR 66, 103-105 Motivation Values & Selfishness 68,70 Satisficing 67 Fairness/reciprocity Social Group & Status Perception Social Influence Calculation 67, 97-99 Bounded Rationality Heuristic Decision-making Execution 67 Bounded Willpower Improper use	POLITICAL ECONOMY 3, 66, 83, 88-92. Foundational Values Wellbeing, capabilities Declining marginal value of wealth Distribution of surplus 7, 11 Power Legal Framework Inequality 46-49 Policy 7 Taxation Subsidies Trade Protectionism Antitrust Toward Regulation 7
STRUCTURAL 14, 34, 41, 66 Imperfect Competition 7, 12, 103-107 ICE Problems Technology Marketing, Bundling Cost-Price 66, 83-89 Ownership 20, 63, 105 Elasticity Availability 67				

Source: See Mark Cooper, Pragmatic, Progressive Capitalism, A Remarkably Successful, Uniquely American Political Economy (August 2020, Working Paper NO. 1; citations are from Joseph Stiglitz's critique of socialism (1996, *Wither Socialism*)

. It follows then that policy interventions are appropriate to correct market imperfections and market failures. In fact, few if any of these Nobel laureates abandon capitalist markets as central economic institutions. Their primary goal is to identify the sources of market failure with greater precision and prescribe policies to reduce market imperfections, all while preserving the positive, dynamic forces of markets. In terms of Table 4.1, the debate between market fundamentalists and progressive capitalists overwhelmingly favors the latter.

UNIQUE AND PERSISTENT MARKET POWER IN COMMUNICATIONS NETWORKS

The examination of the communications sector leads to the conclusion that the conditions in the market lead to strong concerns about market power. Here we offer two perspectives. We begin with a discussion of the fundamental conditions in the market from the antitrust point of view (see Table 2.4). We then turn to a regulatory point of view. In keeping with our general approach, we ground that discussion in a traditional approach.

Market Definitions: The paramount importance of local markets in product definition arises in the communications sector. In fact, for many communications services the geographic definition is simple. In order to transmit communications, the consumer needs to have a local connection to the network (first mile) to a point where the traffic can be transferred to regional or national networks (middle mile). Connectivity has a strong local component on both the originating and terminating ends. Therefore, the analysis begins at the local level and considers national markets only where they have a unique impact. Substitutability between products is limited.

Structure: High levels of concentration sustained over long periods typify the communications market. The long history of legal monopoly and unique barriers to entry create and sustain market power. Other distinctive patterns of anti-competitive practices, anti-competitive contracts, or the presence of disruptive firms (mavericks) are important.

Competitive Effects: Having suggested a rule of thumb that four is few, six may be enough and ten is many, we note that in the communications sector, a market with even six equal-size competitors is hard to envision, let alone ten. In fact, as we show below, these markets struggle to support four competitors. Most have concentration ratios closer to a duopoly than competitive levels. We recognize that in infrastructure and communications industries, four is a big number that markets struggle to reach, but that should not be an excuse to abandon the fundamental principles of analysis of competitive economics. High concentration should be a warning flag indicating market power pervades these markets. Indeed, because the advantages inherited by the incumbents from the monopoly period are so great, because entry is so difficult, and because the anticompetitive behavior of incumbents is so pervasive and deeply ingrained, we believe it would be a mistake to presume even moderately concentrated markets are competitive. Because it is so hard to achieve large numbers of competitors, communications markets have been overseen by both antitrust and regulation.

TABLE 2-4: COMPETITIVE EFFECTS, MARKET CONDITIONS, AND PARTICIPANTS IN COMPREHENSIVE MERGER REVIEW ANALYSIS

Anti-competitive Effects		Market Conditions for Abuse of Market Power		Firm Incentives/Ability to Abuse Market Power	
General	Communications Sector	General	Communications Sector	General	Communications Sector
Price (SSNIP $\geq 5\%$)	Yes ($\geq 25\%$)	Seller #	Few	Dominant Firm	
Profit	High (EBITDA)	Seller size	Large	Price	High
Quality		Product	Segmented	Profit	High
Variety		Geography	Separated	Margins	High
Service	Poor (Satisfaction)	Technology	Specialized	Market share	High
Innovation		Concentration	High	Incremental cost	Low
Exclusion	Pervasive	over time	Persistent	Sales analysis	Limited Loss
		Demand elasticity	Low	Customer location	Crucial
Coordination		Entry & Exit		Information about buyers	Extensive
Negotiated	Occasional	Challenges	Severe	Capacity Management	Yes
Accommodating	Frequent	Barriers	High	Competitors	
Parallel behavior	Reciprocity	Sunk costs	Large	Response	Weak
Conditions facilitating		History	Limited	Speed	Slow
Predictability		Intramodal Competition	Limited	Capacity	Limited
Past practices	Yes	Vertical integration	Extensive	Similarity	Yes
Monitoring		Conglomeration	Yes	Nearness	Yes
Other markets	Multiple contact	Mavericks	Few	Complements	Yes
Collective market power	High	Price		Entry	
		Products		Timeliness	Late
		Innovation		Likelihood	Low
		Efficiencies	Not unique	Sufficiency	Low
		Pass-through	Limited	Consumers	
		Other Practices		Switching	
		Monopolization	Yes	Cost	High
		Facilitating practices	Yes	Availability	Limited
		Monopsony mergers	Yes	Speed	Slow
				Output competition	
				Direct/Indirect	Both
				Price discrimination	
				Targeting	Yes
				Arbitrage	No
				Overcharging	
				End-use Products	Comp.
				Intermediate goods	BDS

Source: Author, based on Chapter 2 and Part II.

Vertical Integration and Leverage: The classic concern in the communications context is that suppliers of (upstream) applications or content distributed over communications networks, who are also owners of those networks, will favor their own products at the expense of the product of unaffiliated producers. Cross-owned products succeed, not because they win on the merits, but because they are favored by their owners who control a key (midstream) chokepoint. More importantly, in communications networks vertical relationships are central because interconnection and interoperability between networks is crucial for communications to be able to flow. Communications networks are frequently a chokepoint, bottleneck, or essential facility that controls the access to consumers by controlling the flow of communications. Therefore, vertical integration and leverage are a heightened concern.³⁶

Transmission of data is the indispensable function necessary to deliver services over the communications network. This creates a strong basis for concern about vulnerability to the abuse of vertical market power. Control of the network chokepoints gives the network operators a great deal of power in a situation where there are few, if any, alternatives.³⁷

Conglomeration: The dominant communications networks possess every one of the characteristics necessary for firms to engage in cross-subsidization of their more competitive products and impose a price squeeze on their rivals. While “an insecure, widely stretched conglomerate with no strong market base and thin profit margins can affect competition far less than an established lucrative, triple-a dominant firm,”³⁸ the dominant broadband Internet access providers (AT&T, Verizon, Comcast, Charter) and the dominant big data platforms (Google, Facebook) exhibit characteristics that are the antithesis of these “non-threatening” conglomerates.

REASONS TO REGULATE TO PREVENT ABUSE AND PROMOTE PROGRESS IN COMMUNICATIONS

In the second edition of his classic work, *Economics of Regulation*,³⁹ published less than a decade before the enactment of the Telecommunications Act of 1996, Alfred Kahn identified a series of characteristics that could justify regulation. While he was generally critical of the way regulatory oversight had been practiced, the conditions he identified compel careful consideration of regulation of communications networks.

Infrastructure and Externalities

Making the case for economic regulation, Kahn pointed to the fact that because communications networks exhibit economies of scale, the market will support only a small number of large firms compared to other sectors of the economy.⁴⁰ In addition, because of the essential inputs the communications networks provide, they influence the growth of other sectors and the economy.⁴¹ They are infrastructure.

Kahn added two other characteristics as potential justifications for regulation: “natural monopoly” and “for one or another of many possible reasons, competition does not work well.”⁴² Although Kahn was skeptical of the monopoly rationale for regulation, he later argued that the nature and extent of competition is an empirical question:

The question is not simply one of *how much* competition to allow—how much freedom of entry or independence of decision making with respect to price, investment, output,

service, promotional effort, financial, and the like. It is a question also of what, in the circumstances of each regulated industry, is the proper *definition*, what are the *prerequisites*, of effective competition.⁴³

Two decades after the passage of the Telecommunications Act of 1996, which aspired to supplant regulation with competition, the critical question is not “Is there more competition?” The question is, “Is there enough competition to prevent abuse?” This report shows that the answer must be a resounding no.

Market Structure

The second rationale offered by Kahn is a market structure problem. Very large economies of scale mean that building multiple networks raises costs. The market will not support competition. In the extreme, we run into the problem of a natural monopoly. Firms that become too large behind high barriers to entry, with high transaction costs on the supply-side or high switching costs or other behavioral flaws on the demand side, obtain market power. Monopolists (natural or otherwise) have market power and there is a strong incentive to abuse it. With the incentive and ability to exercise it, they engage in behaviors that harm competition (by creating additional obstacles to entry or extending their market power to complementary markets) and to harm consumers (by raising prices and restricting choices). Regulation controls market power. However, monopoly is not the only reason to implement public policy – e.g. it has never been a necessary condition to impose common carriage in the communications and transportation sectors.

Social Values

We turn next to Kahn’s third reason for regulation – “other.” Although it is less specific, it can be given several referents in the communications space. Competitive markets do not deliver universal service because there are significant parts of society where the rate of profit does not support extending infrastructure or making it affordable. Rural/high cost areas and low-income populations may not be very attractive from an investment point of view, but they are important from public policy and social values points of view.

Freedom and diversity of opinion and voices are extremely important socio-political values that may not be accomplished by a competitive market. They may or may not be profitable, but society simply cannot leave them to the vagaries of the market. Speech is perhaps the most important example of these values,⁴⁴ diversity is too. Communication is well-recognized as a key to democracy and many consider it a human right.⁴⁵ The challenge is not simply to ensure that all have the opportunity to speak, but also to address gross imbalances in those opportunities.

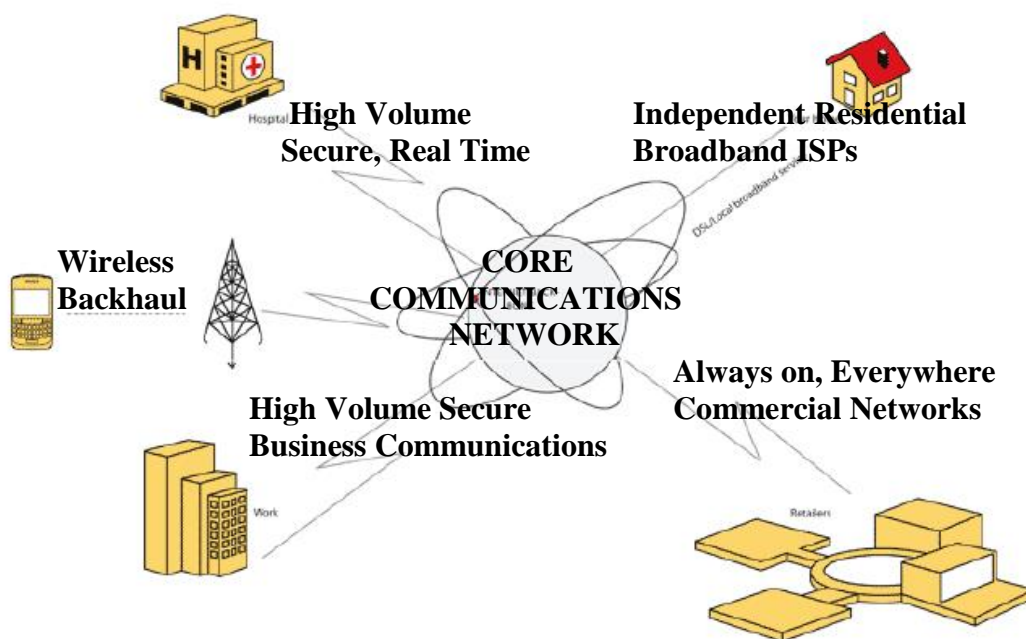
**PART II. THE IMPORTANCE OF MARKET POWER AND ITS ABUSE
IN THE BUSINESS DATA MARKET**

3. THE CENTRAL LOCATION OF BUSINESS DATA SERVICES

THE INCREASING IMPORTANCE OF ANOTHER NETWORK CHOKEPOINT

As shown in Figure 3-1, Business Data Services provide connectivity to the ubiquitous communications network for the dominant digital communications services – wireless and broadband. BDS control the point where the ocean of data surging through the national and regional network become a stream of data flowing to individual consumers. BDS is an intermediate good, vital to the delivery of the other three digital communications services – wireless, broadband internet access service (BIAS) and multichannel video programming distribution (MVPD). Taken together these four services constitute a huge market equal to about half a trillion dollars today, or almost three percent of the gross national product.

FIGURE 3-1: BUSINESS DATA SERVICES AND ACCESS TO CORE NETWORK FUNCTIONALITY ARE CENTRAL IN THE SYNERGY PHASE OF THE DIGITAL REVOLUTION



Source: Cooper, Mark, 2017, "Business Data Services after the 1996 Act: Structure, Conduct, Performance in the Core of the Digital Communications Network The Failure of Potential Competition to Prevent Abuse of Market Power," Telecommunications Policy Research Conference, September. p. 4.

Businesses that do not sell communications to consumers also need BDS to conduct their daily business. This includes small, medium, and large businesses that need much more capacity than a single telephone line, branch networks (like ATMs or gasoline stations) that have many nodes that need to be online all the time, and businesses like health care providers, who need to move large quantities of data between their offices, frequently in real time.

The fact that BDS are intermediate goods does not mean that no one pays for them; people do. This means the costs of these services are important to consumers. These services are not free. The costs are recovered from consumers in the prices they pay for the goods and services that embody them.

A good example of this is mobile wireless service, which has become the largest component of the household communications budget. In order for a consumer to place or receive a mobile wireless transmission, the consumer uses all the facilities that connect the transmission from end-to-end. When the consumer originates the transmission, it is carried from the handset to a cell tower. Once it gets to the tower, it must be hauled back to a point where it can connect to the nationwide communications network. The provision of this “middle mile” link in the communications network is just as necessary to a successful transmission as the “first mile” link to the consumer.

Since the backhaul is to a connection point with the telephone network, high volumes of traffic are aggregated at the cell tower and the backhaul generally takes place over high volume wireline facilities. These facilities that are essential to the communications are needed on both ends of the transmission. Mobile wireless carriers usually purchase these services, called “special access” from wireline incumbent telephone carriers. As such, when the consumer pays her mobile wireless bill, she pays the cost of the middle mile/special access/backhaul for both the originating and terminating areas. Ultimately, all of the costs of BDS are just a cost of doing business, which is passed through to consumers in the bills they pay for goods and services that use BDS as an input.

“First mile” and core connectivity have always been two parts of a single network, whose relationship is being transformed by digital technology and services. Special access stands at a key chokepoint that poses a threat to the development of digital communications networks. The efficient way to meet the need for these services is to deploy a ubiquitous network. This is how and why the telephone network was developed. As we show below, the dominant incumbent network operators, who inherited this ubiquitous network from the monopoly period, continue to have immense market power over this dramatically growing and increasingly vital network service.

THE BIG PICTURE OF BDS MARKET POWER

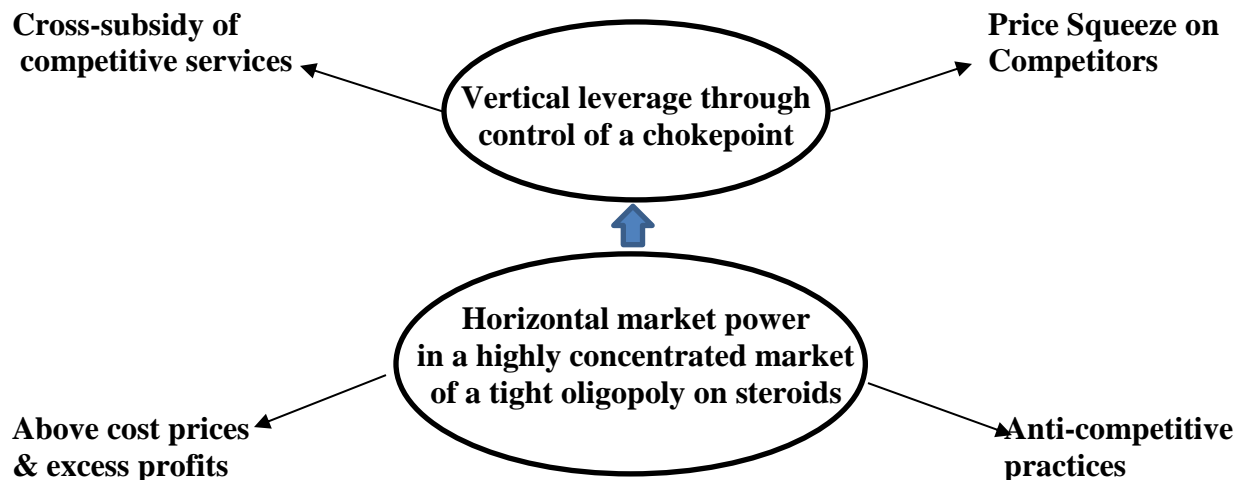
In the previous chapter, we showed that Business Data Services have a central location in the digital communications ecology. In this section, we examine the empirical evidence that this central location combines with the characteristics of the communications market to confer unique market power on the firms that dominate the BDS market. As suggested by Figure 3.2, BDS enjoys both horizontal market power in a highly concentrated market and great vertical leverage because it is a key chokepoint in the digital communications network.

Table 3-1 combines the 48 impacts identified in the general antitrust analysis into 25 concerns and evaluates the potential for abuse of vertical leverage in the Business Data Services market. It shows that the BDS market exhibits characteristics that would make the abuse of vertical market power a great concern. Market power is great, the incentive to abuse it is strong, and the competitive fringe is weak.⁴⁶ This description of the forces in the communications market that drive toward concentration and the abuse of market power are not only theoretically and historically grounded, they are also reflected in the antitrust and regulatory analysis reviewed in the remainder of this report. The Table ties the antitrust approach and the Structure-Conduct-Performance paradigm together. It identifies three major types of factors—competitive effects, market structure, and participant characteristics—used to determine whether a merger will harm

competition and consumers. These reflect the broader framework of the Structure-Conduct-Performance paradigm as expanded by contemporary economic theory. There are more than four dozen factors, although several are repeated in each of the categories. We include our assessment of how these factors play out in the communications market, which is detailed below.

The market's performance is listed in the left column, since this is the bottom line for antitrust analysis. Market conditions and structure are in the center column; conduct is in the third column. There is clearly a pervasive and powerful set of conditions that make these markets vulnerable to the abuse of market power.

FIGURE 3.2: 1 BUSINESS DATA SERVICES: A HIGHLY CONCENTRATED MARKET WITH A HIGH LEVEL OF VERTICAL LEVERAGE



Source: Author based on Cooper, Mark, 2017, "Business Data Services after the 1996 Act: Structure, Conduct, Performance in the Core of the Digital Communications Network The Failure of Potential Competition to Prevent Abuse of Market Power," Telecommunications Policy Research Conference, September

Reading the public record as shown in Table 3-2 provides evidence of abuse of market power and provides a textbook case of abuse of vertical leverage and market power:

PREMATURE DEREGULATION COMPOUNDED THE SPECIAL ACCESS MARKET POWER PROBLEM

Until the passage of the 1996 Telecommunications Act, special access services were subject to traditional price regulation and later price cap regulation because they were provided almost exclusively by the incumbent local phone company. The 1996 Act declared its intention to promote more competition in the local telecommunications sector, but it did not eliminate the requirement that rates be just, reasonable and nondiscriminatory. It expressed a desire for that outcome to be achieved as a result of competition, rather than regulation.

In 1999, special access was one of the first services to be deregulated by administrative action after the passage of the 1996 Act. Because so little time had passed since the 1996 Act, it was clear that the dominant position of the incumbent local telephone companies had not yet been weakened by competition. The FCC's decision to deregulate was based on the prediction that competition would grow. A quarter of a century later, it is evident that the hope and

prediction of competition has not come to pass. The large incumbent local telephone companies still have a stranglehold on the special access market, accounting for at least three-quarters of the special access market and perhaps as much as nine-tenths.

TABLE 3-1: CONCERNS ABOUT VERTICAL LEVERAGE IN HIGHLY CONCENTRATED MARKETS APPLIED TO THE BDS MARKET

Short Description	Conditions in BDS Market
<u>Input Foreclosure (IF)</u>	
Market Structure	Extremely highly concentrated
Ability of fringe to compete	Limited due to high cost, low market share
Behavior of integrated firms	Multiple exclusion strategies
Impact of contractual terms	Layers of anticompetitive conditions
Availability of substitute inputs	Limited
Incentives of other firms to parallel	Strong in-region and reciprocity out-of-region
Ability to undermine competition -- withholding, quality degradation, or price increase	Demonstrated in input and output markets
Competitive fringe ability to constrain	Price competition is weak or non-existent
Pass through of variable cost	Yes
Ability to capture customers	Incumbents dominate with 80% market share
Impact of reciprocity	Extensive
<u>Customer Foreclosure (CF)</u>	
Bargaining leverage	Overwhelming
Ability to self-supply	In-region, absolute
<u>Unilateral Incentives (UI)</u>	
Earning on input, compared to retail product	Rapid growth in BDS services
Relative margins	High margin on BDS services
Barriers to entry	Substantial
Vulnerability to coordination	Significant and demonstrated
Incentive to deal with independents	Nil in-region, small out-of-region
Access to and use of competitively sensitive information	Dominance puts fringe at a severe disadvantage
Who are the mavericks and how do firms behave toward them?	All non-incumbents behave as mavericks
<u>Price Increases (\$)</u>	
Cost symmetry	Asymmetry between incumbents and competitors
Cost and ability to punish market participants	High margins create strategic tool
*Balance of upward and downward pressure on prices	Persistent rising prices, increasing profits
<u>Evasion of regulation (ER)</u>	
Evasion of regulation: ability, profitability	Clear evidence of cross-subsidy
Ability of regulators to detect and deter evasion	Nil

Source: Author based on Cooper, Mark, 2017, "Business Data Services after the 1996 Act: Structure, Conduct, Performance in the Core of the Digital Communications Network The Failure of Potential Competition to Prevent Abuse of Market Power," Telecommunications Policy Research Conference, September

TABLE 3-2: SUPPORT FOR KEY ELEMENTS OF THE ANALYSIS IN THE HEARING RECORD¹

<p>Basic Conditions²</p> <ul style="list-style-type: none"> Franchise Monopoly History³ Few Substitutes⁴ Inelastic Demand and Supply⁵ Declining Costs & Rapid Growth⁶ <p>Market structure</p> <ul style="list-style-type: none"> Concentration/Inadequate Competition⁷ Barriers to Entry⁸ Deployment Costs⁹ Network Effects¹⁰ Incumbent Advantage¹¹ Weakness of Alternatives¹² 	<p>Perverse incentives</p> <ul style="list-style-type: none"> Vertical integration, Merger wave¹³ Regulatory shenanigans¹⁴ Anticompetitive Conduct Price¹⁵ Price squeeze¹⁶ Lock-in Terms and conditions¹⁷ Performance Price above costs¹⁸ Excess profits¹⁹ Macroeconomic Losses²⁰
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Sources: 1 All citations are to the record in the *Matter of Special Access Rates for Price Cap Local Exchange Carriers, AT&T Corporation Petition for Rulemaking to Reform Regulation of Incumbent Local Exchange Carrier Rates for Interstate Special Access Services*, WC Docket No. 05-25, RM-10593.

2 The welfare economic framework animates and described in detail in several of the major discussion, *e.g.* Declaration of Bridger Mitchell, Attached to Comment of Sprint, January 19, 2010, (Hereafter Mitchell Declaration); WIK-Consult Report, *Ethernet Leased Lines: An International Benchmark*, January 2016, Attached as an Appendix to “Reply Comments of BT Americas,” February 19, 2016, (Hereafter, WIK-study). The WIK study provides a review of the literature that demonstrates the lack of competition and economic harm of abuse of market power in special access services (pp. 45-47); Peter Bluhm with Dr. Robert Loube, *Competitive Issues in Special Access Markets*, National Regulatory Research Institute, January 21, 2009, pp. 25-30, also provides a review of previous studies (Hereafter, NRRI); Reply Comments of the National Association of Utility Consumer Advocates and the Maryland Office of People’s Counsel, February 19, 2016, argues for the traditional approach, p. 6 (Hereafter NASUCA, 2016).

3 Declaration of Lee L. Selwyn on behalf of the Ad Hoc Telecommunications Users Committee, January 19, 2010, (Hereafter Selwyn), shows the compelling logic of the deployment of telecommunications network in franchise territories; The technology deployed during the monopoly period, still dominates, Declaration of William P. Zarakas and Susan M. Gately, January 27, 2016, Table 2, (Hereafter Zarakas Declaration). The NRRI account of the history of regulation reminds us of the strong and somewhat arbitrary role the regulated franchises played in the development of the industry and the allocation of costs and benefits, pp. 9-19.

4 Declaration of Stanley Bessen and Bridger Mitchell, attached to Reply Comments of Sprint, February 19, 2016, ¶ 5. (Hereafter, Bessen Declaration); Reply Declaration of Jonathan Baker, February 19, 2016, ¶¶ 16, 26, 30 (Hereafter Baker Declaration); Declaration of David Sappington, Attached to Sprint Reply Comments, February, 19, 2016, ¶¶ 13, 14 (Hereafter Sappington Declaration); Reply Comments of the National Association of State Utility Consumer Advocates and The New Jersey Division of Ratepayer Counsel, May 31, 2013, p.13 (Hereafter NASUCA 2013).

5 Mitchell Declaration, ¶ 65.

6 Susan Gately, et al., *Longstanding Regulatory Tools Confirm BOC Market Power*, Economics and Technology Inc., January 2010, (Hereafter Gately, Comment), pp. ii, 4. (Hereafter, Gately Comment), CostQuest, Wik Study, NRRI, NASUCA, 2016, p. 13; NASUCA, 2013, p. 14.

7 NRRI; CostQuest and Windstream, *Analysis of Fiber Deployment Economics for Efficient Provision of Competitive Service to Business Locations*, Presentation to FCC Staff, June 4, 2015, attached to *ex parte* filing of Harris, Wiltshire & Grannis, June 8, 2015, (Hereafter, CostQuest), p. 2; Bessen Declaration, ¶¶ 41 *et seq.*, Baker Declaration, ¶44; Sappington Declaration, ¶17; NASUCA, 2016, p.2.

8 Selwyn, p. 6, (Hereafter Selwyn); Mitchell Declaration, ¶ 19; NRRI, p. 25; Government Accountability Office, *FCC Needs to Improve Its Ability to Monitor and Determine the Extent of Competition in Dedicated Access Services*, GAO 07-80, p. 6 (Hereafter GAO); Bessen Reply, ¶¶ 23, 28-30.

9 CostQuest, p. 2; Mitchell Declaration, ¶¶ 19, 118.\. Declaration, ¶ 40.

10 Selwyn, p. 3; this observation underlies the analysis in CostQuest.

11 CostQuest, p. 2.

12 Baker Declaration, ¶¶ 31, 32, 22; Bessen Declaration, ¶ 16.

13 NRRI, p. 81; Numerous commenters point out that AT&T, as a long-distance company demonstrated the severe problem of vertical integration, see *e.g.* Charles W. McKee, *Special Access: The Unregulated Monopoly*, March 4, 2009, p.5. shows Sprint’s HHI rising from just under 6,000 to just under 8,000 as a result of the acquisition of the two largest long-distance carriers (ATT, MCI) by the dominant local exchange companies (SBC, VZ) (Hereafter, McKee); Comments of Sprint, p. 2.

14 Reply Comments of Sprint, February 19, 2016, pp. 64-66.

15 Gately Declaration, pp. ii, 4. (Hereafter, Gately Comment), Baker Declaration, ¶¶ 63-64. Citation of NECA tariffs (Comments of INCOMPAS, January 19, 2010), p. 10, (hereafter INCOMPAS Comments), Sappington Declaration, ¶ 23.

16 NASUCA, 2016, p. 8; McKee, 7; Sprint Comment, pp. ii, 28. Sprint Reply, pp. 49-51.

17 Mitchell Declaration, ¶¶ 20, 115, 116, 130-131; Gately Comment, pp. 42-46; NASUCA 2013, p. 26; GAO.

18 Gately, Comment, WIK-study, NASUCA< 2013, p. 17.

19 McKee, 8-9; Gately, Comment, pp. ii, 4; NASUCA, 2016, p. 3.

20 Stephen E. Spivak, *Economic Benefits of Special Access Price Reductions*, March 2011, (Hereafter, Spiwak), attached to *Letter from Maura Corbett, NoChokePoints Coalition to Marlene H. Dortch*, March q5, 2011; WIK-study; NASUCA, 2016, p. 8.

The FCC misunderstood the situation entirely after the 1996 Act and its analysis was exactly backwards. It worried that the new entrant would game the system, holding back on entry to take advantage of the incumbent network, rather than build their own. The opposite problem was much more important. The incumbents understood the immense market power they possessed and they were very skilled at defending and exploiting it. The incumbents had a huge advantage in a fully deployed network, the economic barriers to entry were immense and the incumbent telephone companies had the strong incentive and ability to manipulate the system to prevent entry and enjoy excess profits. Thus, deregulation of the special access market is a striking example of premature deregulation, a clear case of regulators removing their oversight before competition is strong enough to prevent the abuse of market power.

One of the great ironies in the debate over the abuse of market power in the special access market is that until 2007, the Commission collected and published data on the costs and profits of special access services. That data clearly showed that competition had failed to restrain pricing abuse. The response of the FCC, whose prediction that competition would be effective had failed, was to stop collecting the data at the behest of those large incumbents.

In addition to the strategy of hiding anticompetitive behavior behind a veil of secrecy, the premature deregulation of special access exhibits another common strategy used to hide the impact of premature deregulation. The Commission engaged in technology/vintage bias. It deregulated a specific new technology or facilities deployed after a specific date, claiming that new facilities or technologies would be more competitive. Technology bias introduces two processes that drive deregulation forward much faster than competition develops. First, incumbents with market power have strong incentives to lock customers into the new services, where prices are unregulated, before competition gets going. Second, asymmetric regulation of transactions in which services are identical is hard to justify. Pressures build to treat like services similarly and the FCC uses this as an excuse to deregulate all services, rather than reconsider whether the original deregulation decision made sense. Addressing the mistake of inconsistency is used to divert attention from the more fundamental error of premature deregulation.

Because of the FCC's decision to stop collecting data on special access, there is a paucity of publicly available data. The FCC undertook a significant, one-time data collection to consider reforming the special access marketplace that is not available for public inspection at this time. Rather, the FCC hired an independent, third-party economist to analyze the data it received. The FCC also received separate analyses from economists representing incumbents and competitors. However, the details supporting the conclusions in those analyses have been submitted under seal to the agency.

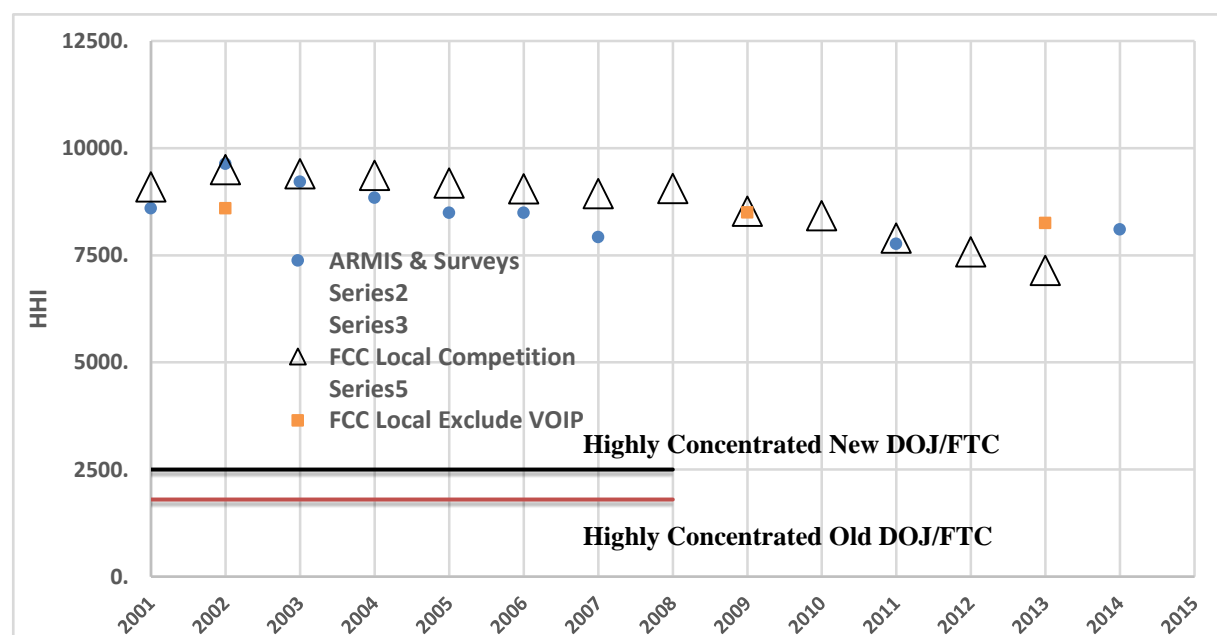
CONCENTRATION

Although the FCC predicted that competition would erode the market power of the incumbent telephone companies in the provision of high-capacity business connectivity, after a decade and a half, their market share is still extremely high. As shown in Figure 3-3, the concentration of the special access market exceeds the thresholds of high concentration by a wide margin, being more than three times, the threshold used by the antitrust authorities to designate a market as highly concentrated.

Figure 3,3 shows three estimates of the HHI. One is based on the FCC Automated Reporting Management Information System (ARMIS) data, prior to its termination, and other surveys or evidence introduced into the special access proceeding. Coverage is spotty. The second estimate is based on the FCC local competition reports. It assumes that Competitive Local Exchange Carriers' (CLEC) use of Incumbent Local Exchange Carriers' (ILEC) lines do not represent competition because the CLECs are not self-supplying. This estimate focuses on business lines only, as a proxy for the special access market. It assumes that the overall ratio of CLEC-owned lines to total lines (*i.e.* owned plus leased from ILECs) applies to business lines.

We make two different assumptions about whether CLEC-interconnected Voice Over Internet Protocol (VOIP) for businesses represents competition (CLECs self-supplying). In the one assumption, interconnected VOIP is assumed to represent a substitute for special access. In the second assumption, it is assumed to not be a substitute and is therefore excluded from the market for special access. We show both treatments of interconnected VOIP because the dramatic increase in interconnected VOIP in the business sector reflects a small part of the market where VOIP is an adequate service, but VOIP may not deliver the secure, stable quality service that many businesses need. This is readily apparent in the distribution of VOIP between residential and business CLEC customers. VOIP lines represent 47% of residential lines, but only 15% of business lines.

FIGURE 3.3: CONCENTRATION IN SPECIAL ACCESS MARKETS



Sources: Early ratios are based on FCC Monitoring Reports, Charles W. McKee, *Special Access: The Unregulated Monopoly*, Sprint, March 4, 2009. 2011 based on FCC *Local Competition Report*, CLEC business subscribers times percent of CLEC subscribers served by CLEC owned facilities. FCC special access proceeding from the Economist' report.

The special access local competition proxy tracks well with the earlier ARMIS data. The level of concentration under both definitions is extremely high, with an HHI in the range of 7,000 to over 8,000. The latter figure is consistent with the non-proprietary evidence in the record, which puts the incumbents' market share at 90% or higher.⁴⁷ In any case, the

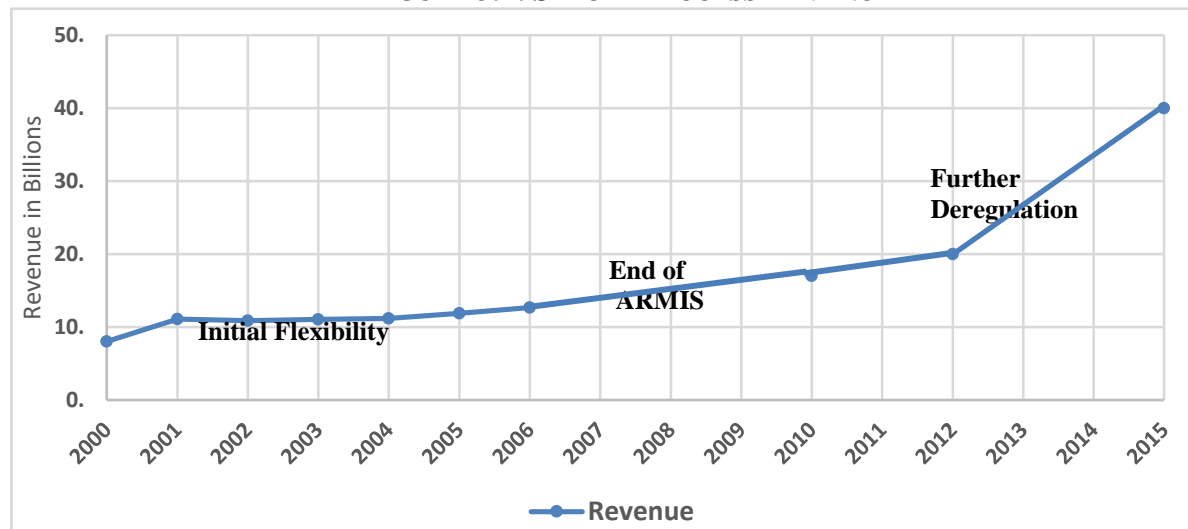
deregulation decision should reflect the careful analysis of real world conditions in well-defined product and geographic markets, rather than hope and hype, to determine that workable competition is present.⁴⁸ Potential competition did not become actual competition.

INCREASING REVENUES, DECLINING COSTS, SOARING PROFITS

Figure 3.4 shows the dramatic increase in revenues after the decision to deregulate the special access market. Between 2000 and 2010, revenues increased by just under 8% per year.

In the past half-decade, that rate of growth has doubled. This increase was triggered by further deregulation and elimination of oversight over special access rates, including the termination of the controls that the FCC placed on SBC at the time it acquired AT&T. Over the entire period, revenues increased by 11% per year. The first round of increase followed the initiation of pricing flexibility. The second came more recently when oversight was further relaxed. Needless to say, growth in the volume of traffic was considerable as well.

FIGURE 3.4: SPECIAL ACCESS REVENUE



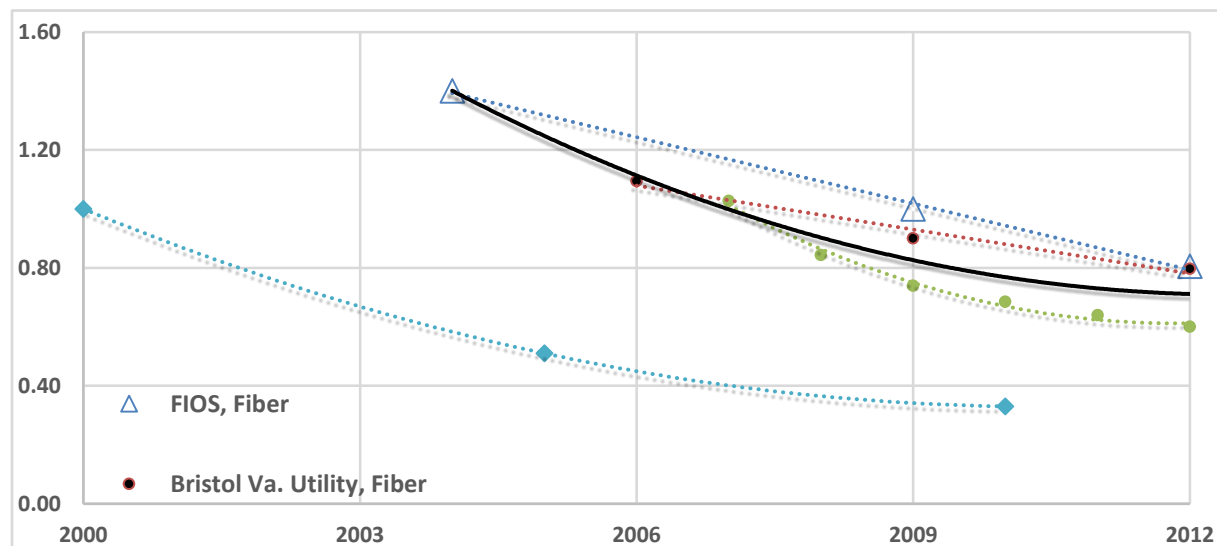
Sources: 2000-2007, The official FCC ARMIS data is frequently the source for early estimates, see Susan Gately, et al., *Longstanding Regulatory Tools Confirm BOC Market Power*, Economics and Technology Inc., January 2010, Charles W. McKee, *Special Access: The Unregulated Monopoly*, Sprint, March 4, 2009.

While revenues were increasing dramatically, costs were declining, particularly for fiber-optic cable, as shown in Figure 3.5, which adds several cost estimates from the FCC proceeding to the earlier, industry-wide cost estimates. Transmission and switching costs were declining about 12% per year over the first decade of the 21st century. With revenues growing at almost 8% per year and costs declining by 12% per year, we would expect to see a large double digit increase in profits. This is exactly what the data showed, as long as it was available.

For 2007, ETI estimated overcharges in the range of \$10 billion on total revenues of \$17 billion. In other words, excesses are over half the total. That estimate was calculated based on the rate of return that the FCC had allowed in 1990, as shown in Figure 3.6. This was a generous rate of return and it is very high in today's market. The FCC-authorized rate of return was set in a period when the risk-free rate of return (on 10-year T-bills) was about 8.5%; today it

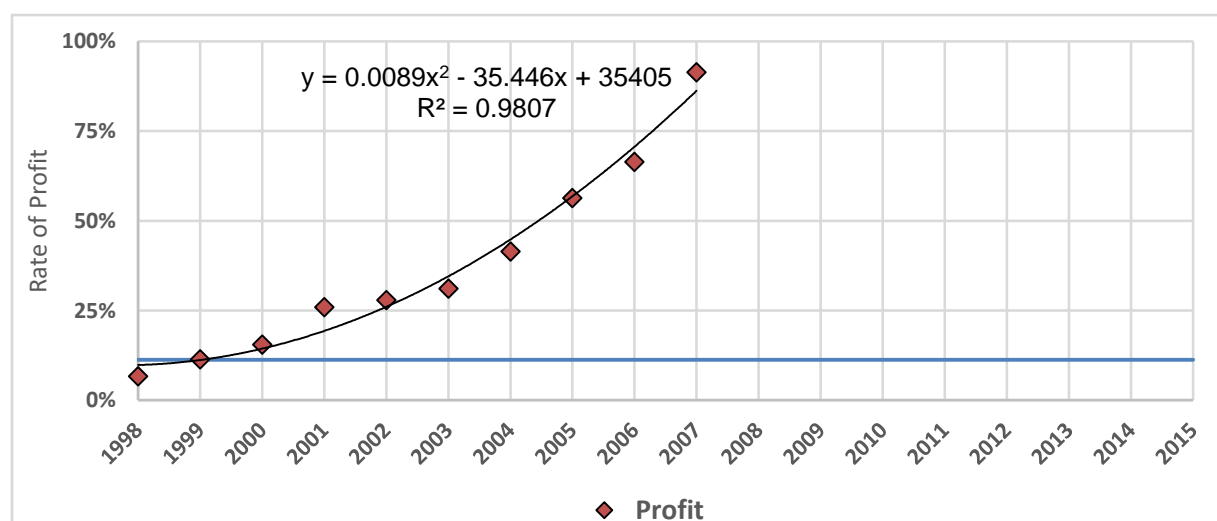
is less than 3%. The interest rate on triple A-rated corporate bonds is also about 5 percentage points lower today. Although one can argue that the increase in competition raises the cost of capital, we have shown that competition is feeble at best. The competitive rate of return would be set well below the level that is a quarter of a century old.

FIGURE 3.5: DECREASES IN THE COST COMPONENTS OF SPECIAL ACCESS SERVICES



Sources: David A. Byrne and Carol A. Corrado, *Price for Communications Equipment: Rewriting the Record*, September 2015; CostQuest and Windstream, *Analysis of Fiber Deployment Economics for Efficient Provision of Competitive Service to Business Locations*, Presentation to FCC Staff, June 4, 2015. attached to *ex parte* filing of Harris, Wiltshire & Grannis, *In the Matter of Special Access Rates for Price Cap Local Exchange Carriers*, AT&T Corporation Petition for Rulemaking to Reform Regulation of Incumbent Local Exchange Carrier Rates for Interstate Special Access Services, WC Docket No. 05-25, RM-10593, June 8, 2015, p. 16.

FIGURE 3.6: SPECIAL ACCESS PROFITS



Sources: 2000-2007, The official FCC ARMIS data is frequently the source for early estimates, see Susan Gately, et al., *Longstanding Regulatory Tools Confirm BOC Market Power*, Economics and Technology Inc., January 2010, Charles W. McKee, *Special Access: The Unregulated Monopoly*, Sprint, March 4, 2009.

Capital costs are only part of the cost of service. We find bits and pieces of evidence on operating costs. Gately gave data that suggested a decline in operating cost of 10% per year for a few years in the mid-2000s. If equipment costs that have been declining by 16% per year represent half of the cost of service (as suggested by a WIK-study), and operating costs have been declining by 5%, the total cost has been declining by 10% per year, or more. Sustained over a 15-year period (since the onset of pricing flexibility), the cost of special access would have fallen by 75%.

This highlights the problem not only with regulatory flexibility, but also with the price cap approach, even if the rates are held steady at the rate of inflation. Profits would be growing 10% per year plus the rate of inflation. The price cap adjustment was 5.3% until 2005 and 1.8% for thereafter. Based on these factors, the average annual compound rate of growth in profits would be about 18% over the period from 2002 to 2007. In the five years after pricing flexibility for which we have ARMIS data, Gately shows a compound annual rate of increase in profits of 20%.

Thus, the data suggest that excess profits are on the order of 50% of the prices charged and those profits have grown steadily since deregulation. Potential competition did not impose discipline on prices or profits.

4. THE FCC'S MAY 16 ORDER AND FURTHER NOTICE

CLASSIC INDICATORS OF MARKET POWER

After a decade of delay and a major data gathering effort, the FCC finally issued an order in the Special Access proceeding. Although the Commission reached final conclusions on some issues and tentative conclusions on others, which it put out for further comment, its reading of the record is important because it points toward the direction the Commission was heading, a direction that is consistent with the record and economic practice grounded in traditional theory.

Concentration

On the question of vigorous competition, the FCC compiled the largest data set in its history. It shows that about three-quarters (at least 70%, and as much as 80%) of consumers purchase special access services under the conditions of an absolute monopoly – even using a fairly lax geographic definition of the market. The remainder have, at best a duopoly – one competitor serving someone in their building or the census tract. In very few circumstances do customers have four or more competitors. Even using a looser definition – one actual competitor and four potential competitors somewhere in the census block – fewer than 10% have competition. Measured at the level of buildings and focusing on facilities-based competition, the incumbent local telephone companies have a market share of about 83%. The HHI is close to 6900, attributing no market power to the largest competitor in the market, which tends to have a market share of 10%.

Anticompetitive Contract Terms and Conditions

In this case, the Commission acted most aggressively in the area of conduct and contractual conditions. In the pricing of special access by the dominant, large incumbent telecommunications companies, The FCC found anticompetitive “restrictive conditions,” including “minimum volume commitments, portability conditions, revenue commitments, shortfall penalties, circuit migration charges and restriction on exclusivity-like provision”⁴⁹ that lock in consumers and undermine competition.

The companies claimed that various contractual terms like “all or nothing requirements,” “shortfall penalties” and “early termination penalties” are a reasonable way to recover costs they have incurred by offering discounted tariffs. The Commission found that, while some terms are reasonable, many of the tariffs are punitive, rather than efficient. The Commission invited the companies to provide cost data that would explain how such obviously excessive and restrictive conditions could be economically justified. The companies chose not to offer one shred of cost evidence. With no concrete defense, the Commission must find the terms illegal.

There are other patterns in the data that suggest anticompetitive practices. Since the largest incumbent local exchange carriers – Verizon, AT&T, and CenturyLink – have significant out-of-region businesses (wireless and enterprise) they are purchasers of special access in those areas. They overwhelmingly buy services from the local exchange carriers incumbent to those regions, rather than competitors. They almost never build out-of-region facilities. By withholding their business from competitive suppliers, they significantly shrink the market. They also establish a pattern of reciprocity – extending their no-compete strategy into this

important market. This is the telco version of the no-compete strategy that pervades the cable industry. The bottom line is simple. If they have market power, they will use it to accomplish their goal of raising their rate of profit and protecting their market power.

Competition and Price

The dominant firms claimed that they face vigorous competition and, as a result, the prices they charge are reasonable and the terms and conditions they impose in contracts are not abusive or anticompetitive. The Commission rejects these claims on the basis of a thick empirical record, blocking some actions and imposing greater regulatory oversight on others.

With respect to prices, for low bandwidth services that make up 60% of the market, economic analysis shows that competition reduces prices and the more vigorous the level of competition, the larger the price reduction. In the most rigorous specification modeled by the FCC expert, the benefits of competition are at least 5% and as much as 28%. The three-quarters of the special access customers who lack competition are denied any of these benefits. Almost no users of special access service receive the benefits of workable competition.

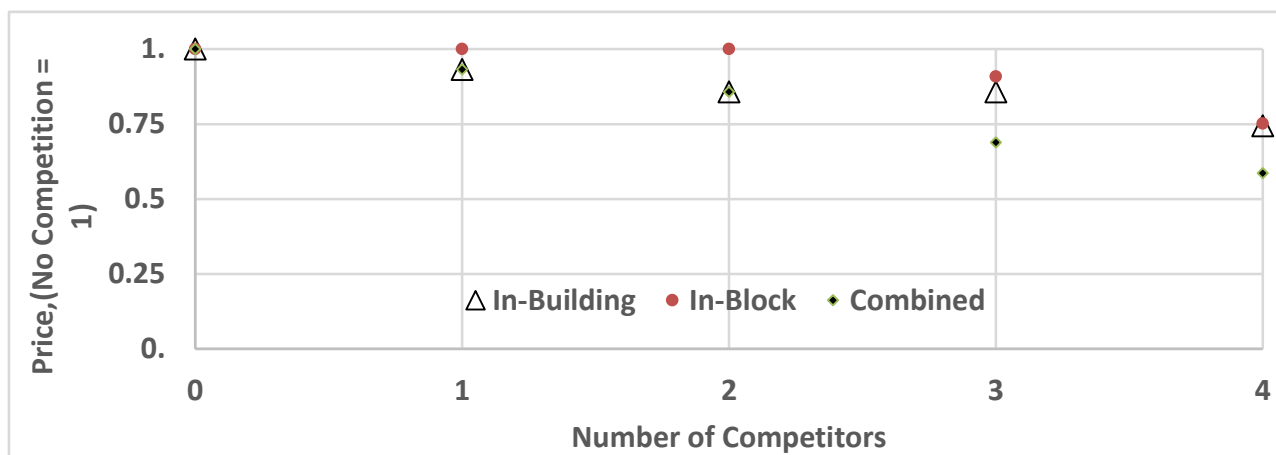
The FCC analysis assumed, incorrectly, that a fiber line anywhere in the census block represented potential competition that would deliver the full benefits of competition. The record was replete with evidence that there were still many cost and institutional obstacles to extending competition to actual customers within the census block. An alternative definition for the geographic market would be the building. That is, if a competitor is serving one customer in a building the conclusion that they are actual or potential competitors for other customers is more reasonable (unless, of course, anticompetitive terms and conditions in the contracts foreclose those customers).

A reanalysis of the data by Jonathan Baker demonstrates this flaw in the FCC analysis. He identified in-building providers as competition, augmented by potential competitors in the census block. Figure 4.1 summarizes Baker's regression analysis. His analysis accepts the basic approach taken by the FCC expert and elaborates on it in several ways. Baker analyzes the effect of in-building v. in-census block competitors independently. He analyzes only high-bandwidth services, since there is a consensus that low-bandwidth services are not competitive. He includes the presence of cable.

Baker's analysis is decisive in several respects.

- First, he generally replicates the in-block result, but finds in-building competition is more important.
- Second, in-building competition has an immediate and larger effect.
- Third, in-block competitors do not have an impact until the third competitor is added.
- Fourth, adding the eighth competitor lowers prices by about 10 percent, which exceeds the SSNIP standard.
- Fifth, the impact of eight or more competitors, which is likely very rare, is a price reduction of 43%.

FIGURE 4.1: PRICE IMPACT OF IN-BUILDING AND IN-BLOCK COMPETITORS



Source: Jonathan Baker, 2016, Replay Comments, in the matter of *Special Access Rates for Price Cap Local Exchange Carriers*, AT&T Corporation Petition for Rulemaking to Reform Regulation of Incumbent Local Exchange Carrier Rates for Interstate Special Access Services, WC Docket No. 05-25, RM-10593, January 27. Table 1, column 8.

This is consistent with our general conclusion that “four is few, six may be okay and ten is competitive.” These results are consistent with broader analysis of concentration and price, as discussed in the next chapter. A duopoly yields little price effect. The move from three to four competitive firms has a big impact. Moving to eight delivers an even bigger impact. Moreover, the fact that prices in competitive markets are lower does not mean they are free of above cost pricing. As noted in the conceptual discussion, in a situation where the dominant firm has a large market share and the competitive fringe has higher costs, the dominant firm can collect rents through strategic pricing – pricing against the residual demand curve.

OTHER INDICATORS OF ANTICOMPETITIVE CONDUCT

The data shows that mobile telecommunications providers are charged much higher prices than other BDS users. This has the effect of undercutting mobile, which has the strongest base of competitors and potential to compete out of region. This reinforces the no-compete strategy. However, the economic analysis does not attempt to estimate the magnitude of the abuse of market power. For the purposes of the FCC in the proceeding, it did not need to do so. It was enough to show that abuse existed.

First, the companies’ failed to offer the cost data to justify their contract terms, data that would have been ideal to address the question of overcharges. They chose not to do so. Again, given the evidence of lack of competition, anti-competitive practices and price effects of competition, the commission properly concluded that substantial pricing abuse exists.

Second, the Commission had abandoned cost analysis and assumed that either competition or the price cap would protect consumers. Having seen that competition had failed to do offer consumer protection, the Commission must look to its price cap approach as the last line of defense. The FCC’s analysis shows that its efforts to protect consumers have failed miserably, resulting in rates that are 15% to 20% higher than would have been the case if the

Commission had updated its X-factor based on broad economy parameters. While this is a good place to start, our analysis of cost trends for communications equipment shows that the excesses are much larger – well over 20% without taking into account excess profits that were built into the base rates.

These adjustments to the formula are based on the economy-wide changes, not the dynamic changes in the communications sector. Indeed, the cost indices identified above were developed precisely because the routine indices were dramatically underestimating the decline in costs. In fact, the specialized cost index shows a decline that is almost twice as high as that calculated by the FCC. Given that the base of the index involved a rate of return that was based on a cost of capital substantially higher than the current cost of capital, our estimate based on the historical data – that rates are 50% higher than they should be – seems reasonable.

NEW YORK DATA

In this section, we focus on Verizon because it has agreed to the proposition that there are severe market power problems in the FCC proceeding, although the solution it proposed was totally inadequate. We also have access to financial data for New York that moves beyond the very aggregated data that is publicly available to gauge financial performance. When the FCC stopped publishing data, the New York Department of Public Service (NYDPS) continued to require Verizon to file financial data. This not only is a key to understanding where the market exists, it is also central to the allocation and recovery of costs.

The Shifting Focal Point of Market Power

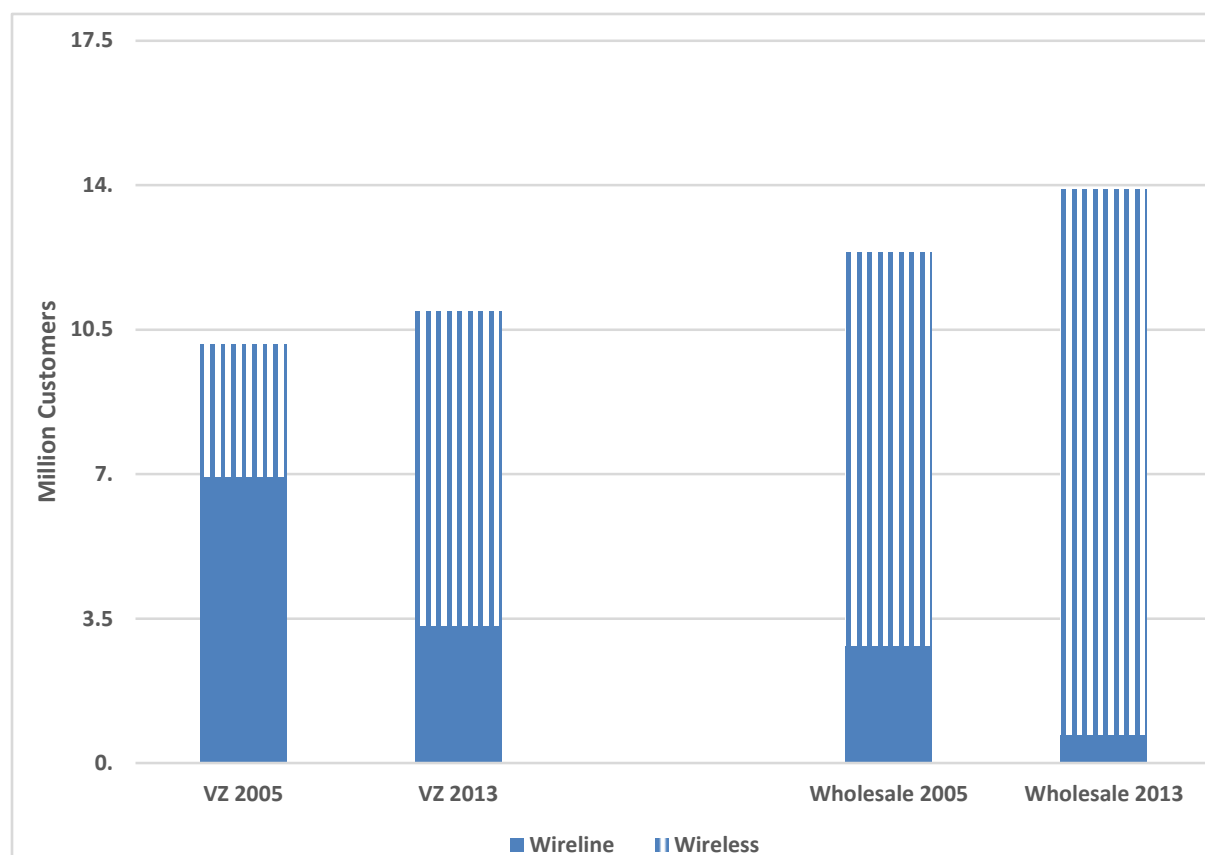
Wireless, broadband data and voice are dependent on Business Data Services and the incumbent market share of the BDS market is the highest of any of the services analyzed in this report. The market power that the dominant incumbent local exchange carriers have by controlling the terminating monopoly – the network interface at the end-user premise – has been transferred to the market power they possess at the first point of network interconnection, i.e. the network interface for BDS.

To appreciate the magnitude and speed of the shift in the role of these two parts of the network, Figure 4.2 shows the change in Verizon voice connections over the period from 2005 to 2013.⁵⁰ We observe that Verizon has experienced modest growth of customers, about 7%. We estimate the wholesale BDS market for voice connections by excluding cable, which is likely to be self-supplying special access but not selling it at wholesale. The rest of the market, made up primarily of out-of-region wireless service providers, has grown by about 16%. Since Verizon is the dominant special access provider, it has garnered the lion's share of that market.⁵¹ These are voice circuits only. Internet data circuits grew much more rapidly, increasing over 30% per year for the decade between 2005 and 2015.

The shift in connectivity from “plain old telephone service” (POTS) to “pretty amazing new stuff” (PANS) in the form of broadband and wireless for connectivity is the technological revolution we have been describing. This shift requires a dramatic growth in high capacity connectivity. Taking this view, in 2005, Verizon's voice connectivity business was split roughly equally between 10 million POTS connections and 13 million BDS connections. Just eight years

later, the POTs connections have been reduced by 60%, while the BDS connections had increased by almost two-thirds. POTS had declined from two-fifths to only one-sixth of the connections. Adding broadband for video connections would make the shift in connectivity even more dramatic.

FIGURE 4.2: VERIZON NEW YORK VOICE CUSTOMERS SHIFT BETWEEN TECHNOLOGIES



Source: Department of Public Service, In the Matter of a Study on the State of Telecommunications in New York State, Staff Assessment of Telecommunications Services, Case 14-C-0370, June 23, 2015, pp. 15-16.

Financial Analysis of the BDS Market

Because the FCC has stopped collecting financial data on special access and the companies have failed to file any meaningful data on the cost and profitability of these services in this proceeding, it is difficult to analyze the financial performance of these services. Projecting price and cost trends from the last available financial data, we have argued that the market is generating \$20 billion in excess profits. That estimate was based on an estimated market size of \$40 billion. In fact, the FCC puts the BDS market at \$75 billion. The line counts above suggest that a substantial portion of the special access market has been shifted into the local jurisdiction under the heading of wireless and broadband services, a shift that is not accounted for in the FCC's estimate of the market's size. With 75% of the Verizon's income coming from these services that rely on special access, we think the market could be as large as

\$100 billion. Some commenters put the overcharges at \$40 billion,⁵² which is consistent with an extrapolation of the Gately ARMIS-based estimate.

Here we take a different approach to the excess profitability question. Matching Verizon corporate financial data with detailed filings in the state of New York we estimate EBITDA for various market segments. The analysis supports the conclusion that there are tens of billions of dollars of overcharges and we urge the Commission to conduct a thorough cost studies to sort these issues out.

In Table 4.1 we present three views of Verizon financial performance. We compare the Verizon SEC annual report to the New York financial filing. In New York, we present two views of the data that differ in how we treat Ethernet-based access. Two views are necessary because of the ambiguity in the treatment of Ethernet-based access, which is likely a part of the IP-services included in the Strategic Services category reported in the VZ-SEC.

TABLE 4.1: VERIZON SEC AND NEW YORK WIRELINE FINANCIAL DATA: 2015
(All figures are in %)

VZ-NY as a % of VZ-SEC	VZ-SEC	VZ--NY	
		Ethernet included	
		No	Yes
Revenue		14	17
Expenses		11	11
Depreciation		16	16
Cost as a % of Wireline			
Cost of Service	55	62	62
Selling	14	16	16
Depreciation	18	20	20
Revenue as a % of wireline			
FIOS	34	28	21
Local Service	15	19	18
BDS	52	58	58
Access (Core & Wholesale)	29	29	33
Other BDS (Strategic & Other)	23	29	26
EBIDTA Margin			
Wireline	23	30	30
Local Service		-51	-51
Access		67	80
Wireless	43		

Source: VZ-SEC, Verizon, Annual Report, 2015, pp. 19-24. FIOS is 79% of customer retail, Local service is 21% of customer retail plus small business. Access includes global enterprise and global wholesale. VZ-NY, Annual Report of Verizon for the Year Ended December 31, 2015, to the State of New York Public Service Commission, Schedule 9. Other Revenues of \$1.5 billion are included and attributed to other BDS services. All nonregulated revenues are assumed to be FIOS.

First, in the upper part of the Table 4.1 we align the Verizon SEC data with the New York financial data. In 2015, VZ-New York represented 14% of Verizon wireline revenue and 11% of expenses and 16% of depreciation. With Ethernet, revenue was 17%. For the reasons stated below, we do not attribute additional Ethernet costs to the New York Jurisdiction.

The Verizon SEC data identifies a wireline segment that includes consumer and small business retail in the mass market category. This includes FIOS revenues, which Verizon estimates to be about 34% of wireline revenue. In the New York data, the category of non-regulated services (made up largely of FIOS) equals 22% of the wireline revenue. The difference in the FIOS share results from the fact that some FIOS revenues (e.g. video) are not reported as telecommunications revenues in New York.

This is an important issue for cost allocation, since FIOS costs appear to be reported as local, but these revenues are not. For example, the New York financials show that just 4% of the current plant are classified as FIOS and only 9% of plant under construction are classified as FIOS, compared to 28% of revenues that are attributed to FIOS. To the extent that FIOS uses special access, this misallocation might impact the estimates of costs and profits, but the bigger question here is whether costs are being dumped on regulated local service to subsidize competitive services.

The BDS category poses a similar problem. Verizon identifies several types of service that appear to be access services:

Global Enterprise offers strategic services and other core communications services to medium and large business customers, multinational corporations and state and federal government customers...

Global Wholesale provides communications services including data, voice and local dial tone and broadband services primarily to local, long distance and other carriers that use our facilities to provide services to their customers.⁵³

Strategic services are defined as follows in the 2008 annual report.

Our strategic IP-based services are the essential building blocks for the integrated communications and IT solutions that Verizon Business offers worldwide... In 2008 we expanded and improved what was already one of the world's few truly global networks, resulting in enhanced speed, availability, diversity and resiliency for business and government customers worldwide. These improvements were part of approximately \$17 billion we invested last year building, operating and integrating our advanced broadband wireless and wireline networks.⁵⁴

Here we see the thorough interweaving of the IP-transition, access and broadband. Strategic services clearly include Ethernet-based access services which is a large part of the BDS market, but are not reported as local telecommunications in New York. The FCC has designated the distinction between services based on TDM technology and services based on Ethernet as important. It concludes that Ethernet-enabled special access represents over 40% of special access. Verizon reports this in the SEC financials as wireline, but does not report it in New York. The far right column in Table 5-2 assumes that Ethernet-based access represents 40%

additional access revenue, compared to the base of access revenue reported in New York.⁵⁵ Whether or not that should be reported as New York revenue, the existence of such revenue raises the profitability of access services substantially, as shown in the lower part of Table 5-2.

The lower part of Table 4.1 shows the standard estimates of EBITDA for four categories of services – mass market, local service, access and wireless. Mass market and wireless are from the SEC filing; local and access are from the New York filing. The fact that local service shows a severe loss (-51%) and access is immensely profitable (+67%) reflects in part the misallocation of costs, but for the present purposes, the critical factor is that access is the most profitable service. Including the Ethernet-based revenue could boost that to as much as 80%.

THE MACROECONOMIC IMPACT OF OVERCHARGES

To sum up, we have demonstrated the structural conditions for a severe abuse of market power in the delivery of special access services. Cost and price trends and direct evidence show substantial overcharges and excess profits. Overcharges of \$20 billion per year, at a minimum, and as much as \$40 billion, burden household budgets and they might be twice as large: indirect economic losses that result from the drag on the economy could add another \$20 billion to \$40 billion to the harm. These harms have been building up since the premature deregulation of special access and they have accelerated in recent years.

In the early days of the digital revolution, some questions were raised about the benefit of the massive investment in the technology in the form of a “computer paradox”⁵⁶ and later a “productivity paradox of information technology.”⁵⁷ Two decades later, there is no doubt that the digital revolution has transformed the economy has been transformed and stimulated growth.

The standard ways to describe the results of the complex analysis conducted using econometric models is to state the multiplier effect that one observes in the before and after levels of output. For example, lowering the cost of an input by x is observed to result in a change of $2x$ in output.⁵⁸ A second way to express the impact of new technology is to estimate the change in output over a range of the input. For example, an increase of 10% in broadband penetration results in a 1.2% to 1.5% increase in economic output. A quadrupling of the average broadband speed increases economic output by 0.6%.⁵⁹ Since the economic change is permanent and the investment necessary to achieve it is small relative to the overall economy, the net benefit is very large.

Raising BDS prices to earn supranormal profits reduces demand and depresses economic activity throughout the economy. Because communications are such an important intermediate good, they have a large multiplier effect. Lowering prices increases consumption. Total revenues increase, and the increase is larger than the reduction in price. At the competitive price, the providers of special access have to work harder (they deliver more services at a lower price). Their rate of profit is lower, but producer surplus is larger. Of course, consumer surplus increases much more, as does total social surplus.

The analysis of these multipliers has become quite common when evaluating policies and projects that affect basic infrastructure industries. The rule of thumb that emerges across many sectors is a multiplier of about 2-to-1, in agreement with the above analyses.⁶⁰ The

transportation analogy is again useful. For example, a recent National Academy of Sciences Transportation Research Board report prepared for the Transit Cooperative Research Program, entitled, *Practices for Evaluating the Economic Impacts and Benefits of Transit*, identifies direct and indirect benefits that are akin to those discussed in this section.

Two primary forms of economic analysis are discussed in this report:

Impacts on the economy – most often referred to as “economic impacts” or “economic development impacts,” which encompass effects on jobs and income: and

The economic valuation of broader societal benefits – sometimes referred to as “social welfare,” benefits which encompass the valuation of “non-user benefits” (affecting quality of life, environments, and productivity) in addition to user benefits....

Economic impact = the study of the net change in economic activity (jobs, income, investment or value added) resulting from a project, event, or policy.

Economic valuation of societal benefits = the social welfare value of prices (\$) and non-prices (non-\$) benefits associated with a project, policy or event. The non-priced benefits are assigned a value based on revealed or stated preference methods.⁶¹

A study by Economists Incorporated modeled the impact of eliminating the abuse of market power in the special access market. The estimation of the direct effect on the communications sector and its consumers was based on empirical assumptions that are consistent with the above conceptual and empirical analysis. It considered price reductions in the range of 40% to 60%, consistent with the above estimate of overcharges. This estimate used relatively low demand elasticities based on an analysis of the special access services. It also modeled the indirect economic impact by running a well-known econometric input output model to assess the effect on the economy (the RIMS II model). As shown in Table 4.2, using the middle-case rate reduction of 50%, which is consistent with the above analysis, we observe the effects of the price reduction for an important intermediate good.

**TABLE 4.2: INDIRECT MACROECONOMIC LOSSES FROM ABUSIVE PRICING OF BDS
(BILLIONS OF \$, MIDDLE CASE, 50% RATE CUT)**

	Elasticity	Pocketbook Savings Output	Monetary increase Economy-wide
2010	-1.5	9.0	16.6
	-1.6	9.0	20.6
	-1.7	9.0	25.0
2015	-1.5	18	33.2
	-1.6	18	41.2
	-1.7	18	50

Source: Stephen E. Spiwak, *Economic Benefits of Special Access Price Reductions*, Economists Inc., March 2011.

The indirect effects resulting from the high multiplier are substantial. The increase in output in the economy is twice as large as consumer pocketbook savings. The firms that consume more special access (and pay a higher total bill at a lower price) produce more output, which pays for the increased input. The economy-wide increase in value added exceeds the increase in spending on special access. The lost value in terms of indirect economic harm equals the direct consumer pocketbook harm as a result of the large multipliers. A global study filed in the BDS proceeding provides an independent source of data that supports this estimate of the harm imposed by the abuse of market power in the provision of special access service.⁶²

5. THE THIRD INDUSTRIAL REVOLUTION: GREAT POTENTIAL, HARMS AND BENEFITS

THE SILVER CLOUD

Economic Transformation

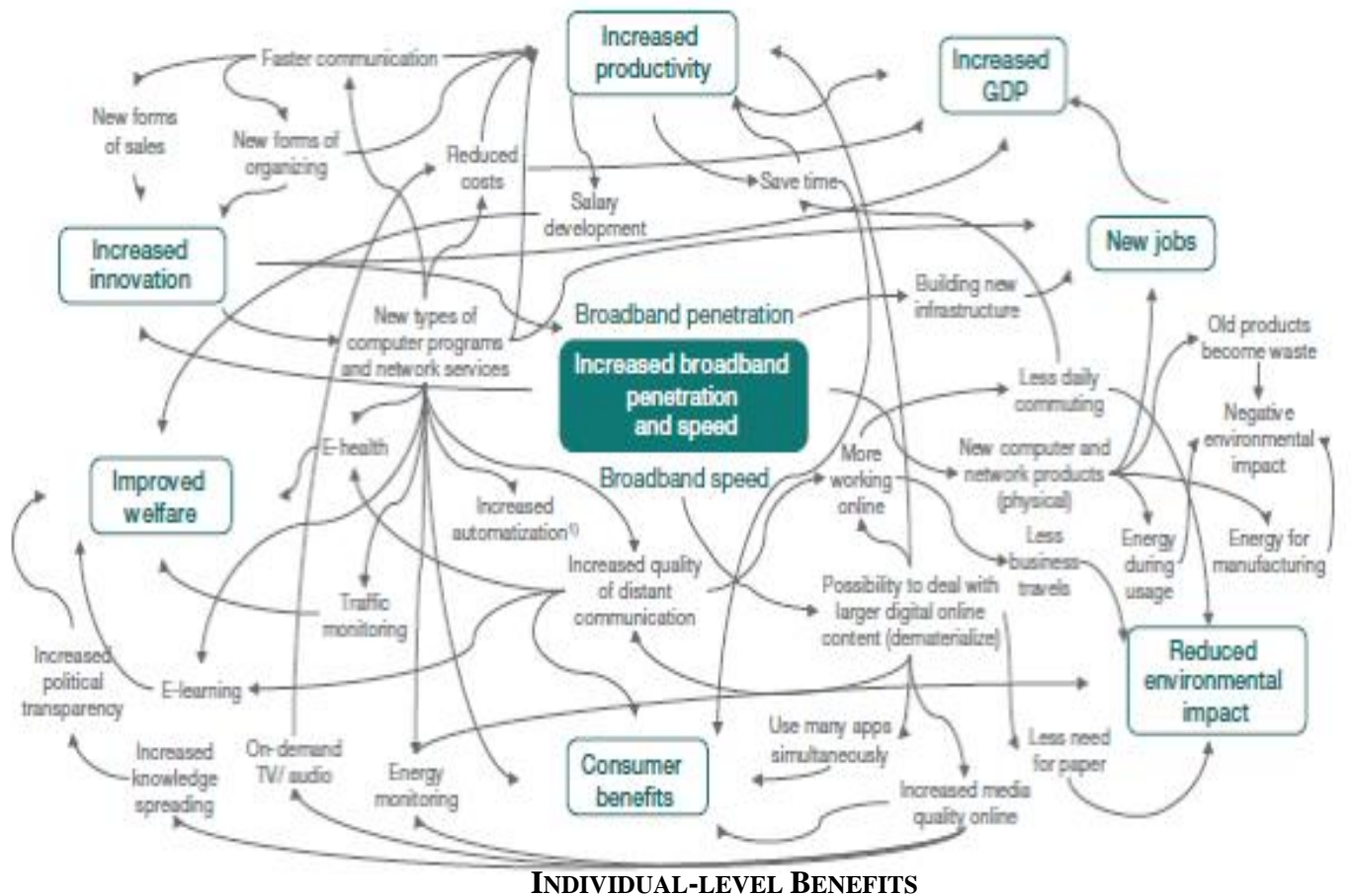
As digital technology spreads through society, the communications sector and the Internet become the core of the digital economy and the size and importance of communications grows dramatically.⁶³ Many activities that took place in physical space now take place in cyberspace and are dependent on digital communications. By substituting communications as an intermediate factor for physical transportation, transactions costs are lowered, increasing economic efficiency, and allowing more transactions to be executed. Intermediate goods or services are consumed by businesses to produce the goods and services that they sell to the public.⁶⁴ In fact, over the course of the past quarter of a century. The role of intermediate goods in the economy has grown dramatically, from 30% to 40% of the national economy.⁶⁵

While the cost, capacity and quality of digital connectivity available to consumers (known as first or last mile) has rightly attracted a great deal of attention, the vast amount of data that flows over the digital network has transformed core network functionality and connectivity (everything in between the first and last mile) deserves equal, if not more, attention. In order to move large quantities of data to end-users, the middle of the network must expand its ability to deliver data.

These middle-mile or Business Data Services epitomize the development of the third industrial revolution. Although still in the early phase of development⁶⁶ – the impact of the emerging techno-economic paradigm⁶⁷ is readily apparent across virtually every sphere of economic, social and political life. It is difficult to convey how comprehensive the changes have been, but a study by Ericsson, Arthur D. Little, and Chalmers University offered the schematic in Figure 5.1 to try to capture the pervasiveness of the process. Across the top half of the graph we see the benefits that accrue to the broad economy as the penetration and speed of broadband Internet access and use advances. Across the bottom half of the graph we see the individual-level benefits. As complicated as the chart is, the text cautions that “this map is a simplification—in reality there are even more factors and linkages.”⁶⁸ Be that as it may, this is what a technological revolution looks like when a general purpose technology is driving a new economic paradigm at the center of an emerging mode of production.

The effect of technology is magnified when the latter includes technology that supports communication, enhances productivity, and improves the wellbeing of society.⁶⁹ In this regard, technological development is expected to lower the cost of production, streamline supply chain processes, provide access to information in decision making, and support consumers in acquiring quality products at competitive prices. The beneficial effects of technology have been demonstrated at the level of geographic areas (nations, regions),⁷⁰ geographic areas (nations, regions),⁷¹ and industrial units (sectors, industries and firms).⁷²

**FIGURE 5.1: EFFECTS STEMMING FROM THE DEPLOYMENT AND ADOPTION OF BROADBAND
MACROECONOMIC LEVEL BENEFITS**



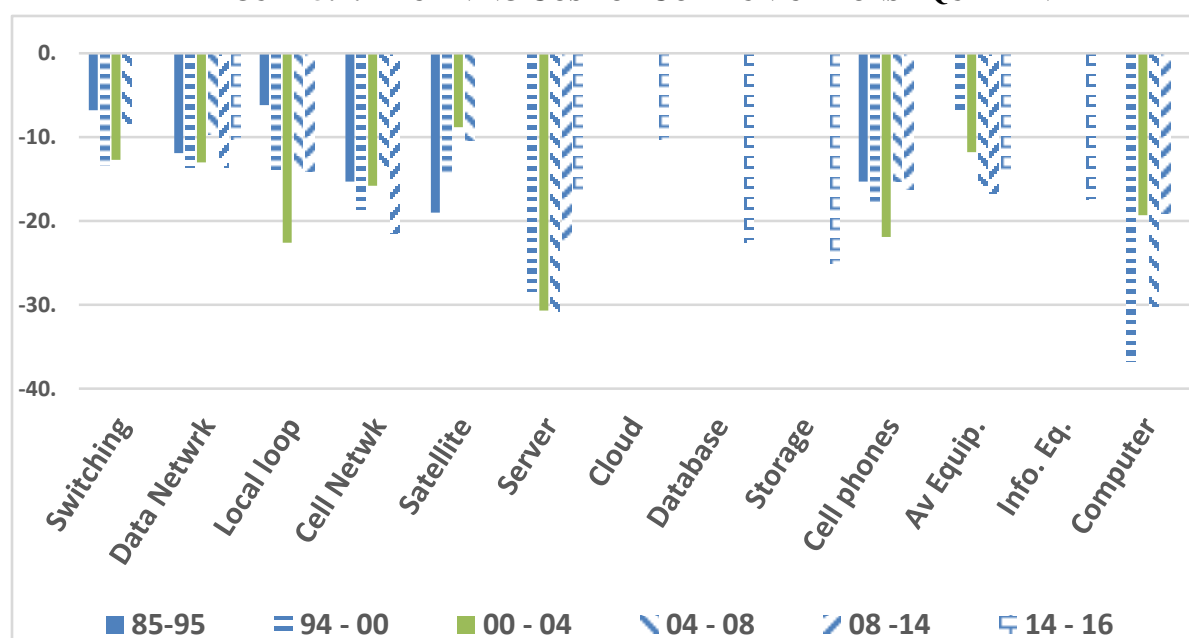
Source: Ericsson, Arthur D. Little, and Chalmers University, *Socioeconomic Effects of Broadband Speed*, September 2013. A much simpler version that conveys the same message can be found in International Telecommunications Union, *Impact of Broadband on the Economy*, April 2012, p. 3.

The impact of communications infrastructure has been magnified because of its pervasive effect across all economic and social activity as well as its ability to transform a wide range of relations of production.⁷³ The social returns to investment in communications infrastructure are very high, a positive externality⁷⁴, and sectors where communications have a large impact, e.g., government services, education, health, and energy, are themselves public goods, or exhibit significant characteristics of public goods.⁷⁵ Moreover, because of the ability of broadband to compress space and time, areas and people who are more isolated can benefit disproportionately from the spread of the technology.⁷⁶ During the formulation of the National Broadband Plan, mandated by Congress after the onset of the Great Recession, it was made clear that broadband communications services play a vital role in the overall U.S. economy.⁷⁷ While broadband receives a great deal of attention in the analysis of macro and micro economic impacts of new technology, wireless communications have the same effect.⁷⁸

Dramatically Falling Costs

One of the most important background factors for both the silver cloud of dynamic technological progress and the dark lining of abuse of market power is the remarkable technological revolution that is taking place in the communications space with respect to costs. While many aspects of that revolution can be examined, the one that is most central, given the analysis of market performance, is the movement of costs in the economy. Figure 5.2 shows key categories of costs for communications equipment, network equipment, and customer premise equipment.

FIGURE 5.2: DECLINING COST OF COMMUNICATIONS EQUIPMENT



Sources: We have combined numerous sources to reconcile different period from David M. Byrne and Carol A. Corrado, *Prices for Communications Equipment: Rewriting the Record*, February 2012; “Recent Trends in Communications Equipment Prices,” *FEDS Notes*, September 29, 2015; ICT Services and Their Prices: What do they tell us about Productivity and Technology, *Finance and Economic Discussion Series, Division of Research & Statistics, and Monetary Affairs, Federal Reserve Board*, Washington D.C., 2017; 2018, *The Rise of Cloud Computing: Minding Your P’s, Q’s and K’s*, NBER, October; “Accounting for Innovations in Consumer Digital Services: IT still Matters,” *Finance and Economic Discussion Series, Division of Research & Statistics, and Monetary Affairs, Federal Reserve Board*, Washington D.C., 2019.

It is important to keep in mind that these are estimates of input costs, not the prices charged to consumers. The extent to which the cost reductions are passed through to consumers depends on the market structure. As shown in Figure 5.2, the average annual changes over three over a quarter of a century after the passage of the ‘96 Act was generally in the range of 15% to 20%.

The authors of the price indices point out the importance of investment in communications equipment early on. They note that “IT capital services have historically made outsize contributions to labor productivity. Consequently, greater IT capital investment augurs well for future productivity gains.”⁷⁹ They then note the strength of the revolution in terms of declining costs.

Last with respect to the debate about whether the impetus for the “IT Revolution” has petered out, we observe that prices for communications equipment have continued to fall rapidly in recent years. Price declines accelerated significantly in the mid-1980s and again in the mid-1990s. Since that time, prices for communications equipment—a general purpose technology central to the economy—have been falling 11 percent on average for 20 years running, and price declines have shown no sign of slowing.⁸⁰

In an era that sees doubled capacity on silicon chips every 18 months (Moore’s Law), we may have become somewhat indifferent to a rate of decline that cuts prices in half every 76 months. But placed in the context of industrial revolutions, this rate of decline is truly historic. It is substantially higher than (double or triple) that of products that have come to symbolize.

Consumer Spending

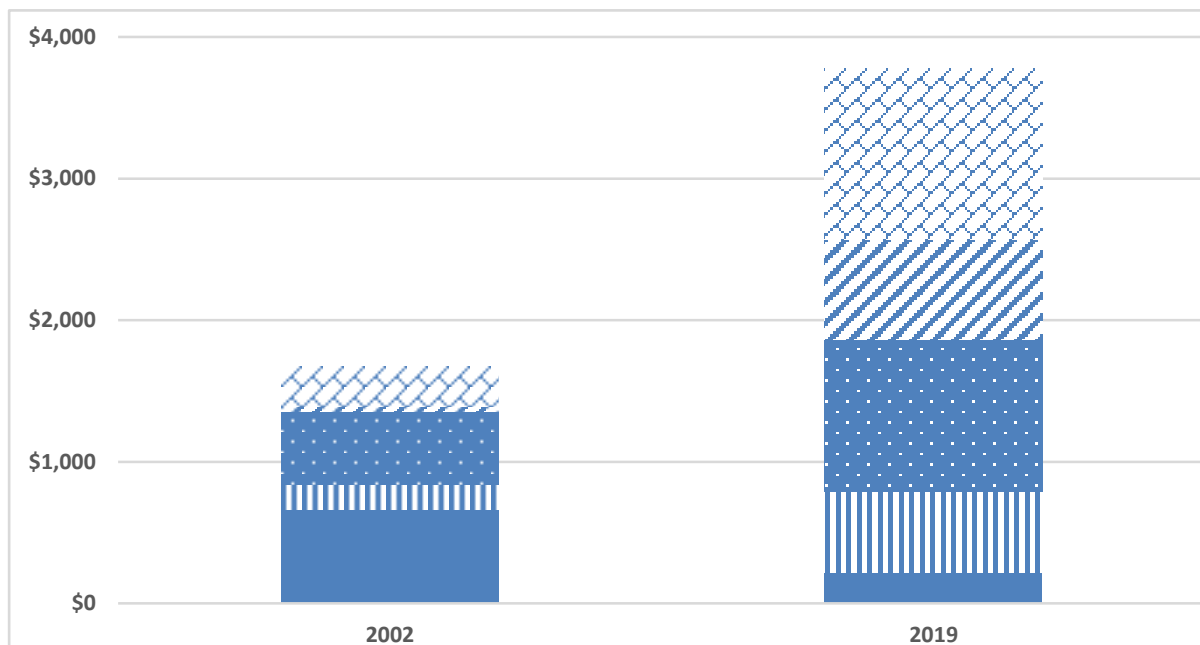
The dramatic shift of activity online reflects the value that consumers derive from the new services that digital technologies deliver. Not surprisingly, it can be argued that the greatest single area of impact has been in the communications market, where consumers pay directly for digital services, as shown in Figure 6.3. Because the changing pattern of consumption makes it difficult to compare expenditures across time, we start with a simple, static example of a typical middle-income family. To get an average for the group, the consumer expenditure survey includes all households, even those that do not take service. That average will be greatly affected if the take rate is changing, as was the case for these services. Landline telephone was declining; mobile and broadband were rising.

The landline and wireless numbers in Figure 5.3 are directly from the Expenditure survey. We have added in the figure for MVPD, broadband and Business Data Services, based on our analysis of company annual reports and FCC data.⁸¹ We rely on average revenue per subscriber, adjusted for the penetration rate of each service.

The dramatic increase in wireless spending reflects the increase in penetration of new services. The increase in Business Data Service revenue, which consumers pay indirectly in the cost of goods and services, reflects the increasing importance of these network wholesale services to deliver retail services to consumers.⁸² The increase in the video/broadband bundle reflects both the increased penetration of broadband and the increase in cable prices. It should be noted that much of the revenue “lost” for landline is recaptured by the local phone companies in BDS, broadband and wireless revenues. Nevertheless, the dramatic increase in communications spending is clear, with total expenditures more than doubling and expenditures on the digital services quadrupling.

The dramatic growth of expenditures on these services, along with their large size, reflects the value the services deliver to consumers. These markets are also at the core of the digital economy. They deliver what have been traditionally considered infrastructural services that broadly affect both end uses and intermediate goods. It goes without saying that consumers would not adopt these technologies if they did not get a great deal of value out of them. The majority of Americans have added wireless and broadband. The compelling practical implication can be seen in their use of these two new digital communications media.

FIGURE 5.3: INCREASING AND SHIFTING EXPENDITURES ON COMMUNICATIONS SERVICES



Sources: Landline and Wireless, Bureau of Labor Statistics, Consumer Expenditure Survey; MVPD/BIAS based on average revenue per subscriber, adjusted for national average penetration rates, discussed in Section IV. Creech, Brett, 2016, “Expenditures on cellular phones services have increased significantly since 2007,” *Beyond the Numbers*, Bureau of Labor Statistics, February, (5:1). BDS costs are assumed grow at the historic rate proper to 2015. Bureau of Labor Statistics, most recent *Consumer Price Index* and *Consumer Expenditure Survey*.

THE DARK LINING: THE PRICE/COST GAP

Prices Far Above Costs

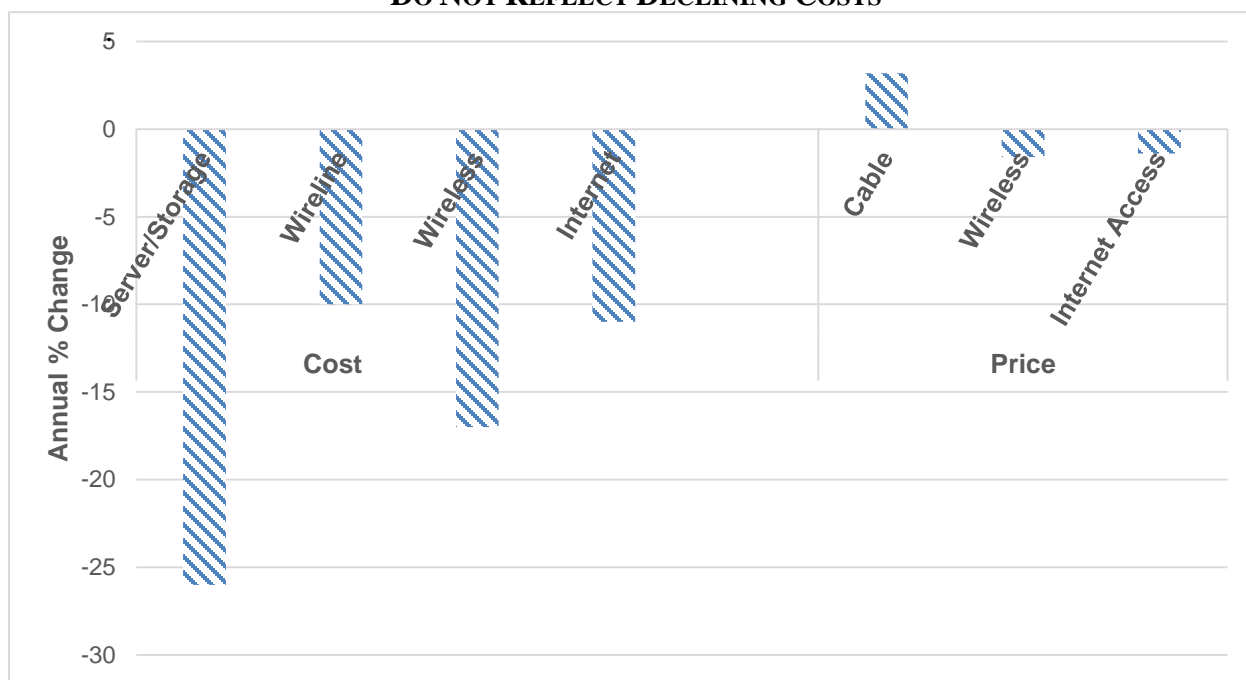
Generally, a cost-reducing, productivity-enhancing technology change is seen as a positive development for an economy. In a vigorously competitive market, we would expect to see a significant part of these cost savings passed on to consumers. In a competitive market, as the demand for services becomes less elastic, consumers see larger benefits as sellers compete for their business. On the other hand, in a situation of high market power, the opposite occurs. Exploitation of consumers increases. Unfortunately, the lack of competition on communications services combines with the importance of these services to allow the firms that dominate communications markets to impose substantial overcharges on consumers. This applies to both of the main networks that make up the digital communications sector – the big broadband networks and the big data platforms.

Figure 5.4 captures the essence of the situation by highlighting the sharp contrast between price increases and cost declines since the passage of the 1996 Act. The cost of fiber is close to the cost of local loop costs.

Cable rates have been the target of a great deal of analysis pointing out the rapid escalation of monthly rates above the rate of inflation, but this is far too narrow a view. As shown in Figure 5.4, it dramatically underestimates the extent of the problem in two respects:

- First, the problem afflicts many more services than cable monthly rates.
- Second, the general rate of inflation is not the proper baseline or referent for communications markets during a technological revolution. Costs have been falling dramatically in several of the most important aspects of the delivery of services. Even steady prices may constitute substantial abuse of market power.

**FIGURE 5.4: COMMUNICATIONS SERVICE PRICES (POST- 1996 ACT)
DO NOT REFLECT DECLINING COSTS**



Sources: See Figure 5.2.

Pass Through of Business Data Service Costs

The FCC estimated that the narrow category of special access is a \$45 billion a year business. The FCC noted that, as digital communications become more central to the economy, special access from the telephone age has become part of a broader category of Business Data Services. According to the FCC, the BDS market is larger, totaling \$75 billion. While this sum is certainly large enough to get our attention, we must ask, “do households actually pay these costs?” The answer is clearly yes.

In fact, when econometric models of the economy are constructed, they rely on end-use prices and values to capture the cost and value of intermediate goods. In building these models, the pass-through is assumed. Since communications are replacing transportation as a central means of commerce, it is instructive to note how transportation costs have been treated in economic analysis.⁸³ Although communications are a small part of the total economy, they have an outsized impact on the cost of goods and services, which is reflected in the way input-output models describe the economy.⁸⁴

Transparency and Consumer Dissatisfaction

Indeed, the American Customer Satisfaction Index, which ranked 47 industries, and 399 companies in 2019, shows that the services provided by the tight oligopoly of communications network companies have an abysmal record on consumer satisfaction. As shown in the upper graph of Figure 5.5, three of the four connectivity services (ISP, MVPD and VOD) rank well below the national average. They have been well below average for their entire existence and even a rated below the post office. In contrast, the things people do on the Internet retail and banking are rated quite highly.

Cellular service is an exception to the above observations; however, the lower graph of Figure 5.5 explains this. The dominant firms are well below average. It is the smaller cell providers that pull the average up.

Because the dominant providers of these services have market power, they can overcharge and deliver lower quality than consumers would get in a competitive market. Consumers pay too much for services that are lower in quality than they could be. We would expect consumers to be less than pleased with this situation. Long-term analysis of consumer (dis)satisfaction with these services supports this conclusion. (See Figure 5.5)

All of these services have been well below the national average on consumer satisfaction since the passage of the 1996 Act. Cable has consistently been ranked at the bottom of more than 40 individual sectors. The two largest cable companies, Comcast and Time Warner, have long been at the rock bottom of 150 companies. Internet Service Providers (ISPs)—overwhelmingly broadband service by the time they were first covered by the survey—entered at the very low level of cable, which is not surprising since cable is the dominant provider of broadband service.⁸⁵

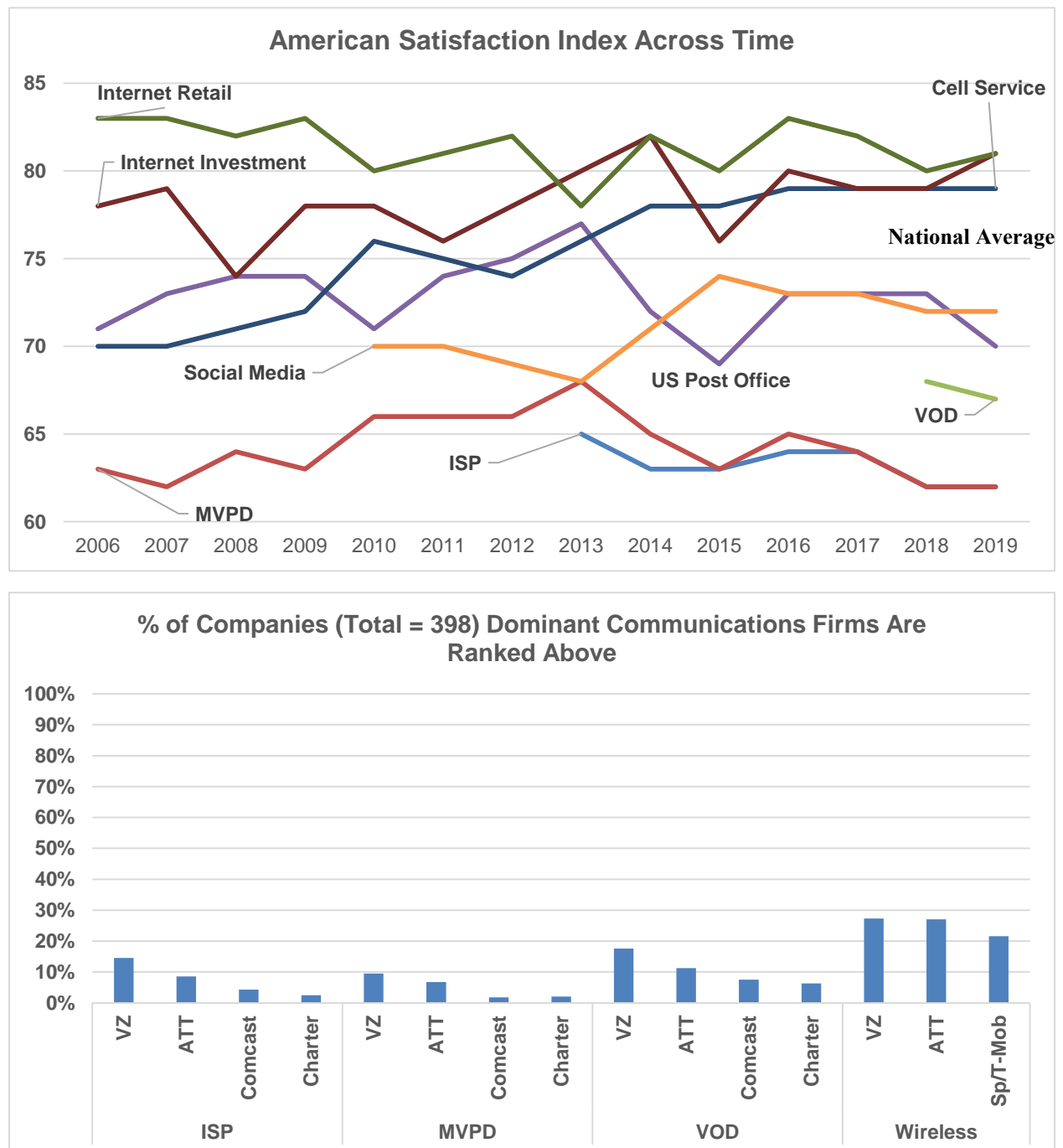
For consumers, the market is performing poorly, with overpriced services and dissatisfied customers. For the broader economy, this means that money overspent on inferior services is not spent on other, more competitive goods and services, reducing overall competitive demand. From a consumption inequality perspective, this means that telecommunications overcharging harms most affect those households that are further down the income ladder, pricing low-income consumers out of the market and raising the bills of middle-income consumers.

THE FAILURE OF COMPETITION TO PREVENT A TIGHT OLIGOPOLY ON STEROIDS AFTER THE 1996 ACT

Layer upon layer of characteristics render communications markets vulnerable to the abuse of market power. The fundamental economies of scale, scope and network effects exhibited by the communications sector would have been an obstacle to competition under any circumstances. But the 1996 Telecommunications Act's competition policy was launched from a condition in which monopoly power existed, having been built behind decades of franchise monopoly that shielded the incumbents from competition and endowed them with a vast communications network whose sunk costs had been paid by captive consumers. They had not won their dominant position; they were gifted it by public policy. The economic fundamentals of the sector combined with a ubiquitous inherited network to give the incumbent local telephone

and cable companies an insurmountable advantage. They exploited their advantage, individuals and as a group. The difficulty of overcoming the incumbent's bestowed advantage was vastly and repeatedly underestimated, resulting in lax antitrust enforcement and premature market deregulation that only made matters worse.

FIGURE 5.5: AMERICAN CONSUMER (DIS) SATISFACTION INDEX SINCE THE 1996 ACT



Source: American Consumer Satisfaction Index, Annual except 2019, which is 2q. Cable calculated as the (weighted average) of subscription television service minus satellite. Satellite is average of DIRECTV and DISH.

Communications markets are highly concentrated, with high barriers to entry, behind which vertically integrated and conglomerated giants sell low elasticity of demand services that embody huge potential surplus. The traditional economic framework usually starts with an assumption of workable competition, then explores deviation from it. Given the underlying structure and history in the communications sector, however, the discussion needs to reverse direction. The starting point is market power and the question is: can competition grow sufficiently and quickly enough to constrain the abuse of the endemic market power. There were and are good reasons to believe the answer is negative.

While there have been efforts to introduce competition, the current market structure still very much reflects that original monopolistic DNA. The traditional analytic framework used to examine market structure and performance is referred to as “The Possession of Monopoly Power”⁸⁶ or “Alternative Monopoly Measures.”⁸⁷ In fact, the “lesson... of the economic definition of monopoly power is that it is not an ‘either-or’ concept. It is a matter of degree.”⁸⁸

Although it is true that many of the markets are oligopolies today, they are tight oligopolies, with levels of concentration in important, especially local, product and geographic markets that approach or exceed the level of a duopoly. They operate under conditions that are conducive to the abuse of market power: a small number of firms who have a history of anticompetitive behavior in circumstances with high barriers to entry, where they meet each other on a continuous basis across many markets. This provides the opportunity for learning and strategic behavior in the sale of products that have relatively low elasticities of demand and few if any, good substitutes.⁸⁹ The outcome is closer to the monopoly outcome than the competitive outcome. In these circumstances, the concerns raised by the *Merger Guidelines* are very real.⁹⁰

Since the services provided by communications networks are about connecting the user to the network (broadband, wireless, video, they are, first and foremost, local services. Measured using the FTC and DOJ guidelines, as shown in Table 5.1, each of the markets is highly concentrated and the leading firms constitute a tight oligopoly. Moreover, the link between Table 5.1 and Figure 5.6 shows how their market power was amped up by the additional factors of geographic separation, technological specialization and produce segmentation.

The high level of local concentration reflects one of the great disappointments of Telecommunications Act of 1996. The 1996 Act envisioned vigorous competition in all markets, but the stronger form of competition never developed. Telephone companies chose not to compete against other telephone companies. Cable companies chose not to compete against other cable companies. Head-to-head, intramodal competition did not develop because the companies chose to buy one another out. Thus, the geographic separation, technological specialization and service segmentation between sectors dating back to the monopoly history of the industry was brought forward into what was supposed to be the competitive era.

ESCAPING REGULATION AND COMPETITION

The tight oligopoly on steroids was driven by two reinforcing patterns of behavior by the dominant incumbents. One of the central vectors of policy implementation since the passage of the 1996 Act has been the push by communications companies to define services via the categories that carried the fewest public interest obligations and were generally the least

regulated. However, neither law nor economic convergence required this direction of policy convergence. Each of the different services had been governed by different sets of public policies and those distinctions could have been maintained. Even if policymakers concluded that it was too complicated to maintain the distinctions (known and reviled as silos), policy could have converged in a different direction than it did. It would have been possible to read the law in the opposite direction – declaring that, where services involved mixed functionalities, applying the strongest regulatory category and broadest public interest obligations was (more) consistent with the purpose and intent of the Communications Act.

TABLE 5.1: THE TIGHT OLIGOPOLY

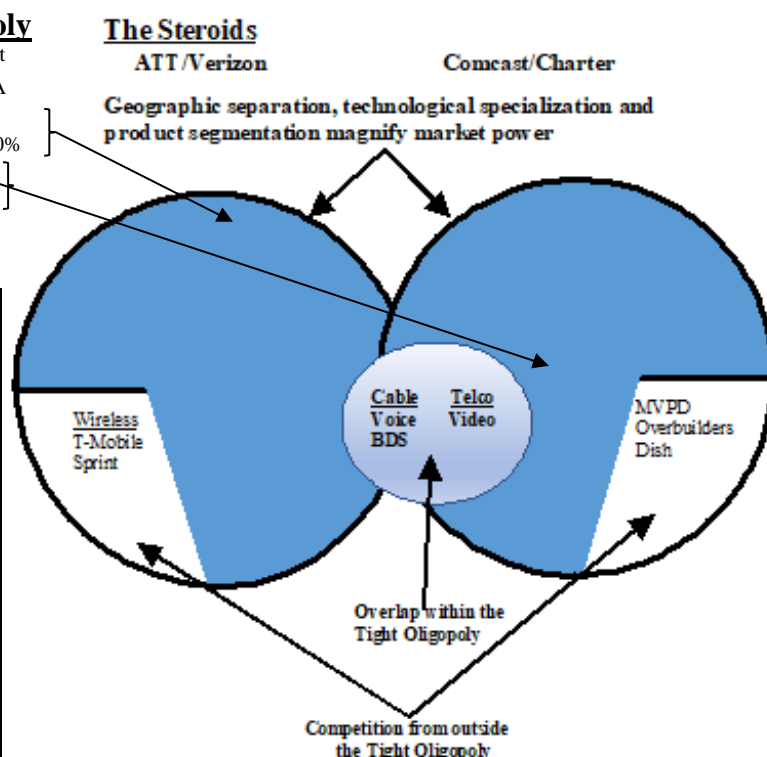
The Highly Concentrated, Tight Oligopoly

Service	National		Local		Segment
	HHI	CR4	HHI	EBITDA	
Wireless	3350	100%	3900	45%	}
BDS*	6600	80%	7000	60% -80%	
Broadband	1850	76%	5900	90%	}
MVPD	1900	77%	3820	40%	

*ATT/VZ have near monopoly on local BDS market
Comcast/Charter self-supply BDS

Sources: See Overcharged and Underserved, 2017, for the calculation of these estimates. Recent data (2017-2019) Lichtman Research for broadband and MVPD. The underlying data is from the following: Wireless: Dano, Mike, “The US Wireless Market in 10 Charts,” *Lightreading. Com*, June 24, 2019. Federal Communications Commission, 20th Annual Report and Analysis of Competitive Market Conditions with Respect to Mobile Wireless, Including Commercial Mobile Services, for national market shares. Local market shares adjusted based on Complaint, Competitive Impact Statement, United States v. AT&T Inc. and Deutsche Telekom, AG, (No. 1:11-cv-01560), August 31. Thresholds, U.S. Department of Justice and the Federal Trade Commission, 2010, *Horizontal Merger Guidelines*, Wireless: Federal Communications Commission, 19th Annual Report and Analysis of Competitive Market Conditions with Respect to Mobile Wireless, Including Commercial Mobile Services, for national market shares. Local market shares adjusted based on Complaint, Competitive Impact Statement, United States v. AT&T Inc. and Deutsche Telekom, AG, (No. 1:11-cv-01560), August 31. Cable/Broadband: Paul e Sa, Paul, Ian Chun, and Julia Zheng, 2015, “U.S. Telecom: Pay TV—A New Way to Look at Cable/Telco Competition and Market Shares,” AB Bernstein Analysis, December 9. Craig Moffett, *U.S. Cable & Satellite: A Funny Thing Happened on the Way to the Graveyard*, MoffettNathanson, January 13, 2016, for cable and telephone company broadband subscribers Business Data Services, *In the Matter of Special Access Rates for Price Cap Local Exchange Carriers*, AT&T Corporation Petition for Rulemaking to Reform Regulation of Incumbent Local Exchange Carrier Rates for Interstate Special Access

FIGURE 5.6: THE TIGHT OLIGOPOLY ON STEROIDS



In fact, the 1996 Act explicitly stated that regulation should be relaxed only where competition, or other factors, had rendered it no longer necessary in the public interest.⁹¹ It stated that the definition of services, which would trigger the public interest obligations, should not be dictated by the technologies used.⁹² The fundamental values of the Communications Act, coupled with real world experience could have guided policy in a different direction. But given the tenor of the times, there was an “irrational exuberance” for deregulation.

In every case, by a wide margin, the four dominant firms are characterized as a tight oligopoly (as shown in the table on the left side of Figure 5.1). This means that the potentially strongest competitors (those with expertise and assets that might be used to enter new markets) are few. This reinforces the geographic segregation between services from the monopoly period, since the best competitors have followed a non-compete strategy. In fact, the actual situation is worse than the traditional concentration analysis suggests. It is the same four consolidated, vertically integrated firms that dominate all the main product markets. These four firms alone constitute a tight oligopoly across all four markets

The second thrust was to avoid competition as best as possible. The dominant firms did not invade each other's service territories and were slow (at best) in offering products that might compete head-to-head with other dominant firms. The problem was compounded by a weak view of antitrust that was dominant at the time. As shown in Figure 5.7, a massive sustained merger wave was allowed to severely concentrate all the communications markets. Figure 5.7 lists the mergers that underlie the historical increase in concentration. It shows both the mergers between dominant Regional Bell Operating Companies (RBOCs) and the acquisition of independent mobile providers. Here the national view is useful in the sense that it shows how the best actual and potential competitors were eliminated through mergers. Twenty years after the passage of the 1996 Act, much of the old Bell system has been put back together (in three pieces) and that structure has been extended to mobile through the merger waves that affected both landline and wireless. Two cable providers, Comcast and Charter, have come to dominate broadband Internet access service, while they continue to hold a dominant share in the MVPD market.

The failure to keep the faith expressed in competition in the 1996 Act is most readily seen in merger policy. In each of the communications services, we have arrived at a tight oligopoly through merger, even at the national level. One can argue that while these transmission networks are no longer "natural monopolies," they are a far cry from workably competitive. They are at best, tight oligopolies. And the problem at the local level is even worse either because market opening policies either could not work due to the underlying economics, or did not work because incumbents were able to frustrate efforts to introduce competition. At the local level, these transmissions networks are barely duopolies.

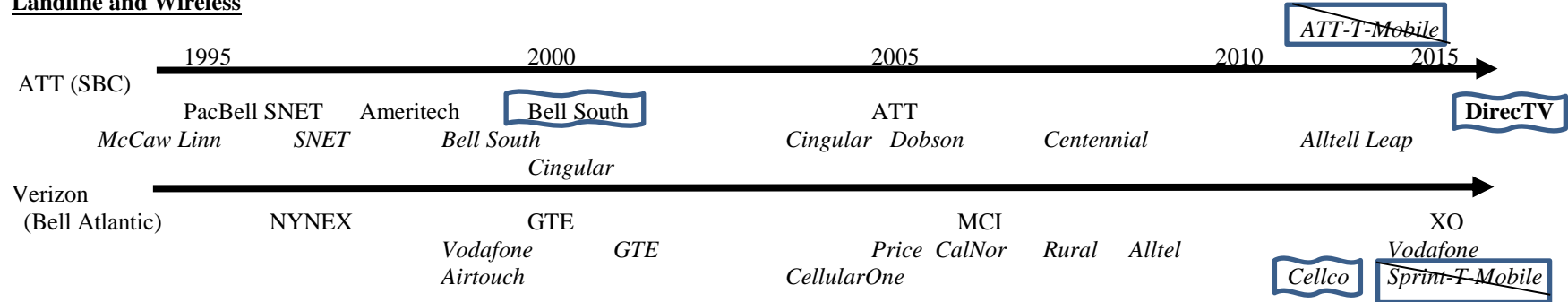
THE STEROIDS

The conditions for the exercise of market power do not stop with highly concentrated markets. The market division strategies that the dominant firms chose to pursue have resulted in a tight oligopoly for each of the services at the local level. A dominant local firm that does not face head-to-head, intramodal competition takes a high market share in its home territory for its franchise service, on the order of half the market. Where the service territories of the different media overlap, a second, intermodal competitor, takes a small market share – one-fifth to one-sixth – as the "entrant" into a new service, but within its old service territory.

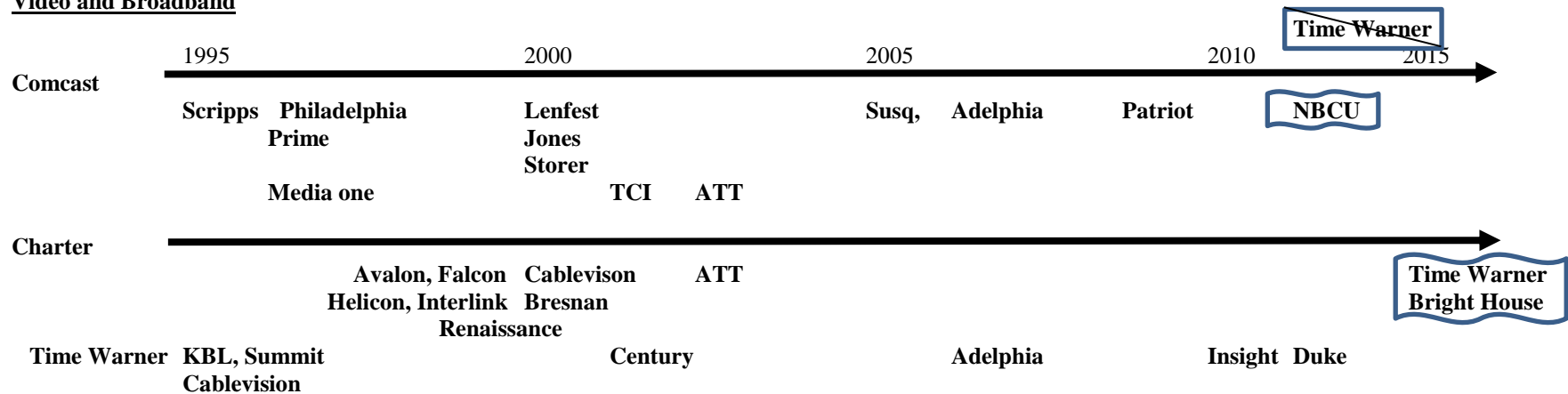
Duopoly and tight oligopoly would both be properly descriptive of some aspects of digital communications markets. Reinforced with geographic separation, technological specialization and product segmentation, the market power these firms enjoy goes beyond the simple oligopoly concept we find in the analytical frameworks. Given the significant and

FIGURE 5.7: MERGERS CREATED A TIGHT OLIGOPOLY ON STEROIDS IN THE DIGITAL COMMUNICATION SECTOR
THE OBAMA ADMINISTRATION SET A NEW DIRECTION FOR MERGER POLICY

Landline and Wireless



Video and Broadband



Legend: Cable in **bold**. Wireless in *italics*. Merger Blocked Extensive Conditions

Sources: Older mergers from: Eli Noam, *Media Ownership and Concentration in America*, 2009, pp. 77, 236, 237, 240, 246; Federal Communications Commission, *Competition Reports, Cable and Wireless*, various years; Wall Street Journal, “A Tangled Family Tree,”; Pew Research.org, Chart of the Week, based on Rani Molla, *Wall Street Journal*. U.S. Department of Justice, *Complaint, Competitive Impact Statement, United States v. Comcast Corp.*, 808 F. Supp. 2d 145 (D.D.C. 2011) (No. 1:11-cv-00106); *Complaint, Competitive Impact Statement, United States v. AT&T Inc. and Deutsche Telekom, AG*, (No. 1:11-cv-01560), August 31; *Competitive Impact Statement, U.S. and the State of New York, v. Verizon Communications Inc., CELLCO Partnership d/b/a Verizon Wireless, Comcast Corp., Time Warner Cable Inc., Cos Communications, Inc., and Bright House Network, LCL*, No. 1:12-CV-01354, August 16, 2013; *Competitive Impact Statement Charter Communications, Inc., Time Warner Cable Inc., Advance/New House Partnership, and Bright House Networks, LLS*. Civil Action No. 1:16-cv-00759 (RCL), May 10, 2016; Jon Sallet, Federal Communications Commission General Counsel, Remarks to the “Telecommunications Policy Research Conference: “The Federal Communications Commission and Lesson of Recent Merger & Acquisition Review, September 25, 2015., explains the FCC approach in several of the merger

repeated examples of coordination – sometime explicit, frequently parallel, and the reinforcing behaviors in multiple market, it is proper to call the current situation a “virtual cartel” or a “tight oligopoly on steroids.” That being the case, there should be no pretense that competition is sufficient to protect consumers. The amount of scrutiny they require is magnified by the important role they play and their central location as chokepoints and bottlenecks in the digital communications sector and the digital economy.

- Given their central location, some markets, like BDS possess unique forms of vertical market power that pose a broad threat to competition and consumers.
- Given the specialized nature of network industries, it was reasonable to expect that these firms would be the “ideal” candidates to engage in head-to-head competition by geographic extension (overbuilding their neighbors) or product extension (adding a new products to an existing line), but they merged instead, removing the best candidates to promote competition.
- Some markets, like the one for video programming, are national and the problem of monopsony power is important

While increasing profits are the primary motive behind the abuse of market power, dominant incumbents have a strong interest in using their market power to control and direct the process of innovation where it poses a threat to their dominance. Traditional concerns about large incumbents raising prices have received a great deal of attention, too much in the sense that other sources of market failure that undermine or weaken competition and innovation deserve equal attention. Indeed, in a dynamic sector with dominant incumbents controlling key chokepoints, their incentive and ability to weaken competition and control or diminish long-term change may be even more important.

The incentive and ability to implement these strategies will vary from market to market and product to product. Incumbents have been willing to push their market power and to litigate even modest constraints on their behavior despite close public scrutiny. Their steadfast opposition to unbundled network elements, which was the cornerstone of the 1996 Act’s effort to promote competition by opening the most critical chokepoint, was an early and striking example, with direct implications for the special access market. The almost two-decade-long battle over network neutrality (nee open access) presents another clear example of the vigorous defense of market power that the dominant incumbents have mounted.⁹³ The ongoing battle over BDS is another example.

PARALLEL EXCLUSION SUGGESTING A TIGHT OLIGOPOLY ON STEROIDS

We believe that attaching a descriptive name to the current situation in the big broadband networks and BDS markets helps to identify the sources of the durable market power that has lasted for over two decades since Congress tried to introduce competition. Others have described the conditions in these markets in ways that support this simple descriptive name.

Hemphill and Wu have offered a discussion of “parallel exclusion” that helps to ground our concept of a tight oligopoly on steroids and tie it to antitrust practice.⁹⁴ As with our other conclusory discussions, we note that their concept suggests a focus on the direction in which the

practice has been heading. Similarly, to Salop's argument for identifying exclusion as a focal point of practice, and the discussion of Heeb, et. al. about cartels in the final chapter, they argue for adopting the concept to help formalize, modernize and institutionalize the practice.

Parallel exclusion is a practice that can have severe anticompetitive impacts – raising prices and slowing or blocking innovation (higher quality, lower cost). This practice is most threatening when implemented in specific structures. The characteristics associated with the most harmful effects of parallel exclusion are precisely the factors that we say magnify the market power of a tight oligopoly in communications markets and render it a tight oligopoly on steroids.

The classic debate, however, is incomplete, for it is fixated on pricing and thus neglects the importance of parallel exclusion... Parallel exclusion (engaged in by multiple firms, that blocks or slows would-be market entrants) ... deserves much greater attention, for its anticompetitive forms have much greater social consequences than parallel pricing due to their potential to influence not just prices, but also the pace of innovation... Parallel exclusion (self-entrenching conduct, engaged in by multiple firms, that harms competition by limiting the competitive prospects of an existing or potential rival to the excluding firms) ...

Parallel exclusion is pervasive in industries that comprise a few major players....⁹⁵

Conscious parallelism, non-cooperative mutually reinforcing, self-interested behavior, or what Hemphill and Wu call “oligopolistic interdependence,” is central to the recognitions of parallel exclusion as a significant concern.⁹⁶ The anticompetitive harm resulting from parallel exclusion is felt most in exactly the areas where contemporary antitrust and regulation have begun to express the greatest concern. It is most effective against nascent competition and lowers the cost of exclusion. In industries marked by rapid technological change, the exclusion of new entrants has a far greater impact on the developments. Dynamic sectors are more important than static, particularly where parallel exclusion undermines the virtuous circle of innovation and investment.⁹⁷

- The structural conditions that provide the environment for parallel exclusion are the core of the above analysis: market power, economies of scale, difficulty of finance for entrants, network effects.
- The behavioral actions that facilitate parallel exclusion are also familiar: exclusionary standards (without fair, reasonable and non-discriminatory FRAND), sabotaging connections, punishing customers, disparaging quality and reliability, recruiting agents (intermediaries), overbuying inputs (e.g. spectrum), bundling and tying, Most Favored Nation (MFN) clauses.
- The stability of parallel exclusion is supported by the ease of identifying a coordination point (focal rules), transparency of compliance, permanence of change, geographical market division, avoiding non-price competition, weak entrants.
- A history of exclusion makes it easier to coordinate in the future. Thus, a specific history of monopoly or regulatory exclusion may be a strong predictor of stable

exclusion. The firms involved can simply continue the former monopoly's patterns of exclusion or find ways to continue the exclusion once provided by now-repealed government regulations.

As we have done earlier, the analysis of parallel exclusion is based on intensive empirical analysis of specific examples, all of which post-date the rewrite of the *Non-Horizontal Merger Guidelines*. Interestingly, three of fifteen examples in Table 1 from Hemphill and Wu⁹⁸ represent markets reviewed in this paper. In the lengthier discussions, AT&T occurs several times, including its early history, the abuses that led to the divestiture, the continuing behavior of the spin-off Baby Bells, and the mergers between incumbents and potential competitors.

EUROPEAN CONCERNS ABOUT MARKET POWER AT CHOKEPOINTS

American thinking about concentration and market power in the communications sector has been reviewed above. European concerns exhibit a similar pattern. For example, an economic policy note from the Dutch Office of Post and Telecommunications Authority/Economic Analysis Team asked a specific question *Is Two Enough?* The answer as summarized in the Table 5.8 was an emphatic no. The Body of European Regulators for Electronic Communications issued a "Report on Oligopoly Analysis" in 2015, that referenced these earlier analyses and ultimately recommended that tight oligopolies be explicitly identified as a source of concern by competition authorities.⁹⁹

TABLE 5.8: TIGHT OLIGOPOLY AND COORDINATION IN ELECTRONIC COMMUNICATIONS

<u>Facilitating a Tight Oligopoly</u>	<u>Facilitating coordination</u>	<u>Factors in Communications Markets</u>
High concentration	Very Few Firms	Market Division
High barriers to entry	Absence of significant entrants	Constrained network effects
Capacity constraints (ambiguous)	Strategic variable	Absence of potential maverick entrants
High Product Differentiation	Homogeneity of products	Lumpy but not whole-hog, repeated constraints
No countervailing buyer power		Moderate, bundled differentiated products
Low price elasticity		Technological specialization, Geographic segmentation
High switching costs		Need for interconnection
Mature technology		Customers small relative to total
Low demand growth		Brand loyalty, lock in contracts
	Focal point on high discount rate	Migrate to franchise product-centered bundle
	Process: Transparency,	Technological, Financial, Search
	Enforceability	Structural links, Facilitating practices, History
	Repeated interaction	
	Symmetry	Cournot process
	Vertical integration	Interconnection
		Franchise service, geographic symmetry
		Multiproduct

Source: Body of European Regulators for Electronic Communications, 2015, OPTA/EAT, 2006.

Given the significant and repeated examples of coordination – sometime explicit, frequently parallel, and the reinforcing behaviors in multiple markets, it is proper to call the current situation in the digital communications sector a "virtual cartel" or a "tight oligopoly on steroids." As such, there should be no pretense that competition is sufficient to protect consumers. The amount of scrutiny a tight oligopoly on steroids requires is magnified in the communications sector by the important role they play along with their central location as chokepoints and bottlenecks in the digital communications sector and the digital economy.

European authorities were also concerned about vertical leverage, since a large and increasing number of products require access to the communications platform. An informative qualitative perspective on the unique problem of a tight oligopoly on steroids can be gained by considering the market conditions that facilitate coordinated and unilateral effects in markets that exhibit characteristics of tight oligopolies, as identified by European competition authorities (see Table 5.9).

These were developed with the communications sector in mind. It was quite apparent to policymakers that the numbers of competitors would be small and the threat of anticompetitive conduct and outcomes was serious. European antitrust and regulatory authorities did not have a structure of policies to deal with the problem of tight oligopolies that give rise to non-competitive outcomes. This challenge became clear when authorities used criteria that restricted oversight to situations of two, equal-sized firms. The expert analysis showed that tacit collusion and even noncooperative behavior could result in noncompetitive outcomes with larger numbers of firms.

TABLE 5.9: STRUCTURE AND CONDUCT SUPPORTING THE TIGHT OLIGOPOLY ON STEROIDS
Coordinated and Unilateral Effects

<u>Structure^{a,b/}</u>	<u>Conduct^{c/}</u>	<u>Connected Markets^{d/}</u>
<i>Few firms</i>	Horizontal Mergers	<i>Scale of Entry</i>
<i>High barriers to entry</i>		
Supply economics		
<i>Scale economies</i>	Vertical restraints (Territory, Exclusion)	<i>Vertical links</i>
<i>Network effects</i>	Predatory and limit pricing (X-subsidy)	<i>“Inherently Real”</i>
<i>Franchise</i>	Imposing barriers to entry	<i>(Operations or Demand)</i>
<i>Protection</i>		<i>Shared resource</i>
<i>Licenses</i>		<i>Operating cost info</i>
Demand		
Product differentiation	<i>Reputation</i>	<i>Customer base</i>
Elasticity	<i>Brand loyalty</i>	<i>Complements</i>
		<i>Information</i>
		<i>Shared brand resource</i>
COORDINATED ONLY	UNILATERAL ONLY	
<i>Frequent interactions</i>	<i>Non-compete behaviors</i>	
Symmetry	Structural links	
	(joint ventures, specialization)	
Transparency/Communication	Product differentiation	
	(segmentation)	

Legend: **Bold Italics** = *Essential*; **Bold**=**Important**; Plain text = conditional; *Italics*=*Connected Markets*

Source: Marcel Canoy and Sander Onderstal, *Tight Oligopolies: In Search of Proportionate Remedies*, CPB Netherlands Bureau for Economic Analysis, February 2003. a/ Structural characteristics (Section 2.3), b/ Tight oligopolies in Practice (Section 3.3); c/ Behavior conducive to a tight oligopoly (Section 2-4); d/ Step 1: The set of connected markets (Section 5.1).

Just as the American authorities became more concerned about vertical leverage, because a large and increasing number of products depend on access to communications platforms, so too did the European Competition authorities, as summarized Table 8-2. A very influential analysis devoted considerable attention to “connected” markets for the following reason:

Sometimes conduct by firms in closely related markets has a strong influence on the functioning of the relevant market. It is therefore insightful to identify these markets as

well. We call such markets ‘connected markets.’ Behavior on these markets influence the behavior on the relevant market. A connected market is a market that is horizontally or vertically related to the relevant market.¹⁰⁰

6. THE PAST AS PROLOGUE, THE FAILURE OF FREE MARKET FUNDAMENTALISM TO DISCIPLINE ENTRENCHED MARKET POWER SINCE THE 1996 ACT

ECONOMIC ANALYSIS V. “ERSATZ” ECONOMIC THEORY

This paper has viewed the inherent economic characteristics of the communications sector through the contemporary analytic framework use by regulators and antitrust authorities and embraced by the FCC in the May 2016 order.¹⁰¹ This framework is derived from the dominant paradigm used to describe markets and industrial organization. It leads to the clear and strong expectation that the abuse of market power in communications will be a severe problem. Evaluating the empirical evidence of the structure, conduct and performance of the Business Data Services market, our earlier analysis and the record before the Commission has shown that the Business Data Services market is performing very poorly.¹⁰² It is extremely highly concentrated and possesses other characteristics that lead to the abuse of market power.

The high levels of concentration go hand-in-hand with very high rates of profit, measured either by return on equity or EBITDA. These high rates of profit have persisted for at least a decade as incumbents were given more pricing freedom. Lower volume services were seen as the least competitive and suffering from the greatest pricing abuse.

Recognition of market power abuse was the main thrust of the Order and Further Notice of Proposed Rulemaking published by the FCC in May 2016. The FCC’s reading of the data made it clear that market power is being abused in the delivery of BDS services.¹⁰³ After years of comments, the recognized that the correct application of market structure analysis and DOJ/FTC guidelines, which clearly indicated the abuse of market power, led to suspension of overbroad flexibility, explicitly rejecting limited entry in large geographic areas.¹⁰⁴ The 2016 order recognized need for a competitive market test that reflected the widespread lack of actual competition. While the order recognized the role, that potential competition could play, it also recognized that this role was limited. It suggests¹⁰⁵ that potential competition matters the most in high-capacity markets, and clarifies¹⁰⁶ that barriers to entry make it unlikely that potential competition will be timely, likely, and sufficient enough to discipline rates.

After years of comments, the FCC (2012) recognized that the correct application of market structure analysis and DOJ/FTC guidelines, which clearly indicated the abuse of market power, led to suspension of grant of overbroad flexibility, explicitly rejecting limited entry in large geographic areas. The 2016 order recognized need for a competitive market test that reflected the widespread lack of actual competition. While the order recognized the role, that potential competition could play, it also recognized that it was limited. It suggests that potential competition matters the most in high-capacity markets,¹⁰⁷ and clarifies that barriers to entry make it unlikely that potential competition will be timely, likely, and sufficient enough to discipline rates.¹⁰⁸ In the Flip Flop rule, the Commission brushed this evidence aside, declaring the market is “becoming increasingly competitive across all service offerings.”¹⁰⁹

The law requires rates to be just, reasonable and non-discriminatory. While the law allows the FCC to declare that competition has achieved that goal, it does not mandate it. The FCC must find, based on the evidence, that the goal has been accomplished because of the

market discipline competition imposes. The record does not come close to supporting such a conclusion. On the contrary, it shows excessive prices, supranormal profits and rampant anticompetitive conduct. The FCC ruled that certain contracting practices were anticompetitive and illegal. It was in the process of developing new regulations to reduce the abuse of pricing when the election intervened.

In the Flip-Flop rule, the Commission brushed this evidence aside, declaring the market is “becoming increasingly competitive across all service offerings.”¹¹⁰

THE FCC’S FLIP-FLOP ON POLICY; COMPETITION WITHOUT COMPETITORS

In the “Flip Flop” order, the FCC sidestepped the data, rather than try to refute it. In-building competition was not analyzed, nor was potential competition from very close suppliers (in-census-block). The FCC chose a much larger geographic market, the county. There are over 6 million inhabited census blocks in the U.S. There are about 5 million commercial and industrial buildings. The 2016 Flip-Flop order uses 3,000 counties and deregulates about 90% of customers. Even accounting for a skewed population distribution, on average the FCC’s geographic market is likely to be two to three orders of magnitude larger than the unit used in the market structure analysis, which exhibited high concentration and abuse of market power.

The FCC Flip-Flop order will excuse the abuse of market power, not control it. First, both of the vectors of “sufficient competition,” alone and in combination, are not adequate to correct the abuse of market power in general. Second, the BDS market exhibits a large number of characteristics that make theory inapplicable to the majority of its properly defined markets. Third, while communications markets are particularly likely to exhibit these characteristics, in fact the conditions that retard the ability of “sufficient competition” to discipline the abuse of market power are quite widespread. Like the theory of contestability that has been thoroughly refuted and rejected, the theory of sufficient competition was attractive to those who favor deregulation, but its assumptions were nowhere to be found in reality.

Duopolies allow the abuse of market power that leaves a great deal of economic rents in the pockets of those who have it, to the detriment of consumers and in violation of the Communications Act requirement that rates be just, reasonable, and non-discriminatory. More importantly, the hope that potential competition would grow into effective actual competition had failed during the two decades after BDS was prematurely deregulated. Without competition to discipline rates, these rates have not been reasonable for decades. The FCC has the authority under the 1996 amendments to the Communications Act to deregulate, but only after it has found that competition has rendered regulation no longer “necessary in the public interest (47 USC, §161), not before and certainly not after decades competition failing to deliver the discipline necessary to control the abuse of market power.

The new Republican majority on the Commission reversed direction, arguing that there was enough competition (or would soon be) to control the abuse of market power. The Flip-Flop was not based on a new record, but based on the application of a new theory to the old record. Ignoring the record, the FCC reiterated the unfounded claim that potential competition and weak actual competition are sufficient to eventually deliver just, reasonable and non-discriminatory rates several years in the future. The new theory of potential competition deregulates more

markets and products than the failed old theory. Thus, the FCC 2017 order was a total “Flip Flop” based on a theory that claimed that even no actual competitors were enough to discipline market power. It did not have to regulate, hoping instead and in spite of two decades of evidence to the contrary, that the abuse of market power would not occur even where there were no competitors, hence it is a “0” competition rule.

In a sense, the FCC Flip-Flop order recognizes that its market assessment labeled markets as competitive that would not be considered competitive by the well-established definitions and concepts used by the FCC and the antitrust authorities. To avoid the obvious implications of the facts before it, it used an idiosyncratic competition framework, claiming that “nearby competition” with duopolies had the effect of workable competition, even though in the Final Rule and FNPRM the FCC concluded the opposite, turning it back not only on the record before it, but also on Commission precedent.¹¹¹

The FCC Flip-Flop rule admitted a lack of competition, but then expressed the hope that that nearby potential competition “tempers prices in the short term and results in reasonably competitive outcomes over three to five years (the medium term).”¹¹² To arrive at his conclusion the FCC adopts an overbroad and unrealistic geographic area in which to declare the disciplining effect of potential competition and, later, a touch of actual competition.

Earlier comments presented extensive analysis that made the point that economics limited potential competitors’ ability to extend service over long distances, a point that was reiterated later through replies and *ex parte* comments.¹¹³ The FCC took a very narrow view of the cost of extending service, and failed to recognize expensive wireline costs (see Table 6-1 below.¹¹⁴ including electronic and full network extensions,¹¹⁵ and pole attachments, trenching and access to customers.¹¹⁶

The FCC’s Flip-Flop order defines the product market incorrectly, failing to distinguish between separate products (e.g. low v. high bandwidth products)¹¹⁷ transmission and termination, and products that are not substitutes¹¹⁸ .

Reflecting the reality that the FCC flip-flop rule ignores, evidence of higher prices is apparent throughout the record,¹¹⁹ The current and future magnitude of overcharging is not addressed, which, as shown below, means the Flip-Flop order leaves substantial abuses at the levels of competition the Commission considers sufficient.

The FCC adopts a time frame (mid-term) that exceeds the standards of the agencies it claimed to be emulating, since, as discussed below, the DOJ/FTC analysis focuses on short-term (non-transitory) price increases.

The FCC cites two studies to defend its rule. Neither supports its theory. The analysis by Shelanski, 2007, the first source, rather than justifying two competitors, states flatly, “importantly, these studies consistently show that as the number of firms in the market increases beyond two, market performance improves substantially for consumers.”¹²⁰ He later conceded that sophisticated efforts to model oligopoly behavior in market that are similar to telecommunications “the equilibrium price above marginal cost but below the monopoly price.”

The FCC misapplies the second study (XAO and Orazem, 2011). The FCC draws implications that the study does not support. First, the study makes claims about the lack of impact of the fourth competitor, not only the first two. Second, it addresses entry, but makes no claims about price. As we show, three competitors are no guarantee that prices are not abusive. Third, it uses the zip code as the unit of analysis. There are ten times as many markets defined by zip codes as the FCC defines with counties, which means the competitors for residential broadband on which the FCC is inferring BDS effects are much closer. Simply put, the FCC's potential competitors are not "nearby" compared to the study they cite as support. If the FCC had used zip codes to define market areas, the extent of deregulation would have been dramatically reduced. Fourth, in this market segment facilities-based carriers in one zip code have access to unbundled network elements in another, where they do not have facilities, which may help to lower entry costs (e.g. by spreading marketing, billing and other administrative costs across a larger base). Finally, by their own admission and comments from potential customers, the primary competitors in the residential market, cable operators, are not, competitors in the BDS market. The fundamental difference between the residential and the BDS market can be inferred from the fact that none of the CLEC BDS service providers are significant sellers of residential service and *visa versa*.

Stripped of these two misapplied and misinterpreted studies, the FCC lacks any evidence to support its theory. The weakness of the theory of sufficient competition on which the FCC Flip-Flop rule rests is even more evident in the limitations it must concede. It cannot claim sufficient competitive pressures exist "to make prices effectively competitive"¹²¹ or that "nearby competitors" are committed to enter¹²² or that their entry will be swift and sufficient.¹²³ Given the higher costs of potential entrants, it is unclear whether entry can make the abuse of market power unprofitable. As we show in great detail below, BDS markets exhibit a host of important characteristics that make it highly unlikely that potential and/or limited competition will yield workably competitive results. After two decades of failure and in light of ongoing market power abuse, the theory of sufficient competition does not comport with the record, the economic literature, or the requirements of the Communications Act.

It should come as no surprise that when the FCC flip-flopped and tried to ignore the record to propose another round of deregulation based on a theory (hope) that potential competition would solve the problem, the victims of market power abuse went to court. Given our analysis of the court ruling on the FCC's Flip-Flop order on network neutrality, the fact that the court refused to overturn the order should not be surprising. The insufficiency of competition was at the center of the debate, and deference to the agency was the key to the legal ruling. The court never concluded that the theory was right, it only felt compelled to defer to the agency.

While the FCC concluded that "duopolies can sufficiently increase competition to make regulation unnecessary," they also noted "the CLEC Petitioners protest that duopolies (markets with only two competitors) have anticompetitive effects and that a Competitive Market Test cannot reasonably produce duopolies."¹²⁴ But the agency always gets the benefit of the doubt. "The CLEC Petitioners may reasonably disagree with the FCC on what the evidence shows regarding incremental costs, but their disagreement is no basis for finding the FCC's interpretation of a conflicting record to be arbitrary and capricious."¹²⁵

Furthermore, even if the FCC misinterpreted the evidence on incremental costs,

it receives deference when it predicts what will happen in the market in the future. “[J]udicial deference to agency action is ‘especially important’ when [an] agency’s judgments are ‘predictive.’” *Southwestern Bell Tel. Co. v. F.C.C.*, 153 F.3d 523, 547 (8th Cir. 1998) (quoting *City of St. Louis v. Dep’t of Transp.*, 936 F.2d 1528, 1534 (8th Cir. 1991)). The FCC explained in the 2017 Order that it relied on the Competitive Market Test and the related market data to predict what will happen in the market. 2017 Order at ¶ 124. The FCC also cited sufficient evidence to justify removing *ex ante* regulation in a market with two competitors. Regardless of whether its predictions based on uncertain data prove true, the FCC is not acting arbitrarily and capriciously when it makes such predictions in choosing how to regulate the market under its jurisdiction.¹²⁶

The court position relies on deference to the agency and suggests that, no matter how much contrary evidence there is in the past. The agency could ignore such evidence if it came up with a theory that said the future would be different. An article from a leading technology publication took the court decision to its illogical conclusion both on the substance of competition and the process of adjudication. “FCC can define markets with only one ISP as ‘competitive,’ court rules,” reads the article. “The FCC can ‘choose which evidence to believe,’ court says.”¹²⁷

In fact, it is quite ironic that the court cites its own ruling in a 1998 case about having to defer to agency judgement on these matters. In the two decades between the two decisions, the theories of contestability sufficient competition to discipline the abuse of market power had demonstrably failed, in both the record before the Commission and the broader economic literature.

This is a good news, bad news outcome. On the one hand, reality did not stand in the way of the agency if it is predicting and the courts refuse to deny it deference. On the other hand, the courts will have to grant deference to an agency decision that reaches the opposite conclusion, no matter how quickly it reverses direction. One should add, that although it does not appear to matter to the courts, deference should be quickly granted when the facts actually support the agency’s decision. In a paper on network neutrality I observed that flip-flop orders and deference almost guarantee a quick reversal, should there be a change in policy orientation at the agency. That is even more true in the context of the BDS ruling, since the historical, evidentiary and analytic record is so clear.

A FAULTY DECISION AT EVERY LEVEL

Under the FCC’s proposed rule, the presence of a firm in a wide geographic area selling any product that might be considered a Business Data Service, even those that are not considered close substitutes by most firms who need BDS, is considered “nearby competition.” This “nearby competition” is assumed to discipline the abuse of market power.¹²⁸ If “nearby competition” grows into actual competition, for any customer anywhere in the geographic area, the resulting duopoly is considered sufficient to effectively discipline the abuse of market power.¹²⁹

The customers and competitors of the dominant BDS providers argued that the economic reality of the market is at odds with the FCC's discussion in the Flip-Flop Order. Two decades after deregulation and the hope that competition would enter, three-quarters of all customers still have only one choice for service (only one provider serves their location). Competitors have been able to extend service to a small fraction of buildings (one-eighth has two, the remaining one-eight has three or four) because of the cost and other barriers to competition— some natural, like economic of scale and network effects, and some artificial, like lock-in contracts. While competitors and customers were arguing for very small geographic and narrowly defined markets, the FCC Flip-Flop order went in the opposite direction, with very broad categories of services and a wide geographic area.

The victims of abuse explained the flaws in the FCC logic.¹³⁰ In their view, the FCC had not only misread the record, it skipped the key steps of administrative process intended to restrain just such an error. Given that the weak regulatory structure had failed to prevent abuse, the victims argued that deregulation would only widen and compound abuse. The law requires rates to be just, reasonable and non-discriminatory. While the law allows the FCC to declare that competition has achieved that goal, it does not mandate it. The FCC must find, based on the evidence, that the goal has been accomplished because of the market discipline competition imposes. The record does not come close to supporting that conclusion. On the contrary, it shows excessive prices, supranormal profits and rampant anticompetitive conduct.

This was the thrust of the Order and FNPRM published by the FCC in May 2016. Ignoring this record, the FCC changed direction, reiterating the claim that potential competition and weak actual competition are sufficient to eventually deliver just, reasonable and non-discriminatory rates several years in the future. The new theory of potential competition deregulates more markets and products than the failed old theory. The record shows not only that the old theory failed, but it also shows why the new theory will fail as well.

The key elements of that complaint are well-supported in the above analysis of economic theory and practice, applied to the data in the record.

- Measured by customers, the markets are highly concentrated, but more importantly, the overwhelming majority are monopolies with the remainder being duopolies. This conclusion is dependent on the product and market definition.
- The product is defined as always-on guaranteed QOS. Different products that do not guarantee service, like best-effort cable, are not considered good substitutes, even by the cable companies who supply them.
- The geographic market is defined as a building, or a census block, because of the prohibitive cost of extending connection over large distances.
- The need for ubiquity is also a barrier to competitive entry.
- These problems are more intense in the lower capacity TDM services.

In the Flip-Flop decision, the FCC defines the product and geographic market more broadly: a competitor in a county or the presence of a cable operator categorizes a county as competitive. The product definition combines two products – termination and transport—that

have been separate. It makes little distinction between low bandwidth and high bandwidth services.

In a sense, the FCC recognizes that its market assessment labels markets as competitive that would not be considered competitive by the definitions and concepts discussed above. Therefore, it introduces an idiosyncratic competition framework. “Nearby competition” and duopolies are defined as having the effect of workable competition, even though in the May 2016 Rule and FNPRM the FCC concluded the opposite.

When viewed through the lens of the economic literature the theory of sufficient competition fares just as badly at the claim that market power is not being abused in the BDS market. While the literature is huge and there are debates over the nuances of the interaction between structure, conduct and performance, the theory of sufficient competition falls so far outside of the debate over the abuse of market power that it can be strongly and summarily rejected.

THE REJECTION OF CONTESTABILITY THEORY AS A BASIS FOR POLICY

The FCC Flip-Flop Order bears a strong resemblance to the contestability theory that drove significant deregulation in the 1980s. That theory maintained that threats of market entry would discipline and constrain market power, even where the number of actual competitors was small. In the past two decades, “contestability theory” has been debunked and rejected in virtually every industry in which it was applied for a simple reason. The conditions in the marketplace necessary to produce the hypothesized, quasi-competitive effect simply do not exist in reality.

Not surprisingly, given the analysis in this paper, the fundamental characteristics of communications markets are uniquely hostile to contestability theory. The major flaws in the theory listed in Table 6-1 reflect the inherent and current characteristics of the communications markets.¹³¹ The market conditions that render contestability theory inapplicable in general are present in the BDS market.

Markets where assets appeared to be mobile were put forward as ideal candidates for contestability. If one could move assets in and out of markets, they might be subject to “hit and run” entry and exit. It turned out that a variety of barriers to entry came into play— some natural, like capital or network effects, some strategic entry-deterring practices, like lock-in contracting.

Contestability made claims about all of the conditions of competition and its rejection teaches us why the traditional approach was correct. As William Shepherd put it in an early piece in the leading U.S. economic journal

[T]heir analysis only treats a specialized, extreme set of conditions, which are probably found in no real markets which have significant internal market power. Little has been added to the pre-existing entry and exit analysis... The “new” analysis gives no persuasive reason to shift attention away for competition within the market.¹³²

TABLE 6-1: MARKET CONDITIONS THAT RENDER CONTESTABILITY (POTENTIAL COMPETITION) INEFFECTIVE IN DISCIPLINING THE ABUSE OF MARKET POWER

<u>Structure:</u>	<p>Requires rapid (hit and run) entry and exit, thereby failing in the face of</p> <ul style="list-style-type: none"> Barriers to entry and exit (e.g. physical assets, scale, time, finance) Sunk costs (asset specificity) Powerful incentives for incumbents to resist entry <p>Requires very large, even total shift of demand</p> <ul style="list-style-type: none"> Switching costs, partnering in tangible specific assets, intangible social assets including brand loyalty and advertising <p>Assumes contrary to reality,</p> <ul style="list-style-type: none"> many small potential entrants No incumbent cost advantages Absences of vertical Integration that affords incumbents control of access to the ubiquitous network. Access to technology (e.g. patenting) <p>Is a static analysis that ignores path dependence</p> <p>Asymmetric information between incumbents, potential entrants and customers is ignored</p>
<u>Conduct:</u>	<p>Strategic (even predatory) and oligopolistic interactions like limit pricing are responses that reduce and undermine the threat of entry</p> <p>Product differentiation makes entry more difficult.</p> <p>Other Anti-competitive practices inhibit entry (lock-in contracts)</p>
<u>Performance:</u>	<p>Persistence of supranormal profits.</p> <ul style="list-style-type: none"> Small number of the same firms over an extended period Limited ability of entrants to succeed and remain viable. Acquisition of new entrants and potential competitors.

Source: Shepherd, 1984; Martins, 1994, Chapter 5 Evenden and Williams, 2000.

Shepherd pointed out that to restrain pricing abuse entry had to be “[t]otal, absolute and perfectly reversible,” with the result being “anticipatory price restraint so that entry need never occur.” Further, “[e]xit must be perfectly free... A corollary is that exit barriers are irrelevant for the market outcome except when they are higher than entry barriers.” These characteristics led him to label contestability “[u]ltra-free entry,” and conclude that it “lacks generality because of its extreme character.”¹³³

Stephen Martin notes that:

The theory of imperfectly contestable markets, on the other hand, is now acknowledged to be an extension of the mainstream structure-conduct performance school of industrial economics.... This tradition holds that increased ease of entry and exit improves the welfare performance of firms and industries... The tradition referred to also holds that difficulty of entry allows incumbent firms to exercise some market power, and that market performance depends on oligopolistic interactions as well as potential competition...¹³⁴

Martin then points to an early admonition offered by one of the leading scholars of the analysis of industrial organization, Avinash Dixit, saying: “It is useful to begin by noting an early call for caution in the policy application of the theory of contestable markets.”¹³⁵

As a positive theory of market structure, it needs careful handling. In most cases in practice, production requires some commitments that can only be liquidated gradually,

consumers assimilate and respond to price changes with some delay, and firms need some time to calculate and implement price changes. Perfect contestability is the judgment that the third lag is the longest. . . . The traditional presumption in industrial organization is the opposite, that is, that prices can be changed more quickly than sunk capacity... In practice, careful empirical work in each specific context will have to be undertaken before we can say whether an industry is contestable and sustainable, and decide whether and what regulatory attention it requires.¹³⁶

Careful empirical work over the next decade verified Dixit's concern, finding contestability theory inapplicable in virtually every industry to which it was applied or used to influence policy.

A decade and a half later, it could be said that

Contestability theory no longer holds widespread support amongst academic economists in the field of microeconomic policy because the assumptions have come to be regarded as implausible as a matter of logic or empirical evidence.¹³⁷

The careful empirical work was contained in the FCC's May 2016 Final Order and Further Notice, on which the FCC Flip-flop order turned its back. The irony of the FCC's flip-flop is that the administrative procedures that it skirted are intended to prevent the unreasonable outcome at which it arrived. In this case, as many others in the early Trump Administration, illegality and ill-considered decisions go hand in hand.¹³⁸ In theory, one could point to the conditions under which market power is not a concern. In practice, there are no markets that meet those conditions. Contestability is one such false assumption.

- (1) Contestability argued that a very small number of competitors, or even the mere threat of potential competition, prevents the abuse of market power. This logic fails because these small numbers of competitors are not enough to discipline market power in real markets,¹³⁹ and because the persistent formation of cartels contradicts the claim that they are difficult to form and are swiftly eliminated by market forces.¹⁴⁰
- (2) The theory that a single monopoly can extract all the rent – which renders concerns about vertical integration moot – is inapplicable to virtually all real-world markets, where oligopoly is common and complementary markets are, or can be, much more competitive.¹⁴¹
- (3) Efficiency gains resulting from mergers are weak, while the incentive and ability to engage in anticompetitive, anti-consumer practices are strong in concentrated, integrated markets.¹⁴²
- (4) Vertical integration is a much larger problem than fundamentalists believe because there are many tactics that integrated entities can use to undermine competition.¹⁴³
- (5) Well-known practices, like tying and bundling, deserve much more attention because they can impose harm on consumers under conditions that are more frequent than admitted.¹⁴⁴

EMPIRICAL ANALYSES

The most prominent examples put forward as candidate markets for contestability involved industries with mobile assets. Martin charts the retreat of contestability through the recognition that it was not generally present in the prime candidate, airlines. The airline industry

was the original source of doubts about contestability and the evidence grew over the years that prices were not constrained in a major way by contestability.

The finding became common knowledge and analysts moved on to more sophisticated tests. Particularly interesting was Mazzoe, who demonstrates that the ill-effects of concentration extended to product quality.

Margins may be higher on monopoly routes because airlines that do not face competitive pressures can save the costs that would be needed to provide higher quality, on-time service. The results in this paper indicate that, in fact, flights are less frequently on-time on routes that are served by only one airline and in cases where the carriers market share at the airport served are higher. Accounting for scheduling suggest that actual quality provided is even worse; the airline schedule longer flight times on their monopoly routes, all else equal.¹⁴⁵

More broadly, this study is among the first to quantify the link between competition and product quality, which will inform policy makers when assessing the competitiveness of markets, evaluating potential mergers and imposing industry standards.

A more recent study reached a similar conclusion.

Using a panel of monthly data for 5472 route-carrier combinations from 2005:4Q through 2012:4Q, we find that the average length of flight delays and cancellation rates increase with the concentration level. Worse service quality is linked to less competition. In addition, we find that the relationships between our measures of service quality and market concentration are nonlinear, so that the scale of the effects of a given change in airline competition appears to depend on the initial level of competition.¹⁴⁶

One important aspect of the airline industry that is not present in BDS markets is that, to the extent a single competitor, or even potential competition has an impact, it is associated with carriers with very low costs.¹⁴⁷ The empirical evidence suggests that entrant costs are as high or higher than incumbents in BDS services because incumbents inherited the network and have at least equal, and likely greater, access to technology. This makes access to the network, interconnection and other services, at fair, reasonable and nondiscriminatory prices critical to the development of competition and an arena for fierce fights at regulatory agencies and in the courts.¹⁴⁸

Cowie (2012) studied another industry with mobile assets, buses, in one of the more recent studies. As he put it, “Most research in the area of contestable markets in transport services has been into the contestability of airline services, however studies have generally found little evidence of its existence.”¹⁴⁹ His study of bus service reaches a similar conclusion, with about 90% of the markets studied not deemed contestable.

Out of some 105 major bus subsidiaries operating in Britain, only 15 were identified as operating in a contestable market. When expressed in revenue shares, this only represents 8.6% of passenger revenue. Furthermore, this share has been decreasing over time as the process of merger and particularly acquisition has continued into the long

run. Thus, whilst there may be evidence of the contestable market in the industry, it can hardly be described as widespread.

Scrambling to preserve some relevance for the theory, advocates lowered their claims to imperfect contestability.¹⁵⁰ These claims fared no better under the scrutiny of intense empirical examination. Peteraf, who tested the imperfect contestability argument in various ways, offered observations on why it did not apply. Her list of factors reflects the conditions of the BDS market discussed above and the specific aspects of the sufficient competition analyzed below. She suggested natural barriers to entry like the high cost of *de novo* entry and network effects that were costly, if not impossible, to overcome. Additional challenges included advantages of existing reservation systems, combined with the high transaction costs of establishing the necessary business relationships in a market. Strategic factors included brand recognition and loyalty programs, advertising, and limit pricing responses. These are a subset of the characteristics we have seen in the BDS market. It is simply not likely to be greatly affected by potential competition or even imperfect contestability.

Each of the empirical bodies of research discussed stand as a rejection to contestability theory, affirming the superiority of the traditional approach and demonstrating that the theory of sufficient competition deserves a similar fate.

Profits are correlated with concentration defying the claims of contestability and duopoly as sufficient competition. As Shepherd noted “Repeated testing shows that market shares correlate closely with rates of return and explain much of their variation. If entry conditions dominated, that correlation would not occur.”¹⁵¹ Evenden and Williams reached a similar conclusion “Positive correlation between concentration and profitability would not be expected in perfectly contestable industries.

Collusion does happen under conditions that defy the claims of contestability and duopoly as sufficient competition. “If the hit and run entry mechanism works, economies of scale will not be barriers to entry and collusion will not be sustainable.”¹⁵²

Potential competition is a secondary concern precisely because entry in the real world is difficult and slow. total and costless entry are unrealistic,

Entrant can match the incumbent firms output completely, by means of total entry. Otherwise, the fixed cost per unit is higher for the entrant... Sunk costs are most likely to be highest, and to cause entry barriers, precisely in those periods when the incumbent is assumed *not* to responds to entry.

Virtually all production requires specific assets which cannot be transferred or sold costlessly.¹⁵³

Shepherd concluded that the conditions of real-world entry render the underlying assumptions inapplicable.

But no significant evidence exists that free entry has or will fully neutralize market dominance, much less pure monopoly. In general entry is slow and occurs in a sequence involving first a foothold and then later expansion. Significant entry virtually

always draws retaliation. The speed and strength of retaliation vary directly with both the incumbent's and the entrants market shares.... Most will enter at a small size, in order to minimize risk and permit learning to grow; large entry at full size is unusual. The main impact on the market comes with post-entry growth, but that is actual competition.¹⁵⁴

Evenden and Williams, reach a similar conclusion

A perfectly contestable market is one in which (i) entrants have access to the same production techniques and factor markets as incumbents (no cost barriers to entry), entrants can serve the same market demands as incumbents (no demand barriers to entry), and (iii) there are no entry or exit costs... such as perfect knowledge, perfect factor mobility, and homogeneity of products.... The entrant's exit lag is shorter than or equal to the incumbent's response lag. This assumption circumvents the full range of dynamic post-entry price, quantity and quality games of traditional oligopoly interaction.¹⁵⁵

Martin, who summarized the state of the contestability literature after two decades, concludes that careful theoretical analysis and empirical research showed that contestability, rather than refuting, affirmed the traditional understanding.

The theory of imperfectly contestable markets, on the other hand, is now acknowledged to be an extension of the mainstream structure-conduct performance school of industrial economics.... This tradition holds that increased ease of entry and exit improves the welfare performance of firms and industries... The tradition referred to also holds that difficulty of entry allows incumbent firms to exercise some market power, and that market performance depends on oligopolistic interactions as well as potential competition...¹⁵⁶

POLICY IMPLICATIONS

Recounting the history of concern about market power, Shepherd emphasized the ebb and flow of emphasis on internal and external conditions.

Internal conditions embody the degrees of actual competition and monopoly among firms already inside the market. These internal of actual competition include both structure and conduct... *External conditions of potential competition*, from firms outside the market who may try to enter in the future, may also influence the choices of firms inside the market.¹⁵⁷

Shepherd examined the layering of concerns about market power in mainstream economic analysis over the course of a century, including emphasis on market shares (1880-1910), oligopolistic interaction and collusion (1910-1950), entry barriers and responses (1950-1970), return of a focus on market shares, with price discrimination and applied theory of industrial organization. The conclusion in rejecting contestability is that:

wise public policy choices will remain based on the accumulation of past research, with its focus on actual competition, as possibly modified by entry. Baumol et al.'s advice to

avoid unnecessary entry barriers is sound, but it was already widely accepted. The "new" analysis gives no persuasive reason to shift attention away from competition within the market.¹⁵⁸

Evenden and Williams conclude that the policy prescription has not been altered by contestability theory, "*therefore, in the vast majority of cases, policy should be oriented towards the facilitation and promotion of both contestability and actual competition between incumbent firms.*" This advice is qualified by a call for careful empirical analysis.

[P]olicy designed to promote contestability *and* actual competition should be sensitive to specific industry contexts. An understanding of the common deviations from competitive and contestable conditions is important, as are industry specific imperfections related to the structure of the industry, the nature of industry operations.¹⁵⁹

They are simply calling for the careful empirical work that Dixit asked for a quarter of a century ago. This is the careful empirical analysis that FCC's 2016 order did in concluding that aggressive policy was needed to constrain the abuse of market power and remove critical behavioral barriers to entry. This is the careful empirical analysis that the FCC's 2017, Flip-Flop order did not do, making no effort to explain why its new theory fit the old data. The above rejection of contestability theory and the empirical analysis of key economic relationships below explain why the FCC did not undertake the necessary empirical analysis. It knew full well that it was doomed to fail.

7. DUOPOLY IS NOT ENOUGH FOR WORKABLE COMPETITION

THE DOJ/FTC REVISION OF THE THRESHOLDS IN THE MERGER GUIDELINES

In a sense, the rejection of the “duopoly is enough competition” leg of the FCC’s theory is even more definitive than the rejection of the contestability leg. The empirical evidence rejects that argument just as strongly. The academic literature, as discussed below, is equal in strength and larger in volume.

First, the DOJ and the FTC had conducted an extensive review of the evidence on competitive market structure and concluded that the thresholds for classifying market concentration should be changed, as noted above. As a result, the threshold for classifying markets as unconcentrated was raised from an HHI of 1,000 to an HHI of 1,500. The highly concentrated threshold was raised from 1,800 to 2,500. These thresholds can be converted to numbers of firms as follows. Under the old definition, a market with the equivalent of 10 equal sized firms was considered unconcentrated. Under the new definition, a market with roughly six equal-sized firms is considered unconcentrated. Under the old definition a market with fewer than six equal-sized firms were considered highly concentrated, under the new definition, a market with four equal-sized firms is considered highly concentrated. In essences, the DOJ/FTC relaxed the old rule of thumb (“six is few and ten is many”) by adopting a rule of thumb that is current in the literature, “four are few and six are many.”¹⁶⁰ As discussed above, The European competition authorities also rejected the proposition that two is enough.

While there are occasional, theoretical suggestions that “two are few and four are many,” there is scant, if any, real world evidence to support that proposition.¹⁶¹ Indeed, the evidence runs in the opposite direction; the empirical evidence suggests that six may not be enough. The argument that “two is enough” has virtually no support in the theoretical or empirical literature. A variety of types of information support the suggestion that concentration unleashes market power at levels traditionally targeted as a competitive concern by market structure.

An extensive literature review by Fiona Scott Morton demonstrates the overwhelming empirical evidence that contradicts Free Market Fundamentalism in general and the theory of sufficient competition in particular. Here I review studies that provide quantitative and qualitative evidence that “two is not enough” and support the other aspects of the BDS market that contradict the theory (hope) of “sufficient competition.”

NUMBER OF FIRMS AND CONCENTRATION¹⁶²

The use of concentration ratios overwhelmingly shows a statistically significant effect in the expected direction. Higher concentration yields higher prices in a wide variety of markets. The primary effect of contestability theory was to compel analysts to look more carefully at potential competition. As Martin suggests, the net effect was to strengthen the basic findings of the traditional approach, with researchers producing ever more nuanced and sophisticated rejections of contestability.

Here it is important to keep the context in view. Hundreds of studies had shown that market concentration had a statistically significant and quantitatively meaningful relationship to prices and profits. To the extent that potential competition was operating, it would have

weakened this relationship, but it had not eliminated it by any stretch of the imagination. The average could be misleading. Authors set out to identify the markets in which potential competition might have a big effect. They generally found small effects that were not sufficient to undermine the basic relationship between concentration and price. Potential competition was nowhere near an effective substitute for actual competition.

Of equal importance from the point of view of evaluating the theory of sufficient competition, the effect of concentration was not limited to the range of monopoly-duopoly. The markets studied are not, on average duopolies. On the contrary, the level of concentration is overwhelmingly below the duopoly level. Using the average HHI and the distribution of HHIs, 95% or more of the products studied have more firms than a duopoly.

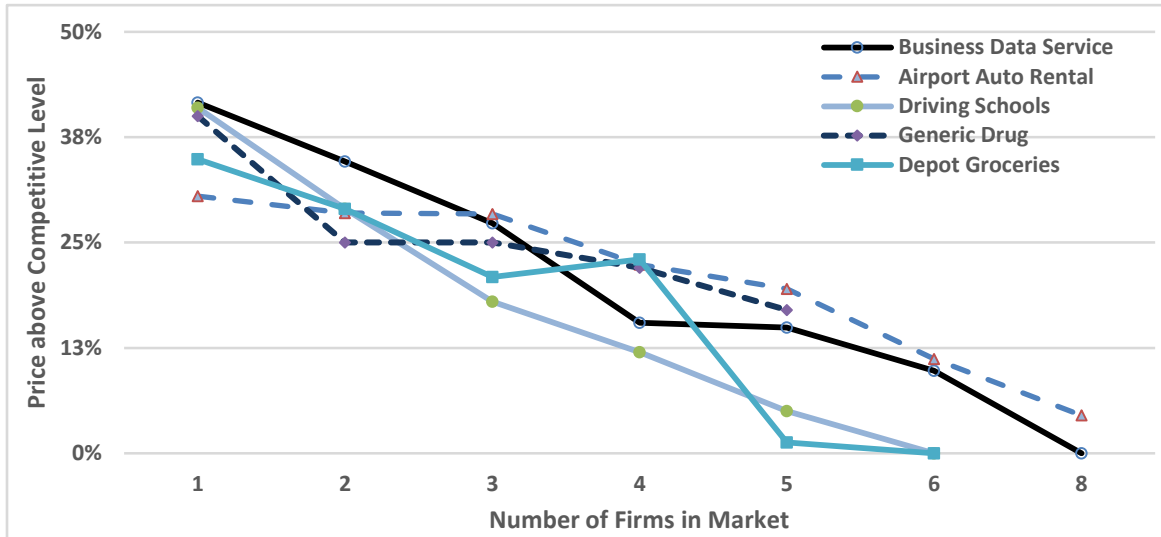
The studies do not generally examine the impact of adding a specific number of competitors to a market, since the HHI captures more information about market structure. When studies do take this approach that counts firms as opposed to relying on the HHI, they confirm that adding competitors into the mid, or even high single digits lower prices (see Figure 7-1). For the purpose of this analysis, we accept the largest number of firms in the market defined by the author as most competitive as the baseline. Since the structure these studies consider tends to stop at fairly low numbers, the analysis may be leaving a lot of rent in the pockets of the sellers. If less concentrated markets were considered, the magnitude of the estimated effect of market power abuse would be larger. For the present purposes of testing the ability of “sufficient competition” to constrain market power, the conservative baseline is more than adequate.

Figure 7-1 compares Baker’s results for the FCC BDS data to the findings on several other product markets. To create a basis for comparison between these empirical studies, we have used regression coefficients on the specific number of firms to estimate how far above competitive levels prices are. We convert Baker’s data to a continuous variable by starting with in-building competitors and adding in-census block competitors. Because potential entrants that are distant from a market tend to have smaller effects, we show actual competitors first, then add the effect of potential competitors atop the effect of actual competitors. The generic drugs and driving school markets, in addition to BDS, include estimates of the specific impact of potential competition that will be discussed below. We identify seven levels of competition that play a central role in debate – 1, 2, 3, 4, 5, 6, and 8. In the upper graph, we show the monopoly markup in percentage points.

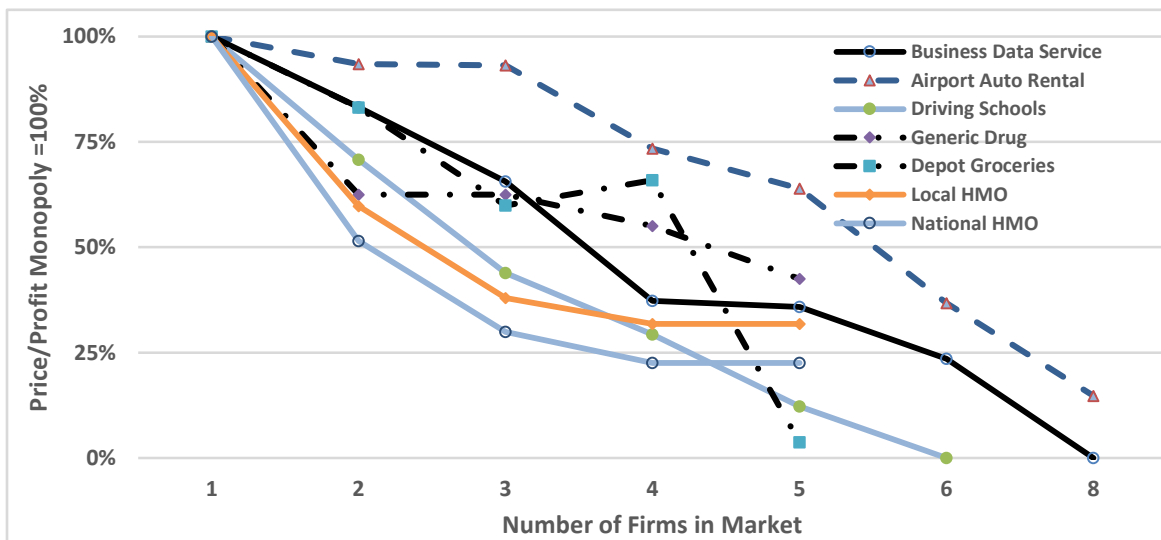
In the lower graph we convert this to an index of the exercise of market power by calculating the reduction in market power as competitors are added. This enables us to include measures other than price. This approach addresses the key issues highlighted by the rules of thumb – “two is few, four is many,” and “four is few, six is many.” On average, two competitors leave almost three-quarters of the rents in the pockets of the sellers. Four firms leave slightly less than half the rents on the table and five firms slightly less than one-third. Six firms squeeze out all the rents in some cases, but not in others.

The evidence shows that two is clearly not enough. Adding competitors to four has large effects.¹⁶³ Beyond four results become less clear.¹⁶⁴ In several examples, six has a statistically significant impact in both product markets. Rents continue be squeezed out up to 8 firms in the case of BDS and airport auto rental.

FIGURE 7-1: CONCENTRATION AND MONOPOLY OVERCHARGES
% Price above Competitive Levels, as the Number of Firms Increases



Monopoly Price/Profit Impact = 100%



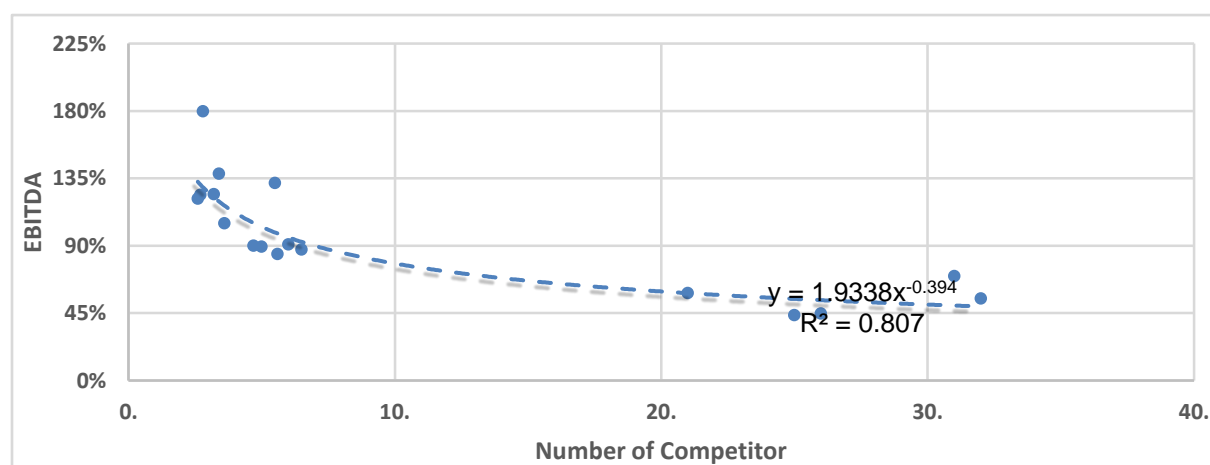
Sources: Baker, Jonathan, B. 2016, Reply Declaration of Jonathan Baker, February 19, 2016, in the Matter of Special Access Rates for Price Cap Local Exchange Carriers, AT&T Corporation, Singh, Satsinder, Michael Utton and Michael Waterson, 1998, Strategic Behaviour of Incumbent Firms in the UK, *International Journal of Industrial Organization*, Volume 16; Asplund, Marcus and Richard Sandin, 1999, "Competition in interrelated markets: An empirical study," *International Journal of Industrial Organization*, (37); Bresnahan, Timothy F., and Peter C. Reiss, 1991, "Entry and Competition in Concentrated Markets," *Journal of Political Economy* 99 (5); Dranover, David, Anne Gronz and Michael J. Mazzeo, 2003, "Differentiation and Competition in HMO Market," *Journal of Industrial Economics*, 51(4); Bresnahan, Timothy F., and Peter C. Reiss, 1991, "Entry and Competition in Concentrated Markets," *Journal of Political Economy* 99 (5); Romana Khan Vishal Singh Ting Zhu, 2009, Price Discrimination and Competition in the Auto Rental Industry, April; Richard G. Frank and David S. Salkever, 1995, *Generic Entry and the Pricing of Pharmaceuticals*, NBER Working Paper 5306, Fidel Ezeala-Harrison and John Bafoe-Bonnie, 2016, "Market Concentration in the Grocery Retail Industry: Application of the Basic Prisoner's Dilemma," *Advances in Management and Applied Economics*, 6(1). Vishai Singh and Ting Zhu, 2006, *Pricing and Market Concentration in Oligopoly Markets*, March 8.

A point of considerable debate in the measurement of market power abuse stems from the fact that the pure measure, based on the notion that competitive prices should equal marginal costs, glosses over the problem of fixed costs which must be recovered through prices to cover fixed cost. Business Data Services may, or may not, have larger fixed costs than the other examples in Figure 7-1.

Figure 7-2 and the accompanying table shows the prices and profit margins (EBITDA) of a number of hospital services where fixed costs are likely to be significant. The critical conclusion—that competition squeezes out rents well beyond two—is supported. The results of this study of competition in common operating room procedures adopted a simple measure of competition: those above the mean HHI are considered non-competitive and those below the mean HHI are considered competitive. The average number of hospital chains serving an area was 11, so the dividing line is reasonable in terms of the old DOJ/FTC standard of 10 is many. Although the measure used in the study is imprecise, the study also provided an econometric measure of the impact of competition, which enables us to create the price curve analysis in Figure 7-2 and the margin analysis in the supporting table below.

The estimated margin at the competitive level (one standard deviation below the mean HHI), with implicitly large numbers of competitors, is fairly tightly concentrated around 50%. As competition declines to the moderately concentrated level (5-6 firms), the margin goes up significantly by over 40 percentage points. The firms in a moderately concentrated market for these services are earning excess profits above 40%. In highly concentrated markets excess profits rise by another 40%.

FIGURE 7-2: CONCENTRATION AND PROFITS IN COMMON SURGICAL PROCEDURES



Data

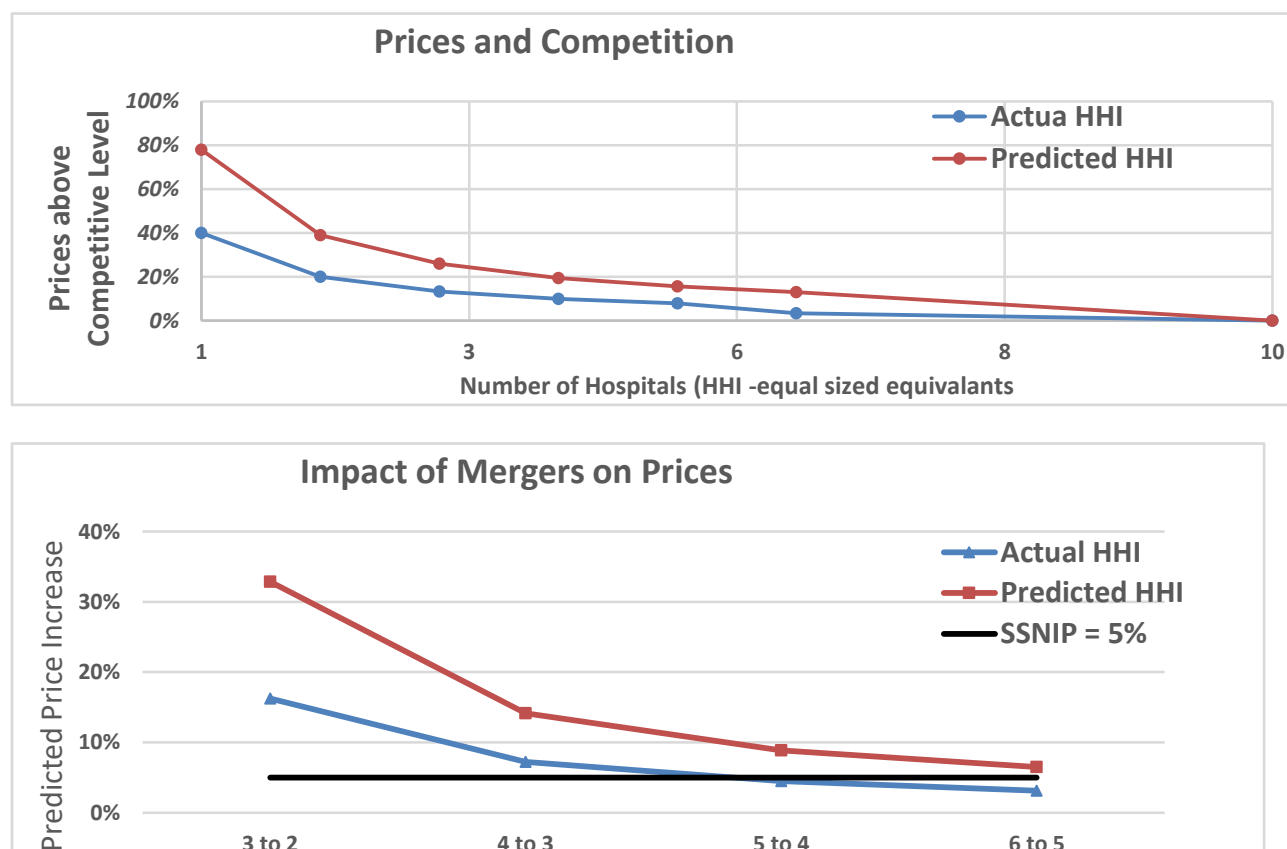
Procedure Mark-up	Concentration Levels Equivalent	HHI # of Firm Competition Measure		Commercial Margin (EBITDA) Margin Analysis		
		HHI	#	AVG.	SD	CV
	1 SD Below Mean	329	43.7	53%	0.098	18%
	Competitive (Below Mean)			64%	0.161	25%
	Mean HHI Moderately Concentrated	1819	5.6	96%	0.179	19%
	Consolidated			129%	0.282	22%
	1 SD Above Mean	3311	3.1	132%	0.256	19%

Source: James C. Robinson, 2011, "Hospital Market Concentration, Pricing, and Profitability in Orthopedic Surgery and Interventional Cardiology," The American Journal of Managed Care, 17(6).

A second study on hospitals yields a similar pattern. As shown in the upper graph of Figure 7-3. Again, we have constructed these curves from the HHI coefficients and the examples given in the text. The introduction of a second hospital has the largest impact, squeezing out about half the rents, but half are still left on the table.

The lower graph shows the impacts of mergers in highly concentrated markets. The examples in the text assumed equal sized firms. We have added the 6-to-5 mergers based on the observed HHI relationship. Tying this back to the earlier discussion, the 4-to-3 and 3-to-2 mergers clearly exceed the SSNIP standard. Even the 5-to-4 is close. Using the higher levels of HHI, all of the mergers exceed the SSNIP standard. These results mirror the larger antitrust practice and academic literature. Mergers with four firms are a great concern, while mergers with five or six firms are borderline. Two is simply not enough competition.

FIGURE 7-3: CONCENTRATION AND PRICES IN LOCAL HOSPITAL MARKETS



Source: See Figure 7.2

As noted by the antitrust authorities, other dimensions of the product space are affected by concentration, including, for example, variety.¹⁶⁵ A more recent study in a very different industry – smart phones – reached a similar conclusion:

Our findings show the market contains too few products and that a reduction in competition decreases both product number and product variety. These results suggest

that merger policy should be stricter when we take into account the effects of a merger on produce choices in addition to those on pricing.¹⁶⁶

This result was demonstrated for mergers between top six firms in the smart phone market, which was moderately concentrated at the time, underscoring the uncertainty about where to draw the line on concern about the level of concentration.

CARTELS, COORDINATION AND TACIT COLLUSION

A second type of data that sheds considerable light on the question of how many competitors are necessary to prevent the abuse of market power in the real world can be found in the literature on cartels. The gap between theory and reality is particularly great in the analysis of cartels, as one recent study put it.

Experimental tests of the tacit collusion model so far find that, while collusion sometimes occurs with two firms, behavior is close to Nash play in markets with three or more firms.

Yet the empirical reality of antitrust enforcement is different: cartels usually involve many firms... Empirical evidence on cartels suggests that the median number of cartel members lies between six and ten...¹⁶⁷

The conventional wisdom is that collusion is easier with fewer firms. While theories on collusion as well as oligopoly experiments support this assertion, there is abundant evidence from cartels suggesting that firms manage to cooperate also in markets with a large number of competitors. In this area of analysis, the central challenge is to uncover the factors that exist in the real world that render the theoretical expectation incorrect. Here we again see support for the proposition that “four is few, six may be enough and ten is many.”

The answer is consistent with a broad body of literature on behavior. The ability to communicate, explicitly and implicitly, and discipline “cheaters” are found to be effective tools to achieve above-cost pricing with the number of competitors in the high single digits, particularly when the firms recognize their mutual interests and reciprocity governs behavior.¹⁶⁸

Communications provide critical functions in establishing pricing policy and in dispute resolution,¹⁶⁹ perhaps by signaling threats to promote compliance without punishment,¹⁷⁰ or keeping punishment targeted.¹⁷¹ The results of an experiment that looked intensively at communications found that

Our result is at odds with the conventional wisdom, if interpreted as “there are more cartels the fewer the firms”. In our data, duopolies have higher prices throughout, so the conventional wisdom that “fewer firms find it easier to maintain high prices” does hold both when firms talk and when they do not talk. But we also saw that the gain from talking is larger for the less concentrated industry, and, as a result, “there are fewer cartels the fewer the firms.”¹⁷²

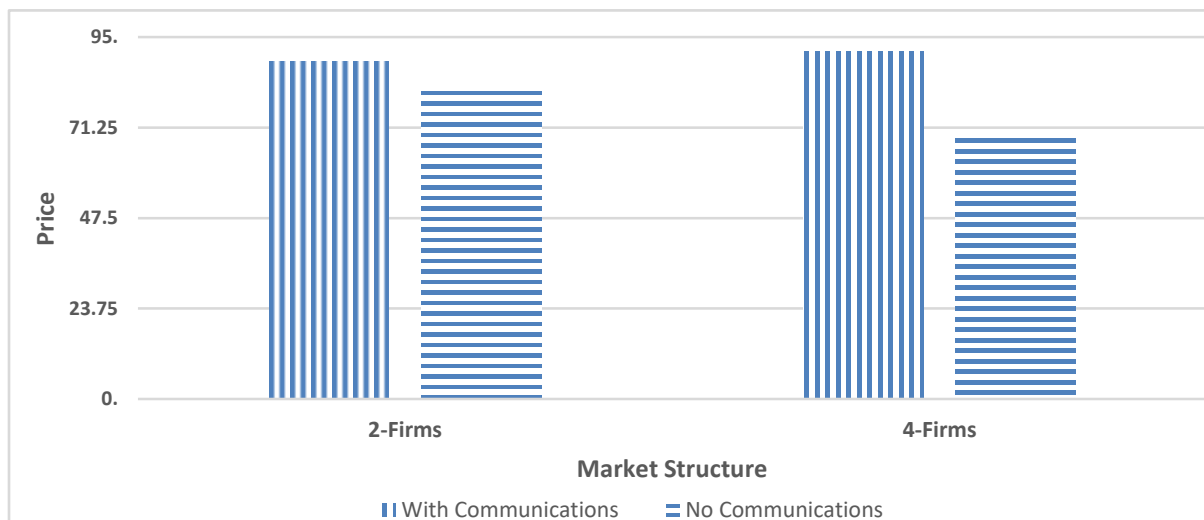
The results summarized in Figure 7-4, show that communications increase rent extraction in a duopoly by about 10%, while communications in a four-firm cartel enables the extraction of

rents slightly above the two-firm cartel. The key finding is that prices in a four-firm market without communications are 23% lower than in the two-firm market with communications. This is similar to the amount of rent squeezed out in the move from two to four firms in the analysis above.

Another recent study that allowed various levels of communications reached a similar conclusion.

Allowing the upstream firm to chat privately with each downstream firm reduces total offered quantity from near the Cournot level (observed in the absence of communication) halfway toward the monopoly level. Allowing all firms to chat together openly results in complete monopolization. Downstream firms obtain such a bargaining advantage from open communication that they are able to accrue all of the gains from monopolizing the market.¹⁷³

FIGURE 7-4: IMPACT OF THE NUMBER OF FIRMS AND COMMUNICATIONS ON ABUSIVE PRICING



Source: , Miguel A., Fonseca and Hans-Theo Normann, 2014, “Endogenous cartel formation: Experimental evidence,” *Economics Letters* 125. p. 224.

The lysine cartel case provides an interesting perspective on market power abuse. A debate occurred over how large the fine should be for engaging in explicit cartel behavior. Those who argued for a lower fine claimed that the firms should not be penalized for the total abuse of market power in the sector, but rather the additional abuse that occurred as a result of the cartel— the total abuse minus the abuse that would have resulted from the market’s oligopoly structure in without communications.

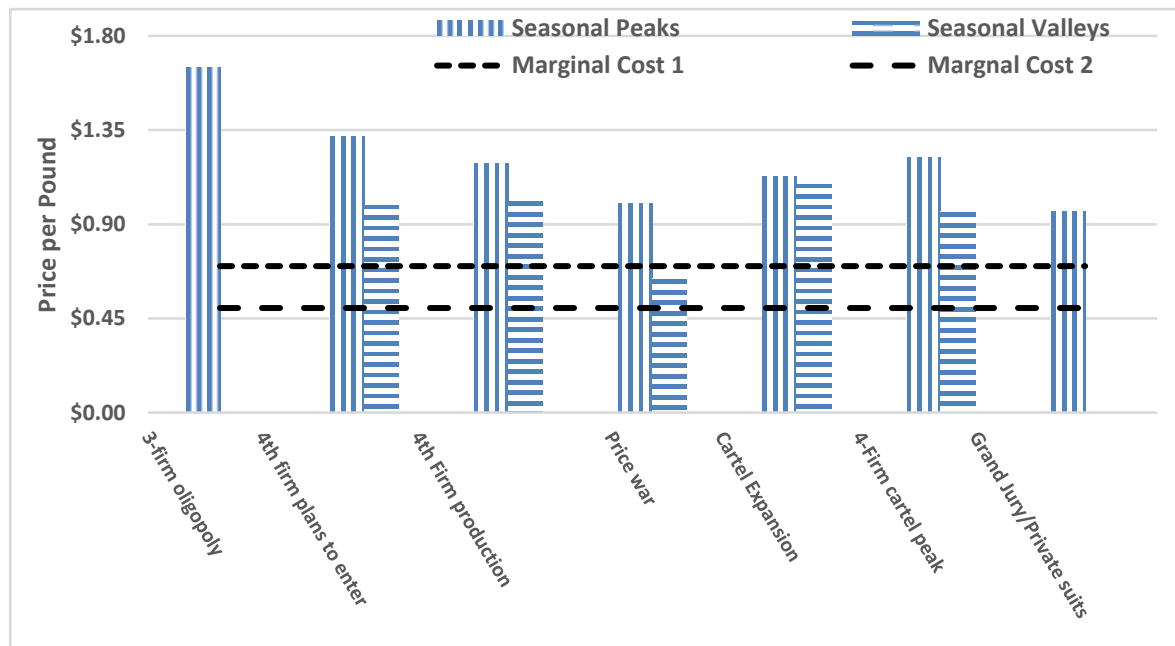
But the lysine industry of 1992-1995 was not a simple "competitive" industry. Prior to ADM's entry the lysine market was essentially a three-firm oligopoly. With ADM's entry it was a four-firm oligopoly. The Herfindahl-Hirschman Index (HHI) was well above 3000. Barriers to entry were high. It was a standardized commodity, with a

standard chemical formula. The buyers of lysine were numerous -- the 1992 Census of Manufactures listed 1,160 companies in the "prepared feeds."¹⁷⁴

In part the difference of opinion about the magnitude of the overcharges stemmed from a difference of opinion about the marginal cost, which is a frequent issue in such situations.¹⁷⁵ In sum, the lysine industry had virtually all of the characteristics of an industry in which implicit oligopolistic coordination of some kind would likely have arisen in the absence of the explicit conspiracy.

This is an industry that went from a three firm-oligopoly to a four-firm oligopoly. The average excess of prices over costs was 45%. When the entrant initiated a price war, prices fell to costs. When the new entrant joined the cartel (explicitly), prices rose, albeit not back to the pre-entry level because capacity had been expanded and there were now four firms in the cartel, not three. The seasonal pattern of increasing prices was much more pronounced under the cartel, with the increases from the valleys to the peaks being three times as large.

FIGURE 7-5: THE LYSINE CARTEL, PRICES AND MARGINAL COSTS



Source: L. White, 2001. Lysine and price fixing: how long? How severe? Review of Industrial Organization 18. de Roos, 2006.

CONTESTABILITY V. ENTRY

One of the earliest tests of contestability examined the effect of potential entry into airline markets, where potential entrants were defined as serving one of the two cities in an origin-destination pair. This was a much higher standard than a toe in the market as a basis for entry. The test found that one actual (average) competitor had the impact of three potential competitors.¹⁷⁶ This finding has become a standard but it is important to note that the comparison was for the average competitor on markets with an average of 2.5 competitors.¹⁷⁷ One might surmise, as we have seen, that potential competitors rank well below the third competitor.

Several of the studies included in Figure 7-1, above, explicitly take potential competition into account. For example, it is interesting to note that the driving school analysis takes distance from nearby markets into account and finds that there is a competitive effect for markets that are very close. A market that is just ten miles away has an effect equal to adding a sixth competitor.

As a numerical example of the magnitude of the distance effect in a market for which distance = 40 has about .07 high prices compared to a market where distance = 10... This is comparable to the quadropoly coefficient of 0.06.¹⁷⁸

Other studies that have included a measure of geographic distance find a positive, although not always significant effect on prices or profits.

However, the example given uses a market in which the closest competitor is one third as far as the average. It then compares that market to one which is almost one standard deviation above the average. A more traditional and informative approach would be to compare a market one standard deviation above and below the mean. Using this approach, moving one standard deviation above or below the mean has an effect on price that is less than one half the effect of the fourth competitor. To put this another way, even if the potential competitor is next door, the competitive effect is just over half of the effect of an actual fourth competitor; and just over one-third the effect of an actual third competitor. When numbers of competitors fall into this range, nearness is not very important because natural factors and active strategies dampen the effects of competition. Potential competition is simply not enough to substitute for actual competition moving from four to six competitors.

A generic drug study used the expiration of a patent as an indicator of an increase in potential competition. It found a small effect, but observed that the effect was contingent on other factors. At the sample mean of market size, the size effect would be larger than the effect of potential competition. The study also found that economies of scale were another barrier to entry.

The study of depot grocery stores provides another perspective. The author did not operationalize a potential competition variable, but did categorize entrants by their size. The study found that actual depot competitors with a small market share (less than 5%) had no effect on prices. Two or three depot competitors (5%-10%, or 10%- 20%) had a modest impact on prices. The fourth competitor (20-30%) had the largest impact. The fifth competitor had no effect.

Similarly, and a bit closer to home, a study of dominant incumbents' response of to the threat of entry by cable companies showed that publicly owned systems that were not restrained by policy induced cable owners to upgrade their systems.¹⁷⁹ The study found that this was a strategic capacity response, since they were also slow to offer upgraded services. The study also found that the threat of entry by a privately owned overbuilder did not elicit this response. Finally, measures of the distance of the overbuilder from the cable system were not significant.

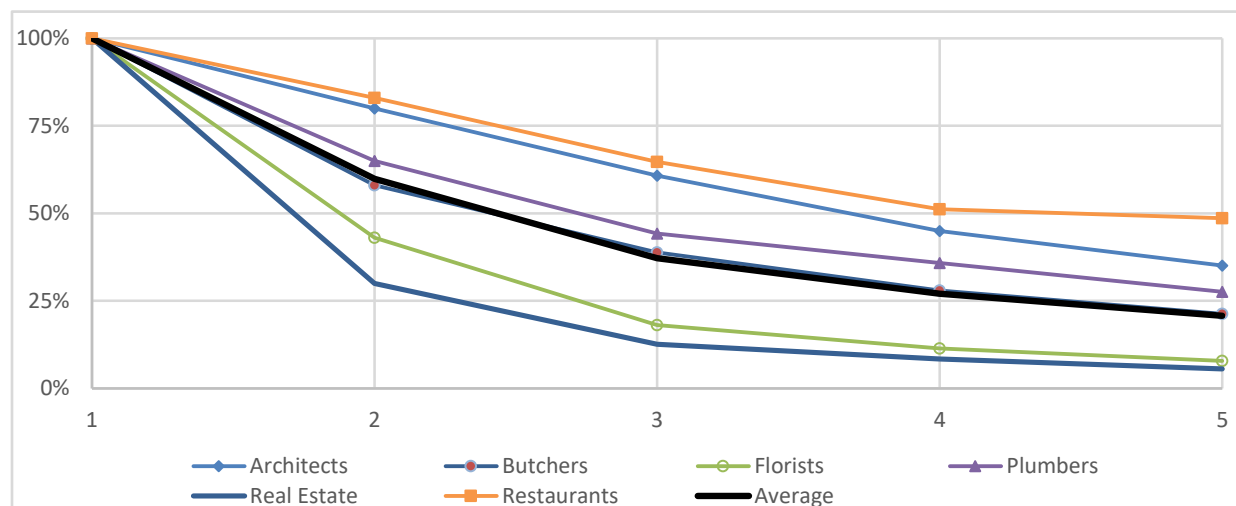
Interestingly, a study of European telecommunications competition found a similar difference between public and private firms and competition.

We conduct an empirical study of the infrastructure investment of 20 incumbent telecommunications operators in OECD countries between 1994 and 2008, and we conclude that greater competitive pressure fosters infrastructure investment by state-owned incumbents but reduces investment by private incumbents.¹⁸⁰

A study of potential entry in Belgian local markets is also instructive. The markets analyzed were small and non-urban. To control for economics of scale, the potential entrants were essentially “mom and pop” enterprises (averaging one outlet). Interestingly, one of the seven industries studied, which had the smallest effects of competition, was found guilty of price fixing in the period covered by the data. Ironically, in the debate over contestability, these types of small enterprises were offered as potentially good candidates for contestability, as Peteraf points out, “Schwartz and Reynolds (1984) have argued that contestability theory might only apply for some small neighborhood of costs above zero sunk costs. Beyond this, they expect monopoly prices to prevail.” If contestability were working, we would not see the pattern of declining rents as the number of competitors increases.

Figure 7-6 shows the standard measure we have used for describing the effect of adding competitors to lower the monopoly markup.¹⁸¹ The results are similar to the earlier finding on the effect of actual competition. The second competitor has an effect, but the third squeezes margins by about half as much as the second, while the fourth and fifth squeeze margins by another quarter of the original monopoly markup. The second competitor leaves about half of the monopoly rents in the pockets of the dominant firm, which competitors three through five squeeze out.

FIGURE 7-6: MARKUP EFFECTS OF ENTRY IN VARIOUS BUSINESS SECTORS



Source: Catherine Schaumand and Frank Verboven, 2011, Entry and Competition in Differentiated Products Markets, Center for Economic Studies Discussion paper, 11 (23), September

Analysis of coordination (explicit or tacit) emphasizes the importance of product differentiation,¹⁸² particularly differentiation by geographic location, which plays a large part in BDS markets.¹⁸³ For example, the study of HMOs in Figure 7-1 underscores this point. The competitive effect of adding HMOs follows the classic pattern, but the effect is very sensitive to the substitutability of products,

The estimates indicate that the effects of competitors on profitability come almost exclusively from same-type HMOs. For both local and national firms, the presence of a same-type competitor cuts baseline profit by more than half... while the presence of competitors of other types has a negligible impact on profits. This provides strong evidence that HMOs are differentiated by geographic scope, and that this differentiation is a profitable strategy¹⁸⁴.

The authors draw a broad conclusion about the (in)ability of differentiated products to exert competitive influence.

In heterogeneous produce industries, however, firms offering similar services may not be direct competitors due to differences in their geographic location, customer base, or other aspects of their business strategy.¹⁸⁵

A summary of the entry deterrence literature provides more insight. Table 7-2 identifies the key characteristics in the literature that affect incumbents' ability to deter or respond to threats of entry. Small numbers of large firms are well positioned to deter entry, particularly from new entrants, as opposed to those who are expanding into new product markets from adjacent markets. Advertising is seen as an important weapon. Command of distribution networks and access to key inputs aid incumbents, while the lack thereof disadvantages entrants. Locking up access to critical resources or lack of access to resources is an important factor. As we have seen throughout this analysis, the situation in the BDS market is dense in factors that restrict the impact of entry. The enthusiasm for entry as a disciplining force must be tempered by the recognition of the complexity of entry and the variety of strategic actions that can be used to deter or blunt its effects.

Cookson concludes "that investments in deterrence are viable, especially when new entrants face significant other barriers to entry." Cookson identifies ten factors that have been supported in the literature as inhibiting entry to some degree: uncertainty and dynamic development, upgrades, advertising, *ex ante* pricing, strategic alliances, quality, brand loyalty, lock in contracts, switching costs, geographic linkages.

Seamons, 2010, adds information asymmetries, *ex post* pricing, and manipulation of regulation to push the total past a dozen. Gomez-Martinez, Onderstal and Sonnemans, identify specific types of information that affect responses.¹⁸⁶ Various studies that find important impacts include prices,¹⁸⁷ differentiation—of both geographic¹⁸⁸ and product¹⁸⁹ varieties—and capacity¹⁹⁰ that diminishes competitive effects. Thomas concludes:

incumbents accommodate other incumbents on price and new products but use advertising to limit the scale of entry. Entrants are more likely to be met with an aggressive price response. I also find that incumbents are more likely to respond when the scale of entry is greater... These findings show that investments in deterrence are viable, especially when new entrants face significant other barriers to entry.¹⁹¹

TABLE 7-2: STRATEGIC BEHAVIORS AND FACTORS THAT AFFECT ENTRY

<u>Factors</u>	<u>Firms as Incumbents Deterring Entry</u>	<u>Firms as entrants</u>
Number of Firms	As the number of rivals increases, the likelihood that there is a common view about either competition is in terms of strategic substitutability or complementarity is reduced. In addition, where relevant, the permutations of accommodate or deter are substantially increased.	
Large Size	Small size (and large numbers) of firms militate against any strategic tools, not least because of the action of any particular firm is less likely to be noticed	
Type of entrant	Established rivals or new entrants	
Actions	<p>Exclusionary behavior may be used in preference to true strategic behavior.</p> <p>Intellectual Property, The incumbent has more to gain by protecting its position from entry (by increasing R&D and patenting results). Good for targeting entrants, not likely to upset incumbents</p> <p>Exploiting selling network: Extremely important</p> <p>Assured supply of raw materials and intermediate products: Extremely important</p> <p>Advertising: By increasing advertising expenditures just prior to and during the launch of products by entrants, incumbent firms may reduce the impact of the entrant's own campaign and raise their costs. Good for targeting entrant, not likely to upset incumbents</p> <p>Price is an infrequent policy: only 1% of respondents said that their pricing policy was <i>mainly</i> directed at slowing the rate of new entry.</p>	<p>Intellectual property is a bigger entry obstacle than a tool to deter entry, particularly for small firms</p> <p>Agreements between firms over pricing and strategy are a bigger obstacle to entry than a tool to deter.</p> <p>Access to human resources is a challenge, particularly for small firms</p>

Source: , Satsinder, Songh, Michael Utton and Michael Waterson, 1998, Strategic Behaviour of Incumbent Firms in the UK, International Journal of Industrial Organization, Volume 16, Issue 2, 1 March.

The ammunition at the disposal of the incumbents is varied and significant. Ewing, Bradley, and Kruse¹⁹² confirm the fundamental expectation that higher concentration leads to higher price. Additionally, higher capacity leads to lower prices, making capacity is an important deterrence strategy, as noted in Conlin and Verinda.

We find that there is higher investment in capacity relative to demand (i.e., idle capacity) in markets with a larger Herfindahl index and by firms with a larger share of market capacity. These results are consistent with the entry deterrence literature that

suggests firms in more concentrated markets and firms with a larger market share have greater incentive to invest in entry-detering capacity.¹⁹³

Molinar (2013) finds congestion to be a strategic response, and Ellison and Ellison (2011) find a u-shaped relationship which strategic investment (small unnecessary, large impossible). Other responses include strategic alliances,¹⁹⁴ outsourcing,¹⁹⁵ quality as a strategic response),¹⁹⁶ exploitation of network effects,¹⁹⁷ and price responses,¹⁹⁸ in which prices for strong brands rise, rather than fall.¹⁹⁹ Entry is least likely for small products and markets,²⁰⁰ a description which applies to the majority of BDS services that are lower capacity.

Responses in digital communications markets are complex, very selective and not focused on price.²⁰¹ Response to entry in cable is complex, with the existence of various *ex ante* and *ex post* strategies targeting different types of entrants. Incumbents respond more aggressively to publicly owned entrants, who are not likely to enter into non-cooperative or tacit collusion strategies.²⁰² Lack of competition between MVPD service providers has long been demonstrated by FCC and academic analysis. The response by cable operators has been to increase the number of channels. A recent study corroborates that finding and argues that the average price per channel goes down significantly.²⁰³ There are two caveats about this proposition. First, cable operators do not sell services on a per channel (a la carte) basis and consumers generally watch only a small subset of channels, so increasing the number has little effect on the welfare of most consumers. Second, the example given makes the calculation based on an extreme set of assumptions. It hypothesizes an increase in potential competition that is over six times the standard deviation in the data. A more reasonable approach would be to model increases of one or two standard deviations, which would result in a much small increase in the number of channels and a much small decrease in per channel prices.

After two decades of failure to reduce the abuse of market power in the BDS market, a literature review on entry provides an apt description of the effects of entry barriers and the challenges that entrants into the BDS market face.²⁰⁴ Although early in the mounting evidence, it is consistent with the current evidence on the ability of entry to discipline market power.²⁰⁵

What all of this adds up to is a presumption that entry is generally a poor substitute for active rivalry amongst incumbent firms in a market. Entry can be (but is not always) too slow, too small scale and too erratic to matter much in many circumstances. Although the current anti-trust emphasis on entry barriers as the important determinant of market structure is welcome (and long overdue), it is nevertheless the case that the pro-competitive effects of entry seem to be easy to exaggerate.

Thus, the empirical literature on potential entry does not support the FCC's optimism about its disciplinary capacity, particularly in light of its abysmal track record in the BDS sector. Qualitative overviews and analyses of entry present a very complex picture in which natural factors, like economies of scale, interact with strategic actions, like investment in excess capacity or "lock-in" contracts, to make the outcome highly uncertain. The likelihood that potential competition will restrain pricing is remote, as is the likelihood that the industry will grow into a duopoly. In either case, it is very unlikely that competitive pressures will be sufficient to prevent the abuse of market power. Under the FCC's Flip-Flop rule, rates will continue to be unjust and

unreasonable and abuse will grow because the erroneous theory of sufficient competition will have been used to allow greater abuse of market power in more markets.

CONCLUSION: THE IMPORTANCE OF TIGHT OLIGOPOLIES ON STEROIDS, BIG DATA PLATFORMS

There is one final reason to introduce the concept of a tight oligopoly on steroids. Not only is it useful in describing the current market structure and harm of Big Broadband Networks, it is also useful in describing the current situation in Big Data Platforms, which is the topic of the next working paper. As shown in Table 7.3, the four conditions for steroids to amp up market power and the ability to frustrate competitive entry are found in the Big Data Platforms that ride on the Big Broadband Networks. The manifestation of the traits and the policies necessary to prevent abuse and promote competition are somewhat different, but the magnification of market power and the need to have policy to prevent abuse and promote competition remains the same. The specific challenges and the tools to overcome them are the topic of a separate paper.

**TABLE 7.3: THE TIGHT OLIGOPOLY ON STEROIDS:
BIG BROADBAND NETWORKS AND BIG DATA PLATFORMS**

Tight Oligopoly on Steroids Characteristic	Big Broadband Networks	Big Data Platforms		
High Concentration	Franchise, economies of scale Telco BDS, Wireless Cable MVPD, BIAS	Economies of scale & scope, zero marginal cost, winner-take-most Google Search	Facebook, connectivity	Amazon, distribution
Technological Specialization	Point-to-point (landline) Cell Networks Star video	Google Algorithms & network value	Facebook Network Value	Amazon Distribution efficiency
Product Segmentation	Voice, wireless Video, BIAS	Search	Social Media	Distribution
Unique Product Traits	Geographic Separation Local network Franchise origin	All: Must Have Content protected by lock-in supply-side foreclosure and demand-side bundling and behavioral manipulation		

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ENDNOTES

¹ Final May 2016, Federal Communication Commission, 2016, (hereafter May order),

² The theory of “nearby competition” espoused by the FCC bears a strong resemblance to the theory of “contestable” markets, which has proven to invalid under the economic conditions that obtain in the communications sector.

³ Contrast, Federal Communications Commission, May 2016, Final Rule and Federal Communications Commission, 2017, (hereafter, Flip-Flop Order).

⁴ Dayen, 2015; Delp and Mayo, 2016; Jarsulic, et al., 2016, Council of Economic Advisors, 2016; Schmidt, 2016; Stiglitz, 2016; Warren, 2016.

⁵ U.S. Department of Justice, 2010, *Horizontal Merger Guidelines*, revised August.

⁶ Id.

⁷ The HHI can be converted to equal-size equivalents as follows:

$$\text{Equal-size voice equivalents} = (1/\text{HHI}) * 10,000.$$

⁸ Friedman, 1983, pp. 8–9.

⁹ Shepherd, 1985, p. 4.

¹⁰ In the case of 5.5 equal-size firms, the four firm concentration ratios would be 72%.

¹¹ The leading firm proviso appears to have been dropped not because such a firm is not a source of concern but because that concern was subsumed in the broad category of “unilateral effects.” A market with a dominant firm is well above the highly concentrated threshold. A merger involving a dominant firm would violate the *Guidelines* if it sought to acquire a competitor with only a 1.5% market share, and “be presumed to be likely to enhance market power.”

¹² DOJ/FTC, 2010, p. 19.

¹³ Id., p. 19.

¹⁴ Selten, 1973; Davies and Olczak, 2008; Friedman, 2014; Rux and Thoni, 2013; Horstmann and Kramer, 2015.

¹⁵ U.S. Department of Justice, 2010, p. 24.

¹⁶ Id.

¹⁷ Id., p. 25.

¹⁸ Given this inherent need for prediction, these Guidelines reflect the congressional intent that merger enforcement should interdict competitive problems in their incipency and that certainty about anticompetitive effect is seldom possible and not required for a merger to be illegal. (DOJ/FTC, 2010, p. 1) Pursuant to the Clayton Act’s incipency standard, the Agencies may challenge mergers that in their judgment pose a real danger of harm through coordinated effects, even without specific evidence showing precisely how the coordination likely would take place. The Agencies are likely to challenge a merger if the following three conditions are all met: (1) the merger would significantly increase concentration and lead to a moderately or highly concentrated market; (2) that market shows signs of vulnerability to coordinated conduct (see Section 7.2); and (3) the Agencies have a credible basis on which to conclude that the merger may enhance that vulnerability. (DOJ/FTC, 2010, p. 25)

¹⁹ Id.

²⁰ The Agencies consider whether a merger may lessen competition by eliminating a “maverick” firm, i.e., a firm that plays a disruptive role in the market to the benefit of customers. For example, if one of the merging firms has a strong incumbency position and the other merging firm threatens to disrupt market conditions with a new technology or business model, their merger can involve the loss of actual or potential competition. Likewise, one of the merging firms may have the incentive to take the lead in price cutting or other competitive conduct or to resist increases in industry prices. A firm that may discipline prices based on its ability and incentive to expand production rapidly using available capacity also can be a maverick, as can a firm that has often resisted otherwise prevailing industry norms to cooperate on price setting or other terms of competition (DOJ/FTC, 2010: 3–4).

²¹ Scherer and Ross, pp. 526–527; Shepherd, p.280 – 304; Asch and Senaca, 1985, p. 248; Krattenmaker and Salop, 1986); Ordover, Sykes and Willig, 1985. On the cable industry see Ordover, and Willig, 1982.

²² Scherer and Ross, 1990, p. 522. Relaxation of the simplifying assumptions shows that monopoly power *may be* (but is not necessarily) enhanced through vertical combinations. In fact, the discussion of vertical mergers and anticompetitive practices in the Viscusi, Vernon and Harrington text are longer than the discussion of mergers generally. In part, this reflects the fact that the potential benefits of vertical mergers and relationships are discussed, the unique vertical concerns must be balanced with analysis of potential benefits – efficiency, quality control, reduced transaction costs.

²³ Viscusi, Smith and Harrington, 2000, p. 213, sweep a number of mergers under the heading of conglomerate: “Conglomerate mergers involve firms that are not sellers in the same market nor do they stand in a buyer-seller relationship... Two other categories of conglomerate mergers discussed were product extension and market extension.... These latter two categories are more likely to be challenged by the antitrust authorities. The reason is concern for reducing potential competition.”

²⁴ Viscusi, Smith and Harrington, 2000, pp. 215...216.

²⁵ Id., pp. 215...216. Numerous anticompetitive claims have been made against conglomerate mergers. They have been charged with creating the opportunities for reciprocal dealing and predatory pricing, producing politically undesirable giant size, and eliminating potential competition.... Although the potential competition principle is certainly correct in theory, there are difficult problems involved in establishing empirically who the potential competitors are and what their respective costs are.

²⁶ Shepherd, 1985, p. 304

²⁷ Id., p. 302.

²⁸ Id., p. 302, Cross-subsidizing... The effect of such support depends mainly on the market position of branch B. If branch B is dominant, the support will tend to entrench if further. But if branch B has a small market share, the support will tend to entrench it further... If all branches of a diversified firm are dominant in their markets, their pooled resources are likely to increase their dominance through greater price discrimination, threats of punitive actions, and so forth

²⁹ Id., p. 302, *Reciprocity* is an exchange of favors... Customers will normally try to induce the firm to make reciprocal deals. Yet such favors are usually departures from strict rational choice. The Chicago-school view is that reciprocity is irrational.... The degree of its effect will depend on the situation. One must judge such possibilities carefully. A conglomerate with only minor market share positions can scarcely reduce competition.

³⁰ Id., p. 304, If an important potential entrant buys up a dominant firm (or vice versa), competition will be doubly reduced. Even so, the total effect may not be sharp. That depends on the degree of actual and potential competition that remains, and on the market power of the parent

firm. Each conglomerate merger presents a different set of conditions. One can still say, roughly that the potential competition and toehold issues do not usually pose large effects on competition.

- ³¹ Asch, and Senaca: 1985), p. 248. Subsidization: The conglomerate firm can choose to behave in a predatory fashion in one market, subsidizing its predation from profits earned elsewhere. The simple concept involved in cross-subsidizing is that conglomerates can use profits from branch A to support deep, “unfair” price cuts by branch B ... Shepherd, 1985, p. 302. If all branches of a diversified firm are dominant in their markets, their pooled resources are likely to increase their dominance through greater price discrimination, threats of punitive actions, and so forth. By contrast, a string of small-share branches is more likely to promote competition than to reduce it, if it can help its members at all
- ³² Scherer and Ross, 1990, p. 524. Substitution elasticities of unity and less normally imply that inputs are indispensable, that is, that no output can be produced until at least some use is made of each relevant input. When the monopolist of an input indispensable in this sense integrates downstream, it can make life difficult for remaining downstream competitors. It can refuse to sell the input to them, driving them out of business. Or it can sell it to them at a monopoly price, meanwhile transferring input at marginal cost to its affiliated downstream units, which, with their lower costs, can set product prices at levels sufficiently low to squeeze the rivals out of the market.
- ³³ Id., p. 526.
- ³⁴ Id., pp. 526-527.
- ³⁵ Cooper 2016, 2020.
- ³⁶ Scherer and Ross, pp. 526-527; Shepherd, p.280 – 304; Asch and Senaca, 1985, p. 248; Krattenmaker and Salop, 1986); Ordoover, Sykes and Willig, 1985.
- ³⁷ One of the key aspects of the network neutrality debate is the problem of vertical leverage that the incumbent network operators have, when they are vertically integrated into complementary product markets. Their incentive and ability to frustrate competition in those complementary market is substantial and several of the key disputes swirled around behaviors that appeared to have anticompetitive effects. Cooper, 200, 2006, 2008.
- ³⁸ Id., p. 302.
- ³⁹ Kahn, 1988.
- ⁴⁰ Kahn, 1988, p. 11.
- ⁴¹ Id.
- ⁴² Id.
- ⁴³ Id. at 114.
- ⁴⁴ Associated Press v. United States, 1945.
- ⁴⁵ Cooper, 2013, 2014.
- ⁴⁶ There is a strong similarity between this list and the EU Guidelines on Non-Horizontal mergers, which were updated much more recently than the U.S. *Guidelines*. It is interesting to note that the EU identified conditions that are red flags for concern, several of which are clearly present in the BDS market, i.e. firm market share of 30% or more; HHI of 2000 or more; and presence of past or ongoing coordinating or facilitating practices.
- ⁴⁷ Cable market share is put at about 7% large CLEC market share is put at less than 3 percent.
- ⁴⁸ Bessen, ¶¶ 3, 304; Sappington, ¶ 25.
- ⁴⁹ Mitchell, 2010, pp. 29-32.
- ⁵⁰ Over the last 7 years, New Networks Institute has examining the Verizon New York financial reports and developed a new report series called “Fixing Telecom,” see Cooper and Kushnick, 2016.
- ⁵¹ I do not include cable in this analysis of Verizon’s voice connectivity because cable operators do not have to connect with the landline network for many of the services they sell and, even where they do, they have begun self-supplying BDS services. They have not become significant competitors for BDS services sold to third parties.
- ⁵² NASUCA, p. i.
- ⁵³ Verizon, 2015, Annual Report. p. 23
- ⁵⁴ Id., p. 10.
- ⁵⁵ Because the cost of services and depreciation in the VZ-NY financials are higher than the VZ-SEC books, we do not attribute additional costs. To the extent that there are additional costs that should be accounted for in the NY financial, the margin would be lower.
- ⁵⁶ Robert Solow, 1987. “We’d better watch out,” *New York Times Book Review*, July 12, 1987.
- ⁵⁷ Brynjolfsson, 1993.
- ⁵⁸ Recent examples in a related FCC proceeding can be found in Spiwak, 2011, for the United States, and Wall Communications Inc., 2015, for the UK. Many of the studies cited in notes 1–18 rely in this concept to estimate the benefits of technological adoption.
- ⁵⁹ The specific range is from Czernich, N., et al., 2011; Ericsson, Arthur D. Little, and Chalmers Univ., 2013. Scott, 2012, evaluates these in a broad context and finds an even larger effect.
- ⁶⁰ Cambridge Centre for Climate Change Research, 2006; Wei, Patadia, Kammen, 2010, Gold, et al., 2011; Homes and Mohanty, 2012; Ryan Campbell, 2012.
- ⁶¹ Id., pp. 3... 10.
- ⁶² WIK-Consult Report 2016.
- ⁶³ Cooper, 2015, Cooper, 2014, Cooper, 2013.
- ⁶⁴ Intermediate consumption (also called “intermediate expenditure”) is an economic concept used in [national accounts](#), such as the [United Nations System of National Accounts \(UNSNA\)](#), the US [National Income and Product Accounts \(NIPA\)](#) and the [European System of Accounts \(ESA\)](#). Conceptually, the aggregate “intermediate consumption” is equal to the amount of the difference between [Gross Output](#) (roughly, the total sales value) and [Net output](#) (gross [value added](#) or [GDP](#)). In the US economy, total intermediate consumption represents about 45% of [Gross Output](#). The services component in intermediate consumption has grown strongly in the US, from about 30% in the 1980s to more than 40% today. Thus, intermediate consumption is an accounting [flow](#) which consists of the total monetary value of goods and services consumed or used up as inputs in production by enterprises, including raw materials, services and various other operating expenses. Because this value must be subtracted from [Gross Output](#) to arrive at [GDP](#), how it is exactly defined and estimated will importantly affect the size of the GDP estimate. Intermediate goods or services used in production can be either changed in form (*e.g.* bulk sugar) or completely used up (*e.g.* electric power). Intermediate consumption (unlike fixed assets) is not normally classified in national

accounts by type of good or service, because the accounts will show net output by sector of activity. However, sometimes more detail is available in sectoral accounts of income & outlay (e.g. manufacturing), and from input-output tables showing the value of transactions between economic sectors. https://en.wikipedia.org/wiki/Intermediate_consumption.

⁶⁵ Id.

⁶⁶ Cooper, 2013a.

⁶⁷ Cooper, 2015.

⁶⁸ Ericsson, Arthur D. Little, and Chalmers Univ., 2013, p. 10.

⁶⁹ Kumar, Kumar, and Patel provide extensive citations of the general literature. The specific citations to the general proposition in the analysis of communications include Koutroumpis, 2009; Tseng, 2009; Gruber and Koutroumpis, 2010; Datta & Agarwal, 2004; Lam and Shiu, 2010; Kumar et al., 2014; Shahiduzzaman and Alam, 2014; Buhalis and Law, 2008; Porter, 2001; Vu, 2011.

⁷⁰ Kumar, Kumar and Patel, 2015, look at small islands and cite an extensive literature. At a country level, various studies support Tech-LG hypothesis. These include: Jorgenson and Stiroh (2000), Jorgenson (2001), and Oliner and Sichel (2000) for the United States of America (US); Oulton (2002) for the United Kingdom (UK); Jalava and Pohjola (2002, 2008) for Finland; Daveri (2002) for European Union (EU) economies; Jorgenson and Motohashi (2005) for Japan; Jorgenson (2003) for the G-7 economies; Jorgenson and Vu (2007) for 110 countries; Kuppusamy, Raman, and Lee (2009) for Malaysia; Venturini (2009) for the US and 15 EU countries; Kumar (2011) for Nepal; Kumar and Kumar (2012, 2013a) and Kumar and Singh (2013) for Fiji; Kumar (2012) for Sub-Saharan Africa (SSA); Kumar (2013, 2014) for the Philippines and Vietnam, respectively.

⁷¹ Kumar, Kumar and Patel, 2015, look at small islands and cite an extensive literature. At a country level, various studies support Tech-LG hypothesis. These include: Jorgenson and Stiroh (2000), Jorgenson (2001), and Oliner and Sichel (2000) for the United States of America (US); Oulton (2002) for the United Kingdom (UK); Jalava and Pohjola (2002, 2008) for Finland; Daveri (2002) for European Union (EU) economies; Jorgenson and Motohashi (2005) for Japan; Jorgenson (2003) for the G-7 economies; Jorgenson and Vu (2007) for 110 countries; Kuppusamy, Raman, and Lee (2009) for Malaysia; Venturini (2009) for the US and 15 EU countries; Kumar (2011) for Nepal; Kumar and Kumar (2012, 2013a) and Kumar and Singh (2013) for Fiji; Kumar (2012) for Sub-Saharan Africa (SSA); Kumar (2013, 2014) for the Philippines and Vietnam, respectively.

⁷² Kumar, Kumar, and Patel, 2015, cite the following (p. 286): “Lehr and Lichtenberg (1999) examine firms in service industries in Canada and find personal computers made a positive contribution to productivity growth. Stiroh (2002) investigates 57 major US industries and finds a strong link between ICT and productivity. Similarly, Brynjolfsson and Hitt (2003) find that firms that invested in computer technology were able to realize greater productivity (output per unit of input). O’Mahony and Vecchi (2005) use pooled data at the industry level for the US and the UK and find a positive effect of ICT on output growth and excess returns relative to the non-ICT assets.”

⁷³ Pradhan et al., 2015 (p. 635): Gasmí and Virto, 2010; Narayana, 2011.

⁷⁴ Thus, investment returns (in terms of higher economic growth) are expected to be higher in telecommunications infrastructure than in other types of infrastructure (Chakraborty and Nandi, 2011). Furthermore, the returns may not accrue as a linear function of the value of infrastructure investment (Roller and Waverman, 2001). One can thus expect a positive relationship between the development of a telecommunications infrastructure and economic development in all countries (Hardy, 1980; Shiu and Lam, 2008a; Lam and Shiu, 2010). There are at least four ways in which the telecommunications infrastructure can contribute to economic and societal development: first, business retention; second, economic diversification; third, enhancement of quality of life; and fourth, increasing business competitiveness (see, for instance, McGovern and Hebert, 1992; Jorgenson and Stiroh, 2006; Oliner and Sichel, 2000; Cieslik and Kaniewski, 2004; Lee, Gholam, and Tong, 2005; Shiu and Lam, 2008b). However, perhaps the greatest impact of telecommunications infrastructure is on information diffusion and organizational efficiency (Hardy, 1980). Many economists have asserted that telecommunications infrastructure affects economic growth both directly and indirectly (Tranos, 2012; MacDougald, 2011; Kenyon, 2010; Choi and Yi, 2009; Thomson Jr. and Garbacz, 2007; Ding and Haynes, 2006; Brock and Sutherland, 2003; Kenny, 2002; Oliner and Sichel, 2000; Cronin, Colleran, Herbert, and Lewitzky, 1993a).

⁷⁵ Vander Wee et al. (p. 177): “It has been shown that broadband infrastructure can act as an enabler supporting an endless variety of applications using the Internet as a platform (OECD, 2008a, b). As such, broadband access networks are pervasive technologies affecting different sectors of the economy in providing opportunities for growth of new e-services in a complementary manner. If these complementarities are taken into account, CBAs have to focus in great detail on the conceptualization, measurement and quantification of indirect effects (OECD, 2009b). In investigating a number of sectors, the OECD (2009a) concluded that the cost savings in just four sectors of the economy (particularly transport, health, electricity and education) would justify the construction of a nationwide FTTH network. In focusing on the government and business sector, the paper is aimed at providing a clear identification, categorisation and quantification of indirect benefits....indirect effects of broadband infrastructure should be taken into account in the evaluation of broadband deployment projects as these effects are responsible for economic growth and thus necessary to account for the full impact of broadband deployment and uptake.... In a dynamic Schumpeterian world, in which general purpose technologies provide necessary inputs into different application sectors (such as health, education and energy), policy has a function in providing incentives to provide broadband infrastructure and to foster the adoption of new e-services.... Literature has just started to provide conceptual frameworks to examine these indirect benefits. In the discussion on the ‘real’ benefits of broadband infrastructure for economic growth (Katz, 2010; Kenny and Kenny, 2011), rarely has any agreement been reached with respect to common methodologies and appropriate data sources to measure and evaluate these benefits.”

⁷⁶ Mack, 2014; Perkins and Neumayer, 2011, Bloom and Van Reenen, 2007; Czernich et al., 2011). In this respect, advances in Internet-related ICTs are considered particularly important to the economy because of their unprecedented space-time compressing capabilities and their widespread impacts related to their categorization as general-purpose technologies (GPTs) (Harris, 1998; Helpman and Trajtenberg, 1998; Jovanovic and Rousseau, 2005). Innovations in these technologies are recognized as a key feature of the tremendous period of economic growth in the 1990s, and the economic changes wrought by these technologies have received several names over the years including the New Economy and the Knowledge Economy (Cohen et al., 2000; Pohjola, 2002).”

⁷⁷ National Broadband Plan, at xi, “Like electricity a century ago, broadband is a foundation for economic growth, job creation, global competitiveness and a better way of life. It is enabling entire new industries and unlocking vast new possibilities for existing ones. It is changing how I educate children, deliver health care, manage energy, ensure public safety, engage government, and access, organize and disseminate knowledge.”). A quote from a review by the Organization for Economic Cooperation and Development (OECD) of the impact of the Internet captures its pervasive effect (OECD, 2012, p. 4.) The Internet significantly affects OECD economies at different levels and in numerous different impact areas. In particular, the Internet impacts firms in various sectors, individuals and governments. It also has some observable general macro-economic effects. At the firm level, the restructuring of business models in association with use of the Internet has led to improved efficiencies. The impact of the Internet can also be seen in the rapid growth of new firms founding their businesses on the

Internet. The Internet's enhanced communication capabilities are affecting nearly all sectors of the economy in ways that may be as subtle as making previously hard-to-find data available online or as profound as transforming an entire market such as is occurring with music, video, software, books and news. The Internet is reshaping the way individuals live. It brings benefits of higher consumer welfare (through a larger variety of digital goods and services, lower prices, improved information gathering, more distribution channels and so forth). In addition, individuals benefit from a more efficient labor market and, on a broader level, from positive impacts on the environment and in education.... The impacts of the Internet on the individual, firm and government level can be also observed at the aggregated, macroeconomic scale. Existing empirical studies, including ongoing OECD work, suggest a positive link between increasing Internet adoption and use and economic growth. Even though the aggregated effects are still preliminary, the relationship between Internet development and economic growth, as well as microeconomic evidence, suggest that governments should continue to pursue policies that help promote Internet connectivity and encourage the take-up of services

⁷⁸ As the Department of Justice explained in its opposition to the ATT/T-Mobile merger, "Mobile wireless telecommunications services have become indispensable both to the way I live and to the way companies do business throughout the United States. Innovation in wireless technology drives innovation throughout our 21st-century innovation economy, helping to increase productivity, create jobs, and improve our daily lives. Vigorous competition is essential to ensuring continued innovation and maintaining low prices."

⁷⁹ Byrne and Corrado, 2015, p. 3.

⁸⁰ Id.

⁸¹ Cooper, 2015, 2017.

⁸² We have removed BDS service costs from wireless and broadband charges to avoid double counting. These costs certainly are incorporated in the bills for other communications services (wireless, MVPD, Internet access). To the extent that BDS costs are recovered from consumers that would be incremental to the costs shown.

⁸³ Because transportation is well recognized as an intermediate good whose costs are passed through, it is a useful analogy. The Mid-Atlantic Freight Coalition confirms the pass through of transportation costs in a recent report on how transportation and logistics consume a significant portion of household budgets. According to the report, "the freight logistics system costs... which is spent moving and warehousing goods... factors into the cost of every product I buy. Anything that industry or government can do to make the logistics system more efficient will return benefits in terms of lower cost and greater global competitiveness." Mid-America Freight Coalition, p. 2. Two studies in the hearing record demonstrate the centrality of communication in general and special access in particular by running or applying the results of econometric models, see Spiwak, 2011, WIK-Consult Report, 2016. The latter study reviews the results of numerous earlier efforts to model this impact. While the specific multipliers vary from study to study, they all show very substantial macroeconomic impacts, or as the WIK study call them "spillovers."

⁸⁴ Transportation is an economic factor of production of goods and services, implying that relatively small changes can have substantial impacts on costs, locations and performance... Transport also contributes to economic development through [job creation](#) and its derived economic activities... Producers and consumers make economic decisions on products, markets, costs, location, prices which are themselves based on transport services, their availability, costs and capacity. Rodriguez and Notteboom, A regional analysis reinforces this observation, "Manufacturing is dependent on transportation to receive raw materials and to deliver its products. Manufacturing is usually a highly competitive activity. Unless an area has other low-cost attributes, high transportation costs will cause manufacturers to leave or avoid that area."

⁸⁵ Wireless entered the survey somewhat higher than cable and has been steadily improving, although it is still below the national average. Landline telephone service, whose rates were generally regulated, was well above the national average but was declining before the passage of the 1996 Act. It continued its decline for a while but has since stabilized somewhat below the national average. We include electric utilities as a point of comparison for a network service that imposes significant costs on the household. Satisfaction with these utilities was above the national average but stabilized just below the national average. The post office has been hovering around the national average, and is well above cable and ISPs. Overcharges and consumer dissatisfaction are hallmarks of a market that has performed poorly.

⁸⁶ Viscusi, Smith and Harrington, 2000, p. 258

⁸⁷ Scherer and Ross, 1990, p. 70.

⁸⁸ Viscusi, Smith and Harrington, 2000, p. 200.

⁸⁹ Viscusi, Smith and Vernon, p. 112, "When firms' products are so differentiated that consumers do not even perceive them as being substitutes, each firm is effectively a "local" monopolist and charges the monopoly price for its market.

⁹⁰ DOJ/FTC, 2010.

⁹¹ Section 402

⁹² See the definition of telecommunications.

⁹³ The first decade is recounted in Cooper, 2005, the second in Cooper 2014.

⁹⁴ Hemphill and Wu, 2009.

⁹⁵ Id., p. 1185.

⁹⁶ Id.

⁹⁷ Id., p. 1212.

⁹⁸ Id., p. 1195.

⁹⁹ Herrera-Gonzalez (2015, p. 1) expressed concerns on the other side of the issue that "If *ex-ante* regulation on oligopolies is to be imposed, it should be justified on sound economic theory proving that regulation enhances social welfare. Otherwise it should be avoided." This paper demonstrates that record and economic literature support *ex ante* regulation and reject the theory of "sufficient competition," in general and, particularly as applied to BDS markets,

¹⁰⁰ Canoy and Onderstal, p. 73.

¹⁰¹ Both the 2016 and 2017 orders do.

¹⁰² Cooper and Kushnick, 2016.

¹⁰³ FCC, 2016, ¶ 3, Competition in this marketplace is uneven. The best available data suggest that competitive entry and potential competition are bringing material competitive benefits to some places and to some products (most notably high bandwidth services), but competition remains stubbornly absent from other places and different products (most notably low bandwidth services). And not all consumers are the same – in particular multi-location businesses, like large retail chains, have very distinctive requirements.

¹⁰⁴ FCC (2012)

¹⁰⁵ Id., ¶ 3.

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- ¹⁰⁶ Id., ¶ 227.
- ¹⁰⁷ Id., ¶ 3.
- ¹⁰⁸ Id., ¶ 227.
- ¹⁰⁹ Id., ¶ 129.
- ¹¹⁰ Id., ¶ 129.
- ¹¹¹ FCC, 2012, ¶ 29, on duopoly and ¶¶ 42, 82 on potential competition.
- ¹¹² Id., ¶ 119.
- ¹¹³ See. Birch, et al., 2016; Sprint, 2016, Nov. Windstream, 2016, Chambless, 2016.
- ¹¹⁴ Costquest, 2015, Mitchell, 2010.
- ¹¹⁵ Deem, et al., 2016.
- ¹¹⁶ Baker, 2016.
- ¹¹⁷ TDS MetroCom, 2016, Windstream, 2016, CostQuest, 2015.
- ¹¹⁸ FCC, 2016, NCTA, 2016, Comcast, 2016, FCC, 2017, ¶ 30, references omitted, Best-efforts Internet access services describe basic Internet access as generally marketed to residential and small business subscribers. At the most-basic level, best-efforts and dedicated Business Data Services appear to be interchangeable: end users can use both services to access the Internet or create virtual private networks. However, best-efforts Internet access is provided with asymmetrical speeds and without service performance guarantees. Whereas dedicated packet-based Business Data Services allow for packet prioritization and quality of service priority tiers, best-efforts services do not.⁹⁰ Also, while dedicated Business Data Services commonly provide at least 99.9 percent network reliability, with higher guarantees being available for fiber services, and guarantees for latency and jitter, best-efforts services generally do not offer any reliability guarantees, although some cable providers offer some non-binding performance “assurances.”
- ¹¹⁹ Rysman, 2016, Sappington, 2016, Time Warner Telecom, 2012, Baker, 2016, Sprint, 2016, October, November).
- ¹²⁰ Shelanski, 2007
- ¹²¹ FCC, 2017, ¶ 219.
- ¹²² Id., ¶ 14.
- ¹²³ Id., ¶ 120.
- ¹²⁴ Citizen’s Telecom, 2016.
- ¹²⁵ Id., p. 28.
- ¹²⁶ Id., p. 28.
- ¹²⁷ Jon Brodtkin, August 29, 2018.
- ¹²⁸ (FCC, 2017, ¶ 13
- ¹²⁹ (FCC, 2017, ¶ 119)
- ¹³⁰ Citizens Telecommunications, Ad Hoc Telecommunications and CenturyLink, v. FCC, Et al., 2017.
- ¹³¹ Martin, 2000, provides a comprehensive critique based on early conceptual (Dixit, 1982; Knieps and Vogelsang, 1982; Schwartz and Reynolds, 1983; Shepherd, 1984, 1988; Schwartz, 1986; Kessides, 1986; Stiglitz, 1987; Bhaskar, 1989; Martin, 1989, Seabright, 1990; Lambertini, 1992) and empirical analyses, with airlines, chosen as the original example, *par excellence*, of the theory, as the first target (Call and Keeler, 1985, Kessides, 1988, Morrison and Winston, 1987, Stockton, 1988, Bailey and Williams (1988), Hurdle, et al., 1989), but other industries were swept in as the theory was broadly misapplied (see e.g. Tye, 1985, on railroads). Later studies have reaffirmed the finding that the theory does not apply in reality (see, for example, Pearson, 2006, on liner shipping; Shoesmith on petroleum refining, Burke and Rhoades, 1989, on banking; Pancharatnam, 1999) Competitive contracting
- ¹³² 1984.
- ¹³³ Id..
- ¹³⁴ Martin, 2000, p. 24.
- ¹³⁵ Martin, 2000, p. 29.
- ¹³⁶ Dixit, 1982, p. 16.
- ¹³⁷ Evenden and Williams, 2000, p. 76)
- ¹³⁸ The most egregious example was the methane rule, the first rule to experience a loss in the effort to invoke the Congressional Review Act. After that failure, the EPA decided to rescind the rule, but the court quickly declared that to be illegal. When the Flip-Flop on the Ozone rule was challenged in court, the EPA withdrew its delay of that rule. A similar challenge was launched against the FDA’s Menu Labelling Rule, which was one day short of being enforced. The legal reality is now enshrined in OMB guidance and is sinking into other agencies (like the Departments of Energy and Transportation.
- ¹³⁹ Stiglitz offers a critique of contestability in Socialism, pp. 117-119. On contestability: Shepherd, 1985, 1988; Martin, 2001, Evenden and Williams, 2000; Singh Vishal and Ting Zhu, 2006, *Pricing and Market Concentration in Oligopoly Markets*, March 8; Asplund and Sandin, 1999, Marion and Mazo, 1995, Pew Internet and American Libe Project, 2009; Robinson, James, 2011; Antwi, Akosa, Gaynor and Vogt, 2013; Schaumand and Verboven, 2011.
- ¹⁴⁰ On cartels and collusion see: Fonseca and Norman, 2014; Singh, Satsinder, Utton and Waterson, 1998; Heeb, 2009; Kovacic, Marshall and Marx, 2009.
- ¹⁴¹ Erlhauge, 2009; Peteraf, 1995; Salop, 2014; Sullivan, 1977; Orbach, 2015.
- ¹⁴² Salop, 2018; Baker, 2012; Hovenkamp, 2012.
- ¹⁴³ Id.
- ¹⁴⁴ Fisher, 2001; Bruce H. Kobayashi, 2005; Sagi, 2014.
- ¹⁴⁵ Vogt and Town, 2006, p. 1, reach a similar conclusion for hospital mergers, “Research suggests hospital prices increased by 5 percent or more as a result of consolidation. When two hospitals merge, not only does the surviving hospital raise prices but so do its competitors. Evidence of the impact of consolidation on quality of care is limited and mixed, but the strongest studies show a reduction in quality. Hospital consolidation does modestly reduce the cost to hospitals of providing care.”
- ¹⁴⁶ Kang Hua Cao, et al., 2016, p. 43.
- ¹⁴⁷ Recent examples that corroborate much of the early analysis include Kwoka, Hearle and Alepin, 2016, Bachwich and Whitman, 2017.
- ¹⁴⁸ Jamison, 2004, finding that UNE price drive investment suggest that the bottleneck is in the ubiquitous network.
- ¹⁴⁹ See also Lang and Sealy, 2000.
- ¹⁵⁰ Peteraf, 1995, Martin, 1994.
- ¹⁵¹ Shepherd, 1984, p. 579.

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- ¹⁵² Evenden and William, 2000, p. 84.
- ¹⁵³ Shepherd (1984, p. 577.
- ¹⁵⁴ Id., pp. 579-580-582.
- ¹⁵⁵ Edendenand William, 2000, p. 86.
- ¹⁵⁶ Masters, 2000p p. 24.
- ¹⁵⁷ Shepherd, 1984, p. 574,
- ¹⁵⁸ Id.,
- ¹⁵⁹ the industry's historical development, regulation, cost structures and changes therein (Evenden and Williams, 2000, p. 87).
- ¹⁶⁰ Selton, 1973, made the case on theoretical grounds, but as discussed below five firms appeared to be the dividing line in many, but not all cases.
- ¹⁶¹ Huck and Oescher, 2004, is frequently cited as the launch pad for demonstrations that four is few.
- ¹⁶² Weiss, 1989, presents a thorough discussion of the unfolding of the debate over concentration and price through the 1980, before the contestability issue had been disposed of, with a careful rebuttal of claims that the relationship did not exist, along with numerous case studies. The Council of Economic Advisors, 2016, discusses more recent analyses in a similar vein. This is not to say that there are not contrary findings on both contestability and the fundamental impact of market structure on performance (e.g. Kessides, 1986, 1988, Eklund, Ford and Koutsky, 2000, Toivan and Walker, 2005, Haas-Wilson and Garmon, 2011, Tenn, 20110)but not overwhelming evidence is on the other side.
- ¹⁶³ Before contestability occupied so much attention in the mid-1980s and 1990s, food had been intensively studied. Marion, et al., 1979, Hall Schmitz and Cothorn, 1979; Lamm, 1981, Cotterill, 1983; Cotteril, 1986, Weiss, 1989, Marion and Mazo, 1995. A recent study supports the general finding. Bresnaha Ezeala-Harrison and Baffoe-Boinnis, 2016, "The empirical analysis shows a consistent result for the price-concentration relationship in all the regions. It indicates that as the market become more concentrated, prices of grocery products rise, with the largest price increase occurring in the West as evidenced by the magnitude of the coefficient of the concentration variable; while, with the exception of the South, a larger store size reduces grocery prices. These results may suggest that the pricing patterns observed between the retail companies in the grocery industry may be largely due to covert tacit collusion among these retail firms, whereby each firm seems to adopt a strategy that results in a cooperative solution in an otherwise inherently non-cooperative game setting. This appears to bear out evidence of a general tendency for quasi-price fixing at best, and outright tacit collusion at worse."
- ¹⁶⁴ See for example, Bresnahan and Reiss, 1991, Cetorelli, 2002.
- ¹⁶⁵ Hall, Schmitz and Cothorn, 1979, Goetz and Gugler, 2006, Sen and Townley, 2010.
- ¹⁶⁶ Fan and Yang, 2016, p. 1.
- ¹⁶⁷ See also, Davies and Olcazak, 2007.
- ¹⁶⁸ For example, see, Sobel, 2005, Doruk and Santos-Pinto, 2013, p. 50., We find that collusion is easier to sustain when firms have a concern for reciprocity towards competing firms provided that they consider collusive prices to be kind and punishment prices to be unkind. Thus, reciprocity concerns among firms can have adverse welfare consequences for consumers."
- ¹⁶⁹ For example, corroborating Genovese and Mullins (2001), Fonesca and Theo-Norman, 2012, p. 25, note "Communication helps firms coordinating on a price or more sophisticated pricing patterns (like taking turns in placing the low bid). This is in stark contrast to the treatments without communication where firms virtually never coordinated successfully, not even the duopolies. It appears that talking removes the strategic uncertainty present otherwise and only with communication do firms manage to coordinate on a price, sometimes even among a large number of firms. Communication is, secondly, frequently used for dispute mediation in our experiments. Defections occur, but they do frequently not lead to price wars. In fact, conflict mediation to avoid the decline of prices appears to be among the central uses of communication. Finally, we find that communication has a long-lasting effect on cooperation (hysteresis): collusion is more effective without communication if it is preceded by a phase of communication, as has been observed in other social dilemmas."
- ¹⁷⁰ Cooper and Kuhn, 2009.
- ¹⁷¹ Roux and Thoni, 2015, p. 1, We find strong evidence that targeted punishment enables firms to establish and maintain collusion. More so, we find that the collusive effect of targeted punishment is even stronger in markets with more competitors, suggesting a reversal of the conventional wisdom that collusion is easier the fewer the firms.
- ¹⁷² Fonseca and Norman, 2014, p. 225.
- ¹⁷³ Moellers, Theo-Norman and Snyder, 2017, p. 214.
- ¹⁷⁴ White, 1998.
- ¹⁷⁵ There are many other issues debates, particularly with respect to the effectiveness of fines as a deterrent. For example, see Genoveses and M(Morrison and Winston, 1987). Mullin, 2001, Connor and Bolotva, 2005, and Connor and Lande, 2008; Boyer and Kotchoni, 2015.
- ¹⁷⁶ Morrison and Winston, 1987.
- ¹⁷⁷ Bergman and Rudhom, 2003.
- ¹⁷⁸ Asplund and Sanden, 1999, p. 366.
- ¹⁷⁹ Seamons, 2011.
- ¹⁸⁰ Lestage, et al., 2013, p. 41.
- ¹⁸¹ Figure 7-6 is based on the constant elasticity specification of the model, a specification in all 24 of the coefficients were statistically significant. Another specification that used the number of competitors in a fixed effects model had only 4 of 24 coefficients statistically significant. This resulted from the fact that by including the number of competitors as a fixed effect, "the standard errors... have become much larger... so that the competition test has less power." Five of the six coefficients on the second competitor are statistically significant. Two of the five for larger numbers of competitors are statistically significant, in once the third firm has a large impact than the second; in another the fifth firm has an impact that is three quarters of the second.
- ¹⁸² See for example, Nevo, 2001, p. 336; "Most economists are familiar with this industry from the research of Schmalensee (1978), which lays out the economic argument at the foundation of the FTC's "shared monopoly" case against the industry in the 1970's. Even though the standard description of the complaint will include a claim of cooperative pricing, the core of the case was brand proliferation and its use as a barrier to entry, not cooperative pricing. As much as I would like to claim that this paper proves or disproves the FTC's case, I cannot do so. I find that the high observed PCM are primarily due to the firms' ability to maintain a portfolio of differentiated brands and influence the perceived quality of these brands by means of advertising. In a sense my analysis suggests that, whether right or wrong, the FTC's claim focused on the important dimensions of competition. "
- ¹⁸³ In addition to the examples discussed in test, see Siemans, 2001, p. 1 The results also imply a large payoff to geographic differentiation since only the closest rivals exert strong competitive pressure on store profitability.

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- ¹⁸⁴ Dranove, Gronz, and Mazzoe, 2003, pp. 450-451.
- ¹⁸⁵ Id., pp. 454.
- ¹⁸⁶ Ellison and Ellison, (2011) argue that natural barriers come first and strategic behaviors come second, with a U shape with the greatest impact at moderate size.
- ¹⁸⁷ McCann and Vroom, 2009.
- ¹⁸⁸ Greenstein, and Mazzoe, 2006, in addition, the effects of the costs of interconnection were significant, as more CLECs were present in 1999 in cities where the UNE-Loop rate was lower. (p. 15) Lower margins typically result from lower market concentration; however, differentiating on the basis of geographic footprint appears to insulate CLECs from the effects of additional competitors. (p.18)
- ¹⁸⁹ Nevo, 2001, p. 307, I conclude that prices in the industry are consistent with noncollusive pricing behavior, despite the high price-cost margins. Leading firms are able to maintain a portfolio of differentiated products and influence the perceived product quality. It is these two factors that lead to high price-cost margins. Nevo, 2001, p. 336 Even though the standard description of the complaint will include a claim of cooperative pricing, the core of the case was brand proliferation and its use as a barrier to entry, not cooperative pricing. As much as I would like to claim that this paper proves or disproves the FTC's case, I cannot do so. I find that the high observed PCM are primarily due to the firms' ability to maintain a portfolio of differentiated brands and influence the perceived quality of these brands by means of advertising. In a sense my analysis suggests that, whether right or wrong, the FTC's claim focused on the important dimensions of competition. In order to make claims regarding the anti-competitive effects of brand introduction and advertising one would have to extend the model to deal with these dimensions explicitly. Mazzeo, 2002, p. 1. The presence of any market competitor drives down prices, but the effect is much smaller when the competitor is a different product type. Differentiation is optimal product choice behavior because the resulting competition among firms is less tough when their products are differentiated.
- ¹⁹⁰ Conlin and Kadiyali, 2004, We find that there is higher investment in capacity relative to demand (i.e. idle capacity) in markets with larger Herfindahl index and by firms with larger share of market capacity. These results are consistent with the entry deterrence literature that suggests firms in more concentrated markets and firms with larger market share have greater incentive to invest in entry deterring capacity
- ¹⁹¹ whose findings for airlines parallels cable finding discussed above.
- ¹⁹² 2006, P. 10) The normalized price is predicted to be higher as a consequence of increased concentration as measured by a higher HHI. (positive significant coefficient on HHI). For a given level of excess capacity (EXCESS), an increase in HHI will increase PRICEDAC and at a faster rate (see positive and significant coefficient on EXCESS*HHI). This result supports the efficacy of the HHI as an indicator for markets that The role of excess capacity in our results tends to support the traditional view that the presence of excess capacity leads to lower prices. Increases in the variable, EXCESS reduce PRICEDAC (see negative and significant coefficient on EXCESS) but at a slower rate (see positive and significant coefficient on EXCESS*HHI).
- ¹⁹³ Conlin and Verinda. 2004.
- ¹⁹⁴ Goetz and Shapiro, 2012.
- ¹⁹⁵ Shi, 2016.
- ¹⁹⁶ Prince and Simon, 2015.
- ¹⁹⁷ Aguirregabiria and YuHo, 2010.
- ¹⁹⁸ Shi, 2016.
- ¹⁹⁹ Frank and Salkever, 1995.
- ²⁰⁰ Bergman and Rudholm, 2003, p. 12.
- ²⁰¹ Evaluation of price effects have become complex Abel, (2002) due to price discrimination, (Verlinda, 2005), dynamic pricing, (Gedge, Roberts and Sweeting, 2014) and selective responses (Simon, 2005).
- ²⁰² Seamans, 2010.
- ²⁰³ Savage and Wirth, 2005.
- ²⁰⁴ Geroniski, 1995, pp. 436-437. New products based on new inventions or innovations are often supply driven, following a 'technological trajectory' which continually opens up new possibilities for developing new products and new processes... However, at some point in the development of a new market, consumer preferences become reasonably well formed and coalesce around a small subset of products (or a 'dominant design') containing a particular range of attributes. At this stage of industry development, competitive rivalry often shifts from competition between competing product designs to competition based on prices and costs to supply a particular design. Early movers rush to exploit economies of scale and trundle down the learning curve; distribution systems are set up, and marketing campaigns try to create brand loyalty and lock in buyers in a variety of ways. New entrants are often at a severe disadvantage in this type of competitive process (which tends to create high entry barriers based on scale economies, absolute cost advantages and product differentiation advantages), and, as a consequence, their role in shaping industry structure and affecting industry performance is much diminished. As long as entry barriers remain high, this will almost certainly remain the case. However, exogenous shifts in costs or demand undermine entry barriers, and, when incumbents fail to exploit these exogenous changes (say because the required innovations would be rent-displacing), entry is likely to re-emerge. A recent analysis by Capone, Malerba and Orsenigo, (2013, p.) suggests a similar process in which switching costs yield a first mover advantage under conditions that apply to the BDS market with homogeneous demand and dynamic technology.) "barriers to entry are thought of as an obstacle which prevents new firms from surviving long in the market... and they are particularly pressing for those entrants who have limited time to in which to prove themselves."
- ²⁰⁵ (Geroniski, 1995, p. 437).