Exhibit No:	
Issues:	Economic principles for competitive declaration
Witness:	Aron
Type of Exhibit:	Direct Testimony
Sponsoring Party:	Southwestern Bell Telephone Company
Case No:	TO-2001-467

FILED

JUN 2 8 2001

Missouri Public
Service Commission

SOUTHWESTERN BELL TELEPHONE COMPANY

CASE NO. TO-2001-467

DIRECT TESTIMONY

OF

DR. DEBRA J. ARON

Evanston, Illinois
June 28, 2001

BEFORE THE PUBLIC SERVICE COMMISSION

OF THE STATE OF MISSOURI

In the Matter of the Investigation of the State of Competition in the Exchanges of Southwestern Bell Telephone Company.	)))	Case No. TO-2001-467

AFFIDAVIT OF DEBRA J. ARON

STATE OF ILLINOIS	)	
	)	SS
CITY OF EVANSTON	)	

I, Debra J. Aron, of lawful age, being duly sworn, depose and state:

1. My name is Debra J. Aron. I am presently a Director of LECG, LLC.
2. Attached hereto and made a part hereof for all purposes is my direct testimony.
3. I hereby swear and affirm that my answers contained in the attached testimony to the questions therein propounded are true and correct to the best of my knowledge and belief.

Debra J. Aron

Subscribed and sworn to before this 18th day of June, 2001.

Notary Public

My Commission Expires: 08/04/2002

"OFFICIAL SEAL"
JOYCE M. KING
Notary Public, State of Illinois
My Commission Exp. 08/04/2002

Index

CASE NO. TO-2001-467
SOUTHWESTERN BELL TELEPHONE COMPANY
DIRECT TESTIMONY OF DR. DEBRA J. ARON

I. QUALIFICATIONS AND ORGANIZATION OF TESTIMONY

Q.1 Please state your name and position.

A.1 My name is Debra J. Aron. I am the Director of the Evanston offices of LECG, LLC, ("LECG") and Adjunct Associate Professor at Northwestern University. My business address is 1603 Orrington Avenue, Suite 1500, Evanston, IL, 60201.

Q.2 Please describe LECG, LLC.

A.2 LECG is an economics and finance consulting firm that provides economic expertise for litigation, regulatory proceedings, and business strategy. Our firm comprises more than 300 economists from academe and business, and has 15 offices in six countries. LECG's practice areas include antitrust analysis, intellectual property, and securities litigation, in addition to specialties in the telecommunications, gas, electric, and health care industries.

Q.3 Please describe your professional qualifications.

A.3 I received a Ph.D. in economics from the University of Chicago in 1985, where my honors included a Milton Friedman Fund fellowship, a Pew Foundation teaching fellowship, and a Center for the Study of the Economy and the State dissertation fellowship. I was an Assistant Professor of Managerial Economics and Decision Sciences from 1985 to 1992, at the J. L. Kellogg Graduate School of Management, Northwestern University, and a Visiting Assistant Professor of Managerial Economics and Decision Sciences at the Kellogg School from 1993-1995. I was named a National Fellow of the Hoover Institution, a think tank at Stanford University, for the academic year 1992-1993, where I studied innovation and product proliferation in multiproduct firms. Concurrent

with my position at Northwestern University, I also held the position of Faculty Research Fellow with the National Bureau of Economic Research from 1987-1990. At the Kellogg School, I have taught M.B.A. and Ph.D. courses in managerial economics, information economics, and the economics and strategy of pricing. I am a member of the American Economic Association and the Econometric Society, and an Associate member of the American Bar Association. My research focuses on multiproduct firms, innovation, incentives, and pricing, and I have published articles on these subjects in several leading academic journals, including the *American Economic Review*, the *RAND Journal of Economics*, and the *Journal of Law, Economics, and Organization*. I currently teach a graduate course in the economics and strategy of communications industries at Northwestern University.

I have consulted on numerous occasions to the telecommunications industry on competition, costing, pricing, and regulation issues in the U.S. and internationally. I have testified in several states regarding economic and antitrust principles of competition in industries undergoing deregulation; measurement of competition in telecommunications markets; the proper interpretation of Long Run Incremental Cost and its role in pricing; the economic interpretation of pricing and costing standards in the Telecommunications Act of 1996 ("TA96" or "the Act"); limitations of liability in telecommunications; Universal Service; and proper pricing for mutual compensation for call termination. I have also submitted affidavits to the Federal Communications Commission analyzing the merits of Ameritech Michigan's application for authorization under Section 271 of TA96 to serve the in-region interLATA market, CC Docket No. 97-137; explaining proper economic principles for recovering the costs of permanent local number portability, CC Docket No. 95-116; explaining the economic meaning of the "necessary and impair" standards for determining which elements should be required to be unbundled under TA96, CC Docket No. 96-98; and an analysis of market power in support of Ameritech's

petition for Section 10 forbearance from regulation of high-capacity services in the Chicago LATA, CC Docket No. 95-65. I have consulted to carriers in Europe, the Pacific, and Latin America on interconnection and competition issues, and have consulted on issues pertaining to local, long distance, broadband, wireless, and equipment markets. I have conducted analyses of mergers in many other industries under the U.S. Merger Guidelines. In addition, I have consulted in other industries regarding potential anticompetitive effects of bundled pricing and monopoly leveraging, market definition, and entry conditions, among other antitrust issues, as well as matters related to employee compensation and contracts, and demand estimation. In 1979 and 1980, I worked as a Staff Economist at the Civil Aeronautics Board on issues pertaining to price deregulation of the airline industry. In July 1995, I assumed my current position at LECG. My professional qualifications are detailed in my curriculum vitae, which is attached as Schedule 1.

Q.4 What is your understanding of this proceeding?

A.4 I understand that under Missouri law, Southwestern Bell Telephone ("SWBT") has the right to have its services declared competitive when certain criteria are met, which I will discuss below. The Missouri Public Service Commission ("Commission") has the obligation to investigate to determine whether "effective competition" exists in the relevant markets. As I understand it, under the Missouri Revised Statutes (2000) ("RSMo"), SWBT is entitled to have its services declared competitive unless the Commission finds that effective competition does not, in fact, exist. Nevertheless, SWBT has chosen to make an affirmative showing that the criteria established by the statue for evaluating "effective competition" are satisfied.[1]

[1] Direct Testimony of Thomas F. Hughes, on Behalf of Southwestern Bell Telephone Company. Case No. TO-2001-467. Hereinafter *Hughes Direct Testimony*.

Q.5 What is the relevant law pertaining to this proceeding?

A.5 I understand that this proceeding is governed primarily by Section 392.245 of the RSMo. Mr. Hughes describes the history of the different parts of the RSMo as they interact with Section 392.245, including the price cap plan, and the process to classify services or even companies as "transitionally competitive" or "competitive," as described in Section 392.370 of the RSMo.[2] In addition, Section 392.185 is important to this proceeding because it describes the purposes and goals of the RSMo. Finally, Section 386.020(13) is important because it provides four factors by which the Commission shall evaluate whether there is "effective competition."

Q.6 Please explain the purpose and organization of your direct testimony.

A.6 The purpose of my testimony is to provide the economic principles that I believe should guide the Commission in its evaluation of the state of competition in those exchanges where an alternative local exchange telecommunications company ("ALEC," also known as a competitive local exchange carrier, or "CLEC") is certified to provide local exchange telecommunications services, as described in Section 392.245 of the RSMo. I explain that adherence to these economic principles will tend to enhance the welfare of consumers of telecommunications services in the state of Missouri.

In Section II of my testimony, I address the notion of "effective competition" by commenting on the factors found in Section 386.020(13)(a), (b), (d) and (e). I summarize my understanding of the RSMo as it applies to this proceeding, and then address the economics of the key concepts invoked by the governing law that are relevant to this proceeding. I describe how the term "effective competition" should be interpreted so that it is consistent with the purposes and goals of the RSMo, and how the factors described in Section 386.020(13) of the RSMo that are used to determine whether "effective

[2] *Hughes Direct Testimony.*

competition" exists might be implemented so as to be consistent with the purposes and goals of the RSMo.

In Section III of my testimony, I address Section 386.020(13)(c) of the RSMo, which charges the Commission with determining how the purposes and policies of the RSMo can be advanced by the use of the marketplace instead of regulation. I discuss how pricing flexibility, which is an essential part of a free market, contributes to efficient competition, efficient investment incentives and greater consumer and social welfare. In Section IV, I summarize my testimony and offer my concluding observations.

II. ECONOMIC INTERPRETATION OF THE STATUTORY LAW

Q.7 Please summarize the portions of the RSMo that are most relevant to this proceeding from an economic perspective.

A.7 Section 392.185 describes the purpose and goals of the RSMo. Section 392.185 says that the goals are to:

1. Promote universally available and widely affordable telecommunications services;
2. Maintain and advance the efficiency and availability of telecommunications services;
3. Promote diversity in the supply of telecommunications services and products throughout the state of Missouri;
4. Ensure that customers pay only reasonable charges for telecommunications service;
5. Permit flexible regulation of competitive telecommunications companies and competitive telecommunications services;
6. Allow full and fair competition to function as a substitute for regulation when consistent with the protection of ratepayers and otherwise consistent with the public interest;
7. Promote parity of urban and rural telecommunications services;
8. Promote economic, educational, health care and cultural enhancements; and
9. Protect consumer privacy.

My main observation regarding these purposes and goals is that they are largely consistent with the development of a vibrant and competitive telecommunications industry in the state, and consistent with the use of the marketplace instead of regulation as the primary vehicle for bringing the benefits of this industry to Missouri consumers. The legislation specifically articulates a preference for competition over regulation, when consistent with the public interest. Indeed, the legislation speaks of "full and fair" competition, which I believe means that regulatory constraints on pricing are lifted (this permits "full" competition), and that regulation does not favor any one competitor or set of competitors, but rather promotes competition itself (i.e., competition is "fair").

Section 392.245 likewise is relevant to this proceeding. Section 392.245 provides for the determination of appropriate prices for telecommunications services. The Section provides for this in two ways. First, services that are not deregulated are subject to the Missouri "price cap" plan. Under the Missouri price cap regulation, a firm may charge a price at or below a maximum price. This maximum price, or "cap," for basic services changes every year according to different formulae (i.e., either the CPI for telecommunications services as published by the Bureau of Labor Statistics, if elected by the Company, or the GDPPI, another indicator of inflation, less a productivity and exogenous factor offset). Non-basic services are subject to Section 392.245(11), which provides that these telecommunications services' maximum prices may increase by up to eight percent each year. Finally, Section 392.220(2) requires that unless otherwise directed by the Commission, a telecommunications company must file a tariff listing any new rate with the Commission, which shall be approved within 30 days, assuming that the proposed price is below or equal to the maximum price cap price.

The second way that Section 392.245 provides for the determination of appropriate prices for services is through the marketplace itself. Section 392.245(5) states that once a CLEC has been certified to provide basic local telecommunications

service in a particular exchange and has provided such service in that exchange for five years, the services of the incumbent local exchange company ("ILEC") in that exchange shall be considered competitive and shall no longer be subject to the price caps.

Section 392.245(5) also says that the Commission is obligated to investigate and, after providing notice, hold a hearing, to determine whether effective competition exists in the exchange for such service. If the Commission finds that "effective competition" does not exist in the exchange, the service is not to be reclassified as competitive and removed from price cap regulation.

A. Evaluating the Meaning of "Effective Competition"

Q.8 How does Missouri law define "effective competition?"

A.8 The RSMo provides guidance in determining what constitutes "effective competition." Section 386.020(13) says that effective competition "shall be determined by the commission based on" four factors:

- The extent to which services are available from alternative providers in the relevant market;
- The extent to which the services of alternative providers are functionally equivalent or substitutable at comparable rates, terms, and conditions;
- The extent to which the purposes and policies of Chapter 392, RSMo, including the reasonableness of rates as set in Section 382.185, RSMo, are being advanced; and
- Existing economic or regulatory barriers to entry.

The Commission may also consider other relevant factors that are necessary to implement the purposes of Chapter 392.[3]

[3] RSMo § 386.020(13)(e) (2000).

Q.9 From an economic perspective, are the four criteria identified by the Missouri statute relevant to determining whether effective competition exists for a given service in a given geographic area?

A.9 Yes, I believe that they are, but they do not do not constitute an exhaustive list of the relevant factors, nor is any one completely dispositive of the presence or absence of effective competition, as the RSMo recognizes.

Q.10 Dr. Aron, please briefly describe the nature of the competition in SWBT's territory.

A.10 As I mentioned earlier, the RSMo uses the term "alternative local exchange telecommunications company." I use the industry acronym, "CLEC" or competitive local exchange carrier to refer to the same type of company. According to data provided to me by SWBT, CLECs with tariffs in Missouri include long-distance companies like AT&T, Worldcom (a/k/a MCI), and Sprint; long-haul wholesalers such as Global Crossing (which also has Global Crossing Telemanagement and Global Crossing Local Services), and Level 3; and smaller carriers such as Birch Telecommunications, Allegiance and McLeodUSA. Thus, the term "CLEC" embraces carriers both large and small and carriers that have taken a variety of approaches toward entry into the local exchange, such as resale, facilitates-based, UNE-P, and "smart build" carriers; different technological approaches such as wireless and packet-switched platforms; and that offer some or all of a host of telecommunications services such as voice (local and long-distance), data, and Internet services.

B. Defining the Relevant Market

Q.11 How should the term "relevant market" be interpreted?

A.11 In economics, a relevant product market is the set of products that consumers deem to be reasonable substitutes for one another. Thus, although the RSMo uses the terms "relevant market" and "substitutability" in different sub-sections of Section 386.020(13), the

concepts are interwoven and I will discuss them together. The reason for this is that when products or services are reasonably good substitutes, they are considered to be in the same product market and they compete with one another. Substitutable products serve to constrain one another's prices, because if one product were to experience a price increase, consumers would purchase other products that are close substitutes.

Going back to the language found in 386.020(13)(b), if two services are the same or are functionally equivalent, they are generally in the same product market. Nevertheless, sameness or functional equivalence is not necessary for two services to be in the same market. The standard economic approach to assessing whether two services are in the same market is to determine whether a substantial number of customers, over a period of time, would be willing to switch to the other service if the price of the service they are currently buying were to increase by a small but significant and non-transitory amount.[4] If customers would be willing to switch between the products in response to a relatively small, non-transitory price change, then the products are considered to be in the same market for purposes of assessing competition. That is, they are substitutes.[5]

In many cases, it is difficult or impossible to determine quantitatively how responsive consumers are in their purchases of one product to a change in the price of another, because of the stringent data requirements for such an analysis. As a result, a pragmatic approach that is consistent with the economic concept of substitutability has been adopted in antitrust case law, by which the critical determinant of whether two services are in the same market is their "reasonable interchangeability of use." This was

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4 *Department of Justice and Federal Trade Commission Horizontal Merger Guidelines*, April 2, 1992, §1.1.

5 Although antitrust analyses typically focus on price increases, the same logic applies to terms and conditions of service – would a consumer switch service providers in response to a small but significant new burden imposed by her current service provider?

the standard adopted by the Supreme Court in 1962[6] and has generally been adopted by courts since then.

Q.12 According to your analysis, should the interpretation of "functionally equivalent" or "substitutable at comparable rates, terms and conditions" of §386.020(13)(b) require services to be identical?

A.12 No. The "reasonable interchangeability of use" standard that I described does not require that services or products be identical, or functionally equivalent, or even of equal quality, nor should it. For example, the courts have found that display advertisements in daily newspapers is not a market in itself, because "door-to-door delivery, direct mail and the weekly papers [were] viable substitutes;"[7] that "premium" ice cream is not a market in itself, because all grades of ice cream compete for customer preference and for retailers' freezer space (in other words, lower-quality ice cream is a relevant substitute for premium ice cream);[8] and that glass jars and metal cans are sufficiently interchangeable in use to be in the same product market.[9] Similarly, the courts have found that "passive visual entertainment," including cable television, satellite television, videocassette recordings, and free over-the-air television are all substitutable enough to be in the same product market.[10]

There are numerous other examples of products that are not functionally identical or equivalent and yet have been found by the courts to be sufficiently substitutable to exert competitive pressure on one another.[11] What is critical from an economic

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6 *Brown Shoe Co. v. United States*, 370 U.S. 294, 325 (1962).

7 *Drinkwine v. Federated Publications*, 780 F.2d 735, 738 n.3 (9th Cir. 1985), *cert. denied*, 451 U.S. 911 (1981).

8 *In re* Super Premium Ice Cream Distrib. Antitrust Litig., 691 F. Supp. 1262 (N.D. Cal. 1988), *aff'd mem. sub nom.* Haagen-Dazs Co. v. Double Rainbow Gourmet Ice Creams, Inc., 895 F.2d 1417 (9th Cir. 1990).

9 *United States v. Continental Can Co.*, 378 U.S. 441, 453-57 (1964).

10 *Cable Holdings v. Home Video, Inc.*, 825 F.2d 1559, 1563 (11th Cir. 1987).

11 See ABA Section of Antitrust Law, *Antitrust Law Developments* (4th ed. 1997), pp. 500 – 508.

standpoint, and what the courts have recognized, is that the ultimate determinant of whether products are competitive substitutes is whether they "have the ability – actual or *potential* – to take significant amounts of business away from each other."[12] (Emphasis added.) Thus, when determining the relevant market in this proceeding, and when determining whether a particular service "counts" or not, one needs to determine, from the consumer's viewpoint, the extent to which one service may displace another and thereby serve as a constraint on pricing.

Q.13 Is the concept of "reasonable interchangeability of use" unique to the antitrust arena?

A.13 No. The Federal Communications Commission has established an approach similar to that of the courts in its analysis of the competitive constraints imposed by non-identical, alternative services. For example, the FCC's 1998 report on competition in the multichannel video programming distribution ("MVPD") market states: "The cable industry's large share of the MVPD audience is a cause for concern, in large part, only to the extent it reflects an inability of consumers to switch to some comparable source of video programming."[13] The report proceeds to "identify and discuss alternative sources of multichannel video programming, as well as regulatory and technological developments that have enhanced, or soon may enhance the competitive significance of alternative providers."[14] The number of alternative technologies considered is substantial and includes the following: traditional cable television, free-to-air television, Direct Broadcast Satellite (DBS) services, Wireless Cable Systems, electric utilities and Internet video.[15] Finally, the FCC states that the determination for a technology's inclusion in the

12 *SmithKline Corp. v. Eli Lilly & Co.*, 575 F.2d 1056, 1063 (3d Cir.), *cert. denied*, 439 U.S. 838 (1978).

13 Federal Communications Commission, *Fourth Annual Report*, CS Docket No.97-141 (January 13, 1998) ("*FCC 4th Annual Cable Report*"), ¶8.

14 *FCC 4th Annual Cable Report*, ¶8.

15 Federal Communications Commission, *Fifth Annual Report*, CS Docket No.98-102 (December 23, 1998) ("*FCC 5th Annual Cable Report*"), ¶12.

market "depend[s] on the substitutability or relative attractiveness (including the price, equipment, and installation charges) among the MVPD choices delivered to the household."[16]

Q.14 Do *all* customers have to view the services as "reasonably interchangeable" for the services to be in the same relevant market?

A.14 No. All that is necessary is that a sufficient number of customers, over time, would be willing to switch between the services so that the producers potentially exert competitive pressure on one another.

Q.15 What is the relevance of this analysis to the issue before the Commission?

A.15 There are two major issues of relevance. First, restricting the analysis of substitutable services to those that are *identical* is improper because consumers are capable of evaluating different kinds of services and making a choice based on attributes as well as price. Indeed it is an explicit goal of the RSMo to promote diversity in the supply of telecommunications services and products throughout the state of Missouri. This goal is consistent with the fact that consumers have varying communications needs and preferences, which may be best met by a market offering a variety of choices of different services.

Moreover, CLECs themselves generally do not wish to provide services that are identical to those offered by the ILEC. New competitors typically seek profitable opportunities by differentiating their products in some way from the existing incumbent product. Differentiation may be in the form of different service quality or customer care, service features, billing, pricing structures, or a host of other possibilities. The observation that services are differentiated does not mean that the services do not

[16] *FCC 5th Annual Cable Report*, ¶124.

compete with each other. On the contrary, the differentiation is the *result* of competitive forces from other "reasonably interchangeable" services.

The second reason the analysis of "reasonable interchangeability of use" is relevant to this proceeding is that it may be the case that entirely different technologies, such as wireless service, cable telephony, voice-over-packet, or fixed wireless connectivity, can substitute for circuit switched local exchange service. These services may be in the same market as local exchange service, as either a substitute for usage, or as a substitute for primary and, especially, second lines.

Q.16 How can the Commission evaluate whether two services are reasonably interchangeable and, therefore, in the same relevant product market?

A.16 Criteria that are often employed to determine "reasonable interchangeability of use," and which would be relevant to this case, are:

- Whether the services appear to serve the same or similar function from a customer's standpoint;
- Whether customers view them as reasonably equivalent; and/or
- Whether they are objectively similar from a technical standpoint.[17]

Other relevant evidence includes:

- Whether they are sold in the same marketing channels;
- Whether competitors market their services as a substitute for those of the ILEC; and
- Whom the providers view their competitors to be.

For example, in the case of local exchange service, absent significant and specific evidence to the contrary for a specific offering, CLEC landline services provided by resale, unbundled network elements, or their own wireline facilities, should each clearly

[17] Again, technical similarity is not necessary for services to be substitutes, but is relevant because if services are technically similar they are likely to be substitutes.

be considered as reasonable substitutes for an ILEC's service. And, as I mentioned, it may be important to investigate the interchangeability of other technologies as well, such as wireless and cable.

Q.17 Dr. Aron, please explain why, in your judgment, resold services satisfy the conditions that you've outlined and therefore belong in the relevant product market for exchange service.

A.17 Resold services are functionally and technically equivalent to the ILEC's services, because, while the billing, marketing, and other retailing functions may differ, the underlying service to the customer is the same. The fact that resellers' retailing functions may differ from those of the ILEC does not change the status of the service as a substitute (or, indeed, as a functional equivalent). The accepted standard for "reasonable interchangeability of use" does not require the services to be identical, of the same quality, or even functionally equivalent, as I explained earlier. Hence, just as "regular" ice cream is considered to be in the same market as premium ice cream and cable television is in the same market as free over-the-air television, I think it is clear that resold services are in the same market as the ILEC's own services.

Q.18 Do resold services provide competitive discipline on an ILEC?

A.18 Yes, to an extent. Resale can be a vital stage in the development of telecommunications competition. Losing a customer to a reseller damages an ILEC in a more subtle and long-term sense than the short-run direct effect on revenues. To a large extent, resellers use resale as part of a larger strategy to migrate customers to their own facilities, and/or to provide customers with a bundle of many telecommunications services. Once an ILEC loses the customer relationship to the reseller, the reseller can easily migrate the customer to its own facilities or to UNE-based provision when the facilities are ready. At that point, the ILEC loses all of the wholesale revenues from vertical features and enhanced

services, and the revenues from access, as well as the wholesale revenues from the line itself.

In addition, resellers that compete by providing bundled services have an incentive to leverage their relationship with the customer to sell that customer additional services and thereby further displace the ILEC. Consistent with these considerations, an ILEC is far from indifferent between providing services as a wholesaler and providing services as a reseller and, instead, is quite concerned about losing customers to resellers. Once the customer contact is broken, the CLEC reseller is in the driver's seat for migrating that customer to its own facilities and selling its own bundles. Therefore, I believe that these dynamic considerations discipline the ILEC because the ILEC will want to avoid losing customers to resellers, even though its short-term profits might, in some cases, be little affected by such a loss.

Q.19 Do resellers generate the social welfare benefits normally associated with competition?

A.19 Yes, to some extent. The greatest social welfare effects of competition in a rapidly developing, technologically-intensive market such as telecommunications derive from the powerful incentives to innovate. The ability of resellers to innovate, however, is limited, because they share with the incumbent the network technology that provides the service. As Supreme Court Justice Breyer said, "Increased sharing by itself does not automatically mean increased competition. It is in the *un*shared, not in the shared, portions of the enterprise that meaningful competition would likely emerge."[18]

Because resellers share the entire network platform of the ILEC, they cannot compete by offering or developing innovative technology at the network level. Nevertheless, because resellers can use different billing, bundling, customer care, and

[18] *AT&T Corp. v. Iowa Utilities Board*, 525 U.S. 366, 429 (Breyer, concurring). (emphasis in original).

marketing approaches than the ILEC, there is the opportunity for competition on this level. Accordingly, resellers do have opportunities to provide true, effective competitive pressure (and add social value). Resellers can enhance social welfare by:

- Innovating or improving the retailing functions that they provide using their own personnel and functions;
- Offering new and innovative bundles or packages of services that combine local service with (for example) long-distance or broadband services, paging, cable television, advanced calling features, or other services;
- Offering new or innovative pricing structures that appeal to customers' different demand characteristics; and
- Coupling resold local service with their own or third-party innovative platforms for voice mail or other such services.

Q.20 Do basic local exchange services offered by facilities-based providers using either their own end-to-end facilities or unbundled network elements ("UNEs") purchased from the ILEC satisfy the condition of being in the relevant market?

A.20 Yes. Both UNE-provided services and self-provisioned voice service offered by facilities-based CLECs are in the relevant product market and satisfy the condition of being substitutable as I have described the term. In my general experience of reviewing CLEC offerings on their web sites, reading their financial reports filed with the SEC, and reading investment analyst and market analyst reports, I conclude that CLECs using UNEs or self-provisioning represent their voice services to be comparable to the service provided by ILECs such as Southwestern Bell. Even if the services are not identical or of the same quality (higher or lower), the services may still be reasonably interchangeable, and the UNE-based and facilities-based services are in the same relevant product market.

C. *The Impact of Entry Barriers on Competition*

Q.21 Dr. Aron, the RSMo also says that "economic or regulatory barriers to entry" bear on the issue of effective competition.[19] What is a barrier to entry?

A.21 A barrier to entry can be defined as an attribute of a market "that make[s] entry unprofitable while permitting established firms to set prices above marginal cost, and to persistently earn monopoly returns."[20] Barriers to entry make it more difficult for new firms to enter a market, which may permit existing firms to price above competitive levels. The higher these barriers, the less likely it is that firms not currently producing the product in question will provide competitive discipline on the incumbent's pricing. The lower the entry barriers, the more likely firms that are not active now in the market can provide competitive discipline on the marketplace through the credible threat of entry in the future.

Barriers may be economic or technology-driven or they may be legal or regulatory in nature. An example of an economic entry barrier is, under certain conditions, when a new firm must make a large investment that would be "sunk" (i.e., could not be recovered if the firm were to exit the market). The reason this could be an entry barrier is that investors might decline to fund a firm that had to make a substantial investment in an asset or technology to enter the market, when that asset or technology is virtually without value in the event that the new firm were to fail and had to exit the market.

Not all large up-front investments should be considered entry barriers, however. A large up-front investment that is not sunk – that is, an investment that could then be sold off if the entrant decided to exit the market – is not an entry barrier. For example, someone getting into the airline business has a large up-front investment to make in the

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19 RSMo § 386.020(13)(d) (2000).

20 Ferguson, James M., *Advertising and Competition: Theory, Measurement, Fact* (Cambridge: Ballinger, 1974), p. 10.

form of obtaining an airplane. Nevertheless, to the extent that the airplane can be resold in a reasonably efficient secondary market, its cost, though expensive to the entrant, would not normally be considered an entry barrier.

Moreover, not every economic entry barrier is inefficient or should (as a matter of policy) be eliminated. On the contrary, up-front investment requirements may be an efficient requirement of market entry. It is common for businesses to incur substantial up-front costs to enter a market. Such costs may be entry barriers if they discourage some new firms from entering the market, but they do not harm efficient competition, and, in fact, they promote efficient resource use. A new firm that cannot bear the up-front costs caused by its entry and still expect to make a profit should not, from a social perspective, enter the market, because the value of the resources that are needed to make the up-front investment exceed the value to consumers of having the additional firm in the market.

As I mentioned, entry barriers need not be imposed by technology. Some may instead be imposed by regulation. Indeed, according to Dr. Alfred Kahn, "No barrier to entry is more absolute than one imposed or enforced by the sovereign power of the state. All others are potentially subject to hurdling, erosion, or circumvention."[21]

Q.22 Why is it important to consider entry barriers in evaluating whether "effective competition" exists?

A.22 As a general economic matter, when entry barriers are low, markets are often thought to be effectively competitive even if there is little observable competitive activity. Markets *can* be highly competitive even if entry barriers are substantial, which is why an examination of entry barriers alone is not generally dispositive of whether effective competition exists. If entry barriers are substantial, one would tend to look to various measures of competitive activity to evaluate the degree of competitiveness. When entry

[21] Kahn, A.E., *The Economics of Regulation: Principles and Institutions*, Volume II (New York, NY: John Wiley & Sons, Inc., 1971), p. 116.

barriers are low, such measures are less important, and other information -- particularly that which tests the lack of entry barriers -- is much more relevant.

Q.23 Do you mean that even firms that are not currently producing the product or service being studied can exert competitive discipline on an incumbent firm producing that product?

A.23 Yes. The existence of barriers to entry is fundamentally important to ascertaining the competitiveness of a market, especially when few firms (or only one) currently provide service in that market. When entry barriers are low, the threat of new entry can discipline incumbent firms to charge prices close to the competitive level, even in the absence of active competitors. Imagine a situation where only a single firm provides service in a market. If entry barriers are low, a significant and sustained price increase by the incumbent firm above a reasonably competitive level would invite competitive entry, the prospect of which would deter the price increase to begin with. Clearly, the more firms that provide service in an exchange, the greater the evidence of effective competition; but the opposite does not necessarily hold. The relative absence of CLECs does not preclude the existence of effective competition. This conclusion is supported by the RSMo, which does not appear to require any particular level of competitive entry as an essential element of effective competition.[22]

Q.24 Can "effective competition" that benefits consumers exist even when only a few competitors are in the market?

A.24 Yes, it can, particularly if barriers to entry or barriers to expansion are low. By "low barriers to expansion," I mean that once a carrier has a presence in a market, the costs of *increasing its presence* are relatively low.

[22] RSMo § 386.020(13)(a) (2000) directs the Commission to consider the extent to which alternatives are available rather than actual level of competitive entry.

A CLEC that is already providing service in an exchange has demonstrated a commitment of resources to that exchange. The CLEC has already begun establishing a brand name or leveraging an existing brand name. The CLEC has gained experience in interfacing with the ILEC's personnel and systems when capturing existing ILEC customers. A CLEC providing service using UNEs or its own end-to-end facilities may have laid its own fiber-optic loops or trunks, established collocation in the ILEC's central offices, and/or have deployed its own switch to serve that exchange. Advertising, experience, and deployed facilities share the characteristic that they have little resale value to third parties. These sunk expenditures reflect a commitment to serving that exchange that will not be abandoned lightly. Once these expenditures are made, any incremental sunk costs of expanding service, especially for resale and UNE-based customers, are likely to be small.

Q.25 Can "effective competition" that benefits consumers exist when competitors serve only a negligible portion of the consumers in an exchange?

A.25 Yes. One reason that competitors might serve only a negligible portion of consumers is that, at the prices currently charged to those consumers, the market might be unattractive. Hence, one must consider where the current regulated prices of service are relative to true economic cost. If the regulated prices are close to, or even less than, cost, there is a reduced incentive for firms to enter the marketplace and compete for customers. Nevertheless, when entry barriers are relatively low, carriers can wait in the wings and enter if the profitability of the service improves (e.g., if the incumbent were to increase price). Hence, for example, CLECs that already serve business customers and who therefore have surmounted entry barriers, can leverage their assets into the residential marketplace if profitability in the latter market increases. In this way, for example, a CLEC that currently serves only business customers may exert discipline on prices in the residential marketplace.

Q.26 Have entry barriers to the local exchange market been affected by technological change?

A.26 Yes. Technology has had profound impacts on the nature and extent of competitive entry into the local exchange markets by reducing entry barriers. In some instances, entities that would have been considered non-traditional service providers a few years ago are now offering customers packages of new services which they claim to be directly competitive with those of traditional local service providers. Indeed, a consequence of this development is that it has reduced the "specificity" of the capital investment in communications facilities and thereby further diminished the sunk costs as a barrier to entry.

For example, new developments in wireless technology – such as the introduction of digital personal communications services or PCS – have made mobile wireless phones a more attractive competitor to wireline local service. The digitization of wireless technology has produced decreased prices, increased coverage areas, and improved reception, all of which have resulted in more customers "cutting the cord" to their wired phones. Wireless services increasingly act as substitutes for landline usage services because many calls that would otherwise have been made via landline services are now made using wireless services.[23] The United States Commerce Department has likewise affirmed this, stating that "[t]here is anecdotal evidence that wireless telephone service is beginning to substitute on the margins for traditional (wireline) telephone service; and it may do so increasingly as technology improves, competition and subscribership increase, and prices fall."[24]

One market research firm found that over 12 percent of those surveyed who recently bought a cellular or PCS phone did so instead of installing an additional phone

[23] Federal Communications Commission, *Semi-Annual CMRS Competition Report*, June 20, 2001. Downloaded from <www.fcc.gov>, June 26, 2001.

[24] United States Council of Economic Advisers, *Progress Report: Growth and Competition in U.S. Telecommunications, 1993 – 1998*, February 8, 1999, p. 12.

line.[25] The research firm also found that those with cellular or PCS phones on average placed or received about 18 percent of their calls (local and long-distance) on their wireless phone when they were at home.[26]

One of the factors that has deterred wireless replacement of landline is that in many areas of the country landline rates historically have been held down relative to cost. However, according to the Bureau of Labor Statistics, wireless prices have declined by nearly one-third over the past three years,[27] a trend that would bring wireless rates substantially closer to wireline prices, especially for second lines that have higher end-user common line (EUCL) charges associated with them.

With substitution between wireline and wireless services taking root, the growth rate in the number of wireless customers in the US has been phenomenal. Since 1992, the number of wireless subscribers has increased by a factor of approximately 10 times from about 11 million subscribers,[28] to about 117 million so far this year.[29] Between June and December 2000, wireless carriers added about 68,000 lines net new lines per day,[30] or over 6 wireless lines for every net new landline (business and residence combined).[31]

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25 *Replacing Landline with Wireless: How Far Can it Go?*, IDC Bulletin, citing IDC *Personal Wireless Communications User Survey, 2000.* December, 2000. p. 4.

26 Ibid., p. 3.

27 *CPI-US City Average; Cellular Telephone Service; December 1997=100 (NSA) (CUUR0000SEED03).* US Department of Commerce, Bureau of Labor Statistics. Downloaded from <stats.bls.gov/cpihom.htm>, June 26, 2001.

28 *CTIA's Semi-Annual Wireless Industry Survey Results, June 1985 to December 2000,* CTIA. Downloaded from <www.wow-com.com/industry/stats/>, June 26, 2001.

29 Ibid.

30 Ibid.

31 Federal Communications Commission, *Local Telephone Competition: Status as of December 31, 2000,* Table 1, May 2001.

Q.27 How have technological changes affected entry barriers for cable providers into telephony?

A.27 Cox Cable and AT&T continue to add cable telephony subscribers using a circuit-switched technology over their cable infrastructure. Together, these firms had about 805,000 subscribers nationwide at the end of last year.[32] According to Morgan Stanley Dean Witter, Cox has reached 20 percent penetration in several of its original markets.[33] Other cable firms appear to be working on, or waiting for, a packetized technology so that they can provide voice service over their cable modems and use one infrastructure for at least two services (voice and data).[34]

According to Morgan Stanley Dean Witter, although an IP-based voice-over-cable offering provides positive incremental shareholder value for cable operators, it is their opinion that at current prices for residential local service, operators should focus on higher-margin services, such as cable TV and data,[35] since profitability there is even greater. What is important for consideration in this proceeding, therefore, is not necessarily the number of voice lines that cable operators serve today around the US, but rather the fact that they already have surmounted many of the technological entry barriers into local exchange service market by making the upgrades needed to make their cable plant two-way capable for cable modems, which is also required for telephone service; and the fact that they are establishing relationships with customers through residential broadband provisioning.[36] Wherever cable providers have made the investment to upgrade their facilities, they are positioned to enter into the voice business if better

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32 *IP Telephony: Leveraging the Cable Network to Profitability in Voice.* Morgan Stanley Dean Witter Equity Research. February 14, 2001, p. 8-9.

33 Ibid., p. 9.

34 Ibid., pp. 9-10, 13-14, 20, 22

35 Ibid., p. 54.

36 "A high-quality data-ready broadband network would create the most economically scalable IP telephony deployment. In addition, the base [of cable modem users] represents a group of 'pre-marketed' customers." Ibid., p. 8.

margins present themselves. In other words, cable companies act as supply waiting in the wings, which disciplines the pricing behavior of active telecommunications providers.

Q.28 How does TA96 affect barriers to entry in the provision of local telecommunications services?

A.28 TA96 substantially reduces the barriers to entry into the local exchange business. Indeed, the reductions are remarkable in their scope and in their requirements for the incumbent to open the door and lend a hand to competitors.

Q.29 Please describe the special obligations that TA96, and its interpretation in regulations, has imposed on ILECs that reduce barriers to competitive entry into the marketplace.

A.29 Incumbent LECs face special obligations to help their competitors beyond those normally imposed on unregulated firms. Under TA96, ILECs must interconnect with competing carriers; they must unbundle their networks and provide certain network elements to their competitors at cost-based rates; they must provide end-to-end service for the resale of telecommunications services to their competitors at avoided-cost wholesale rates; and they must permit their competitors to collocate equipment in their central offices. In addition, as part of these obligations, it has been determined that ILECs must permit CLECs to purchase all of the elements necessary to provide end-to-end service, at cost-based rates, so that the CLECs can provide service without providing any of the network elements themselves. TA96 therefore created several avenues by which competitors can enter the local exchange market without making significant sunk investments. Each of these requirements reduces entry barriers and facilitates entry into the local exchange market.

Although many of us may be anesthetized to the extent and economic import of these various obligations and regulations, it is worth recognizing that requiring the incumbent to provide an extensive array of unbundled network elements or discounted

resale services *at all* is itself an extraordinary obligation. These are all substantial obligations, some of which, in my judgment, go well beyond what would be required of ILECs under antitrust law[37] and all of which substantially ease entry for new carriers.

Q.30 You have credited TA96 with eliminating many of the significant barriers to entry in the local exchange market. What has the FCC said on this topic?

A.30 The FCC has made clear that it views the resale and UNE obligations as significantly influencing competition, characterizing these instruments as "powerful tools to dismantle the legal, operational and economic barriers that frustrated competitive entry in the past."[38]

Q.31 Have CLECs opined on this topic?

A.31 Yes. In McLeodUSA's 2000 SEC 10K filing, McLeodUSA summarizes the importance of resale and UNEs, stating that

> We believe that these requirements [resale, unbundling and interconnection] are likely, when fully implemented, to increase competition among providers of local communications services and simplify the process of switching from entrenched, traditional local exchange carrier services to those offered by competitive local exchange carriers.[39]

Q.32 Dr. Aron, are there any indications that barriers to entry are in fact low in Missouri?

A.32 Yes. I understand that the Commission has recommended approval of SWBT's application to provide in-region interLATA services under Section 271 of TA96.[40]

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37 *Goldwasser, et al., versus Ameritech Corporation*, 222 F.3d, 399-400 (7th Cir. 2000).

38 Federal Communications Commission, *Memorandum Opinion and Order*, FCC No. 97-346, September 26, 1997.

39 McLeodUSA, 2000 Form 10-K (filed 03/30/01), p. 5.

40 State of Missouri Public Service Commission, *Order Finding Compliance with the Requirements of Section 271 of the Telecommunications Act of 1996*, Case No. TO-99-227, March 6, 2001.

During the 2+ year review, the Commission found that SWBT had satisfied a federally mandated checklist intended, as I indicated, to reduce barriers to entry into the local exchange market. The Commission stated in its March 15, 2001 Order that "SWBT is providing competing carriers with all of the requisite checklist items in a nondiscriminatory fashion."[41] In providing this nondiscriminatory access to the checklist items, SWBT showed that it had opened its network to competitors seeking to lease UNEs or to provide services by resale. In my opinion, this provides robust evidence that barriers to entry into the local exchange market are relatively low in SWBT's territory in Missouri.

In addition, the fact that carriers have in fact been certified to provide service in an exchange, and are providing service, indicates that the barriers to entry facing entrants have been overcome.

D. Other Factors Relevant to Implementing the Purposes of the RSMo

Q.33 Dr. Aron, what additional factors would you advise the Commission to consider in its evaluation of the state of competition in these exchanges?

A.33 I believe there are at least two additional factors that are relevant to the Commission's inquiry. First, the Commission should consider whether the current regulated rates are below the rates likely to prevail in a competitive market. The reason that this is important is that uneconomically low retail prices can mask the extent to which a market is truly open to competition. As I explained earlier in my testimony, a market may be fully open to competition but have little or no apparent competitive activity because the artificially low retail rates render the market unattractive to competitors. In such a case, the lack of

[41] State of Missouri Public Service Commission, *Order Regarding Recommendation on 271 Application Pursuant to the Telecommunications Act of 1996 and Approving the Missouri Interconnection Agreement (M2A),* Case No. TO-99-227, March 15, 2001. Downloaded from <http://www.psc.state.mo.us >, June 26, 2001.

competitive activity signals a need to lift restrictions on retail rates so that rates will adjust to a level that attracts resources to the market and more properly reflects the value of the resources being consumed.

Second, the Commission should consider *trends* in competitive activity, rather than simply the level of competitive entry in an industry that is emerging from heavy regulation. When a market is moving from a protected monopoly environment to a competitive one, the absolute size of a competitor's activity is often a misleading measure of competition. A market that was previously a monopoly may well be much more concentrated than an equally competitive market without a history of regulation, all else equal. Market concentration is "path dependent;" i. e., it depends upon past market concentrations, even if the market is now highly competitive.

Hence, the absolute *level* of a competitor's activity at a point in time tends to understate the degree of competition in markets undergoing deregulation, and tends to underestimate a competitor's future market significance. For this reason, it is sometimes more instructive to examine the growth of the competitive activity in the market. If competitors' businesses are growing steadily, it suggests that the market is open to competition. Moreover, it suggests that new customers to the market find the competitors' offerings attractive.

As Mr. Hughes demonstrates in his testimony, indicators of CLEC activity have increased in the last year; in some cases more than doubling.[42] Mr. Hughes' discussion of the trends in interconnection and collocation indicates that facilities-based CLECs are able to enter the market and successfully attract new customers.

[42] *Hughes Direct Testimony.*

III. COMPETITIVE MARKETS AND THE LIFTING OF SWBT'S PRICE CAP REGULATION ADVANCES THE PURPOSES OF THE RSMO.

Q.34 Please summarize the purpose of the Provisions set out in Section 392.185 of the RSMo, as you understand them.

A.34 Although I am not an attorney, my reading of Section 392.185 is that the provisions of Chapter 392 (including the Section 392.245 inquiry relevant to this hearing) shall be construed to promote several broad policy goals of the Missouri legislature. As I read it, the legislators, as expressed in the RSMo, seek to promote universally available, efficiently supplied, and reasonably priced telecommunications services.[43] The legislation also seeks to promote diversity in the supply of telecommunications services, and to allow competition to function as a substitute for regulation whenever possible and consistent with the other goals of the Revised Statutes.[44] Finally, the legislation seeks to promote parity of urban and rural telecommunications services, promote economics and other enhancements, and protect consumer privacy.[45]

Q.35 Is the development of competition consistent with these goals?

A.35 Yes. When there is competition in a market, it is both unnecessary and undesirable to impose artificial regulatory requirements on participants in the market. It is unnecessary because markets function more effectively to protect customers than can regulations. More importantly, it is undesirable because regulatory restrictions are not innocuous in competitive markets. By preventing or hindering providers from quickly raising, lowering, restructuring, targeting, bundling, or otherwise changing prices, providers are impeded in their ability to respond to competition, to differential cost conditions, to customer-specific demands and preferences, and to changing market conditions, to the

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43 RSMo §392.185 (1), (2), and (4) (2000).

44 RSMo §392.185 (3), (5), and (6) (2000).

45 RSMo §392.185 (7) - (9) (2000).

detriment of social welfare and economic efficiency. Moreover, regulation can prevent a company from correcting prices that have been distorted by years of regulatory oversight. If such a company cannot price in response to these legitimate market factors, the company is restricted in its ability to effectively meet customer demand, and customers suffer.

Q.36 What are the benefits of competition?

A.36 One of the main benefits of competition can be summarized by the term "efficiency," which is one of the explicit goals articulated in Section 392.185 (2) of the RSMo. Efficiency in the provision of services means that society is obtaining the greatest benefits from its resources and technologies. In discussing efficiency, I distinguish between "static efficiency" and "dynamic efficiency."

Static efficiency leads to the optimal allocation of society's resources in the sense that resources produce the products that consumers want in the proportions that they want them, given their willingness to pay for them. Static efficiency also means that the firms that are producing those products do so in a way that economizes on resource use, and that firms use a resource mix that is consistent with their relative values to society.

Dynamic efficiency refers primarily to how firms invest in innovation and technologies that help reduce costs, and that are capable of creating new kinds of products. Both static and dynamic efficiency drive society's ongoing economic progress.

Competition plays an important role in achieving both static and dynamic efficiency objectives. Competition provides the incentives, in the form of both rewards and punishments, for satisfying society's desires. Indeed, it is a fundamental tenet of economics that, under the proper circumstances, competition is the best, and perhaps only, way of providing the greatest welfare to society. Accordingly, it is crucial that policy engender true, efficient, competition that fosters society's goals of a robust

telecommunications infrastructure, availability of new services and packages of services, and prices that are commensurate with the resources efficiently used in producing the services and consistent with market demand. All of these are goals of the RSMo.

Q.37 Does lifting price cap regulation when effective competition exists in an exchange promote the policy objectives discussed above?

A.37 Yes, it does. It is particularly important for achieving dynamic efficiency that carriers are permitted enough pricing flexibility that it is feasible to justify investments in innovation, which is inherently risky.

Q.38 What would you expect to be the consequence of price deregulation on prices in the market?

A.38 The effect on price levels in the short run depends, to a great extent, on their current level relative to costs. Moreover, it depends on the changes in the attributes of services offered in the market as competition drives services to be more responsive to consumer tastes and drives innovative offerings. In my opinion, the most important effect that price deregulation would have on observed prices is not on price *levels* as much as on price *structures*.

Given the plethora of innovative, creative, and experimental pricing structures being offered in telecom sectors that do not face price regulation (such as wireless), it appears that there are many opportunities for innovations in pricing structures in local exchange markets. In the wireless marketplace, for example, local and long-distance usage are sometimes bundled and offered in a single usage "bucket" of minutes. Distance sensitivity for calling often completely disappears in such an offering. A customer of a wireless company does not wonder if the local part of the package has increased or decreased relative to the toll part. That issue is totally irrelevant with that type of

package. Similarly, I expect that creative bundles and packages using landline technologies will evolve, as they already are evolving.

The success of these different strategies in wireline markets will ultimately depend on their appeal to consumers and their fit with customers' desired usage patterns and bundling preferences. In general, this process of trial and error is the engine by which unregulated markets, driven by competition, find ways to better satisfy customers.

Q.39 Are there other benefits to consumers that arise under competition that may not arise under price cap regulation?

A.39 Yes. I believe the most important effects will be on dynamic efficiency. Permitting an incumbent carrier flexibility to price its services encourages investment in new facilities, and competitive markets provide the incentive to accelerate the deployment and development of advanced technologies.

Maintaining the level of investment and innovation in the telecommunications infrastructure in Missouri is critical to maintaining the vibrancy of many industries in the state and preserving the status of the state as a place where businesses want to locate and talented workers want to live. I believe that maintaining incentives to innovate and invest in the telecommunications infrastructure is the most important factor for achieving the RSMo's goal of promoting "economic enhancements" in the state.[46]

Q.40 Please provide an example of how pricing flexibility encourages efficient investment in new facilities.

A.40 Regulated pricing structures wherein business services are priced higher than residential services without corresponding disparities in cost can result in competition for business customers rather than residential customers. However, a firm will not choose to enter a market and deploy facilities unless it believes that it will have a reasonable chance to

[46] RSMo § 392.185(8) (2000).

recoup its investment. Lifting price cap regulation provides a signal to potential competitors that the incumbent's prices will not be forced below those that would prevail in a competitive market. If this commitment by the regulator is credible, in that it is not expected to be reversed during the time in which the competitor hopes to recoup its investment, new facilities will be deployed. Of course, the prospect of having sufficient flexibility to maintain prices at a remunerative level, to the extent permitted by competition, and the prospect of competitive investment by CLECs, encourage efficient investment by ILECs as well.

Q.41 Please explain why technological innovation may accelerate if price cap regulation is removed.

A.41 Economic growth is the product of innovation, investment, and integration of new technologies and new ways of doing business. This occurs spontaneously "when there is a reasonable expectation that these activities will be rewarded."[47] If the Commission exerts pricing jurisdiction over services that are already competitive, buyers will turn to more market-responsive alternatives to the extent that regulated prices differ substantially from market realities. Regulation of new and competitive services can slow the rate of technological progress to the extent it reduces the profitability of new services in any or all of the following ways:

- If regulation delays new service offerings, then the revenue streams from those new services are pushed forward, reducing the present value of the service;
- Limitations on pricing flexibility can reduce the sales volumes and profitability of new services;
- The cost of complying with economic regulation reduces the profitability of new services.

[47] Harold W. Furchtgott-Roth, former Commissioner of the Federal Communications Commission. Comments Before the Economic Strategy Institute, March 3, 1998. Downloaded from <www.fcc.gov>, June 26, 2001.

Relief from price cap regulation, when effective competition exists in an exchange, will allow ILECs and CLECs to roll out services utilizing cutting-edge technologies quickly, without fear that price cap regulation will eliminate the profitability of the new service.

IV. CONCLUSION

Q.42 Do you have any concluding thoughts?

A.42 Yes. The RSMo provides valuable economic guidance on determining the extent of "effective competition" in a competitive declaration proceeding. Some of the main points that I wish to stress are that, first, the relevant product market is determined by what the consumer determines is "reasonable interchangeability" of use. This means that products need not be identical. Products with different attributes can be in the same relevant market if they help provide price discipline.

The second point that I wish to stress -- and it follows from the first -- is that "alternative providers," as used in Section 386.020(13)(a), reasonably would include CLECs that use resale and UNEs as their methods of competitive entry, as well as CLECs that utilize their own networks. Nor are telecommunications customers limited to these providers, since in many instances customers have available wireless, cable or other technology platform carriers.

My third point is that the tremendous reduction in barriers to entry that has occurred both as a result of TA96 and as a result of technological change means that firms that are not now actively providing service may still provide price discipline on the incumbent. Given that this Commission has approved SWBT's 271 application, it has already determined that the market is open to competition. When entry barriers are small, it is a matter of standard economic principle that even *potential* entrants pose a

meaningful competitive threat and impose meaningful competitive discipline on incumbents.

As I have explained, once entry barriers are removed from a market there is little to be gained form continued economic regulation, and much to be lost. Where there is incentive and opportunity in a market, competitors will enter and will bring the benefits of competition to consumers. Lack of entry barriers creates the opportunity, and pricing flexibility (and potential profits) creates the incentive. I understand that other witnesses sponsor more detailed testimony about the state of competition in Missouri, which I believe is important to evaluate. However, given that (1) I understand that the Commission has already extensively studied the market and SWBT's offerings to competitors; (2) the Commission has declared the market open to competition; (3) TA96 itself imposes extraordinary market-opening obligations; and (4) SWBT has met these obligations, economic principles would dictate that the Commission be strongly predisposed to a determination that the market in Missouri is effectively competitive.

Q.43 Does this conclude your direct testimony?

A.43 Yes, it does.

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IBM Chair, Kellogg Graduate School of Management, Northwestern University, 1986-1987.

RESEARCH INTERESTS

Industrial organization, antitrust economics, and business strategy, pricing, information industries, network industries, telecommunications policy, theory of the firm, compensation and incentives.

TEACHING

Courses taught: Pricing Strategy; Information, Communication, and Competition (strategy and competition in communications industries); Intermediate Microeconomic Theory; Managerial Economics (microeconomic theory as applied to business strategy and decision making) at the M.B.A. level; The Economics of Information at the Ph.D. level.

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PUBLICATIONS AND WORKING PAPERS

1) "Economic Theories of Tying and Foreclosure Applied—And Not Applied—in *Microsoft*," with Steven S. Wildman, *Antitrust*, vol. 14, no. 1, 1999, pp.48-52.
2) "Effecting a Price Squeeze Through Bundled Pricing," with Steven S. Wildman, in *Competition, Regulation, and Convergence: Current Trends in Telecommunications Policy Research*, Gillett and Vogelsang, Eds., (New Jersey: Lawrence Erlbaum Associates, Inc.) 1999, pp. 1-17.
3) "Worldwide Wait? How the Telecom Act's Unbundling Requirements Slow the Development of the Network Infrastructure," with Ken Dunmore and Frank Pampush, *Industrial and Corporate Change*," vol.7, no. 4, 1998, pp. 615-621.
4) "The Pricing of Customer Access in Telecommunications," with Steven S. Wildman, *Industrial and Corporate Change*, vol. 5, no. 4, 1996, pp. 1029-1047.
5) "Bonus and Penalty Schemes as Equilibrium Incentive Devices, With Application to Manufacturing Systems," with Pau Olivella, *Journal of Law, Economics, and Organization*, 10, Spring 1994, pp. 1-34.
6) "Diversification as a Strategic Preemptive Weapon," *Journal of Economics and Management Strategy*, 2, Spring 1993, pp. 41-70.
7) "Using the Capital Market as a Monitor: Corporate Spin-offs in an Agency Framework," *RAND Journal of Economics*, 22, Winter 1991, pp. 505-518.
8) "Firm Organization and the Economic Approach to Personnel Management, *American Economic Review*, vol. 80, no. 2, May 1990, pp. 23-27.
9) "The Introduction of New Products," with Edward P. Lazear, *American Economic Review*, vol. 80, no. 2, May 1990, pp. 421-426.
10) "Ability, Moral Hazard, Firm Size, and Diversification," *RAND Journal of Economics*, 19, Spring 1988, pp. 72-87.
11) "Worker Reputation and Productivity Incentives," *Journal of Labor Economics*, vol. 5, no. 4, October 1987, part 2, pp. S87-S106.
12) "Imitation and Differentiation in New Product Markets," under second review at *RAND Journal of Economics*.
13) "Competition, Relativism, and Market Choice," with Edward P. Lazear, C.M.S.E.M.S. Working Paper No. 750, October 1987.
14) "An Empirical Analysis of Agency Theory and the Choice of Merger Partners," mimeo, Northwestern University, August 1987.
15) "The Role of Managerial Ability and Moral Hazard in the Determination of Firm Size, Growth and Diversification," Ph.D. Dissertation, University of Chicago, August 1985.

RESEARCH IN PROGRESS

"Balancing Concerns of Price Squeeze and Pricing Flexibility in Regulated Telecommunications Industries," with Gordon Green and Frank X. Pampush.

"Licensing and Access to Innovations in Telecommunications and Information Services," with Steven S. Wildman.

"Optimal Intercarrier Compensation Mechanisms in Network Industries," with Alan S. Frankel.

"Interconnection Pricing in Telecommunications."

SELECTED TALKS

"Local Competition in Illinois," Illinois Telecommunications Symposium, Northwestern University, Evanston, Illinois, December 2000.

"Licensing and Access to Innovations in Telecommunications and Information Services," Telecommunications Policy Research Conference, Alexandria, Virginia, September, 2000.

"Effecting a Price Squeeze Through Bundled Pricing," Federal Communications Commission, Washington, D.C., May 1999.

"Competitive and Strategic Use of Optional Calling Plans and Volume Pricing Plans," The Institute for International Research Conference for Competitive Pricing of Telecommunications Services, Chicago, Illinois, July 1998.

"Effecting a Price Squeeze Through Bundled Pricing," Consortium for Research in Telecommunications Policy Conference, University of Michigan, Ann Arbor, Michigan, June 1998.

"The Pricing of Customer Access in Telecommunications," Conference on Public Policy and Corporate Strategy for the Information Economy, Evanston, Illinois, May 1996.

"Diversification as a Strategic Preemptive Weapon," University of Iowa, Iowa City, Iowa, February 1994.

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"Strategic Pricing" Winter Meetings of the Econometric Society, Discussant, Anaheim, California, December 1993.

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"Innovation, Imitation, Productive Differentiation, and the Value of Information in New Markets," Summer Meetings of the Econometric Society, Boston University, Boston, Massachusetts, June 1993.

"Innovation, Imitation, Productive Differentiation, and the Value of Information in New Markets," University of California, Department of Economics, Berkeley, California, May 1993.

"Innovation, Imitation, Productive Differentiation, and the Value of Information in New Markets," Stanford University, Graduate School of Business, Stanford, California, May 1993.

"Diversification as a Strategic Preemptive Weapon," Stanford University, Graduate School of Business, Stanford, California, April 1993.

"Innovation, Imitation, Productive Differentiation, and the Value of Information in New Markets," Hoover Institution, Stanford, California, April 1993.

"Innovation, Imitation, Productive Differentiation, and the Value of Information in New Markets," University of California, Graduate School of Business, Berkeley, California, February 1993.

"Innovation, Imitation, Productive Differentiation, and the Value of Information in New Markets," Stanford University, Department of Economics, Stanford, California, February 1993.

"Innovation, Imitation, Productive Differentiation, and the Value of Information in New Markets," Hoover Institution, Stanford, California, January 1993.

"Pricing Strategies," Session Discussant, 1992 North American Winter Meeting of The Econometric Society, Anaheim, California, January 1992.

"Diversification as a Strategic Preemptive Weapon," University of Toronto, Toronto, Canada, November 1991.

"Diversification as a Strategic Preemptive Weapon," Queen's University, Kingston, Ontario, Canada, November 1991.

"Bonuses and Penalties as Equilibrium Incentive Devices, with Application to Manufacturing Systems," University of Chicago, Chicago, Illinois, June 1991.

"The Timing of Entry into New Markets," Summer Meetings of the Econometric Society, University of Pennsylvania, Philadelphia, Pennsylvania, June 1991.

"Innovation, Imitation, Productive Differentiation, and the Value of Information in New Markets," University of Chicago, Chicago, Illinois, April 1991.

"Bonuses and Penalties as Equilibrium Incentive Devices, with Application to Manufacturing Systems," Winter Meetings of the Econometric Society, Washington, D.C., December 1990.

"Corporate Spin-offs in an Agency Framework," University of Washington, Seattle, Washington, October 1990.

"The Timing of Entry Into New Markets," University of British Columbia, Vancouver, British Columbia, October 1990.

"Corporate Spin-offs in an Agency Framework," Texas A&M University, College Station, Texas, April 1990.

"Firm Organization and the Economic Approach to Personnel Management," Winter Meetings of the American Economic Association, New York, New York, Dec. 1989.

"Corporate Spin-offs in an Agency Framework," Western Finance Association Meetings, Seattle, Washington, June 1989.

"Corporate Spin-offs in an Agency Framework," University of Rochester, Rochester, New York, May 1989.

"Corporate Spin-offs in an Agency Framework," North American Summer Meetings of the Econometric Society, Minneapolis, Minnesota, June 1988.

"Competition, Relativism, and Market Choice," North American Summer Meetings of the Econometric Society, Berkeley, California, June 1987.

"Competition, Relativism, and Market Choice," University of Chicago, Chicago, Illinois, April 1987.

"Rate Reform and Competition in Electric Power," Discussant, Conference on Competitive Issues in Electric Power, Northwestern University, Evanston, Illinois, March 1987.

"Worker Reputation and Productivity Incentives," New Economics of Personnel Conference, Arizona State University, Tempe, Arizona, April 1986.

"Ability, Moral Hazard, and Firm Diversification," Yale University, New Haven, Connecticut, February 1985.

"Ability, Moral Hazard, and Firm Diversification," University of Rochester, Rochester, New York, February 1985.

"Ability, Moral Hazard, and Firm Diversification," Stanford University, Stanford, California, February 1985.

"Ability, Moral Hazard, and Firm Diversification," University of Minnesota, Minneapolis, Minnesota, January 1985.

"Ability, Moral Hazard, and Firm Diversification," California Institute of Technology, Pasadena, California, January 1985.

"Ability, Moral Hazard, and Firm Diversification," Duke University, Durham, North Carolina, January 1985.

"Ability, Moral Hazard, and Firm Diversification," Northwestern University, Evanston, Illinois, January 1985.

"Ability, Moral Hazard, and Firm Diversification," Brown University, Providence, Rhode Island, January 1985.

"Ability, Moral Hazard, and Firm Diversification," Harvard University, Cambridge, Massachusetts, January 1985.

"Ability, Moral Hazard, and Firm Diversification," University of California - Los Angeles, Los Angeles, California, January 1985.

"Ability, Moral Hazard, and Firm Diversification," University of Pennsylvania, Philadelphia, Pennsylvania, December 1994.

REFEREEING

Dr. Aron has served as a referee for *The Rand Journal of Economics, the Journal of Political Economy, the Journal of Finance, the American Economic Review, the Quarterly Journal of Economics, the Journal of Industrial Economics, the Journal of Economics and Business, the Journal of Economic Theory, the Journal of Labor Economics, the Review of Industrial Organization, the European Economic Review, the Journal of Economics and Management Strategy, the International Review of Economics and Business, the Quarterly Review of Economics and Business, Management Science, the Journal of Public Economics, the Journal of Institutional and Theoretical Economics*, and the National Science Foundation.

TESTIMONY AND OTHER ENGAGEMENTS

For a major Japanese telecommunications equipment manufacturer, *evaluated the revenue potential and desirability of entering several advanced services equipment markets worldwide, for the purposes of assisting the client to evaluate a proposed acquisition,* February 2001.

For Ameritech Illinois, in the matter of PrimeCo Communications Inc. v. Ameritech Illinois, Testimony of Debra J. Aron, *provided testimony as to the extent of competition in the Chicago area for high capacity (broadband) wireless and wireline dedicated access services; and as to the economic principles pertaining to the role of the courts in enforcing contracts,* January 2001.

For Avantel, S.A., in response to Request for Consultations by the U.S. Trade Representative (USTR) with the Government of Mexico before the World Trade

Organization (WTO) regarding barriers to competition in Mexico's telecommunications market, *analyzed regulated switched access rates in the U.S. in comparison with those charged by Telmex,* November 2000.

For Southwestern Bell Telephone of Texas, Declaration of Debra J. Aron, *analyzed proposed regulation aimed at preventing incumbents from executing a price squeeze; developed a framework for evaluating claims of a price squeeze consistent with antitrust principles of predation,* August 2000.

For Yellow Cab Company, *analysis of regulatory requirements in the City of Chicago pertaining to valuation of medallions and valuation of capital for purposes of regulatory ratemaking proceeding,* 2000.

For Ameritech: written and oral testimony in Illinois and Michigan in various arbitration matters pertaining to the proper compensation for the use by competitors of client's facilities for foreign exchange services, 2000.

For a firm in the aluminum fabrication industry, in the matter of a potential merger between vertically integrated competitors: *developed a methodology for adjusting the HHI measure of market concentration to account for the vertical control by the merging parties of downstream competitors.* 2000.

For a large newspaper publisher, in the possible acquisition of the San Francisco Chronicle: *analyzed the potential antitrust impediments to an acquisition by the client of the Chronicle, including issues of geographic and product market definition, the interplay between advertising markets and customer markets, and the relevant implications of the Newspaper Preservation Act.* 1999.

For Ameritech Illinois: written and oral testimony regarding the proper economic interpretation of the standards for declaring a service competitive under the Illinois Public Utilities Act, and quantification of the extent of competition in relevant Illinois markets: *including discussion of market definition, the relevance of entry conditions, and implementation of a new technology-based method of measuring market participation,* 1999-2000.

For Rand McNally in the acquisition of Thomas Brothers Maps: a*nalyzed market definition, concentration, and efficiencies from the proposed merger,* 1999.

For Ameritech: affidavit submitted jointly with Robert G. Harris to the Federal Communications Commission in the matter of "unbundled network elements" and commenting on the proper interpretation of the "Necessary and Impair" standard, *including discussion of entry conditions and the business-case approach to valuation of an entry strategy*, April 1999; reply affidavit May 1999.

For Ameritech: "An Analysis of Market Power in the Provision of High-Capacity Access in the Chicago LATA," submitted to the Federal Communications Commission, *including an analysis of the US DOJ merger guidelines and their applicability to regulatory relief in a regulated market,as well as extensive empirical modeling of the costs and business case for network buildout of high capacity facilities,* February 1999.

For Ameritech: "Proper Recovery of Incremental Signaling System 7 (SS7) Costs for Local Number Portability," White Paper submitted to the Federal Communications Commission, April 1999.

For Universal Studios, in the proposed merger between Bertelsmann & Kirsch: *analyzed the potential anticompetitive effects of control of the programming rights for anchor channels, satellite capacity, and decoder technology. Evaluated potential remedies in media mergers, 1998.*

Written and oral testimony on behalf of Ameritech Indiana regarding the economics of resale of local exchange services; testimony on behalf of Ameritech Illinois regarding a new model and methodology for estimating the cost of unbundled local switching; written and oral testimony on behalf of Ameritech Michigan regarding the provision of intraLATA toll service to customers of competing basic local exchange service providers; written and oral testimony on behalf of Ameritech Wisconsin regarding the determination of proper forward looking costs for purposes of determining Federal Universal Service support; 1998.

For Ameritech: affidavit submitted to the Federal Communications Commission in the matter of "Telephone Number Portability," regarding competitively neutral cost recovery for shared and common costs for permanent local number portability.

For Ameritech Michigan: affidavit submitted to the Federal Communications Commission in the matter "Application by Ameritech Michigan for Authorization under Section 271 of the Communications Act to Provide In-Region, InterLATA Service in the State of Michigan."

For Flowers Industries, in the proposed merger between Flowers and Franklin Baking Company: a*nalyzed potential efficiencies from the merger, market definition, and potential entry into the relevant geographic market.*

For Optus Vision of Australia, in the proposed merger between Australis and Foxtel: a*nalyzed the competitive effects in the Australian pay TV industry of the proposed merger. Specifically analyzed issues of market power in the cable television industry with respect to cable TV programming and the ease of entry and exit.*

For the Appraisal Institute: in the case of The Appraiser's Coalition, et. al, v. Appraisal Institute, et. al, Civil Action No. 93 C 913, U.S. District Court, Northern District of Illinois, Eastern Division, a*nalyzed issues of market power, market structure, market share, concentration, entry and exit, and antitrust injury.*

Written and oral testimony on behalf of Ameritech in Illinois and Wisconsin in state arbitration proceedings pursuant to the Telecommunications Act of 1996, regarding the issue of limitations of liability in provision of telecommunications services; testimony on behalf of Ameritech in five states in proceedings before the state regulatory commissions to determine economic costs of providing unbundled network elements to competitors under the FCC's "TELRIC" cost theory pursuant to the Telecommunications Act of 1996; 1996-1997.

For the FTC: Revco's proposed acquisition of Rite-Aid. *Analyzed issues of market power, market structure, market share, concentration, entry and exit, and antitrust injury.*

For the Estate of Reginald F. Lewis: in the case of Carlton Investments v. TLC Beatrice International Holdings, Inc, Loida Nicolas Lewis, as Executrix of the Estate of Reginald F. Lewis, et al., *analyzed structure of executive compensation and firm and industry performance to determine whether compensation was in compliance with CEO's fiduciary duty.*

For Telus of Canada: analyzed economic issues pertaining to access to cable television channel capacity, bottleneck facilities, competition, and cost, November 1996.

For Ameritech Cellular: Reports of Debra J. Aron, "Pricing Strategy for Cellular Telephone Services," *Examined consumption patterns of cellular telephone services for demand elasticities and evidence of risk aversion, developed* entirely *new pricing strategies for cellular services in each of six major cellular telephone markets, and estimated the likely revenue effects of the strategy change for each market. Also developed and provided software to the client for estimating the revenue effects and the proposed pricing strategies,* October 1994, November 1995.

For Ameritech Michigan: testimony submitted to Michigan Public Service Commission on efficient pricing of local exchange services; testimony submitted to Michigan Public Service Commission on "just and reasonable" price increases in local exchange services; 1995.

For the Chicago Mercantile Exchange: "An Analysis of the Marketability of a CPI Future" (with Edward P. Lazear), February 1985.

For the University of Chicago: Report of Debra J. Aron, "Efficient Pricing of Telecommunications Equipment at the University of Chicago," 1985.

As a Professor at Northwestern University, Dr. Aron has supervised numerous student consulting projects in which pricing strategies were analyzed for industries including health clubs, toys, paper products, food products, athletic shoes, and hardware.

PROFESSIONAL ORGANIZATIONS

Member, American Economic Association

Member, Econometric Society

Associate Member, American Bar Association

PERSONAL INFORMATION

Born: March 15, 1957
Los Angeles, CA

February 2001