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An Economic Analysis of the Competitive Effects of the SBC/AT&T and Verizon/MCI Mergers on the Internet Backbone Market

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I. Introduction

This memorandum provides an economic analysis of the competitive effects of the SBC/AT&T and Verizon/MCI mergers on the Internet backbone market. The underlying economic theory supporting this analysis is explained in Section II. Section III reviews DOJ's evident reliance upon this theory in challenging and settling through divestitures or abandonment of the transaction WorldCom's attempt to acquire three rival Internet backbone providers (MCI, Sprint, and Intermedia) from 1998 to 2000. DOJ blocked one of these acquisitions and got partial divestitures in two others. Section IV then explains how the same basic economic theory applies to the two instant mergers — which have horizontal elements like the three prior WorldCom transactions, but also have important vertical elements that exacerbate their horizontal effects. Section IV also explains how the unique advantages of the acquiring entities (SBC and Verizon) will enable their newly acquired Internet backbone entities (AT&T and MCI) to achieve joint dominance or a duopoly over the Internet backbone market.

Section V provides evidence based on revenue shares indicating that SBC/AT&T and Verizon/MCI would be sufficiently large once the mergers are consummated to engage in the anticompetitive activities discussed in Sections II to IV. Section VI explores one of the unique advantages of the ILECs that would enable AT&T and MCI to achieve joint dominance—the bottleneck control over local connectivity (i.e., special access) which is required to link Internet backbone customer sites to the Internet. Section VII explores the other unique advantage of the ILECs—the ability of the ILECs to generate a significant number of new "eyeballs" and Internet traffic by broadband expansion through DSL, Fiber to the Premises (FTTP) and Fiber to the Neighborhood or Node (FTTN), and 3G technology for cellular users.

Section VIII explains how AT&T and MCI will be financially strengthened by the mergers, while their Internet backbone competitors will remain financially weak, so that their current market share very probably overstates their market significance. In contradiction to claims made by the merging parties, Section IX explains why customers

will be unable to prevent anticompetitive behavior by the jointly dominant AT&T and MCI Internet backbones. Section X describes how the merged firms' bottleneck control over local connectivity will reduce economic growth through the mergers' anticompetitive impact on the Internet backbone and on special access.

II. The Theory of Anticompetitive Harm Developed by Crèmer, et al. in WorldCom/MCI

The theory of anticompetitive harm from Internet backbone mergers was first developed by three economists, Jacques Crèmer, Patrick Rey, and Jean Tirole, who were retained by GTE (now part of Verizon) to aid in its opposition to the WorldCom/MCI merger in 1998.[1] Relying on game theory, Crèmer et al. described the competitive interaction between Internet backbone providers (IBPs) in a market characterized by significant network effects or externalities and set forth the conditions that could lead to the domination of the Internet backbone by a single firm.

A customer of an IBP (e.g., an Internet Service Provider (ISP), a content provider, or a business requiring direct access to the Internet) pays the IBP for access to customer sites across the Internet including customer sites not directly connected to the IBP's own network. In order to meet the demands of its customers for broad Internet access, the IBP must reach interconnection agreements with other IBPs. These are essentially bilateral bargaining agreements where the relative size of each IBP's customer base plays the key role in the bargaining.[2] Relatively larger IBPs (in terms of customer base size) can

[1] The three economists were with the Institute of Industrial Economy in Toulouse, France. The paper they submitted on behalf of GTE is Crèmer, et al., "The degradation of quality and the domination of the Internet." This model was later published as "Connectivity in The Commercial Internet," *Journal of Industrial Economics,* v. 48, n.4, pp. 433-472, December 2000.

[2] While the peering statements of IBPs enumerate a number of criteria, the Crèmer, et al. theory focuses on the size of the customer base as the key variable in achieving dominance over the Internet backbone market. DOJ recognized the size of the customer base as the key to achieving dominance in its complaint against the WorldCom/Sprint merger: "When a single network grows to a point at which it controls a substantial share of the total Internet end user base and its size greatly exceeds that of any other network, network externalities may cause a reversal of its previous incentives to achieve efficient interconnection arrangements with its rival networks. In this context, degrading the quality or increasing the price of interconnection with smaller

extract fees from smaller IBPs for access to the larger IBP's customer base. From the perspective of the smaller IBP, the payment of the fee is preferable to the denial of access to the large IBP's more desirable customer base. From the perspective of the larger IBP, it recognizes that its more desirable customer base will allow it to extract fees from smaller IBPs.[3] If two IBPs are of roughly equal size, they will recognize that neither possesses a bargaining advantage and they will decide to interconnect on a settlements-free basis. In the Internet backbone market, this bargaining outcome is referred to as peering.

In the paper that was submitted to DOJ, the FCC, and the EC, Crèmer, et al, argued that "WorldCom/MCI will have a market share approaching 50% of backbone traffic, at least three times more than its biggest competitor. It will also have a sizeable share of dedicated access business customers and Web site hosts. Hence, WorldCom/MCI will be in the domain in which the leading economics literature would predict that it would have incentives to degrade compatibility."[4] They further argued that "a dominant WorldCom/MCI will have strong incentives to degrade the quality of its interconnection with its competitors in order to further increase its dominance, eliminate its rivals or limit their expansion, and raise prices above costs."[5] Crèmer, et al. discussed strategies that a dominant firm could employ to enhance its dominance, including pricing and interconnection degradation strategies. These strategies would work, they argued, because their effect would be to further increase the customer base of the dominant firm and reduce the customer bases of other IBPs.

networks can create advantages for the largest network in attracting customers to its network." (¶41)

3 More generally, this can be restated in terms of the total losses each party would suffer: the threat to deny interconnection is credible if one's losses are smaller. In practice, smaller IBPs often pay transit fees to the very largest IBPs, called Tier 1 IBPs, to provide interconnection to all of the networks connected to the large IBP's network.

4 Crèmer, et al., p. 5.

5 Crèmer, et al., p. 1.

Generally, it is not inconsistent with economic efficiency or consumer welfare if larger IBPs deny free peering to smaller IBPs and instead charge them transit fees in order to prevent free riding by those smaller IBPs who have not made comparable investments in backbone and related facilities. A key economic policy question, however, is whether the transit fees charged the lesser IBPs are the result of competitive interaction among the largest IBPs or the exercise of market power. Competition among IBPs should yield competitive transit fees. A large IBP has incentives to increase the size of its customer base for two reasons: first, customers are a direct source of revenues (through fee payments) and second, a larger customer base enables the IBP to increase its bargaining power versus its peers. In a competitive environment, these incentives should cause the large IBP to engage in free peering with similarly situated IBPs and to charge other IBPs reasonable prices for transit. But if a large IBP (or a pair of large IBPs together) achieves dominance, that dominant firm (or pair of firms) will have the incentive and ability to impose supracompetitive fees which will ultimately harm consumers.

III. The Theory of Anticompetitive Harm Applied by DOJ in Successfully Opposing Three Internet Backbone Mergers

DOJ has opposed at least three Internet backbone mergers, WorldCom/MCI in 1998, WorldCom/Sprint in 2000, and WorldCom/Intermedia in 2000. DOJ stopped the WorldCom/Sprint merger and won partial divestitures in the other two cases. DOJ's theory of anticompetitive harm in these three cases was quite similar to the theory contained in the Crèmer, et al. paper as can be seen from the following paragraphs in DOJ's WorldCom/Intermedia complaint. Significantly, DOJ's theory of anticompetitive harm was articulated in the context of a projected combined WorldCom/Intermedia market share that was likely in the low 40% range, albeit considerably greater in size than the next nearest IBP rivals.[6]

[6] DOJ's complaint against the WorldCom/Intermedia merger stated that based on its Internet traffic study conducted for its analysis of the WorldCom/Sprint merger, WorldCom had a share of 37%.

> 36. If the merger is allowed to proceed, UUNET [the Internet backbone provider owned by WorldCom] will increase its commanding position vis-à-vis all other IBP rivals. UUNET already carries more than twice the Internet traffic as its nearest rival, Sprint. Whereas large IBPs currently have roughly equal incentives to peer with each other, the merged entity threatens to become so large relative to any other IBP that its interest in providing others efficient and mutually beneficial access to its network will diminish. If this happens, current Tier 1 IBPs could be forced to purchase transit services from the combined UUNET/Intermedia to maintain adequate interconnection capacity.
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> 37. Whereas in a competitive environment Tier 1 IBPs have incentives to charge reasonable prices for transit, the merged entity threatens to become so large relative to other IBPs that its interest in providing reasonable prices or terms for transit service will diminish. Ultimately, there is a significant risk that, as a result of the merger, the combined entity will be able to "tip" the Internet backbone services market and raise prices for all dedicated access services.
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> 38. The proposed transaction substantially enhances the risk that UUNET will have the power to engage in anticompetitive behavior. Such behavior may involve refusing to peer with current Tier 1 IBPs for interconnection, and either failing to augment (e.g., by denying, withholding, or "slow-rolling" requested upgrades) or otherwise degrading the quality of interconnection capacity between peers, which will decrease the quality of the experience for Internet customers.

The theory of anticompetitive harm developed by Crèmer et al. and evidently utilized by DOJ applies with equal force to the SBC/AT&T and the Verizon/MCI mergers. This is because of the probability that those two firms will end up with roughly comparable markets shares that considerably exceed the shares of any other remaining rival and because the competitive environment is one in which the two closely matched market leaders would maximize their individual profitability by mutually forbearing from undercutting that merger-created shared advantage.

While the complaint did not specify Intermedia's share, it stated that that "Intermedia is much smaller than WorldCom" (¶29). It seems unlikely that Intermedia's share was greater than 5% if that large.

IV. The Mergers Should Be Analyzed as Mergers Leading to Joint Dominance or Duopoly Due to SBC's and Verizon's Unique and Significant Advantages in Their Own Territories

There are obvious differences between the circumstances of the prior mergers opposed by DOJ and the two proposed mergers. To account for these differences, DOJ should analyze the competitive effects of the mergers as follows: (1) analyze the mergers not only in terms of the direct horizontal effects of combining Internet backbone businesses but also as vertical mergers where the unique and significant advantages of the country's two largest ILECs are able to generate substantial increases in the customer bases of the country's two largest IBPs and IXCs; (2) analyze the potential of the mergers to lead to joint dominance or duopoly of the Internet backbone market.

There is substantial evidence that SBC and Verizon will have the ability and incentive to divert Internet backbone customers who have significant presences in the ILECs' respective regions and need to obtain local access from the ILEC to the ILECs' downstream IBP affiliates. As the customer bases of AT&T and MCI continue to expand relative to the customer bases of other IBPs, AT&T and MCI will reach a relative size difference that will permit them to engage in the anticompetitive strategies discussed in Crèmer, et al. and in the DOJ WorldCom/Sprint complaint.

Overt collusion is not required to reach joint dominance. Each firm acting in its own self-interest is sufficient to achieve duopoly. Each firm is likely to recognize after the mergers that their market shares will be sufficiently large to jointly engage in the strategies described by Crèmer et al. to enhance their dominance. As described above, a large enough IBP can tip the market towards a single dominant IBP by denying or degrading the interconnection to smaller IBPs. As interconnection is denied and quality degraded, customers are likely to migrate to the larger IBP thereby increasing its customer base and dominance. After the merger, SBC and Verizon will be able to jointly engage in this strategy.

Given the size of their respective customer bases, SBC/AT&T and Verizon/MCI can tacitly coordinate their actions by only peering with each other. This strategy is self-

enforcing because it enables both merged entities to attain a dominant position in the IBP market by depeering other top-tier providers. As peering agreements are denied, the two top-tier IBPs will generate greater revenues from additional and higher interconnection fees. In addition, SBC/AT&T and Verizon/MCI will not have incentives to break the tacit agreement. If SBC/AT&T were to disrupt connections with one IBP but Verizon/MCI were still willing to peer, the degradation strategy would fail but Verizon/MCI would not gain from breaking the agreement. In response, SBC/AT&T could retaliate and also peer with any of Verizon/MCI's targets. Analogously, SBC/AT&T would not have incentives to violate the agreement. Given that neither firm will be large enough to profitably degrade quality alone, neither of the merged entities could acquire dominance without coordination.

As long as ILEC-owned AT&T and MCI backbone businesses remain of comparable size over time, they will continue to peer with each other while they both target smaller IBPs for increasing transit fees and degradation. The two IBPs will feel comfortable in their position of shared dominance, mutually relying upon the fact that their respective upstream parents possess roughly comparable abilities to increase the customer bases of their respective downstream affiliates.

The previous Internet backbone mergers that were opposed by DOJ were horizontal mergers. SBC and Verizon today compete in the Internet backbone market against the two IXCs they propose to acquire. The mergers should also be analyzed for the anticompetitive vertical effects that are likely to flow from the joining of the upstream ILEC to the downstream IBP. The nature and likelihood of these anticompetitive effects are briefly summarized here. SBC and Verizon possess two decisive advantages that will enable them to use their control over the access bottleneck to significantly increase the customer bases of their respective IBP downstream affiliates at the expense of their IBP competitors. First, with their bottleneck monopoly control over local connectivity to businesses requiring dedicated, non-switched connections to the Internet, SBC and Verizon will have the incentive and the ability to discriminate in price and quality against IBP competitors of their respective downstream affiliates. The types of businesses

requiring dedicated access to the Internet include ISPs, content providers, and other businesses seeking dedicated Internet connectivity.

Second, within their respective territories, SBC and Verizon each will have the incentive and ability to route the Internet traffic of their large customer bases of residential users and small businesses, who are dependent on access to the local bottleneck through their incumbent LEC, to their respective downstream affiliates. Both SBC and Verizon are rapidly increasing sales of DSL to residential and small business customers. They are also using the local rights of way and large embedded base obtained when they were the local monopolist to deploy optical fiber to the home (or curb/node) throughout their regions to provide residential customers with high speed bandwidth to connect to the Internet. In addition, both SBC and Verizon control very substantial nationwide cellular phone customer bases, which will require interconnection to the Internet to take advantage of the 3G broadband technology that is being deployed. Each of these significant and, in some cases, unique advantages will enable SBC and Verizon to substantially increase the Internet backbone customer bases of AT&T and MCI respectively.

Forrester Research points out the enormous advantage that SBC's and Verizon's control over "last mile access" and a large local network customer base will give AT&T and MCI in their downstream markets. "The market forces driving this particular merger [Verizon/MCI] are identical to those that led to the acquisition of AT&T by SBC-the defining roles that last mile access and massive network and customer scale play in determining the winners and losers in the telecommunications industry."[7] [emphasis added]

[7] Forrester Research, "Verizon Buys MCI," February 22, 2005, p. 1. [footnote omitted.]

V. IDC Revenue Data Shows High Market Shares for SBC/AT&T and Verizon/MCI

Revenue data can be a good measure of the value and size of the customer base of an Internet backbone provider. In his reply declaration for Verizon/MCI, economist Michael Kende, relies upon IDC revenue data[8] for the period 2000 to 2003[9] to show that MCI/WorldCom's Internet backbone revenue share declined from 37% in 2000 to 20% in 2003 when the company was in Chapter 11 reorganization.[10] Using an extrapolation technique described in footnote 17 of his reply declaration, Kende calculated MCI's Internet backbone revenue share had declined further to 19% in 2004.

Relying on the same IDC revenue data that Kende used to show MCI/WorldCom's decline in Internet backbone revenue share,[11] we have calculated that the combined Internet backbone shares of SBC/AT&T and Verizon/MCI reached 44.5% in 2003.[12] Using the same extrapolation technique employed by Kende and referenced above, we project that the combined shares of the two merging firms reached 49.3% in 2004 and will reach 54.0% in 2005. Chart 1 below shows the SBC/AT&T share,

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8 On its web site, IDC characterizes itself as "the premier global market intelligence and advisory firm in the information technology and telecommunications industries."

9 See ¶10 and footnote 15 of Kende's reply declaration for a description of the IDC data. The data for the top 10 Internet backbone providers for each year for the two categories that make up total Internet backbone revenues are shown in Exhibit 3 ("Top 10 Wholesale IP Backbone Revenues, 2000-03 [Source: IDC]") and Exhibit 5 ("Top 10 Business IP Backbone Revenues, 2000-03 [Source IDC]").

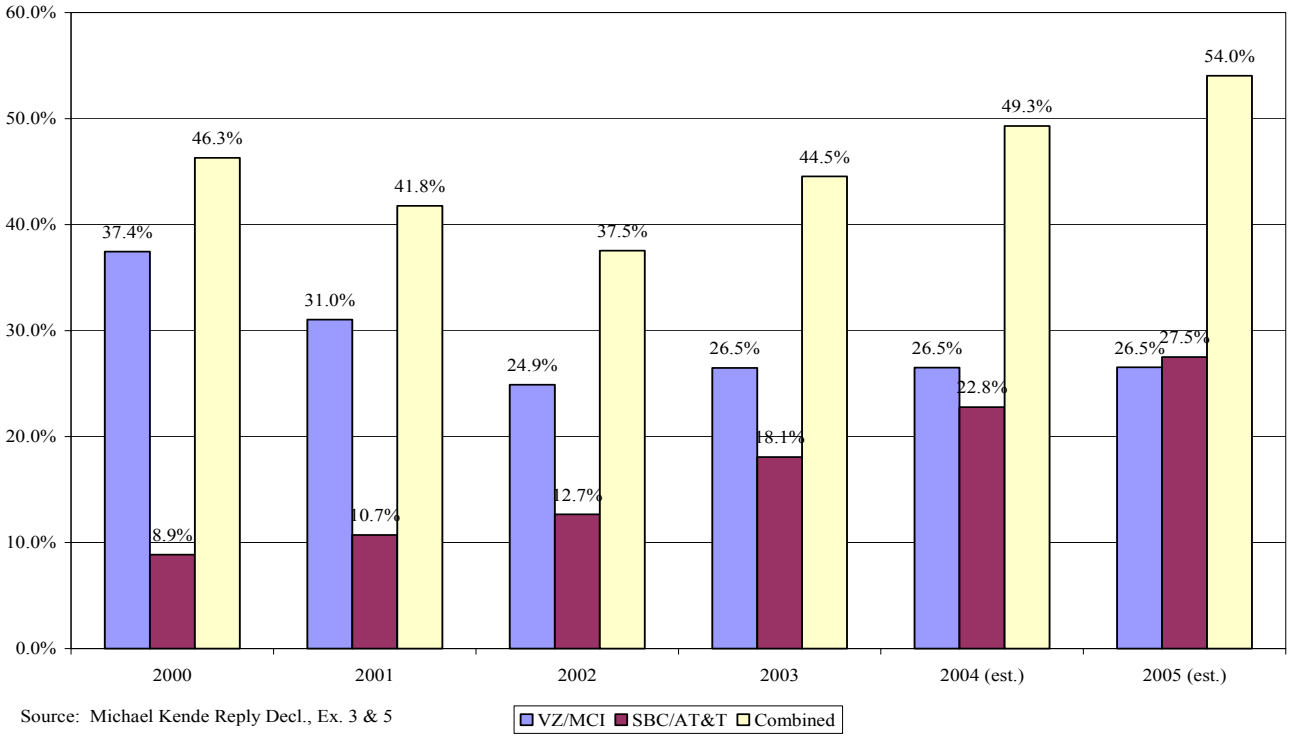
10 See ¶11 of Kende's reply declaration. Kende added the revenues in Exhibits 3 and 5 for each year to obtain total Internet backbone revenues for MCI and for the market as a whole.

11 The source of the IDC revenue data used to calculate these Internet backbone shares is Kende's reply declaration, Exhibits 3 and 5.

12 Kende claims that it is "not meaningful to use these [IDC] numbers to calculate a market share for the merged company" because he says that he does not believe the revenues reported by IDC for one category of Internet backbone revenues for ILECs like Verizon is fully "comparable" to Internet backbone revenues reported for CLEC/IXCs like MCI. (See ¶¶12-13 of Kende's reply declaration.) The category he is referring to is wholesale upstream IP transit. Kende provides no basis for his belief nor does he show what proportion of Verizon's wholesale upstream IP transit revenues or overall Internet backbone revenues may be affected by this alleged non-comparability. Furthermore, even if IDC includes some revenues from Verizon that might not be entirely "comparable" to those of MCI, Kende does not establish that it would be inappropriate to include those revenues in a calculation of total Internet backbone revenues.

Verizon/MCI share, and the combined SBC/AT&T and Verizon/MCI share for the period 2000 to 2005 with 2004 and 2005 estimated using Kende's extrapolation technique. The estimated 2004 share (49.3%) was within a fraction of a percentage point from the theoretical 50% threshold share needed to engage in a successful degradation strategy as explained by Crèmer, Rey and Tirole. Our estimated 2005 share (54.0%) clearly exceeds that threshold.[13] Furthermore, as shown in Chart 1, the 2005 estimated individual shares for SBC/AT&T and Verizon/MCI pairings are nearly identical to each other (27.5% and 26.5% respectively), indicating highly symmetric Internet backbone operations. Such close symmetry would facilitate coordinated anticompetitive behavior by SBC/AT&T and Verizon/MCI together against their smaller Internet backbone rivals.

Chart 1. VZ/MCI and SBC/AT&T Internet Backbone Revenue Shares 2000-2005 (2004-2005 estimated)



Source: Michael Kende Reply Decl., Ex. 3 & 5

[13] Section IV above explains how the mergers will provide AT&T and MCI with the ability and incentive to engage in mutually cooperative behavior to achieve joint dominance of the Internet backbone market. Each firm acting in its own self-interest is sufficient to bring about the duopoly they would share.

In 2000, DOJ estimated MCI/WorldCom's share of Internet traffic at 37% in its complaint filed against MCI/WorldCom's proposed merger with Sprint. This estimate was based on a traffic study of the 15 largest Internet backbone providers in the US.[14] Note further that the 37% share DOJ estimated for MCI/WorldCom based on Internet traffic was the same as the 37% share estimated by IDC for MCI/Worldcom based on total Internet backbone revenues.

Although Kende relies upon the publicly available IDC data to estimate a decline in MCI's revenue share from 37% in 2000 to 19% in 2004, he ignores these IDC data when discussing MCI's market share in relationship to other providers at any given point in time. Instead, he relies on a private traffic study conducted by the consulting firm RHK for Verizon/MCI.[15] According to Kende, this study estimated traffic shares for the seven largest Internet backbone providers in North America but did not specifically identify any other carrier besides MCI by name. There is no indication in Kende's reply declaration as to how RHK estimated the overall size of the market. As shown in Exhibit 2 of Kende's reply declaration, the RHK traffic study showed MCI as the fourth largest Internet backbone supplier with a share of total traffic of 8.3% in Q4 2003. In contrast, the IDC revenue study that Kende relied upon to show MCI's decline in revenue share showed MCI with a 20% share in 2003. In other words, the RHK traffic share estimate for MCI was almost 60% below the estimate based on IDC revenue data. Furthermore, the RHK traffic share estimate for MCI was almost 80% below the 37% traffic share DOJ estimated for MCI/WorldCom in 2000. While MCI had significant financial difficulties during the period 2000-2003, it is not plausible that MCI lost nearly 80% of its Internet backbone share since 2000.[16]

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[14] See ¶32 of the WorldCom/Sprint complaint.

[15] See ¶¶5-9 and Exhibits 1 and 2 of Kende's reply declaration.

[16] *See*, MCI's press releases in October 13, 2004, *MCI Ranked #1 As Most Connected Internet Network Provider For Fourth Consecutive Year* ("'Our number one ranking illustrates MCI's role in delivering critical Internet services for our customers and the entire Internet community,' said Vint Cerf, MCI senior vice president of Technology Strategy. 'MCI delivers a comprehensive range of public and private IP services to businesses and government agencies and this distinction reinforces MCI's ability to carry digital information quickly and reliably around the globe.' Alan

In 2000, DOJ also filed a complaint to block MCI/WorldCom's attempted acquisition of Intermedia. DOJ's complaint based its share estimates on the Internet traffic study it had conducted for the WorldCom/Sprint merger investigation. The complaint cited MCI/WorldCom's share of 37% (¶28) and stated that Intermedia was "much smaller" than MCI/WorldCom (¶29) but the complaint did not attribute a specific share level to Intermedia. Based on published material available at the time, it is improbable that DOJ estimated the combined MCI/WorldCom-Intermedia share at a level greater than the low 40% range. Nonetheless, DOJ blocked the acquisition of Intermedia's Internet backbone by MCI/WorldCom because, as DOJ's complaint stated: "[U]ltimately, there is a significant risk that, as a result of the merger, the combined entity will be able to 'tip' the Internet backbone services market and raise prices for all dedicated access services" (¶37) We have concluded that the share estimates based upon IDC revenue data indicate that the risk the two merging parties (SBC/AT&T and Verizon/MCI) will be able ultimately to jointly 'tip' the market is substantially greater here than the risk presented by the MCI/WorldCom-Intermedia merger in 2000.

Mauldin, senior research analyst for TeleGeography added, 'The Autonomous System ranking is a measure of the connectedness of an IP network to the rest of the public Internet. While all networks can reach each other on the Internet, the AS ranking demonstrates the closeness of a network to the rest of the Internet, as in number of hops data must take to reach its destination. Since TeleGeography began tracking AS-connectivity in 2001, not only has MCI ranked first each year, but consistently has held a wide margin over the nearest service provider.") October, 23 2003, *See also*, *MCI Ranked #1 As Most-Connected U.S. Internet Colocation Provider* ("MCI today reported that it was ranked first as the most-connected U.S. collocation provider, according to TeleGeography, a research division of PriMetrica, Inc., in its recently released Collocation 2004 Database and Report. Additionally, MCI was found to be the second most-connected collocation provider in Europe.")

http://global.mci.com/about/news/news2.xml?newsid=8791&mode=long&lang=en&width=530&root=/about/; *see also* press release, August 21, 2003, *MCI Ranked #1 As Most Connected Internet Backbone Provider*
http://global.mci.com/about/news/news2.xml?newsid=8370&mode=long&lang=en&width=530&root=/about/

VI. The Impact of the SBC's and Verizon's Bottleneck Monopoly Control Over Special Access on the Internet Backbone Market

As explained in Section IV above, one of the significant advantages that will be enjoyed by AT&T and MCI over their Internet backbone competitors is that their parents, SBC and Verizon have bottleneck monopoly control over local connectivity (or special access) to Internet backbone service customers. The main Internet backbone customer types include ISPs, content providers, and businesses requiring dedicated access to the Internet.[17] Because SBC and Verizon will be able to anti-competitively favor their downstream affiliates AT&T and MCI in obtaining Internet backbone customers, the size of the customer bases of AT&T and MCI will grow relative to those of their competitors, enabling AT&T and MCI to reach a size sufficient to profitably engage in anticompetitive behavior.

When Michael Kende, the Internet backbone economic expert for Verizon/MCI, was Director of Internet Policy Analysis at the FCC's Office of Plans and Policy, he sounded the alarm about how ILEC local bottleneck monopoly control could be used to obtain dominance over the Internet backbone. He wrote

> The sections above show how, in a competitive environment without a dominant firm, interconnection, either by transit or peering, will be available to existing and new backbones. While consolidation is the most obvious means for a backbone to become dominant, as discussed above, *there are other means by which a backbone could grow to become dominant. For example, one way is for a provider to leverage market power over last-mile access to end users into market power in the backbone market…*[18]

A stylized example will show how SBC or Verizon would have the incentive and ability to utilize monopoly control over special access to favor their respective

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[17] The two ILECs have effective monopoly control over special access links of two DS3s or less. Customers requiring special access links of two DS3s or less would include smaller ISPs and content providers and most business sites requiring dedicated Internet access.

[18] See "The Digital Handshake: Connecting Internet Backbones," OPP Working Paper No. 32, September 2000 (emphasis added).

downstream Internet backbone affiliates at the expense of Internet backbone competitors. Suppose, for example, SBC's long-run incremental cost of supplying DS1 special access links in the SBC region is $200 per month and the price it charges to Internet backbone providers for DS1 links to Internet backbone customer sites is $400 per month for, say, a three-year term.[19] Suppose further that the end-user customer requires a three-year contract for Internet access via DS1 links and that the end-user customer has 100 sites located throughout the SBC region. This hypothetical business represents 5,000 "eyeballs" sending and receiving data over the Internet. If AT&T is bidding for the dedicated Internet access contract, it will be able to bid a little bit less than $400 per month per DS1 circuit to have a reasonable assurance of winning the contract. Internet backbone competitors bidding below $400 per month per circuit would be bidding below their incremental cost of supply of DS1 service. On the other hand, AT&T's incremental cost would be the incremental cost of SBC (i.e., $200). In this manner, AT&T will be able to steadily expand its customer base at the expense of Internet backbone competitors due to its vertical relationship with SBC and SBC's bottleneck control over special access to Internet backbone customers. This anticompetitive advantage, which is not available to IBP competitors of SBC/AT&T and Verizon/MCI, illustrates just what Michael Kende, wearing his FCC cap, warned about: "a provider [leveraging] market power over last-mile access to end users into market power in the backbone market."

[19] These are reasonable approximations of actual prices and terms in SBC's territory. Joseph Stith, who was responsible for ILEC special access analysis for AT&T, showed the tariffed price flex (unregulated) rate for a 3-year term for a DS1 link to a customer site in Illinois was $434 per month and the UNE equivalent rate for the same special access link (based on TELRIC costing principles) was $201 per month, a gap of $233 per month and a price flex rate/UNE rate ratio of 2.16. These rates assume a 10-mile standalone circuit. In other Ameritech states such as Indiana, Michigan, and Ohio, the 3-year OPP price was higher and the UNE rate was lower (i.e., the gaps and price flex rate/UNE rate ratios were even greater than for Illinois). For the other Ameritech state, Wisconsin, the gap and price flex rate/UNE rate ratio between the 3-year price flex rate and the UNE rate was smaller than for Illinois. For the SBC region as a whole, the unweighted average price flex rate/UNE rate ratio was 2.11 and the average ratio weighed by gross state product was 2.08. Source: Declaration of M. Joseph Stith, filed with AT&T's initial comments in the Unbundled Access to Network Elements proceeding (FCC docket WC 04-313), pp. 11-15 of Attachment 1, declaration dated 9/30/04 based on ILEC special access rates as of 7/1/04.

VII. The Unique Ability of SBC and Verizon to Generate "Eyeballs" and Internet Traffic

Following the mergers, no other IBPs will have the same multiplicity of access technologies and reach into US consumers whether such consumers are residential, small and medium sized businesses or large enterprises. SBC and Verizon will greatly increase their totals of digital subscriber line (DSL) subscribers, both because broadband services generally are growing, and because DSL services, which SBC and Verizon offer bundled with their voice offering, are gaining an ever-increasing portion of the total broadband services market. Moreover, Verizon is investing heavily in Fiber to the Premises (FTTP) and SBC equally heavily in its near equivalent Fiber to the Neighborhood or Node (FTTN), which will significantly increase the two entities' broadband Internet business. SBC and Verizon also both have extensive wireless holdings with nationwide footprints (Cingular and Verizon Wireless), and both plan to increase their affiliates' offerings of broadband wireless services that require Internet access.

Growth of Broadband

The number of U.S. households using broadband as opposed to dial up connections has been steadily increasing and is expected to continue to increase. Data from the FCC, which are shown in Table 1, indicate the substantial growth in broadband over the last several years.

Table 1: Residential and Small Business High-Speed Lines, December 1999 to June 2004[20]			
Year	Month	Million lines	Percent change
1999	December	1.8	NA
2000	June	3.2	77%
2000	December	5.2	63%
2001	June	7.8	51%
2001	December	11.0	41%
2002	June	14.0	27%
2002	December	17.4	24%
2003	June	20.6	19%
2003	December	26.0	26%
2004	June	30.1	16%
2004	December	35.3	17%

Broadband is growing due to an increase in the number of U.S. households that have any type of Internet access and an increase in the share of those households that have broadband access. Data from Jupiter Research allow us to see how broadband's share of Internet access has grown and provide projections to 2006. Those data, which are otherwise very similar to the FCC's, are presented in Table 2.

Table 2: U.S. Households with Broadband Access, Total and as Share of All Households With Internet Access[21]			
	Households with		Broadband
Year	Broadband	Internet Access	Share
1999	1.8	45.4	4%
2000	5.2	56.7	9%
2001	10.0	62.8	16%
2002	15.4	68.2	23%
2003	20.6	73.4	28%
2004	25.7	77.9	33%
2005	30.7	82.2	37%
2006	35.1	86.3	41%

[20] Data are from Table 3 of of Industry Analysis and Technology Division, "High-Speed Services for Internet Access," FCC Industry Analysis and Technology Division, July 2005.

[21] Data are from Jupiter Research.

Increasing Share of DSL

SBC and Verizon offer wireline broadband service by DSL. DSL's share of broadband service has been increasing and is expected to continue to increase as is shown by data from both the FCC and Jupiter Research. Table 3 presents FCC data on ADSL and broadband service. These data show that from December 1999 to December 2004, ADSL's share of broadband more than doubled.[22]

Table 3: ADSL Share of Residential and Small Business Broadband Service, December 1999 to June 2004

		ADSL	Broadband	ADSL Share
1999	December	0.3	1.8	16%
2000	June	0.8	3.2	24%
2000	December	1.6	5.2	31%
2001	June	2.5	7.8	32%
2001	December	3.6	11.0	33%
2002	June	4.4	14.0	31%
2002	December	5.5	17.4	32%
2003	June	6.4	20.6	31%
2003	December	8.9	26.0	34%
2004	June	10.8	30.1	36%
2004	December	13.1	35.3	37%

Additional data from Jupiter Research also show a large increase in the DSL share of broadband. These data are shown in Table 4. Moreover, these data include a projection to 2006. The projection indicates that by 2006, DSL will be in 14 million households, 40% of households with broadband access.

[22] Data are from Table 3 of of Industry Analysis and Technology Division, "High-Speed Services for Internet Access," FCC Industry Analysis and Technology Division, July 2005. The FCC data only include asymmetric DSL (ADSL), but ADSL accounted for at least 96% of residential and small business DSL service over the period covered by the data.

Table 4: Households with DSL, Total and as Share of Broadband Households[23]			
	Households with		
Year	DSL	Broadband	DSL Share
1999	0.3	1.8	17%
2000	1.4	5.3	26%
2001	2.8	9.9	28%
2002	4.9	15.5	32%
2003	7.0	20.5	34%
2004	9.3	25.8	36%
2005	11.8	30.7	38%
2006	14.0	35.1	40%

Another source gives somewhat different numbers than those in Table 3 or 4, but they tell a similar story. According to the Telecommunications Industry Association (TIA), in 2004 the number of broadband subscribers in the United States reached 32.5 million, and the number of those with DSL was 12.6 million, or 39%.[24] TIA says that the most common form of broadband access in the United States is cable modem, with 17 million subscribers, or 52%.[25] DSL, however, is expected to grow faster than cable modem service. From 2004 to 2008, DSL is expected to grow by 14.6% annually, compared to 6.1% for cable modem. Moreover, DSL service revenue is expected to grow from $8 billion in 2004 to $13.6 billion in 2008.

Research from Legg Mason also supports the view that ILECs are increasing their share of broadband.[26] According to Legg Mason, ILECs have steadily increased their share of new subscribers, and that share reached 56% in the first quarter of 2005.

SBC has been an active participant in DSL and is sharing in its growth. It is the nation's largest DSL provider with 5.1 million DSL lines in service at the end of 2004, an

23 Data are from Jupiter Research.

24 Information from the TIA in this paragraph is from www.tiaonline.org/media/press_releases/index.cfm?parelease=05-18, downloaded April 29, 2005.

25 FCC data suggest that in June 2004, cable modem had 62% of residential and small business broadband access. (Table 3 of "HiSpdTables_0604_final_011805," op. cit.)

26 "ILEC and Cable Broadband Update," Legg Mason Telecom and Cable Services, May 27, 2005.

increase of 1.6 million over the number at the end of 2003. Currently SBC is able to offer DSL service to about 77% of its customers.[27]

Verizon is also very active in DSL. An emphasis on DSL is consistent with Verizon's corporate strategy.[28] At the end of 2004, Verizon had 3.6 million DSL lines in service, an increase of 1.24 million compared to the previous year.[29] Thus, SBC had about 47% of all U.S. DSL lines, Verizon had 33%, and the two companies combined had about 79%.[30]

Investments in FTTP and FTTN

Both SBC and Verizon have been active in building fiber networks to serve the home. Such networks can offer Internet access at speeds even faster than those typically available with DSL and cable modem service today. DSL and cable modem service can theoretically provide access at up to 1.5 and 2.5 Mbps respectively while FTTP (Fiber to the Premises) and FTTN (Fiber to the Neighborhood or Node) can offer speeds of 155 Mbps. This improved and greatly expanded access will support new classes of bandwidth-hungry applications not available to DSL and cable modem subscribers today, and thereby enable SBC and Verizon to increase their share of broadband access.

SBC's Project Lightspeed involves the deployment of 38,000 miles of fiber optic cable (FTTP and FTTN) at a cost of from $4 billion to $6 billion. Last October, SBC announced that it would accelerate this project, so that it could provide 18 million

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27 Information on SBC's DSL service is from www.sbc.com/Common/files/pdf/4Q_internet_update_FINAL.pdf, downloaded April 29, 2005.

28 According to Verizon's 2004 10-K, "Our emphasis is on revenue transformation, devoting more resources from traditional services, where we have been experiencing access line losses, to the higher growth markets such as wireless, wireline broadband, including digital subscriber lines (DSL) and fiber optics to the home, long distance and other data services as well as expanded services to enterprise markets."

29 Verizon 10-K for 2004.

30 Shares are based on approximately 11 million total DSL households, the average of the estimates of TIA and Jupiter Research.

households extremely high-speed service by the end of 2007.[31] SBC will use this network to provide IP based television, ultra-high-speed broadband, video on demand, Voice over Internet Protocol (VOIP) services, and bundles of products and services that include wireless.[32]

Verizon is actively building FTTP. Near the end of 2004, Verizon had installed 20 million feet of fiber and was installing another 2.5 million feet every week.[33] Verizon plans to connect about 3 million households directly to fiber-optic lines by the end of 2005; that is about 10% of the 30 million households that have Verizon's telephone service.[34] It is prepared to spend over $15 billion on FTTP during the next decade.[35] Verizon has just begun offering its "Fios" service to customers using its FTTP network in 250 communities on the East Coast and in Texas.[36]

These new facilities will allow SBC and Verizon to increase their respective shares of Internet access significantly by improving the quality of the access they offer and by including video in their product offerings.

Verizon plans to introduce a video service using traditional technology. It may introduce Internet Protocol Television (IPTV) later. It has already made arrangements with some content providers.[37]

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31 www.sbc.com/gen/press-room?pid=4800&cdvn=news&newsarticleid=21427, downloaded April 29, 2005.

32 SBC is planning to introduce IPTV services very soon. In January of this year, it announced that in mid-2005, it would deliver "a home entertainment service that integrates satellite TV programming, digital video recording, video on demand, and Internet content including photos and music." www.newtelephony.com/news/51h10115138.html, downloaded May 2, 2005. This service is offered by a joint venture of SBC and 2Wire Inc.

33 www.ftthconference.com/04ConfNewsletter.html, downloaded April 27, 2005.

34 businessweek.com/magazine/content/05_18/b3931099_mz016.htm, downloaded May 2, 2005.

35 businessweek.com/magazine/content/05_18/b3931099_mz016.htm, op. cit.

36 Marguerite Reardon, "Broadband speed war emerges," www.news.com. July 1, 2005.

37 news.com.com/Verizons+salvo+on+cable+TV/2100-1037_3-5677274.html, op. cit.

Once they introduce video services, SBC and Verizon will be able to offer bundles of Internet, voice, and video service and thereby gain a substantial competitive advantage, which will enable them to attract millions of new customers to their downstream Internet backbones. Bundling results in "stickier" customers, which will increase the ability of SBC and Verizon to bring additional traffic to AT&T's and MCI's Internet backbones.

Wireless Internet Services and the Application of 3G Cellular Technology

The importance of SBC and Verizon to the Internet will also increase due to the spread of third generation (3G) cellular technology and the greater use of wireless Internet access. With 3G technology, customers can more easily get Internet services on their cellular phones, PDAs and other handheld devices. Thus, the spread of these services will cause the cellular carriers serving those customers to become an important source of Internet traffic, and the cellular telephone companies will be able to direct this traffic to their affiliated downstream Internet backbone providers. Both SBC and Verizon have important shares of the cellular telephone industry. SBC owns 60% of Cingular, the largest wireless company in the country. Cingular has over 50 million subscribers, about 30% of the U.S. total.[38] Verizon owns 55% of Verizon Wireless, a joint venture with Vodaphone. Verizon Wireless is the second largest wireless company in the country with approximately 44 million subscribers.[39] Both Cingular and Verizon Wireless are actively involved in promoting 3G technology.

Cingular announced that it would begin to build a 3G network this year.[40] The network will use a Universal Mobile Telecommunications System (UMTS) with High

[38] www.cingular.com/about/company_overview, downloaded May 3, 2005. See also "Cingular poised to lead in wireless data speed," *Knight-Ridder Tribune Business News,* March 16, 2005.

[39] www.verizonwireless.com/b2c/aboutUs/index.jsp?cm_re=HP%20-%20About%20Us, downloaded May 3, 2005.

[40] "Cingular Wireless Announces Plans for 3G Network," *Wireless News,* December 1, 2004.

Speed Downlink Packet Access (HSDPA). Data speeds will average between 400 and 700 Kbps. Cingular plans to offer 3G services in most major markets by the end of 2006.

In October 2003, Verizon Wireless launched its 3G BroadbandAccess network in two metropolitan areas.[41] Since then it has continued to expand this network. By February 2005, the network covered 30 metropolitan areas and was starting to offer streaming video and three dimensional games. Verizon expects the network to cover 150 million people by the end of 2005. BroadbandAccess, which uses Evolution Data-Only (EV-DO) technology, offers an average speed of 300 kbps. to 500 kbps.[42] Verizon recently announced that it had 500,000 wireless broadband subscribers.[43] In a recent speech before the Yankee Group, Verizon Wireless CEO Denny Strigl said that the company is on track to make its two EV-DO wireless broadband access services "available to half the US population by the end of this year."[44]

SBC is also deploying a wireless Internet access service called FreedomLink. By the end of next year, SBC hopes to offer FreedomLink at 6000 locations in its service area.[45] These locations will include airports, convention centers, and hotels. SBC has a contract to install FreedomLink at United Parcel Service locations. It also has a roaming agreement with Wayport, which has over 650 U.S. locations and a contract to offer wireless access at McDonald's. For the access at McDonald's, Wayport is responsible for the store infrastructure, SBC handles the Internet network and back-haul.[46] Cingular subscribers will be able to use their phones in combination with FreedomLink facilities.

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41 "Verizon Wireless, Nortel Networks Launch EV-DO BroadbandAccess 3G Network in Additional U.S. markets," *Business Wire,* September 23, 2004.

42 http://www.pcworld.com/resource/printable/article/0,aid,119222,00.asp, downloaded May 2, 2005.

43 "Verizon Wireless has more than 500,000 broadband subs—CEO," Reuters.com, June 28, 2005.

44 Verizon press release "Verizon Wireless Leads Industry with National Wireless Broadband Service," June 28, 2005,

45 Information on FreedomLink is from "SBC Communications to deploy Wi-Fi hotspots in 6,000 venues, *Mobile Internet,* September 2003; www.wi-fiplanet.com/news/article.php/3422231 downloaded May 3, 2005.

46 wifinetnews.com/archives/004339.html, downloaded May 2, 2005.

Conclusion

The substantial deployment of each of these broadband technologies—DSL, FTTN/FTTP, and 3G—will enable SBC and Verizon to greatly expand the number of "eyeballs" available to their respective downstream Internet backbone affiliates AT&T and MCI. The growth in "eyeballs" through the deployment of these broadband technologies and the anticompetitive advantages created by control over special access as discussed in Section VI above will permit the Internet backbones of AT&T and MCI to achieve the growth necessary for joint dominance.

VIII. The Significance of the Financial Difficulties of Other Internet Backbone Providers

AT&T and MCI are in a strong position to increase their share of the Internet backbone market due to the financial difficulties faced by their rivals.[47] Financial difficulties can have competitive consequences. They can make a firm less desirable as a supplier and as a prospective employer, and they can make it difficult to finance needed investments. The financial difficulties of the other IBPs will likely reduce their ability to compete with AT&T and MCI and thus enable AT&T and MCI to increase their Internet backbone market shares relative to the shares of their Internet backbone competitors.

Internet backbone providers have not been very profitable over the last few years. Table 5 presents accounting data on the net income, income margin (net income divided by total revenues), and debt ratio of a number of firms that provide Internet backbone services.[48] (These data pertain to each firm as a whole, not just to its Internet backbone operations.) The data show that these firms have often run losses; none had positive net income in 2004. Moreover, several of these firms have relatively heavy debt burdens.

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47 Jean-Claude Delcroix, "Global Consolidation of Carriers Brings Stability, but at a Price," Gartner Research, April 28, 2005, p. 7

48 Data in Table 5 were compiled by British Telecom based on public sources. Note that Global Crossing emerged from bankruptcy on December 9, 2003 and MCI on April 20, 2004.

AT&T and MCI themselves also have not been very profitable, as shown in Table 5. They too both ran losses in 2004. Nonetheless, they do have lower debt ratios than most of their competitors. Moreover, if the proposed acquisitions take place, they will have the support of the substantial financial resources of SBC and Verizon respectively. The resulting financial stability will be a significant marketing advantage. One observer notes, "Because these consolidations will improve the financial stability of AT&T and MCI, U.S.-based multinational corporations can feel more comfortable using AT&T's and MCI's international capabilities. . ."[49]

Some Internet backbone providers also have specific difficulties. For example, in 2004, Level 3 announced that America Online, one of its major customers, planned to cut its purchases, with a potential resulting loss in revenue of $100 to $150 million.[50]

Another backbone provider, WilTel, is threatened directly by the SBC/AT&T merger. SBC currently accounts for about 70% of the WilTel network's operating revenues in 2004, and SBC announced that it intends to move this traffic to AT&T after the merger. WilTel is not listed in Table 5 because in 2003 it was acquired by Leucadia, a conglomerate. In 2004, Leucadia reported network revenues for WilTel of $1.5 billion and a net income loss of -$78.4 million, for an income margin of -5%.

Thus, if the SBC/AT&T and Verizon/MCI mergers proceed, the two merged companies may be the only Internet backbone providers that are financially stable. Their financial stability will be a significant competitive advantage. Combined with their other advantages, it will likely allow SBC/AT&T and Verizon/MCI both to greatly increase their share of the Internet backbone market.

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[49] Jay Putz and David Neil, "Management Update: SBC-AT&T and Verizon or Qwest-MCI: The Impact on Business Customers," Gartner Research, April 27, 2005, p. 2.

[50] Telecommunications Reports, February 4, 2004.

Table 5: Income Margins and Debt Ratios of Internet Backbone			
	2002	**2003**	**2004**
AT&T			
Total Revenues	37,827	34,529	30,537
Net Income	(13,082)	1,865	(6,469)
Income Margin	-35%	5%	-21%
Debt Ratio	41%	30%	33%
MCI			
Total Revenues	28,493	24,266	20,690
Net Income	(9,173)	22,211	(4,002)
Income Margin	-32%	92%	-19%
Debt Ratio	4%	26%	35%
Sprint			
Total Revenues	26,679	26,197	27,428
Net Income	610	1,290	(1,012)
Income Margin	2%	5%	-4%
Debt Ratio	49%	45%	42%
Qwest			
Total Revenues	15,371	14,288	13,809
Net Income	(38,468)	1,512	(1,794)
Income Margin	-250%	11%	-13%
Debt Ratio	77%	67%	71%
Level 3			
Total Revenues	3,111	4,026	3,712
Net Income	(858)	(711)	(458)
Income Margin	-25%	-18%	-12%
Debt Ratio	68%	63%	67%
Global Crossing			
Total Revenues	2,903	2,763	2,487
Net Income	654	24,728	(336)
Income Margin	23%	895%	-14%
Debt Ratio	NA	9%	33%
Teleglobe			
Total Revenues	1,010	858	1,002
Net Income	(5,981)	(30)	(21)
Income Margin	-592%	-3%	-2%
Debt Ratio	188%	109%	18%
Savvis			
Total Revenues	236	253	617
Net Income	14	(94)	(149)
Income Margin	6%	-37%	-24%
Debt Ratio	33%	46%	70%

IX. Customers Will Not Be able to Prevent Anticompetitive Behavior by the Jointly Dominant AT&T and MCI Internet Backbones

The merging parties claim that large broadband ISPs, e.g., major cable companies, Qwest, and BellSouth, and also large business customers who purchase dedicated Internet access services, will be able to defeat any attempts at anticompetitive behavior by the SBC/AT&T and Verizon/MCI Internet backbones, thereby preventing the creation and maintenance of a mega-duopoly and consequent harm to the marketplace.[51] A very similar argument was raised in the WorldCom/Sprint and WorldCom/MCI Internet backbone mergers. Indeed, AT&T, Verizon's predecessor GTE, and SBC[52] were in the forefront of those contending persuasively that the WorldCom argument should be rejected. Generally, WorldCom contended that IB customers could and would easily switch traffic away from the merging entities and thereby defeat any attempted de-peering or degradation of their Internet backbone service providers that was designed to tip the market to a monopoly. DOJ and the EC rejected this argument with respect to the two WorldCom mergers, and DOJ should soundly reject it again in its redressed form in the present mergers.

There are several fundamental reasons for rejecting the argument that customers will prevent and/or defeat any Internet backbone duopoly. First and foremost is the parties' erroneous assumption that broadband ISPs and large business customers will have the financial incentive and ability to direct their traffic away from the two merged entities' very large and rapidly growing backbone businesses and toward smaller and

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51 See, for example, the recent FCC ex parte filing (7/6/05) by SBC/AT&T responding to a filing by Earthlink.

52 On p. 45 of its opposition filing, SBC stated: "As Professor Hausman explains, multihoming increases the incentive of the dominant IBP to degrade connectivity with the divested network because customers who use multihoming will be able to compare the quality differences between the larger and smaller IBP networks. Hausman Decl. at ¶56." Opposition of SBC Communications Inc. to WorldCom/Sprint merger application, CC Docket No. 99-333, filed Feb 18, 2000, pp. 38-46. On p. 42, SBC argued that the larger IBP networks are well-placed to persuade customers not to rely upon smaller IBP networks. SBC even argued that divestiture of Sprint's IBP network was an insufficient remedy.

more slowly growing backbones. The assumption that connectivity customers will be able to resist the immediate and concrete advantages to themselves of sending traffic to the largest backbones and instead try to "save" the Internet marketplace from irreversible structural damage flies in the face of the economic logic enunciated so clearly by DOJ in its WorldCom/Sprint complaint:

> When a single network grows to a point at which it controls a substantial share of the total Internet end user base and its size greatly exceeds that of any other network, network externalities may cause a reversal of its previous incentives to achieve efficient interconnection arrangements with its rival networks. In this context, *degrading the quality or increasing the price of interconnection with smaller networks can create advantages for the largest network in attracting customers to its network. Customers recognize that they can communicate more effectively with a larger number of other end users if they are on the largest network, and this effect feeds upon itself and becomes more powerful as larger numbers of customers choose the largest network*. This effect has been described as "tipping" the market. Once the market begins to "tip," connecting to the dominant network becomes even more important to competitors. This, in turn, enables the dominant network to further raise its rivals' costs, thereby accelerating the tipping effect. As a result of an increase in their costs, rivals may not be able to compete on a long-term basis and may exit the market. If rivals decide to pass on these costs, *users of connectivity will respond by selecting the dominant network as their provider*. Ultimately, once rivals have been eliminated or reduced to "customer status," the dominant network can raise prices to users of its own network beyond competitive levels. Once this occurs, restoring the market to a competitive state

> often requires extraordinary means, including some form of government regulation.[53]

As DOJ's WorldCom/Sprint complaint above explains, the incentives created by the exercise of degradation strategies or by raising the price of interconnection by a dominant firm or jointly dominant firms will lead Internet backbone customers (including ISPs and other large buyers) to switch *toward* and not away from the dominant backbone or backbones. As the AT&T and MCI Internet backbones maintain the joint dominance resulting from these two simultaneous mergers and engage in mutually beneficial anticompetitive strategies against competing IBPs, ISPs and other Internet backbone customers will have an irresistible incentive to either stay with the dominant providers if they are already customers of the merging parties or switch and send their customers' traffic to the two dominant backbones. If, for example, an ISP had been sending traffic to Savvis but also to AT&T (so-called dual homing), the ISP will have the incentive to simply switch the traffic that it had been sending to Savvis to AT&T (or, possibly, to MCI) if Savvis is de-peered or degraded by the merging parties with whom it currently peers. At bottom, the rational profit-maximizing strategy for a buyer of IBP connectivity like an ISP or system integrator is to ensure that its own customers receive the quickest, most reliable, fewest hop route to the most Internet sites (i.e., to purchase service from the dominant backbone or backbones).

A second problem with the merging parties' customer countervailing power argument here is that it necessarily assumes that either there is a sufficiently large single customer that by switching could prevent AT&T and MCI from acquiring a dominant position or that a sufficient number of customers can and would act in a coordinated fashion switching away from AT&T and MCI so as to prop up some third or fourth IBP. First of all, it is implausible to assume that a single large customer could play a pivotal role in tipping the market, especially since many smaller customers, which are likely to

[53] ¶41 of the DOJ complaint (emphasis added). See also Sections II through IV of this analysis which explain the general theory underlying the incentive and ability for AT&T, MCI and their ILEC parents to achieve joint dominance of the Internet backbone market.

represent a greater aggregate volume than a single large customer, have incentives to migrate to the largest provider. Second, many large players may not be able to switch away from AT&T or MCI or may not be able to do so when others want to or may disagree as to which rival IBP should receive the business. We understand that Comcast, for instance, inherited through AT&T Broadband an obligation of substantial duration to use AT&T's Internet backbone network exclusively. Other cable operators, e.g., Cox, may have contractual commitments to buy transit from AT&T. BellSouth, as SBC's minority partner in Cingular, may be unwilling or unable to take steps that would be viewed as antagonistic by the merged SBC/AT&T. Effective coordination would also have to overcome each of the participant's incentives not to follow the hypothetical agreement by remaining with the dominant IBPs, and expanding their customer bases at the expense of migrating customers who will be offering lower quality. Nor would BellSouth or Qwest necessarily want, or be permitted under the antitrust laws, to coordinate their Internet backbone connectivity decisions with large cable operators who are their horizontal competitors in voice telephony, Internet access, and multichannel video. The same practical and antitrust concern exists with respect to coordination of Internet connectivity purchasing by large systems integrators and telecommunications carriers competing to supply telecommunications solutions to business enterprises. And the idea that the SBC/AT&T-Verizon/MCI duopoly could be defeated in what would be a necessarily fast-moving network effects timeframe by an individual large cable operator constructing its own Internet backbone network, negotiating peering arrangements with the other top tier providers, and then seeking additional backbone business from other companies that may also be its downstream horizontal competitors, is just not credible.

A third fatal flaw in the merging parties' argument is that they ignore the unhappy financial state and uncertain future of the other IBPs to which they hypothesize traffic could be shifted.[54] Savvis, the buyer through C&W of MCI's old backbone business, is very publicly concerned about the two mergers' effect on Savvis' own viability. Level 3,

[54] See Section VIII for a description of the financial difficulties faced by the IBP competitors of AT&T and MCI.

heavily in debt, has been positioning itself for many months to be purchased by someone but, so far apparently, has no takers. Qwest was perilously close to bankruptcy, according to some reports, and prominently failed to attract MCI despite a significantly higher bid than that of Verizon. MCI gave as one of its reasons Qwest's inferior financial state. Global Crossing has been deep in bankruptcy, teetered on the edge again recently, and its future, now that it is controlled by a Singapore-based company, is uncertain. Wiltel, acquired out of bankruptcy by the financial firm Leucadia, was greatly dependent on its alliance with SBC, an alliance which has now been supplanted by SBC's prospective AT&T merger. Sprint, whose Internet and global customer businesses were badly neglected during the unsuccessful WorldCom merger attempt, is focused on clearing its Nextel merger and spinning off its local exchange business and then financing expansion in the wireless business. Even if significant large Internet backbone customers wanted to and could switch traffic away from AT&T and MCI to defeat the duopoly, they would be deterred by the huge risks in relying upon *any* of the foregoing Internet backbone providers.

A fourth problem with the merging parties' argument is that it assumes the parties do not already account for a majority of the Internet connectivity business and ignores the essentially guaranteed Internet backbone traffic growth that these two vertical merged entities would uniquely control going forward.[55] At least based on what has been filed publicly at the FCC, the merging parties have not addressed the growth implications of SBC's and Verizon's FTTP/FTTN broadband deployment programs, the introduction of 3G technology to their cellular phone customers and, most significantly, their control over special access links to Internet backbone customer sites within their regions.[56]

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[55] Sections VI and VII present evidence that SBC and Verizon are uniquely situated to rapidly expand the size of the AT&T and MCI Internet backbone customer bases.

[56] Marius Schwartz, the Internet backbone economist for SBC/Verizon, did discuss broadband growth of cable company customers and ILEC DSL customers but did not analyze (1) broadband customer growth resulting from FTTP/FTTN deployment of SBC and Verizon, (2) broadband customer growth resulting from the introduction of 3G technology by the cellular companies of SBC and Verizon, or (3) the competitive implications of the bottleneck control of special access to Internet backbone customers by SBC and Verizon.

Through these growth mechanisms described in detail in Sections VI and VII, the parties will be able to achieve their joint dominance even if (contrary to the other points above) there were some switching away from the duopolists by one or more cable or other broadband ISPs.[57] Once joint dominance has been achieved, the owners of the AT&T and MCI Internet backbones will be able to engage in anticompetitive activity that will permit them to entrench their dominance regardless of any such switching.[58] And network effects will enable them to attract customers, not lose them, contrary to what the merging parties claim in their arguments. This network effects positive feedback process was aptly described by DOJ in its WorldCom/Sprint complaint. Switching is unlikely to prevent joint dominance. It is implausible that a customer will have either incentives or the ability to prevent AT&T and MCI from becoming the dominant IBPs.

In sum, for several important reasons, large customers of Internet backbone connectivity will not be able to prevent the creation and maintenance of an anticompetitive Internet backbone duopoly should these two mergers be approved.

X. Telecom Mergers that Threaten Internet Expansion Threaten Economic Growth

Introduction

In considering the effects of the SBC/AT&T and Verizon/MCI mergers, it is important to consider their effects on the expansion of the Internet and the increased adoption of innovative advances in information and communication technologies (ICT).

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57 As Section V indicates, AT&T and MCI already appear to be large enough to exercise joint dominance once the mergers are consummated.

58 To be sure, prior to achieving joint dominance, the parties are unlikely to be able to successfully engage in widespread anticompetitive degradation or pricing strategies in the downstream Internet backbone market. The parties would have the incentive and ability, however, to engage in successful anticompetitive price squeezes in the upstream special access market which will help the parties to achieve joint dominance in the downstream Internet backbone market. The analyses of the economists for the parties (see Schwartz for SBC/ATT and Carlton, et al for Verizon/MCI) seem to be focused entirely on situations where the parties have not achieved joint dominance.

This issue is particularly important because of the significant role ICT plays in economic growth. Advances in ICT have led to significant gains in productivity.

The growth of ICT depends on the cost of using telecommunication facilities, as those facilities are needed to take advantage of ICT. Of particular importance is special access, dedicated lines that run from the customer's location to the service provider's facilities without using the local exchange company's switch. Special access is used by many customers with a significant volume of traffic, including communications providers, such as wireless carriers, narrowband and broadband Internet Service Providers (ISPs), and Interexchange carriers (IXCs). As AT&T has been arguing since it filed its special access rulemaking petition in October 2002, the incumbent LECs already charge excessive prices for special access. A still higher price for special access will generally make it more expensive for a business to use the Internet or other ICT. As a result, it will be less attractive for a business to use advances in ICT. Similarly any degradation of service will make the Internet slower and less reliable and thus make businesses less willing to use it. The price and quality of special access are particularly significant because they affect any communications that go outside the business's premises.

Moreover, the effect of an increase in special access prices may be amplified because of the network effects that are often present in ICT. Because of network effects, new communications technologies often become more desirable the more widely they are used. Thus, higher special access prices may have a two-fold effect on the adoption of ICT: a direct effect, where they discourage adoption by making it more expensive; and a network effect, where they discourage adoption by reducing the number of users on the network. A decrease in the quality of special access will have a similar two-fold effect in reducing the adoption of ICT.

The economic effects of the price of special access are important because, as discussed in earlier papers, the mergers of SBC with AT&T and Verizon with MCI are likely to lead to increased market power with resulting higher prices and lower quality for

special access.[59] This paper will first describe the importance of the Internet and ICT to economic growth. It will then discuss the significance of special access to the adoption of ICT. Finally, the paper will briefly review why the two mergers pose a threat to ICT's future contributions to economic growth.

The importance of the Internet and ICT to economic growth

The dramatic advances in ICT in the late 1990s and the early years of this century were accompanied by a large increase in productivity growth. The U.S. President's Council of Economic Advisors (CEA) has examined the annual growth of total factor productivity (TFP), which measures the productivity of both capital and labor. The CEA found that the growth in TFP was over 1 percentage point per year higher from 1995 to 2002, compared to the period from 1973 to 1995.[60] Moreover, the CEA found that advances in ICT increased the effect of capital on labor productivity. Increases in capital typically increase labor productivity. The CEA found that the effect of capital on labor productivity increased by over half a percentage point a year after 1995, a change they attributed to the improvement in information technology.

Other studies confirm the effect of improvements in ICT on productivity. For example, Morrison found that even in the period before that studied by the CEA, investments in information technology equipment significantly reduced firms' costs by allowed them to use less materials and labor.[61] Shin found that improvements in information technology reduced firms' coordination costs, enabling them to increase productivity.[62] London Economics found that improvements in ICT in the 1990s

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59 The fear that the mergers will hamper innovation through their effect on the Internet is also expressed in "Comments of Eliot Spitzer Attorney General of the State of New York," WC Docket No. 05-75, May 9, 2005.

60 This increase is calculated holding factors related to the business cycle and the expansion of the capital stock constant. *Economic Report of the President,* February 2003, p. 69.

61 She defined information technology equipment to include office, computing, and accounting machinery, communications equipment, and scientific and engineering instruments. Morrison, Catherine J., "Assessing the Productivity of Information Technology Equipment in U.S. Manufacturing Industries," *The Review of Economics and Statistics,* vol. 79, no. 3, August 1997, pp. 471-481.

62 Shin, Namchui, "An Empirical Analysis of Productivity Gains From Information Technology's Reduction of Coordination Costs," in N. Shin (ed.) *Creating Business Value With Information Technology: Challenges and Solutions*, Idea Group Publishing, 2003, pp. 125-144.

increased the growth of labor productivity in the United Kingdom by .76 percentage points a year.[63]

Some studies focus on a specific way that improvements in ICT improve productivity—its effects on the supply chain. Basu and Siems examined how new supply-chain management techniques have benefited the overall economy. These techniques have enabled increased customization, have lowered inventories, and have reduced volatility in production.[64] Similarly, Callen, Morel, and Fader focused on one change in the supply chain that was made possible by ICT, just-in-time manufacturing. They found that just-in-time manufacturing increases profits by more than the amount needed to compensate for the increased risk involved.[65]

In addition, some studies examine the effects of improvements in ICT on specific industries. For example, Caraveli and Traill found that technological change substantially reduced costs in the dairy industry. In particular, new information technology allowed better process control.[66] Mishkin and Strahan found that advances in ICT have brought a number of benefits to the finance industry.[67] LaCour-Little found that improvements in ICT led to substantial cost savings in mortgage finance.[68]

The benefits of this increase in productivity growth can be substantial. For example, if the growth rate of productivity is higher by .76 percentage points a year, as found by London Economics, then after ten years of growth at the higher rate, overall

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63 The study examined the period 1992 to 2001. London Economics, "ICT Investment and Productivity in the UK: a Regional Assessment," April 2003.

64 Basu, Amit and Thomas T. Siems, "The Impact of E-Business Technologies on Supply Chain Operations: A Macroeconomic Perspective," Federal Reserve Bank of Dallas, Research Department, Working Paper, 0404, November 2004.

65 Their study is based on an econometric analysis of data from 100 Canadian manufacturing plants in the automotive parts and electronics components industries. Callen, Jeffrey L., Mindy Morel, and Chris Fader, "The Profitability-Risk Tradeoff of Just-in-time Manufacturing Technologies," *Managerial and Decision Economics,* 24: 393-402 (May 2003).

66 Caraveli, Helen and W. Bruce Traill, "Technological Developments and Economies of Scale in Dairy Industry," *Agribusiness,* vol. 14, no. 4, 1998, pp. 311-319.

67 Mishkin, Frederic S. and Philip E. Strahan, "What Will Technology Do To Financial Structure?" Working Paper 6892 National Bureau of Economic research, January 1999.

68 LaCour-Little, Michael, "The Evolving Role of Technology in Mortgage Finance," *Journal of Housing Research,* vol. 11, No. 2, 2000, pp. 173-205.

productivity will be 8% higher than it would have been otherwise. If productivity growth is 1.08 percentage points higher, as found by the CEA, then after 10 years productivity will be 11% higher than it would have been otherwise.

The effect of ICT will continue, if conditions are favorable. Litan and Rivlin found that, even after the gains of the 1990s, businesses were still only in the early stages of the adoption of the Internet. In their view, the continued expansion in the use of the Internet could continue to cause large improvements in the economy.[69]

The significance of special access to future gains in ICT

Special access has a substantial effect on the likelihood of further productivity gains from improvements in ICT. As Litan and Rivlin note, "the largest potential gains from the Internet lie in its use by business."[70] That use largely depends on special access. Special access is a necessary input into many developments in ICT. There are simply no adequate substitutes for large businesses wishing to access the Internet. DSL does not have sufficient capacity for a large enterprise customer's needs because DSL services are typically asymmetric and rarely is 1.5 Mbps capacity available in both directions. Nor is cable modem service an option. Cable systems are designed to serve primarily residential neighborhoods, not commercial areas or industrial parks. Moreover, cable modem capacity is shared between users, so a large increase in volume by one user could slow the service to another user. The shared nature of cable modem capacity would reduce its reliability. Fixed wireless is promising, but not widespread in use or reliable. Therefore, special access will be required for many businesses that want to send a large volume of message traffic.

Thus, an increase in the price of special access will make improvements in ICT more expensive, and that in turn will make businesses less likely to adopt them. Moreover, special access often is used by Internet access providers. If their costs go up, they likely will pass part or all of the increase on to their customers, which will discourage use of the Internet by making it more expensive.

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69 Robert E. Litan and Alice M. Rivlin, *Beyond the Dot.Coms, The Economic Promise of the Internet,* Brookings Institution Press, Washington, D.C., 2001, pp. 68, 119.

70 Litan and Rivlin, op. cit., p. 68.

The significance of the price of special access is shown by its effect on the amount of special access that businesses purchase.[71] A recent study measured the price sensitivity of the demand for special access.[72] It found that the elasticity of demand for special access, the ratio of the percentage change in quantity demanded to the percentage change in price, was conservatively estimated to be -1. Thus, for every 1% increase in the price of special access, the quantity of special access consumed would fall by at least 1%. Any significant increase in the price of special access will lead to a significant reduction in its use, which in turn will reduce the adoption of advances in ICT.

The quality of special access services is also very important to future gains from ICT. A degradation in the quality of special access would make the Internet slower and less reliable. Special access is positioned to be crucial to the quality of the Internet connection. The access can degrade the delivery times, extent of service, speed of service, quality of service, maintenance, connectivity and interconnection to other networks in a strategy similar to that identified for Internet backbone degradation.

Even if only some of a business' locations are in SBC or Verizon territory, the increase in price and drop in quality of its special access may have a significant effect on its willingness to adopt advances in ICT. For example, suppose an organization wants to disaggregate its supply chain and split up its vertically integrated single site activities to take advantage of multiple sites and the comparative advantages of being spread across multiple geographies. It could not make this change in its business strategy if some of its sites did not have reliable and reasonably priced Internet access. Another example would be a firm that wanted to have a multi-location based wide area network, where computers are operated in a distributed hierarchy. That also would be impossible, if it did not have reasonable and reliably-priced Internet access at some locations.

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71 It is important to remember, however, that factors other than price affect the demand for special access. For example, customers to buy special access since functionally equivalent low-priced unbundled network elements (UNEs) are not available for transport from customer sites to IXC POPs.

72 Paul N. Rappaport, Lester D. Taylor, Arthur S. Menko, and Thomas L. Brand, "Macroeconomic Benefits from a Reduction in Special Access Prices," June 12, 2003.

The mergers' effect on special access prices and quality

The mergers with AT&T and MCI will increase the already substantial market power that both SBC and Verizon have in the special access market. There are several reasons why the mergers will lead to greater market power, higher prices, and reduced quality for special access.[73]

CLECs have provided some constraint on ILECs' special access prices, although the constraint has been limited. The mergers will further weaken that constraint. First, the mergers will remove AT&T as an independent provider of special access services in SBC's territory and MCI as an independent provider of special access services in Verizon's territory. Second, because SBC and Verizon exercise market power in different geographic areas, they will mutually benefit from avoiding turf wars and consequent retaliation. Thus, the mergers likely will remove MCI as an independent competitor to SBC and AT&T as an independent competitor to Verizon. The loss of two leading CLECs will increase SBC and Verizon's market power in special access.

Furthermore, AT&T and MCI have been able to get relatively favorable special access rates from ILECs and then resell special access to CLECs, IXCs, and other carriers. In many cases, AT&T has resold ILEC special access in combination with its own facilities-based metro fiber network and long distance network. MCI has done the same with Verizon. After the merger, this type of resale competition will cease.

Finally, in legislative and regulatory discussions, AT&T and MCI have been the ILECs' strongest and best-financed critics. They have been the companies with the greatest incentive and ability to persuade regulators, legislatures, and courts to restrict ILECs' exercise of their market power over special access. Their elimination of independent voices will make it much less likely that the government will restrain SBC and Verizon's exercise of market power in special access.

[73] See the declaration of Simon Wilkie , former FCC chief economist, filed with the FCC in support the petition of Cbeyond. et al., to deny the SBC/AT&T merger, especially ¶¶26-27 (4/25/05). "I conclude that the removal of AT&T as an independent competitor to SBC in local wholesale access markets will cause significant consumer harm. In particular for those circuits where competition is eliminated and the requesting carrier is left with special access tariff, prices will rise approximately 100 percent."

The mergers will also degrade the quality of service for special access. Just as the lessening of competition due to the mergers will allow SBC and Verizon to increase the price of special access, it will also allow them to reduce its quality. The mergers will have this effect on service for two reasons. First, AT&T and MCI, both as competing CLECs and as critics in regulatory and legislative forums, put some pressure on SBC and Verizon to maintain quality. These mergers will eliminate that pressure. Second, SBC and Verizon may choose to deliberately degrade the quality of special access to raise the costs of rivals who sell telecom services in competition with the ILECs but who must rely on SBC and Verizon for special access to locations in their territory.

Conclusion

The mergers of SBC with AT&T and Verizon with MCI may significantly reduce U.S. economic growth. Those mergers are likely to significantly increase SBC's and Verizon's market power both in the Internet backbone and in special access. As a result, Internet services, which are vital to advances in ICT, will become more expensive, slower, and less reliable. Therefore, firms will be slower to adopt Internet-based technologies and improvements in ICT, and the significant increase in economic growth available from those improvements will be lost.