



Is America Exporting Misguided Telecommunications Policy? The U.S.-Japan Telecom Trade Negotiations and Beyond

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No. 79

January 7, 2003

Global telecommunications markets have traditionally been closed to foreign trade and investment. Recent World Trade Organization negotiations resulted in a Basic Telecommunications agreement that sought to construct a multilateral framework to reverse that trend and begin opening telecom markets worldwide. Regrettably, this new WTO framework is quite ambiguous and open to pro-regulatory interpretations by member states.

In fact, during recent bilateral trade negotiations with Japan, U.S. government officials adopted the position that the new framework allowed them to demand that the Japanese government adopt very specific regulatory provisions regarding telecom network interconnection and pricing policies. The Office of the U.S. Trade Representative argued that Japanese officials should require their domestic telecom providers to share their networks with rivals at a generously discounted price to encourage greater resale competition.

Those interconnection and line-sharing rules were borrowed directly from the U.S. Telecommunications Act of 1996, a piece of legislation that remains the subject of intense debate within the United States. Good evidence now exists that those rules generally retard network investment and innovation by encouraging infrastructure sharing over facilities-based investment. Consequently, the USTR has generated resentment on the part of Japan and other trading partners as it has attempted to force them to adopt heavy-handed telecommunications mandates that have very little to do with legitimate free-trade policy.

The USTR must discontinue efforts to impose American telecommunications regulations on other countries as part of free-trade negotiations and should instead focus on reforming or eliminating the most serious barriers to foreign direct investment both here and abroad.

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Introduction

Trade in the \$1 trillion global telecommunications services marketplace has always been riddled with difficulties. Historically, almost every nation on the planet has erected barriers to trade in communications services and imposed restrictions on foreign direct investment in domestic telecom markets and companies. In many cases, government ownership of telecom infrastructure has made such trade and investment impossible. But even where governments did not nationalize their communications sector, markets were heavily regulated and foreign interaction was generally discouraged or greatly restricted. In essence, there really has never been anything close to free trade in telecommunications services worldwide.

A New Paradigm for Telecom Trade Negotiations

To begin addressing this problem, in February 1997, 69 countries signed on to the World Trade Organization's Basic Telecommunications agreement,¹ making it an official annex of the WTO's General Agreement on Trade in Services.² One year later, the Basic Telecom agreement went into effect for all WTO members as part of the Fourth Protocol of the GATS.

The WTO's Basic Telecom agreement encouraged WTO member states to enter into negotiations to progressively liberalize trade in telecoms and open their markets to foreign access and investment. Dozens of countries immediately made offers to do so, but no specific market-opening obligations were imposed on signatories, and progress on this front remains sluggish and sporadic.

However, as part of the Basic Telecommunications accord, signatories did agree to adopt a set of principles and policies to guide ongoing domestic telecommunications regulation in their countries. The principles were laid out in a Reference Paper,³ a remarkably ambiguous document that became part of the final Basic Telecom agreement. Those

principles included safeguards to prevent anti-competitive practices, network interconnection requirements, preservation of universal service subsidization schemes, and an outline of basic licensing criteria for regulatory agencies to follow. "[T]he Reference Paper has turned out to be malleable into any policy outcome that imaginative regulators can reconcile with the document's unobjectionable desiderata," argue Jeffrey H. Rohlfs of Strategic Policy Research, Inc., and J. Gregory Sidak of the American Enterprise Institute.⁴

The danger inherent in such an ambiguous document is that it can be used by some parties to pervert the primary intention of the Basic Telecom accord, liberalization of trade in telecom services. Indeed, a prime example of how those principles can be abused occurred just a few years after the adoption of the WTO agreement when the United States and Japan began bilateral negotiations in the late 1990s to address market access issues.

The FCC's and USTR's Pro-Regulatory Bent

Before discussing the U.S.-Japan negotiations, it is important to note that the WTO Basic Telecom agreement and Reference Paper were both strongly supported by the Federal Communications Commission, which had a major hand in crafting the new global framework. In fact, many of the principles embodied in the Reference Paper were borrowed directly from the Telecommunications Act of 1996.⁵ As then-FCC chairman Reed Hundt said after the Basic Telecom agreement was struck in early 1997, "By this agreement, the Telecommunications Act enacted a year ago by Congress has become the world's gold standard for pro-competitive deregulation."⁶

Unfortunately, Chairman Hundt and the FCC at the time interpreted the Telecom Act with a decidedly pro-regulatory bent. In particular, and as discussed in greater detail below, Hundt's FCC expansively read the Telecom Act's vague interconnection and unbundling provisions in such a way as to

create a highly convoluted and heavy-handed new regulatory regime of infrastructure sharing in America's local wireline telephone marketplace. The intent of these controversial rules—which remain the subject of intense debate in the United States today—was to encourage new entry by smaller carriers by granting them wholesale access to local telephone lines at generously low rates. That would allow smaller carriers to resell telephone service to the public and still make a profit. Since 1996 these line-sharing rules and interconnection-pricing policies have been aggressively enforced by federal and state regulators who believe such mandates are the key to introducing competition to the telephone market.

Not surprisingly, as the United States and Japan began telecom market access talks as part of the Enhanced Initiative on Deregulation and Competition Policy in 1997, the Office of the U.S. Trade Representative pressed Japan to introduce similar line-sharing and interconnection-pricing rules in Japan. For the many reasons outlined in the next section, however, America's interconnection rules and infrastructure-sharing mandates are not an appropriate model for ongoing international trade negotiations on telecommunications policy matters. The volumes of rules and regulations spawned by the Telecom Act have failed to promote facilities-based competition in the American local telephone marketplace despite what policymakers had hoped. Indeed, there is strong evidence that the act has discouraged industry investment and innovation by encouraging carriers to share existing wireline networks instead of deploying new facilities of their own.

The USTR has no business trying to forcibly transplant this controversial and economically questionable model to foreign countries. Market access talks should focus on removing traditional barriers to market access, such as barriers to direct foreign investment and business ownership. The U.S. regulatory model should be reconsidered at home, not imposed abroad.

USTR Continues Effort to Export American Telecom Policy

Although the FCC has taken steps to begin scaling back some of the onerous infrastructure-sharing rules it has imposed within the United States, it appears that the USTR is still attempting to force Japan (and other countries through bilateral negotiations) to adopt those convoluted rules as part of "free-trade" talks.

For example, in the spring and fall of each year the U.S. government issues a set of demands and recommendations to Japan with respect to its telecommunications policies and practices. Some time in late March or early April, the results of the annual review of foreign compliance with telecommunications trade agreements (known as the section 1377 review) are announced by the USTR.⁷

In October, the USTR also presents Japan with reform recommendations and proposals focusing on key industry sectors, including telecommunications. Those recommendations are issued pursuant to the Regulatory Reform and Competition Policy Initiative (the Regulatory Reform Initiative), which replaced the Enhanced Initiative on Deregulation and Competition Policy. This new effort was launched under the U.S.-Japan Economic Partnership for Growth,⁸ which was designed by the two governments to further deregulate their economies, bolster competition, and open markets. This initiative is a bidirectional exchange of recommendations; Japan also makes reform proposals to the United States for strengthening U.S.-Japan bilateral trade and economic relations.⁹

The initiative and partnership are constructive as long as they actually help to accelerate structural reforms in both countries, including the opening of telecom markets. But do they accomplish that objective? And do the initiatives serve as a good model for ongoing bilateral or multilateral telecommunications negotiations?

Again, to the extent those negotiations are aimed at examining legitimate barriers to trade and investment, they are constructive. Unfortunately, however, recent negotiations

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have become bogged down with U.S. efforts to export very detailed, and quite controversial, regulatory policies that should not be the focus of trade negotiations with Japan or any other country.

Moreover, the obsession with ensuring competition on local telephone networks ignores an important fact: those networks are quickly becoming obsolete with the proliferation of rigorous wireless competition and the advent of digital, packet-based broadband systems. As wireless and packet-based Internet systems become substitutes for traditional analog, circuit-switched wireline telephone networks, it is unclear why trade policy should be preoccupied with optimizing trade over older systems. Nonetheless, both the American and the Japanese governments are trapped in outmoded discussions of issues peculiar to the pre-Internet communications age.

Worse yet, the controversial telecom pricing and interconnection regime, which the United States is trying to export to and impose on Japan, could be used as the basis for negotiations between the United States and other countries. For example, the United States is involved in ongoing free-trade agreement (FTA) negotiations with Chile and Singapore, and telecommunications sections will be included in those agreements. Although many U.S. telecom carriers and foreign government officials originally feared that similar interconnection mandates and detailed price controls would be embedded in those agreements,¹⁰ it now appears that those concerns have been addressed and the final telecom language in those FTAs will not resemble that of the Japanese agreement.

Regardless, the USTR must cease efforts to impose American telecommunications regulations on other countries as part of any future free-trade negotiations. Each country has a right to negotiate with any other country on any matter, and results of such negotiation should not create suspicion or animosity on the part of trading partners; trade policy should not create resentment or ill will between trading partners but instead create a

"win-win" feeling among them. Singapore officials, for example, were said to be very worried about possible telecom rule changes that might be required as part of the FTA being negotiated with the United States.¹¹ And Japanese officials have been angered by American efforts to dictate the terms of their domestic telecom policies.

Finally, such bilateral trade talks and agreements need to be viewed within the larger context of ongoing World Trade Organization efforts to establish clear and consistent multilateral rules for global trade in communications services. Convolved communications network interconnection mandates and pricing regulations will not further that end; in fact, they could set back ongoing liberalization efforts worldwide.

The U.S. Telecommunications Act of 1996: Managed, Not Free, Trade

Although it is billed as a historic effort to deregulate the American communications marketplace, the Telecommunications Act of 1996 has very little to do with free trade in the broadest sense of the term. The act is, in reality, a complex effort to manage markets. At the bill-signing ceremony on February 8, 1996, then-speaker of the house Newt Gingrich noted, "This is a bill which correctly uses government to help reshape the private sector so that in the marketplace entrepreneurs compete to please the customer by offering better services at lower cost in a dynamic environment."¹²

That turned out to be a very prescient statement. Indeed, under this bill, the government really did attempt to "reshape the private sector," but not in ways that necessarily pleased companies or consumers, and certainly not in ways that agreed with sound economic policy.

Particularly problematic in this regard has been the FCC's tortuous interpretation and implementation of sections 251 and 252 of

the Telecom Act, which deal with “open-access” requirements for local telephone carriers (interconnection, unbundling, line sharing, and the like). Although those sections took up only a few pages of the Telecom Act, the FCC promulgated a “Local Competition Order” in August 1996 to implement the access-related provisions of the act. The order weighed in at a staggering 737 pages and contained more than 3,200 footnotes.¹³ That edict, which ranks as one of the longest and most convoluted rules in the history of regulatory policymaking in America, produced a stream of litigation that continues today.

In fact, the U.S. Supreme Court has already been forced to hand down two mammoth decisions dealing with the FCC’s controversial reading of the Telecom Act’s provisions. To make a very long story short, the FCC’s local competition rules basically mandated that local telephone carriers (a) share several elements of their networks with rivals and (b) do so at a price set by regulators that was far below the actual costs the Bells incurred to build and maintain those networks. The infrastructure-sharing mandates were supposed to increase “competition” in the provision of local telephone service by encouraging new “rivals”—called Competitive Local Exchange Carriers (CLECs)—to enter the market and lease elements of existing networks at greatly discounted rates and then resell the recombined elements for a profit.

The Controversy Goes to the Supreme Court

The Supreme Court dealt with the sensibility of these infrastructure-sharing mandates in the 1999 case of *AT&T v. Iowa Utilities Board*¹⁴ and ruled that the FCC had overzealously interpreted the act. The Court’s decision partially overturned the agency’s mandates on the sharing of unbundled network elements (UNEs)—the distinct elements of the communications networks owned by local telephone companies—but regrettably left much of the FCC’s authority to mandate such infrastructure sharing intact. Worse yet, in dealing with the second part of the FCC’s local competition rules—those regarding

how access to network elements should be priced and how the local telephone companies should be compensated—the Court’s May 2002 decision in *Verizon Communications v. Federal Communications Commission*¹⁵ was even more disappointing. Specifically, the Court reviewed the pricing methodology and model and total element long-run incremental cost, or TELRIC, that the FCC created to accomplish that task. That model has been highly controversial because it estimates costs by imagining what it might cost to construct and operate a hypothetical, efficiently designed network from scratch. Was the FCC’s cost model fair? Did it adequately compensate the Bells? Did TELRIC encourage enough industry investment? On all those questions the 7-to-1 majority of the Court ruled in the affirmative and vindicated the FCC’s six-year effort to divine costs through some rather creative regulatory reasoning and controversial economic models.

The Impact of the Rules on Innovation, Investment, and Competition

The Court’s ruling means that American regulators will be allowed to continue to force incumbent telephone companies to share elements of their networks with rivals at heavily discounted rates. Although it remains unclear how big a blow the ruling will be to ongoing efforts to liberalize the industry, it will certainly make the transition to a free market in telecom services more difficult than was previously expected. Moreover, despite the Court’s rather lame defense of the FCC’s system of UNE price controls, it remains unmistakably clear that fairy tale regulatory models like TELRIC do not mesh with economic reality since they fail to account for the actual costs of building and maintaining networks. As a consequence, numerous critics have pointed out that TELRIC-style regulation poses a threat to industry investment, innovation, and genuine *facilities-based* competition.

Alfred Kahn, author of *The Economics of Regulation*¹⁶ and former chairman of the now-defunct Civil Aeronautics Board, has referred

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to the logic behind TELRIC as “regulatory arrogance” and noted that “by their meddling, under enormous pressure to produce politically attractive results, regulators have violated the most basic tenets of efficient competition—that it should be conducted on the basis of the respective actual incremental costs of the contending parties; and it is that competition, rather than regulatory dictation, that should determine the results.”¹⁷

And technology guru George Gilder, author of *Telecosm: How Infinite Bandwidth Will Revolutionize Our World*,¹⁸ has argued, “Like any price-control scheme, TELRIC choked off supply, taking the profits out of the multibillion-dollar venture of deploying new broadband pipes.” Moreover, Gilder adds, open-access and unbundling mandates discourage broadband investment by “privatizing the risks and socializing the rewards. No entrepreneurs will invest in risky, technically exacting new infrastructure when they must share it with rivals.”¹⁹

Sadly, only Justice Stephen Breyer gave those arguments any credence in the two Supreme Court decisions. It should be noted that Justice Breyer was a respected expert on the law and economics of regulation long before he joined the Court and is the author of *Regulation and Its Reform*,²⁰ a standard textbook for students of the regulatory process. That expertise shone through in Breyer’s scathing dissents to the majority decision in both cases in which he raised the important question of whether there was any rational connection between the regulations the FCC promulgated and the Telecom Act’s stated goal of deregulating this sector. As Breyer argued in the Verizon decision: “The problem before us—that of a lack of ‘rational connection’ between the regulations and the statute—grows out of the fact that the 1996 Act is not a typical regulatory statute asking regulators simply to seek low prices, perhaps by trying to replicate those of a hypothetically competitive market. Rather, this statute is a deregulatory statute, and it asks regulators to create prices that will induce appropriate new entry.”²¹ Breyer goes on to correctly note that the FCC’s TELRIC pricing rule and UNE

requirements “bring about, not the competitive marketplace that the statute demands, but a highly regulated marketplace characterized by widespread sharing of facilities with innovation and technological change reflecting mandarin decision-making through regulation rather than decentralized decision-making based on the interaction of freely competitive market forces. The majority nonetheless finds the Commission’s pricing rules reasonable. As a regulatory theory, that conclusion might be supportable. But under this deregulatory statute, it is not.”²²

Regrettably, the rest of the Court didn’t accept Breyer’s arguments. Instead, the justices downplayed the negative disincentives posed by such infrastructure-sharing rules and simply deferred to the FCC’s “by any means necessary” crusade to encourage new rivals to enter this marketplace. Through its actions, the agency has essentially proclaimed that a nose count of new entrants is more important than network investment and genuine facilities-based competition. The wisdom of that policy has been put to the test by industry analysts and in the actual business market and has been found wanting.²³

In fact, in a comprehensive survey of the CLEC market, Brookings Institution economist Robert Crandall has found that “CLECs are best able to produce revenue growth by building their own networks or significant parts of their own networks. CLECs that only resold the established carriers’ services were generally unable to convert investments into revenues, and these companies were likely to fail.”²⁴ In other words, markets are sending policymakers a clear message: business models that are heavily dependent on a forced-access regulatory regime are not sustainable.²⁵

Therefore, although the ostensible purpose of all of that regulatory activity was to create and maintain credible competitors to the Baby Bells, the FCC has instead simply created a small cottage industry of corporate free riders without serious business plans or chances for long-term survival.²⁶ While there is nothing wrong with voluntary wholesale or resale arrangements between incumbents

and new carriers, current forced-access mandates have artificially encouraged rivals to flock to the reselling option and largely ignore facilities-based alternatives. Thus, open-access regulation has discouraged investment in network upgrades and deployment, especially by incumbent carriers, who fear that the imposition of unbundling and line-sharing mandates on new services will prevent them from recovering the exorbitantly high fixed costs of network service. As economists J. Gregory Sidak of the American Enterprise Institute; David J. Teece, professor at the Haas School of Business at the University of California-Berkeley; and Thomas M. Jorde, professor of law at the University of California-Berkeley, argue:

Mandatory unbundling decreases an ILEC's [Incumbent Local Exchange Carrier] incentive to invest in upgrading its existing facilities by reducing the *ex ante* payoffs of such investment. Requiring a firm to grant to its competitors unbundled access to its facilities at TELRIC-based rates greatly reduces, if it does not eliminate entirely, the probability of excess return; such mandatory unbundling thus eliminates the ILEC's incentive to invest in existing facilities. It makes no economic sense for the ILEC to invest in technologies that lower its marginal costs, so long as competitors can achieve identical savings by regulatory fiat.²⁷

The wider economic harm caused by forced-access regulation has been powerfully summarized by Scott C. Cleland, chief executive officer and founder of Precursor Group, a leading Washington, D.C.-based investment research organization specializing in investment trends in the telecommunications and high-technology sector. Cleland argues:

Unfortunately, the Telecom Act and FCC implementation have turned

out to be a bipartisan economic disaster contributing to the severity and length of the economic downturn in telecom-tech. At the most basic economic level, the Government set wholesale prices *below real cost* in the high-fixed cost, price-inelastic local access market segment, poisoning prospects for economically sound *facilities investment*. Unintentionally, government telecom policy is contributing to the destruction of companies, jobs, and shareholder wealth by discouraging economic investment and rewarding uneconomic investment.²⁸

The U.S. Interconnection Rules and Global Free-Trade Negotiations

In summary, the FCC's tortured economic reasoning and the Supreme Court's misplaced support of it cannot change the fact that network sharing has not been a very good microeconomic business model or macroeconomic investment thesis. Unfortunately, however, the recent Supreme Court decisions perpetuate the FCC's models and methods and encourage companies to continue to petition the regulators to rig the rules in favor of generously discounted access to existing and future communications networks and technologies. As Eli Noam, professor of economics and finance at the Columbia Business School, summarized in a recent editorial: "When in 1996 the Telecom Act was passed, many people hailed it as a Magna Carta of deregulation. It is turning out to be the enabler of long-term regulatory intervention and of a centralization of regulation in Washington. Ironically, it is the economic conservatives on the Supreme Court who have now sanctioned this expansion of central regulatory powers."²⁹ Consequently, this sets the stage for years of additional regulatory proceedings and casts a dark cloud over the emerging universe of broadband technologies and services since the legal environment remains riddled with uncertainty.

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Three conclusions can be drawn from this analysis of the Telecom Act and subsequent FCC regulations for communications markets:

1. America's experiment with aggressive open-access regulation has done little to encourage credible facilities-based competitors but has instead encouraged regulatory opportunists to take advantage of a convoluted legal regime of unbundling mandates and network access price controls to hitch a free ride on other carriers' networks. (As discussed below, the most credible facilities-based competitors that have arisen to challenge the supremacy of incumbent local telephone giants have been wireless cellular providers, which are unregulated and were largely ignored by the authors of the Telecom Act.) Moreover, substantial evidence now suggests that open-access regulation has discouraged investment in network upgrades and deployment, especially by incumbent carriers, who fear that the imposition of unbundling and line-sharing mandates on new services will prevent them from recovering the exorbitantly high fixed costs of network service.
2. For these reasons, the Telecom Act's new regulatory framework remains a controversial and unsettled matter within the United States. Policymakers and judges at the federal and state levels have challenged the wisdom of the act, and some have attempted to significantly modify or even strike down large portions of the act's infrastructure-sharing provisions. Legislation has also been introduced in the U.S. Congress to reform those rules,³⁰ and the FCC has introduced several proceedings aimed at loosening the impact of those mandates on industry.³¹
3. Finally, given the ongoing controversy over the Telecom Act's open-access regulatory regime, it should be clear that it should not be employed as a model for ongoing global trade negotiations. In

essence, the Telecom Act is an attempt to manage trade in telecommunications markets. As such, it is hardly a sensible framework for free trade in telecom services worldwide. As Leonard Waverman, professor of economics at the London School of Business notes, "[T]o enshrine current U.S. regulatory issues in a multi-lateral trade agreement is both foolish and dangerous."³² And economist Larry Darby similarly concludes that "[the United States] should not try to export the details of our regulatory approach or its rules, nor should we develop negotiating strategies that would tilt in that direction."³³

The Decline of Traditional Telephony and What It Means for Trade Policy

The preceding analysis makes it clear that U.S. regulators have made an unfortunate choice of legal regimes for the telecommunications sector. But an equally serious problem with the Telecom Act and subsequent FCC rulemakings is their misplaced focus on a marketplace that is clearly in decline: voice telephony over analog, circuit-switched wireline networks. Voice traffic over the traditional telephone system is no longer as profitable as it once was because many customers are cutting their phone lines and moving to alternative communications networks and technologies.³⁴ Wireless cellular systems and Internet-based forms of communication pose the most serious threat to traditional providers.

The Shift to Wireless

The most serious short-term threat to the vitality of traditional wireline systems is wireless cellular service. Wireless telephony has until recently been considered only a complement to wireline voice services, but recent FCC surveys of wireless-wireline competition reveal that "there is growing evidence that consumers are substituting wireless service

for traditional wireline communications. . . . Several local carriers have attributed declining access line growth rates in part to substitution by wireless.³⁵ An August 2002 report by the credit-rating firm Moody's similarly argued that "wireless services could increasingly displace local wireline voice services."³⁶ When the threat posed by wireless cellular service is combined with the threat of cable television providers who are increasingly offering voice telephone service over their systems,³⁷ the threat to incumbent telephone companies appears quite serious. Several recent industry surveys and reports support this contention:

- A January 2002 USA Today/CNN/Gallup poll confirmed that a gradual shift to wireless is well under way in America. Eighteen percent—almost one in five—of cell phone owners surveyed consider their cell phones their "primary phone."³⁸ As a result, in 5 to 10 years, "the vast majority of us are going to be using wireless phones as our main phones," noted telecom analyst Jeff Kagan.³⁹
- *Forbes* magazine recently reported that 9 million local (wireline) phone lines were cut off in America in 2001, a 4.7 percent decline in the total number of phone lines from the year before.⁴⁰ Further declines in wireline use are expected for 2002.
- A recent study by IDC, a global technology industry analysis firm, projected that consumers will continue to opt for wireless services over wireline options and that this will result in the displacement of 20 million wireline access lines by 2005.⁴¹ IDC attributes this shift to falling prices, improved geographic service quality, and the popularity of bundled pricing programs that provide evening and weekend local and long-distance calling at little or no additional cost.
- Telecompetition, Inc., a telecommunications networks and services forecasting firm, recently predicted that wireless and cable telephone service providers will steal

30 million access lines away from wireline carriers over the next five years.⁴²

Those reports and surveys make it clear that communications consumers are substituting buckets of wireless minutes for traditional local and long-distance wireline service and some are even "cutting the cord" as they find they no longer need wireline service in their homes. Some pioneering wireless firms, such as San Diego, California-based Leap Wireless, are even making that theme their core business model as they craft service plans meant to steal wireline users away for good. Leap Wireless has 1.4 million customers and more than a quarter of them have eliminated their previous wireline provider entirely.⁴³ Leap's chief executive Harvey White recently told *Forbes* magazine that this is part of a larger generational shift. "Our demographic is younger," noted White, "and when people start a household today they simply never bother to get a land line."⁴⁴

The Internet Challenge to Traditional Telephony

An equally serious threat to the centrality of traditional voice-based wireline telephone networks comes from the rise of broadband Internet protocol (IP) networks. The Internet enables not only high-speed data transmission but also the transmission of voice traffic through Internet protocol or VoIP (voice over IP). VoIP technology uses IP to deliver voice information in the form of digital packets rather than over traditional circuit-switched analog networks.⁴⁵ This technology could make traditional telephone networks obsolete in the relatively near future and serves as a classic example of what Clayton Christensen, author of *The Innovator's Dilemma: When New Technologies Cause Great Firms to Fail*, refers to as a "disruptive technology."⁴⁶

Christensen points out that disruptive Internet technologies, such as VoIP, may eventually supplant what he calls "sustaining technologies," such as the traditional telephone network systems.⁴⁷ The technological paradigms for telephone networks and IP

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networks are quite different, and Christensen argues that the new paradigm of packet-switched communications networks (the Internet) should supersede the old paradigm of circuit-switched telecommunications networks (telephones).⁴⁸

The significance of the new networks must be taken into account in international trade negotiations in this arena since this may become a very disruptive technological shift for traditional wireline providers. As Peter Huber, Michael K. Kellogg, and John Thorne, authors of *Federal Telecommunications Law*, summarize, "The advent of the Internet generally, and IP telephony in particular, will be profoundly destabilizing for the entire telecommunications industry."⁴⁹

That is already proving to be the case in some countries as Internet networks grow and data compression technologies advance. Some global operators have laid out large-capacity optical fiber networks for long-distance and international voice communications at cheap rates, without using conventional long-distance telephone lines. In China those operators have been offering VoIP services since 1999, bypassing telephone lines. By simply buying an IP telephone card and connecting to the optical fiber networks with an access code and a mobile phone, one can make a call to the United States at a very low rate.

Inexpensive VoIP access is possible because network construction requires a reasonably low investment and operational costs are similarly modest. IP networks have been dubbed the "Stupid Network" by David Isenberg because the new IP networks rely on distributed knowledge and end-user capabilities.⁵⁰ By comparison, in Isenberg's analysis, telephone networks are "Intelligent Networks" because they rely on a remarkably complex system of switches, circuits, and other sophisticated tools and capabilities in networks to ensure that calls are accurately placed, without any errors or malfunctions. But upgrading the networks requires a huge investment, since intelligent switches must be constantly replaced. The "Stupid Network," on the other

hand, performs no functions on its own. All the functions go to edges of networks and are provided for, and controlled by, end-user terminals. Any terminal can be plugged into the network, as long as it is compatible with IP. Therefore, running costs for the IP networks are minimal, and low rates for network usage can be maintained.

Thus, the telephone industry today faces the reality of shrinking network use and declining profitability as wireless- and Internet-sector firms and technologies challenge the hegemony of traditional voice providers. It is unlikely that the volume of communications traffic over traditional analog telephone networks will grow significantly in this environment. Regrettably, however, despite this seismic shift, U.S. trade negotiators continue to be preoccupied with micro-managing trade in traditional wireline telephone markets.

Mistakes Made during U.S.-Japan Trade Talks

Despite clear signs that the wireline voice marketplace is in a state of decline, it seems that the U.S. government is myopically focused on the well-being of this industry sector. Worse yet, it has become abundantly clear that American trade negotiators are attempting to dictate the terms of Japan's domestic telecommunications policy.

For example, during the U.S.-Japan talks in 2000, American trade negotiators argued that U.S. long-distance telephone operators pay overly high connection fees to Japanese regional operators, such as NTT East Corporation, NTT West Corporation, and NTT DoCoMo (all subsidiaries of Nippon Telegram and Telephone Corporation) and are not allowed to compete fairly in the Japanese market. Despite that claim, however, some European telephone companies have successfully entered the Japanese market.

During the talks, the U.S. government also claimed that NTT's high interconnection fees were preventing the expansion of

Internet use in Japan. That is a misleading claim, however, because the interconnection fees charged long-distance operators by NTT companies do not directly affect Japan's Internet users. As in the United States, narrowband Internet users normally dial a local number to connect to the Internet. Only users who call long distance to access the Internet might benefit from reduced connection fees in the form of possibly lower long-distance rates, but those long-distance callers are a very small minority. For the vast majority of users who connect locally to the Internet, the basic local dial-up rate is far more relevant. If NTT companies are forced to raise local rates to offset income lost from reducing interconnection fees for long-distance operators, those price increases could have a negative impact on the spread of Internet use in Japan.

In accordance with the July 2000 U.S.-Japan agreement, NTT regional companies did lower interconnection fees by 20 percent. NTT companies also lowered local rates last year as a result of the introduction of the "My Line" (preselection) system in Japan, which required consumers to choose their own local, long-distance, and international telephone carriers. (NTT used to be the "default" carrier; consumers were automatically connected to NTT unless they signed up for another carrier.) NTT East and West have both suffered severe declines in revenue; NTT West has not yet recovered the lines it lost. Under these circumstances, NTT companies have been forced to refrain from new capital investment projects, which will hurt Japanese consumers in the long term.

The arguments made by the USTR during the 2000 trade talks also included contradictory objectives for competition policy. The USTR criticized NTT's domination of the Japanese market, claiming that more than 95 percent of local telephone lines (facilities and physical lines) belong to NTT. The USTR therefore demanded that other operators besides NTT invest in new facilities and lines to introduce more competition in the market. On the other hand, the USTR also

requested a reduction in NTT's interconnection rates in accordance with America's TELRIC pricing model to require the unbundling and sharing of NTT lines at greatly discounted rates. When such extensive unbundling and line-sharing rules are promoted, other telephone operators are likely to use NTT's facilities and lines to provide service instead of building their own—an effect much like that of the CLECs in America. Consequently, the USTR is making contradictory demands on Japan, since infrastructure sharing and facilities-based competition are conflicting objectives.

And, again, it is worth pointing out that the FCC is reviewing its regulations and beginning to ease the unbundling obligations of U.S. regional telephone companies in light of the problems those rules have caused in the American marketplace. So it makes little sense for the USTR to demand that a foreign country do something that is contrary to the communication policies of its own country.

The USTR has also issued misleading claims regarding interconnection fees for wireless services, which U.S. international carriers pay to Japanese wireless operators. The USTR criticizes Japanese wireless operators for charging high interconnection fees and argues that the fees are harmful to U.S. operators and consumers. However, when an American consumer calls from the United States to a mobile phone user in Japan, U.S. international carriers charge the American consumer more than Japanese operators charge the American consumer. Therefore, the high prices that U.S. consumers are paying are mainly due to the charges imposed by U.S. international carriers.

Finally, it should be reiterated that the U.S.-Japan talks on open-market policies in the field of telecommunications have focused primarily on the wireline telephone sector, a declining market in both America and Japan. Cellular phones may be a growing sector, but as long as they are connected to conventional telephone lines, the old industry interconnection rules will likely apply.

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U.S.-Japan talks on open-market policies in the field of telecommunications have focused primarily on the wireline telephone sector, a declining market in both America and Japan.

But as packet-switched and Internet-based telephony becomes a reality, the whole issue of interconnection fees will be drastically reframed.

Importance of Differences between U.S. and Japanese Political Systems

One can better understand why the USTR relied on the old paradigm in bringing up those issues by examining who is advising the trade negotiators when they engage in talks on these matters. For instance, the USTR collects comments from the private sector to prepare the section 1377 review. Comments from companies, such as AT&T, BellSouth, Comptel, and the Telecommunications Industry Association were taken into account in preparing this year's review.⁵¹ The USTR naturally listens to, and relies heavily on, those corporations and associations when engaged in complex trade negotiations over technical matters such as telecommunications policy. The FCC also has an informal advisory role.

The Japanese political system is different, however. The Japanese counterpart to the USTR in the trade negotiations is the Ministry of Foreign Affairs. There is no government agency equivalent to the USTR. MOFA gets input on telecommunications negotiations from the Ministry of Public Management, Home Affairs, Posts and Telecommunications, which oversees telecommunications policies. But MOFA and MPHPT do not necessarily represent corporate interests, although they do work for the Japanese people and national interests. Their political posture is similar to that of the U.S. State Department, which works to further broad national interests but does not represent particular corporate interests.

The USTR has continued to complain that MPHPT and NTT are one and the same. The ministry did set up a public telecommunications entity once, a predecessor to NTT. Since NTT was privatized in 1985, a kind of tension has persisted between the ministry and NTT. They do not cooperate in the way that the USTR and telecommunications

companies work together to pursue common interests. Their interests are often irreconcilable. NTT's management wants the best solution for its own operations, while the ministry wants to take control of telecommunications policies as a regulator. The ministry needs to approach negotiations with balanced proposals to satisfy the U.S. government, new Japanese common carriers, and NTT. Therefore, its policy decisions on deregulation and other trade issues do not necessarily accord with NTT's views.

Impact on U.S. Industries

It is also incorrect to assume that a reduction in NTT's interconnection rates would unambiguously benefit the United States. As a consequence of the revenue losses incurred by reducing fees, NTT East Corporation and NTT West Corporation have less money to spare for investment expenditures. They have purchased large amounts of U.S.-made communications equipment each year, but their budgetary constraints will leave them able to afford fewer U.S. products. The purchase of U.S. goods has also been a trade issue since the late 1970s, and Japanese companies, including NTT, have stepped up efforts to procure U.S. high-tech equipment. While U.S. telecommunications services operators would benefit from reduced interconnection rates and possibly increased profits, U.S. vendors to NTT companies would lose sales.

It is plausible to assume that telephone company profits will eventually go up, as communication volume increases because of lower connection fees and consequent lower rates. But a substantial increase in volume is unlikely even with lower rates, since the Japanese telephone market is already saturated. The reduction of interconnection rates has only caused financial harm to NTT companies.

Ultimately, what the USTR and many U.S. companies profess to want is access to the Japanese telecommunications service market. The Japanese market is already very open to new entrants—no regulations prevent them from operating in Japan, except for a law mandating that one-third of NTT shares belong to

the Japanese government. Vodafone, a British company that became a majority shareholder of Japan Telecom Company, has successfully made inroads into the Japanese market. NTT's facilities and lines are equally accessible to any foreign operator.

If foreign companies fail to enter the Japanese market, it is more likely due to the fact that they may have problems securing investment for foreign expansion, or do not have appropriate services to offer Japanese consumers. One does not have to go to business school to understand that it is important to offer unique services that appeal to consumers in different cultures. Successful American companies localize their products and services. Exporting what is offered in the United States to a foreign country is not necessarily the right formula for successful marketing. If Toyota were to introduce new cars with right-side steering wheels from Japan into the United States, and the Japanese government demanded that American automakers start producing right-side steering wheels, the U.S. government would probably advise the Japanese to study the U.S. market first.

Conclusion: A New Vision for Telecom Trade Policy

While the United States, through USTR negotiators, meddles with the declining wireline telephone industry in foreign countries, many parts of the world are making rapid advances with new communications and broadband industries and technologies. Canada, Korea, and Japan have made amazing strides in this regard, and broadband subscribership is growing faster in those countries than in the United States.

U.S. officials should not waste time tinkering with the old telecommunications paradigm attempting to fix the problems of the past. America has been the principal leader in the development of new markets and technologies, but of late it seems that U.S. telecom regulators and trade negotiators are less interested in promoting new technological

solutions and markets than they are in micromanaging old ones. At some point, this could have a serious impact on American competitiveness. "The U.S. jumped into broadband ahead of most of the rest of the world," notes Scott Woolley of *Forbes*. "But today subscriber rolls are climbing faster overseas, where monthly bills are lower and speeds are faster."⁵²

Moreover, the misguided focus on micro-managing old telecommunications networks across the globe is likely to generate resentment among trading partners if the United States continues to insist that the rest of the world remake its telecom sectors in the image of America's heavy-handed Telecommunications Act of 1996. Trade negotiators should instead refine their telecommunications and trade policies to reflect technological advances and conduct constructive negotiations based on emerging market realities. They should realize that wireless services and the Internet are assuming a more dominant role in the communications market, pushing aside the traditional telephone industry and its corresponding regulatory paradigm. It is a waste of time for governments to engage in bitter negotiations over the issues of the past.

What then should concern trade negotiators? To begin, to the maximum extent possible, all governments should agree to deal with these matters within the WTO's multilateral framework. WTO processes take longer than a bilateral framework, but bilateral negotiations over such technical matters often tend to become too political to reach reasonable conclusions. Even though the Basic Telecom accord is flawed, it still presents the best opportunity to successfully implement comprehensive liberalization across the globe.

Second, whether trade negotiators pursue either bilateral or multilateral telecommunications trade agreements, they should limit their focus to the most serious barriers to foreign direct investment. Most countries, including the United States, continue to have percentage-based caps on the amount of foreign investment that is allowed in the market or in specific industries and companies.

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Those rules are ripe for reform. Negotiators may also deal with market investment issues, such as undersea cable landing rights, access to public rights-of-way, access to spectrum licenses or permission to bid in ongoing spectrum auctions, and international orbital assignments for communications satellites.

While such objectives would be worthy of discussion as part of any ongoing trade negotiations, what should not be considered in trade negotiations are far more specific rules or policy paradigms that require countries to adopt very detailed regulatory regimes for their domestic markets. For example, universal service subsidization policies or interconnection and network unbundling rules, like those the United States has been attempting to force on Japan, are not appropriate issues for negotiation.⁵³ The focus should be on removing traditional barriers to investment, not the wholesale restructuring of entire industries (especially old or dying sectors) to conform to some grandiose vision of what a “perfectly competitive” market is supposed to look like.

Finally, as global leaders in telecom markets, U.S. and Japanese officials should lead a multinational effort to facilitate the growth of nascent telecom and broadband markets in developing nations. Governments do not need to directly inject capital into those markets or provide aid to accomplish this goal. Rather, they should encourage less-developed countries to open their markets to much-needed foreign investment by well-established industry players and adopt a simple set of rules for ongoing competition within this sector. A more coherent multilateral vision would itself stimulate the markets by attracting venture capital, private equity, and other forms of investment.

Notes

1. World Trade Organization, Data on Telecommunications Markets Covered by the WTO Negotiations on Basic Telecommunications, February 17, 1997, www.wto.org/english/news_e/pres97_e/data3.htm.

2. World Trade Organization, General Agreement on Trade in Services, www.wto.org/english/tratop_e/serv_e/gatsintr_e.htm.
3. World Trade Organization, Negotiating Group on Basic Telecommunications, April 24, 1996, www.wto.org/english/tratop_e/serv_e/telecom_e/tel23_e.htm.
4. Jeffrey H. Rohlfs and J. Gregory Sidak, “Exporting Telecommunications Regulation: The U.S.-Japan Negotiations on Interconnection Pricing,” *Harvard International Law Journal* 43 (Summer 2002): 10, www.aei.org/ra/rasida29.pdf.
5. Telecommunications Act of 1996, Public Law 106-106, 47 U.S.C. §151, February 8, 1996.
6. Reed E. Hundt, “Statement of FCC Chairman Reed Hundt Concerning WTO Agreement on Telecom Services,” February 18, 1997, www.fcc.gov/Speeches/Hundt/st021597.html.
7. The section 1377 review of 2002 is available on the USTR website, www.ustr.gov/releases/2002/04/02-39.htm. On the day before the release of the 2002 section 1377 review, the National Trade Estimate Report was also released by the USTR. That report discussed Japanese telecommunication issues. See www.ustr.gov/releases/2002/04/02-37.htm.
8. Ministry of Foreign Affairs of Japan, “U.S.-Japan Economic Partnership for Growth,” June 30, 2001, www.mofa.go.jp/region/n-america/us/pmv0106/joint_ehtml
9. Ministry of Foreign Affairs of Japan, “Submission by the Government of Japan to the Government of the United States regarding Regulatory Reform and Competition Policy,” October 14, 2001, www.mofa.go.jp/region/n-america/us/submit0110.html.
10. “USTR Says Telecom Rules in New FTAs Will Not Hamper U.S. Regulators,” *World Trade Online*, October 18, 2002, www.insidetrade.com.
11. William New, “Telecoms Remain Concerned on Singapore Negotiation,” *National Journal Technology Daily*, August 13, 2002, p.m. edition.
12. “The President and Vice President Deliver Remarks after Signing the Telecommunications Reform Act of 1996,” Federal Document Clearing House, Inc., *FDCH Political Transcripts*, February 8, 1996.
13. Federal Communications Commission, *Implementation of the Local Competition Provisions of the Telecommunications Act of 1996*, First Report and

Order, FCC Docket no. 96-325, August 8, 1996, www.fcc.gov/Bureaus/Common_Carrier/Orders/1996/fcc96325.pdf.

14. *AT&T v. Iowa Utilities Board*, 525 U.S. 366 (1999), www.caselaw.lp.findlaw.com/cgi-bin/get-case.pl?court=US&navby=case&vol=000&invol=97-826.

15. *Verizon Communications Inc. v. Federal Communications Commission*, 535 U.S. ___ (2002), [www.supremecourtus.gov/opinions/01pdf/00-511.pdf](http://www.a257.g.akamaitech.net/7/257/2422/29apr20021100/www.supremecourtus.gov/opinions/01pdf/00-511.pdf).

16. Alfred E. Kahn, *The Economics of Regulation: Principles and Institutions* (Cambridge, Mass.: MIT Press, 1988).

17. Alfred E. Kahn, "Resisting the Temptation to Micromanage: Lessons from Airlines and Trucking," in *Regulators' Revenge: The Future of Telecommunications Deregulation*, ed. Tom W. Bell and Solveig Singleton (Washington: Cato Institute, 1998), p. 27.

18. George Gilder, *Telecosm: How Infinite Bandwidth Will Revolutionize Our World* (New York: Free Press, 2000).

19. George Gilder, "Tumbling into the Telechasm," *Wall Street Journal*, August 6, 2001, p. A12.

20. Stephen Breyer, *Regulation and Its Reform* (Cambridge, Mass.: Harvard University Press, 1982).

21. Justice Stephen Breyer, dissenting opinion in *Verizon*, p. 22.

22. Ibid., p. 25.

23. Not being patient enough to wait for true facilities-based innovation and investment to develop, regulators instead "opted for quick, ephemeral results—a superficial froth of resale competition—over the substance of real competition based on newly built facilities," in the words of John Thorne, senior vice president and deputy general counsel of Verizon Communications. "The Commission was more interested in counting noses than in counting networks." John Thorne, "The 1996 Telecom Act: What Went Wrong and Protecting the Broadband Buildout," Verizon Communications, Washington, 2001, p. 6.

24. Robert W. Crandall, *An Assessment of the Competitive Local Exchange Carriers Five Years after the Passage of the Telecommunications Act* (Washington: Criterion Economics, L.L.C., June 2001, Revised January 2002), p. 4, www.criterioneconomics.com/documents/Crandall%20CLEC.pdf.

25. See Larry F. Darby, Jeffrey A. Eisenach, and Joseph S. Kraemer, "The CLEC Experiment: Anatomy of a Meltdown," Progress and Freedom Foundation, *Progress on Point*, Release 9.23, September 2002.

26. See Adam Thierer, "Forced Access Follies Continue: The Case of Special Access Services," Cato Institute *TechKnowledge* no. 32, January 28, 2002, www.cato.org/tech/tk/020128-tk.html.

27. Thomas M. Jorde, J. Gregory Sidak, and David J. Teece, "Innovation, Investment, and Unbundling," *Yale Journal of Regulation* 17, no. 1 (2000): 8.

28. Scott C. Cleland, "Why De-Regulation Is Now the Dominant Telecom Trend/Theme," Precursor Group, Washington, November 28, 2001. Emphasis in original.

29. Eli Noam, "Regulating in Order to Deregulate," *FT.com*, May 22, 2002, www.columbia.edu/elinoam/articles/ft1.pdf.

30. See Adam D. Thierer, "The Tauzin-Dingell Bill and the National Academy of Sciences Broadband Study: Calls for Broadband Freedom," Cato Institute *TechKnowledge* no. 29, December 14, 2001, www.cato.org/tech/tk/011214-tk.html; and Adam Thierer, "Conflict of Broadband Visions: Breaux-Nickles vs. Hollings," Cato Institute *TechKnowledge* no. 36, May 10, 2002, www.cato.org/tech/tk/020510-tk.html.

31. Adam Thierer, "How Four FCC Rulemakings Could Finally Break the Broadband Logjam," Cato Institute *TechKnowledge* no. 34, March 28, 2002, www.cato.org/tech/tk/020328-tk.html.

32. Leonard Waverman, "Telecommunications and Trade Promotion Authority: Meaningful Market Access Goals for Telecommunications Services in International Trade Agreements," Testimony before the Subcommittee on Commerce, Trade, and Consumer Protection of the House Committee on Energy and Commerce, October 9, 2002, www.energocommerce.house.gov/107/hearings/10092002Hearing740/Waverman1220.htm.

33. Larry Darby, "Telecommunications and Trade Promotion Authority: Meaningful Market Access Goals for Telecommunications Services in International Trade Agreements," Testimony before the Subcommittee on Commerce, Trade, and Consumer Protection of the House Committee on Energy and Commerce, October 9,

2002, www.energycommerce.house.gov/107/hearings/10092002Hearing740/Darby1219.htm.

34. For the best recent survey of this trend and what it means for incumbent telephone providers, see Scott Woolley, "Bad Connection," *Forbes.com*, August 12, 2002, www.forbes.com/forbes/2002/0812/084.html.

35. Federal Communications Commission, *Annual Report and Analysis of Competitive Market Conditions with Respect to Commercial Mobile Services*, Seventh Report, FCC 02-179, July 3, 2002, p. 32, wwwhraunfoss.fcc.gov/edocs_public/attachmatch/FCC-02-79A2.pdf.

36. Quoted in Reinhardt Krause, "Verizon May Face Downgrade," *Investor's Business Daily*, September 25, 2002, p. A6.

37. Peter Grant, "More Consumers Answer Cable's Call on Phone Service," *Wall Street Journal*, September 5, 2002, p. B1.

38. Michelle Kessler, "18% See Cell Phones as Their Main Phones," *USA Today*, January 31, 2002, www.usatoday.com/money/tech/2002-02-01-cell-phones.htm.

39. Ibid.

40. Woolley, "Bad Connection."

41. "20 Million Access Lines Lost to Wireless, Study Says," *MobileInfo.com*, no. 2002-03, January 2002, www.mobileinfo.com/News_2002/Issue03/IDC_study.htm.

42. "New Study Reveals Mobile Carrier Threat to Wireline," Cellular Telecommunications and Inter-net Association, *Wireless Newsline Releases*, June 3, 2002, www.wow-com.com/news/wireless_newslines/press_release.cfm?press_id=4083.

43. Woolley, "Bad Connection."

44. Quoted in *ibid.*

45. Consumer VoIP service is available in Japan. For example, Fusion Communications offers a nation-wide fixed-rate service for 20 yen for three minutes.

46. Clayton M. Christensen, *The Innovator's Dilemma: When New Technologies Cause Great Firms to Fail* (New York: Harper Business, 2000).

47. *Ibid.*, p. xxv.

48. *Ibid.*

49. Peter W. Huber, Michael K. Kellogg, and John Thorne, *Federal Telecommunications Law*, 2d ed., 2003 Cumulative Supplement (Gaithersburg, Md.: Aspen Law & Business, 2003), p. 5.

50. David Isenberg, "Rise of the Stupid Network," *Computer Telephony*, August 1997, pp. 16-26, www.isen.com.

51. See U.S. Trade Representative, "Section 1377 Review," www.ustr.gov/sectors/industry/Telecom_1377.

52. Scott Woolley, "Bottleneck Breakers," *Forbes*, November 11, 2002, p. 108, www.forbes.com/forbes/2002/1111/106chart.html.

53. The problem with interconnection as even a general rule is that it will eventually require very specific regulations to enforce. Regulators will need to implement ongoing rules to answer the following questions: Which companies or industry sectors will be subject to the rules? What infrastructure components will be subject to such rules? On what terms will the specific components be shared? How long are those mandates to last? And, most important, how should incumbent network owners be compensated for interconnection to, and reuse of, their embedded systems?

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