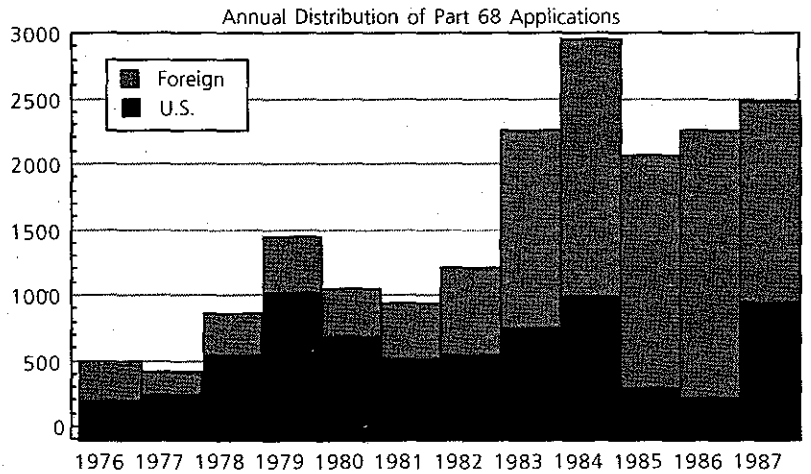
ing the initiative in the near term. The probabilities, unfortunately, are that the United States will likely continue to muddle along in this sector, as telecommunications trade deficits mount.

Eli M. Noam

The trade issue has become arguably the primary problem of the post-divestiture environment. The numbers say it loud and clear: the trade balance in terminal equipment moved from a $275 million surplus in 1982 to a $2.6 billion deficit in 1988, and things may get worse. Kenneth Robinson warns us that this deficit could grow, according to some estimates, to $4.9 billion by 1992, when the Bell companies could possibly buy an incredible 58 percent of their procurement from foreign-based companies. AT&T would cut 50,000 American jobs. One can add other horror statistics: registration of new equipment (so-called Part 68 filings) show that in 1988 only 43 percent of registrations were by American companies—many of which may well be foreign-owned subsidiaries—while 48 percent were by Asian firms. Europeans, interestingly enough, had only five percent of registrations (figures 12.6 and 12.7).

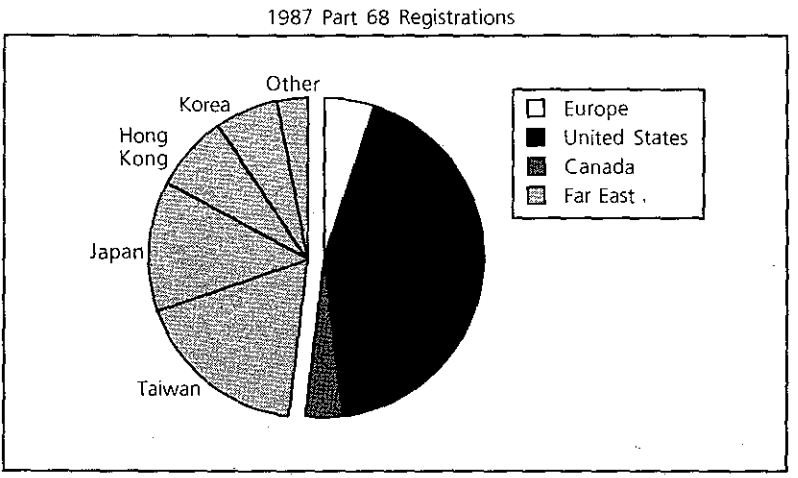
The twin reasons for the deficit are usually seen as the closed mar-

FIGURE 12.6



Source: W. Von Alven, FCC, Washington, D.C. 1988.

FIGURE 12.7



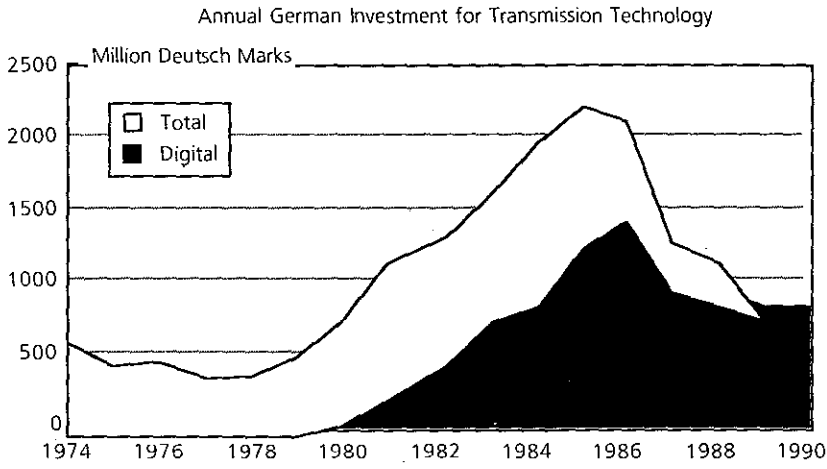
Source: W. Von Alven, FCC, Washington, D.C. 1988.

kets abroad and the open ones at home—open due to the divestiture. Both these reasons are partly correct; at the same time, things are often more complicated than they seem at first, and one needs some dispassion before blaming divestiture for our trade balance problems.

It is first necessary to understand the forces that are changing the international equipment market. Many people assign the prime role to changing technology, but one must recognize that networks in industrialized countries have reached a certain maturity, which in turn leads to a change in development strategy. The key variable is the saturation of basic service. The achievement of universal service is a very recent phenomenon; in Germany, for example, overall telephone penetration in 1960 was only 12 percent of households. A minuscule 6 percent of households headed by blue- and white-collar employees had a telephone. But in 1980, overall telephone density was up to 75 percent. In France, overall penetration in 1967 was an anemic 6 percent, and it is over 80 percent today. For the national telecommunications equipment industries, the achievement of universal service creates a serious challenge. The industry must reorient itself enormously, because its activity level would otherwise fall dramatically. Figures 12.8 and 12.9 illustrate the great drop in equipment investment in Germany.

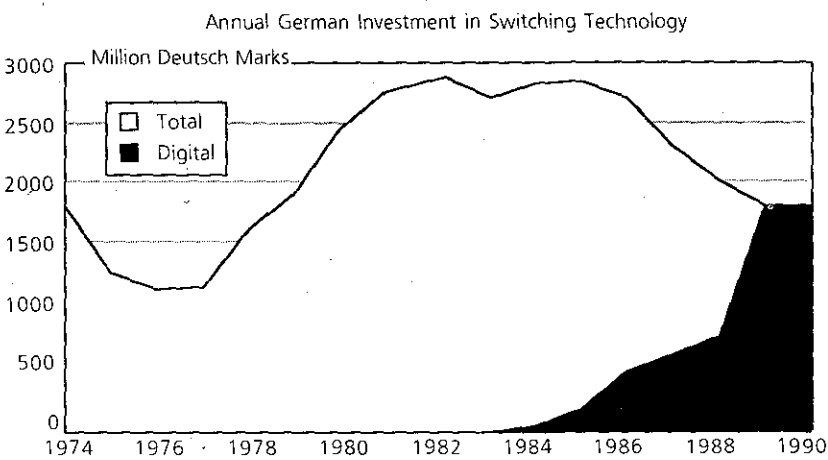
Thus, having been successful in spreading telephony, the supplying

FIGURE 12.8



Source: Helmut Schön, "Das ISDN im Investitions, Industrie Und Fernmeldepolitischen Kontext," in W. Kaiser, ed., *Integrierte Telekommunikation, Münchner Kreis*, no. 11.

FIGURE 12.9



Source: Helmut Schön, "Das ISDN im Investitions, Industrie Und Fernmeldepolitischen Kontext," in W. Kaiser, ed., *Integrierte Telekommunikation, Münchner Kreis*, no. 11.

TABLE 12.1
Telephone Carriers' Share of Total Formation in Telephone and Telegraph, 1970–1986
($B)

	Common Carrier Capital Expenditures[a]	*Total Investment in Telephone and Telegraph*[b]	*Ratio*
1970	9,275	8,835	1.05
1975	12,833	12,683	1.01
1980	23,620	26,081	1.09
1986	25,890	38,930	0.67

[a]Calculations of Robert Crandall, Brookings Institution.

[b]U.S. Department of Commerce data for equipment and structures in telephone and telegraph.

industry of several industrialized countries became a victim of its own success in saturating the basic market. Domestically, it had no place to go but down in terms of basic equipment. This left several complementary options: *Strategy 1: Upgrade* This means a supply push into videotex, ISDN, IBN, and cable television as ways to provide the industry with procurement orders. This partly explains national initiatives in that direction, and the emphasis on setting standards. *Strategy 2: Export* Increased international activities can substitute for the shrinking basic domestic market. However, most interesting markets in industrial and industrializing countries are protected by their own governments. Therefore, everyone either concentrates on those markets that are more open, most particularly the United States, or engages in bilateralism and reciprocity. Part of the U.S. problem is that it unilaterally relaxed structural protections without extracting a reciprocal lowering of barriers. *Strategy 3: Retarget* Perhaps most importantly for the long term, manufacturers should target large private *users* as a market for equipment. Whereas in 1975 virtually all of capital equipment in telecommunications in the U.S. was invested by the carriers, in 1986 it was only two-thirds (table 12.1). About $13 billion were invested by noncarriers, mostly large users.

The implication is that the equipment industry, in the past a protector of the old order, is increasingly part of the process of creating alternatives to the traditional carriers. With this supply push, the peripheral equipment market is expanding into what used to be the realm of the traditional core network. This is partly a secular trend, based on

the demand pull of what may be called a pluralism in the network, as users and user groups increasingly set up specialized networks and higher-level enhanced services.

In other words, it is not just the changed market structure in the United States that leads to the changed trade situation. It is also the domestic market conditions of telecommunications manufacturing in other countries that has changed.

The manifestations exist on multiple levels: the *first* wave of imports into the United States was in terminal equipment. Here, it was not the divestiture that made CPE interconnection legal, possible, and convenient, but rather the *Carterfone* decision more than ten years earlier. Once one permits CPE interconnection, equipment can originate from Taiwan as well as from San Jose, and it would be surprising if the general strength of Asian producers in consumer electronics would not show itself in CPE, too. A country that can build cheap tape recorders can also build cheap answering machines. Of course, one could structure a set of restrictive type-approval rules on the books in order to protect the domestic manufacturers. But the European experience shows that what God wants interconnected, government cannot keep apart.

In Switzerland, for example, the PTT in 1984 set standards for cordless phones. The fifty-five pages of specifications required a virtual Rolls Royce among such equipment, including forty duplex channels and automatic scanning. The rules were supposed to protect the users from unauthorized usage, but, as it happens, only one company (a Swiss one) could meet the standards quickly. This was not surprising since the company had played a major role in writing the rules. That manufacturer's price to the PTT was about $600, and rental price to users came to over $180 per year. At the same time one could *buy* a simpler but perfectly adequate cordless phone in the United States for under $75. As one may expect, Swiss consumers started buying cheaper unlicensed equipment, willingly supplied by numerous "for export only" outlets. Pressured by industry, PTT, and unions, the Swiss Parliament passed a law, described as a liberalization. It prohibits the sale and purchase of unauthorized equipment, while making it easier to search private residences to stamp out the threat.

The implications are that for CPE, with or without the divestiture, and with or without attachment and type-approval rules, a flood of Asian imports would have entered, just as it did for VCRs, compact disc players, and television sets.

When it comes to *network* equipment, the divestiture has made a greater difference. The RHCs can now buy equipment competitively,

TABLE 12.2
Cost of Digital Central Office Switch
($M)

	1983	*1984*	*1985*[a]	*1986*[a]	*1987*[a]	*1988*[a]
10,000 Line Switch	2.73	2.53	2.29	2.08	1.91	1.73
20,000 Line Switch	4.60	4.16	3.80	3.36	3.08	2.88

Note: Switch costs exclude installation.

[a]Estimated by New York Telephone.

and are not tied anymore to Ma Bell's apron strings. As a result, AT&T's market share for network equipment has dropped considerably. Before we pronounce this a disaster, we should examine the price trend (table 12.2). The costs per line of a digital central office for NYNEX have come down from $230 in 1983 to an estimated $125 in 1990.

A third problem area in trade is emerging in *services.* Foreign resellers, VANs, and cellular carriers now operate in the United States; they could evolve into local and long-distance service providers. This is fine, up to a point, but provided there is reciprocity.

The trade issue had not been thought through sufficiently when the divestiture was conceived by the policymakers. But others were not much smarter, either. France's premier newspaper, *Le Monde,* once ran a series of noted articles on the divestiture, which emphasized this was part and parcel of a large American export offensive. How wrong they were. But the policies such views brought, which can be called political telematique, still haunts transatlantic telecommunications trade.[2] Both GTE and ITT, the main American participants overseas, were squeezed out of Europe, with hardly a whimper or offer of help from the U.S. government. ITT used to dominate the French market, but after several rounds of politics, plus its own internal problems, it had no place to go but sell out to the French CGE. AT&T tried to get an allocation of 16 percent of the French market by offering major concessions, but the German firm Siemens would have none of it.

And this is part of the problem. The Europeans are now preoccupied with unifying their Common Market. To reduce national compartmentalization they lower barriers and make concessions to each other, and partly at the expense of outsiders. It is difficult enough for an American

firm to get a major telecommunications procurement order in Europe. But for Japanese or Koreans, the odds become even smaller. These are highly political markets dominated by governments, and to view them with somewhat rosy glasses would be to distort reality.

On the plus side, imports make the cost of telephone service cheaper in the United States. And as a state regulator, that of course pleases me. But if I stop defining my job as merely keeping residential rates low, and view the "public interest" more broadly, I, too, must be concerned with the trade problem, and do my share to address it. Also, the nationally compartmentalized markets abroad impose a direct cost on American telephone users. They cannot benefit from economies of scale if AT&T cannot sell in France, or if Ericsson cannot sell in Japan. In other words, equipment sold in America would be cheaper if other countries, too, would open their markets to international competition. And this would translate itself to lower phone rates. So there is a direct link even to the traditional concerns of state regulators.

Trade politics, however vocal, will only open the door. One still needs superior products. Ultimately, the trade balance is determined by the competitiveness of the industry. If we had better and cheaper facsimile machines than the Japanese, we would buy them here and sell them there. This does not excuse other countries, but neither does it let domestic producers off the hook.

For the future, the most worrisome area is that of technology development. And while the private sector is working hard in that regard, telecommunications with its network characteristics frequently leads to chicken-and-egg situations. This has led the New York Public Service Commission to act as a catalyst for the industry's ISDN interconnecting trials. The various federal agencies involved in telecommunications must be forward-looking in technology questions. The FCC has started to do so, and I hope it can formulate a coherent long-range vision on how telecommunications policy should assist the evolution of advanced networks. For example, it could consider developing a blueprint for interface points and interconnection standards that would permit compatibility by hardware and software suppliers.[3] NTIA has issued calls for action. Robinson lists several initiatives upon which the federal level should embark. Standards and procurement policies should be priorities. When I served on the advisory board of the FTS-2000 federal phone system, a $25 billion procurement giant, it was astonishing to learn that of all the many criteria for evaluating the bids, the factor of how the governmental network would advance civilian technology and applications, was largely missing. It is unlikely the Japanese would proceed in that fashion.

In the past, state regulators tended to be preoccupied with the domestic conflicts and turf fights with the FCC, and not focused on the interrelations with the rest of the world. Yet in a few years, the difficulties of maintaining a national policy, let alone a state policy, in an electronically interdependent world will become increasingly apparent. In the past, perhaps the United States could afford the luxury of tying itself into regulatory knots and spending ten years on developing policies governing cellular radio and AM stereo. But the times are changing, and regulators must, too. The trade balance figures are only a symptom of the more general problem of economic performance, innovation, and international interdependence. The time for localism is running out, and regulators on all levels of government must think in global terms.

Robert T. Blau

No one seriously believes that AT&T's divestiture is solely responsible for the erosion of U.S. competitiveness in global telecommunications equipment markets. But many industry observers and participants do believe that the MFJ has made a bad trade situation worse, unnecessarily. There are three principal reasons.

First, by breaking up the former Bell System in the manner it did, the government unilaterally opened the U.S. telecommunications equipment market to foreign competitors without even trying to extract reciprocity from Japan and other major industrial trading partners. Second, the MFJ restrictions have encouraged the RHCs to buy from foreign firms in order to reduce their dependence on equipment produced by AT&T, the sole U.S. manufacturer of central office switches and other major types of local telephone network technology. The RHCs have taken this step out of concern that AT&T can use its control over the introduction of new network technology to create a competitive edge in local service markets where the two compete. Third, and perhaps most important, by denying the RHCs the right to manufacture equipment or provide information services, the MFJ has eliminated virtually all incentives for seven of the nations' largest telecommunications companies (with combined revenues of $75 billion in 1988) to invest in the development of new technology that the U.S. clearly needs to compete in world markets.

In response, apologists for the AT&T consent decree assert that America's trade problems are not confined to telecommunications markets, and have far more to do with U.S. fiscal and monetary policy than

with the MFJ. AT&T's Michael Baudhuin will later argue that replacing the MFJ restrictions with alternative regulatory safeguards would only encourage the RHCs to joint venture with foreign manufacturers, thereby foreclosing a large portion of the U.S. network equipment market to AT&T and other domestic firms. Should this occur, Baudhuin claims, the ensuing loss of U.S. sales to foreign rivals would add to the trade deficit, force a reduction in AT&T's own commitments to R&D, and further weaken its ability to compete in a critically important market for the nation's long-term economic welfare.

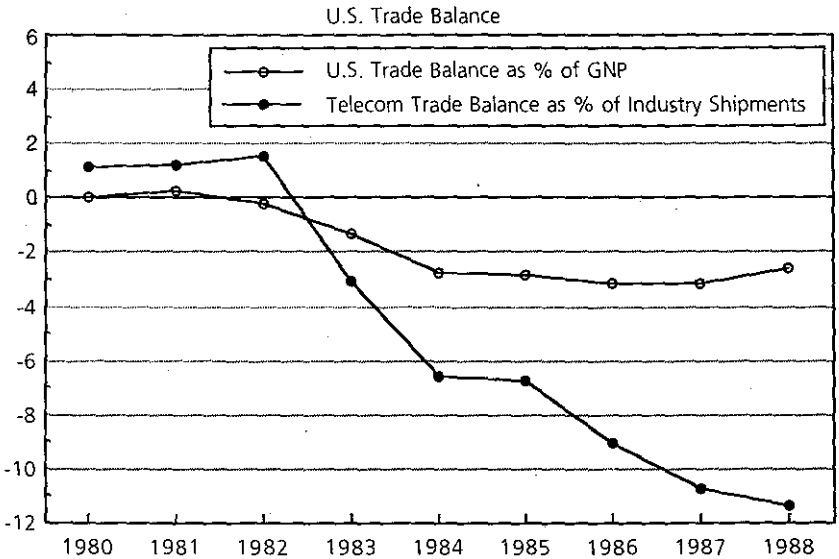
It is interesting AT&T apparently feels no shame in using the specter of joint ventures with foreign competitors as its primary rationale for keeping the manufacturing restraint on the RHCs intact. During the period since divestiture was announced, AT&T itself has shut down seven major manufacturing plants in the U.S., and cut back production capacity in sixteen others, while opening four wholly-owned offshore manufacturing facilities and entering into joint production ventures with no fewer than ten of its major foreign competitors. These initiatives have resulted in the combined loss of as many as 70,000 high-quality manufacturing jobs in this country,[4] but added little, if anything, to AT&T's share, domestic or foreign, of telecommunications equipment markets.

Other defenders of the status quo, including William Baxter in chapter 1, argue that trade considerations should have little or no bearing on the administration of the MFJ. According to this school of thought, if Asian or European manufacturers can make and sell telephone handsets and other types of "low end" telecommunications equipment in this country at a lesser cost than AT&T and other domestic producers, then federal policymakers should accept that fact and do nothing to discourage imports. If U.S. telecom manufacturers are protected, the argument goes, they will simply tie up capital and human resources that could be put to more productive use elsewhere in the economy. American consumers will end up paying more than they need to for telephone equipment and services.

Whom is one to believe? If the weight of empirical evidence and common sense have any bearing on the debate, Kenneth Robinson's views should prevail hands down. Those who might question Robinson's veracity would do well to consider just how badly U.S. trade in telecommunications has faltered since the announcement of AT&T's divestiture in January 1982, and what will need to change if the U.S. telecommunications industry is to avoid digging itself into a deeper competitive hole during the early 1990s.

The numbers clearly show that the MFJ has seriously aggravated

FIGURE 12.10

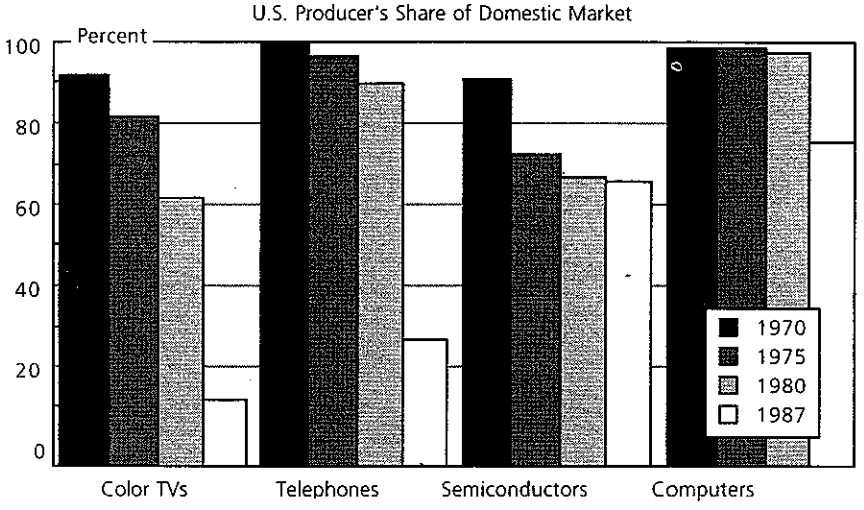


Source: U.S. Department of Commerce.

U.S. trade problems in telecommunications. Since early 1982, when responsibility for procurement decisions within the former Bell System effectively moved from AT&T's corporate staff to the local BOCs, U.S. trade in telecommunications has deteriorated at a rate *almost four times faster* than the decline in the nation's overall trade balance (figure 12.10). Worse yet, between 1985 and 1987, the nation's telecommunications trade deficit more than doubled, falling from $1.2 to $2.5 billion, despite a 40 percent decline in the value of the U.S. dollar—a decline that should have boosted AT&T's competitive standing by making its products less expensive abroad while raising the cost of foreign imports in the United States.

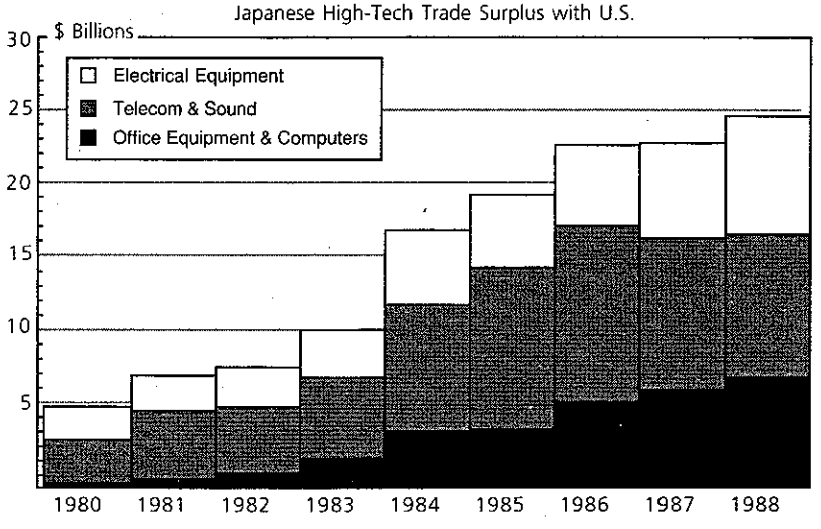
Contrary to what AT&T and William Baxter would have us believe, trends in telecommunications trade also imply the recent erosion of U.S. competitiveness is not confined to "low end" consumer products, where the United States is thought to be at a major disadvantage by virtue of higher labor costs. If the problem were that simple, then sharply lower U.S. exchange rates should have produced at least some improvement in the trade balance. That U.S. trade deficits have continued to mount in the face of a much weaker dollar simply suggests that

FIGURE 12.11



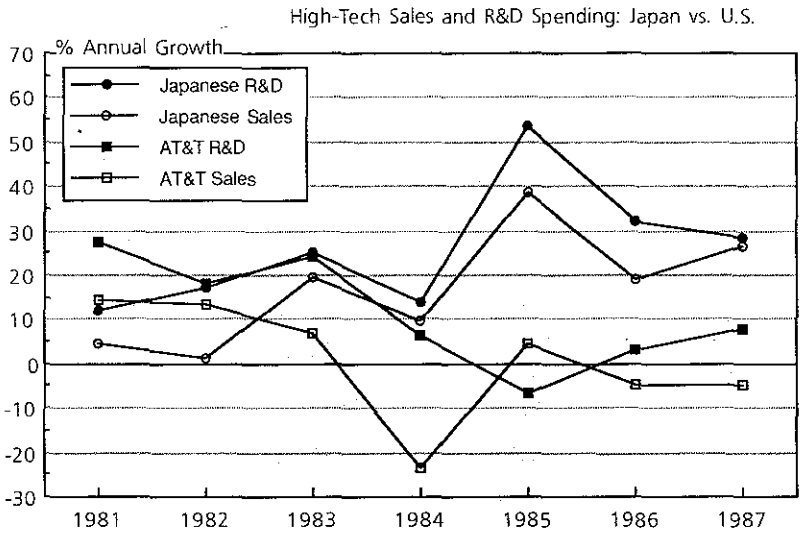
Source: *Business Week*, U.S. Department of Commerce.

FIGURE 12.12



Source: U.S. Department of Commerce.

FIGURE 12.13



Source: COMPUSTAT and Company Annual Reports.

forces other than cost—forces such as more rapid innovation of new technology made possible by higher levels of R&D spending and more efficient production processes—are instrumental in determining who wins and who loses in the global telecommunications marketplace.

There is also no question AT&T's loss of domestic market share since divestiture has enabled foreign manufacturers to sharply increase R&D spending which, in time, will make their products and services even more competitive both here and abroad. Figure 12.12 highlights recent growth in Japan's "high-tech" trade surplus with the U.S. which, between 1982 and 1987, rose from $7 billion to nearly $23 billion. Figure 12.13 depicts corresponding growth in combined sales and R&D spending for Japan's six leading manufacturers of telecommunications equipment, computers, and electronics—NEC, Matsushita, Toshiba, Pioneer, Sony, and Hitachi—and compares those growth rates with AT&T's.

During this period, the Japanese boosted R&D spending at a compounded average annual rate of 30 percent, thanks largely to a 22 percent average increase in sales. By contrast, AT&T's outlays on R&D rose at an average annual rate of only 6 percent, constrained no doubt by a 5 percent average annual decline in total operating revenues, and an even larger percentage drop in annual equipment sales.[5]

TABLE 12.3
R&D Spending By U.S. Information Industries

Industry	*R&D as % 1988 Sales*	*R&D % Change from 1987*	*1988 R&D $ per Employee*
Bell cos. (+Bellcore)	1.3	8	1,721
Telecom equipment	5.7	6	6,281
Computers	8.2	16	10,680
Systems design	9.2	35	11,719
Computer peripherals	5.6	14	7,352
Software services	13.3	33	18,429
Semiconductors	8.9	15	7.461
Electronics	4.8	19	4,618
All Industry	3.4	11	5,042

Source: *BusinessWeek*.

At the same time, the MFJ has all but eliminated incentives for the RHCs to spend competitively on R&D. The MFJ's manufacturing and information services restraints have made it virtually impossible for the local Bell companies to recover capital that they might otherwise commit to the development of new telecommunications technology. Consequently, the RHCs devoted only 1.3 percent of their sales to R&D in 1988, which is less than 40 percent of the U.S. industrial average (3.4 percent of sales) and only about one sixth of what other high-tech industry groups routinely commit to R&D (table 12.3).

In short, the MFJ in general and the line-of-business restrictions in particular, have aggravated the nation's mounting trade deficit in telecommunications equipment. Adding insult to injury, the erosion of AT&T's equipment sales since divestiture has helped the Japanese and other foreign manufacturers finance a massive build up in R&D spending that will make it all the more difficult for U.S. producers to regain lost ground in the "low end" of the equipment market, or to stay competitive in "higher," more knowledge-intensive segments of the business. So difficult in fact that in Fall 1989, AT&T's Chairman and CEO Robert Allen announced that the company may stop producing those products that do not contribute significantly to its growth in earnings. According to Allen:

> You have to look at the maturity of some of our traditional [equipment] markets. One has to conclude if we're going to realize growth and also be responsive to our customer needs, we'll have to move up

> the value chain over time and be participating in faster growth areas. . . . It is clear that there is declining value added in traditional or basic manufacturing in this country, and that's true for us. There is more [value] added at the component level and more added at the software and services area.[6]

Making matters even worse, there are reasons to believe the MFJ is compromising U.S. efforts to reduce the trade deficit in telecommunications through bilateral negotiations with Japan. Post-divestiture relationships between telecommunications trade and R&D spending have created incentives for the Japanese government to prolong trade talks with the U.S. before any meaningful concessions are forthcoming. Japan can reasonably anticipate its recent buildup of R&D spending will soon give rise to new telecommunications technology which outperforms anything that Japanese users might acquire from AT&T or other American suppliers (assuming U.S. products were fairly priced and readily available). Once that technology "gap" is opened, trade negotiations will then progress, but only to the extent that government-sanctioned trade barriers are no longer needed to strengthen or preserve Japan's ability to compete worldwide.[7]

Figure 12.12 suggests that a basic shift in technological leadership from AT&T to its principal foreign rivals may already be underway. Historically, many Japanese manufacturers have avoided sizable outlays on basic research by acquiring rights to state-of-the-art technology developed in the U.S. and focusing their resources on commercializing that technology. While this process continues today, the Japanese are relying less on innovations born in the U.S., presumably because their own research capabilities are beginning to surpass what industrial laboratories in this country can now provide. It is only natural that Japan's R&D outlays have increased sharply, because they are now paying for the full cost of developing state-of-the-art technology that they used to get from Bell Labs and other U.S. sources at bargain basement prices.

Figures 12.11 and 12.12 (p. 455) illustrate one other disturbing feature about the MFJ that merits mention in this context. Because Japan's six leading manufacturers of telecommunications equipment also produce computers, electronics, and other high-tech products, they are free to share R&D resources and to transfer proprietary technology among many different lines of business (e.g., next generation computers, expert software systems, high-definition television, etc.) as market conditions warrant. This means Japanese manufacturers are positioned to derive significantly higher returns on their investment in R&D than their American counterparts. Japan's highly integrated industrial structure also implies that the adverse effects which the MFJ has had on R&D

spending and U.S. competitiveness extend well beyond telecommunications equipment markets per se.

What then might telecommunications policymakers do to improve the nation's trade prospects? In addition to several constructive suggestions outlined in the conclusion of Robinson's paper, it is obviously important that federal and state officials heed Eli Noam's advice and think through the likely effects of their actions on U.S. competitiveness, *before* they act. Had this been done in the course of finalizing terms of the consent decree, or later during the first Triennial Review, responsibility for administering the MFJ restrictions would not have remained with the Court. Instead, the FCC would have been given the authority to condition RHC entry into nonregulated markets on compliance with procompetitive federal and state regulatory safeguards. Properly administered safeguards, after all, would satisfy the public's interest in full and fair competition, without completely undermining the U.S. telecommunications industry's ability to compete globally.

Baudhuin's claims notwithstanding, MFJ relief would not prompt the RHCs to enter into joint ventures with foreign manufacturers, much as AT&T has done. On the contrary, if allowed to manufacture, some RHCs might well be interested in participating with AT&T in the development and production of central office switches or other types of local network technology. The RHCs would benefit from such arrangements because they would then be in a position to ensure that new local network technology, including central office software operating systems that are used to create new service offerings, is designed and introduced in full accord with their own competitive interests, not just AT&T's. Similarly, AT&T could benefit by collaborating with the RHCs because the local companies could help underwrite escalating R&D costs which AT&T will otherwise have to bear alone, or share with foreign joint venture partners. And the U.S. would benefit because American companies would retain control over new technologies that AT&T and the RHCs should be able to bring to the market. In addition, much-needed improvements in its relations with the RHCs should add to AT&T's share of the domestic equipment market, thereby reducing trade imbalances the Japanese and other foreign manufacturers are currently using to finance rapid growth in their R&D capabilities—growth that, if left unchecked or unchallenged, will surely result in the demise of AT&T's reputation as the world's foremost innovator of state-of-the-art telecommunications technology.

Timothy Brennan later correctly observes that the U.S. "will not have the best policy with regard to the MFJ . . . if the debate is shouldered with unrealistic expectations of and demands for 'proof,' and

denigration of what [economic] theory can tell us." He is not correct, however, in suggesting that policymakers will somehow need the benefit of more involved theoretical arguments or additional econometric evidence before they can make an informed judgment concerning the merits of MFJ relief. Common sense will suffice.

Common sense and the continuing erosion of U.S. trade and technological leadership in the global telecommunications market tell us that while relaxing the MFJ restrictions will not, in and of itself, revitalize U.S. competitiveness, it will help at a time when help is sorely needed. If this is to occur, however, jurisdiction over the MFJ will have to be shifted from the court to the federal and state regulatory commissions. As long as the court continues to administer the AT&T consent decree, it will do so on the basis of facts and conclusions that emerged from the government's case against the former Bell System fifteen years ago. While this approach to policymaking may have merit from a purely judicial perspective, it ignores the fact the telecommunications industry has changed, and must continue to change, in response to circumstances that have little or nothing to do with "evidence" presented in the course of AT&T's antitrust trial. Since then, both technological advances and the emergence of a global economy have completely altered the nature and significance of the telecommunications marketplace. If the U.S. expects to compete, domestic communications policy will have to change its orientation from one that is excessively preoccupied with the "ghost" of a company that no longer exists, to one that will promote, rather than handicap, U.S. economic interests.

Michael D. Baudhuin

It has become fashionable in some circles to place the AT&T antitrust decree at the center of the current debate on telecommunications trade policy. Robert Blau claims that if only the decree were changed to permit the divested Bell companies to manufacture equipment, they could help reverse the trade deficit. I reach the opposite conclusion: the Bell companies would not help the trade balance if they manufactured; instead, they would make it worse. What is more, the industry's ability to conduct research and development, which the consent decree has uniquely fostered, would diminish.

The trade problem is not unique to telecommunications equipment. The total merchandise trade deficit for 1989 reached $109 billion, only 2 percent of which was attributable to telecommunications equipment

TABLE 12.4
U.S. Telecommunications Equipment Trade
($ million)

	Trade Balance	*Year-to-Year Change*
1981	+817	
		−542
1982	+275	
		−793
1983	−518	
		−633
1984	−1,151	
		−715
1985	−1,866	
		−164
1986	−2,030	
		−520
1987	−2,550	
		− 58
1988	−2,608	
		+623
1989	−1,935[a]	

Source: Office of Telecommunications, International Trade Administration, U.S. Commerce Department.

[a]1989 figure would have been approximately −2,300 had accounting methods used in previous years not been revised.

trade. The factors contributing to this economy-wide problem are as diverse as the affected industries themselves. Some of the factors cut across the industries as a whole; others relate to the individual sectors.

In the telecommunications sector, some critics have held divestiture responsible for the telecommunications trade deficit, because it opened the American market for network products to foreign suppliers. The telecommunications trade figures do not support this theory. They clearly show that the trade problem not only predated the 1984 divestiture by two years, but that the largest year-to-year increase in the trade imbalance occurred in 1983, before divestiture (see table 12.4).

The disaggregated trade statistics also show network equipment is not causing a trade problem. The problem lies, as the North American Telecommunications Association has reported, in imports of "lower end" consumer products, which account for the bulk of all telecom-

munications imports.[8] In 1989, for example, the U.S. imported $978 million in facsimile machines, mostly from Japan.[9] This represented 14 percent of all telecommunications imports for 1989, 51 percent of the year's deficit, and a 95 percent increase over 1987 imports. 1989 imports of residential telephones reached $1.37 billion.[10] Cordless phone imports[11] alone have grown by 246 percent since 1985 and now comprise 43 percent of total phone imports. Answering machines from South Korea and cellular phones from Japan also swell the deficit.

Switching equipment imports, by contrast, were not only a small percentage (6.3 percent) of total 1989 telecommunications imports, but exports exceeded imports. (Exports totaled $826 million;[12] imports were $438 million.[13]) Notwithstanding the efforts of foreign firms such as NEC, Ericsson, and Siemens to establish themselves in the U.S. market, American firms plus Northern Telecom-U.S. accounted for 91 percent of 1987 U.S. sales of switching, transmission, and media equipment.[14]

It is therefore specious to blame the consent decree for U.S. trade problems. The decree did open the market for network equipment, but it did not have a negative impact on trade. Responsibility for the trade deficit lies in part in other government actions taken years before divestiture was conceived, which opened the door to a flood of foreign consumer products.

In Congressional testimony in 1976, Glenn Watts, then President of CWA, made a chilling prediction: opening the U.S. market for telephone equipment would mean the end of U.S. manufacturing capabilities for residential telephones (September 30, 1976, testimony under CCRA legislation before the Commerce Subcommittee on the Interstate and Foreign Commerce Committee). Notwithstanding, in the 1970s the FCC initiated a proceeding to end the near-monopoly of the old Bell System in supplying telephone equipment to consumers. At the end of the decade, the FCC set in place a registration program by which anyone can make and sell equipment to be attached to the AT&T public network. This was all the opening that the Far East, with its cheap labor supply, needed. Now, a decade later, the CWA's prediction has all but come to pass. Even AT&T has been forced, by extremely low margins, to move several hundred residential telephone-set manufacturing jobs offshore (leaving 90,000 other manufacturing and support jobs in the United States), or exit the residential market.

Having thus introduced competition, the FCC then adopted rules that had the effect of handicapping AT&T's ability to compete with the Far East manufacturers. In 1980, the Commission required AT&T to establish a rigid, structural separation between its regulated common

carrier business and its recently-detariffed consumer products business. AT&T asked the FCC to lift those *Computer II* rules after divestiture of its monopoly exchanges, which had been the justification for the rules in the first place. However, the FCC did not grant AT&T's petition for another one-and-a-half years. In the meantime, the mandated duplication of resources cost AT&T $1 billion each year.

Unrelated, but equally relevant to the trade issue, was the government's fiscal and monetary policy, which allowed the dollar to remain expensive in international currency markets. This had the effects of making imports cheap relative to U.S. products, and exports costly. As a result of this and other government policies, the nation's exports, across the economy, were not competitive in world markets. The telecommunications equipment surplus, which policymakers had taken for granted, quickly disappeared in an avalanche of facsimiles, telephones, and other consumer products from the Orient.

Over the past several years, AT&T and other U.S. manufacturers have refocused their resources to enable them to produce the best products, incorporating the latest technologies, at the lowest cost. To compete in the global market, they have pared costs, streamlined operations, improved inventory and manufacturing controls, applied new technologies, and tightened the links between research facilities and manufacturing operations.

Signs of a more coherent telecommunications trade policy are now emerging in the government as well. A few years ago, the Treasury orchestrated the dollar's fall in relation to other currencies, making all U.S. exports more attractive to overseas buyers and making imports either more expensive or less profitable than before. The telecommunications provisions of the 1988 Trade Bill sent a strong signal overseas that Congress will not tolerate the continued protectionist policies of U.S. trading partners. The U.S. Trade Representative has now targeted the European Economic Community and South Korea for possible sanctions under the bill if they persist in closed markets. Other actions include the U.S.-Canada Free Trade Agreement, which eliminated the Canadian tariff on switching equipment, effective January 1, 1989. On the office products front, the International Trade Commission has accepted AT&T's complaint against several Far Eastern companies for dumping their key systems on the U.S. market.

It is not yet clear whether these measures will cause the demise of the trade barriers that have proved so intractable in the past. The barriers take many forms, from standards-setting practices to the cultural biases that the Recruit scandal in Japan have exposed to the world. Perhaps most pernicious is the captive-supplier relationship between a

nation's monopoly carrier and its switch manufacturer. The U.S.-Canada Free Trade Agreement has removed the tariff on switching equipment, but it will have no effect on Bell Canada's practice of turning to other suppliers only if Northern Telecom is not interested. An example of the extraordinary advantages a captive market provides a firm such as Siemens is illustrated by the fact that the Bundespost pays it about $700 for each telephone line installed, while U.S. telephone companies pay around $100.[15]

This close relationship between manufacturer and monopoly carrier is what some seek to recreate for the Bell companies. It was an informal trade barrier in the old Bell System, and it would be once again. The terrible irony is that this time, America's main entry in the global sweepstakes, AT&T, would not be permitted to compete in its hometown based on the merits of its products.

The decree may be the only thing that prevents the closed market of the past from reemerging. If the manufacturing injunction were eliminated, the consequences are predictable: the Bell companies probably would not manufacture consumer products at all, and have said as much in Congressional testimony. They would manufacture network equipment, and particularly central office switches, by joint venturing with foreign partners, and they would buy exclusively from those partnerships. This means that the surplus in switching equipment would become a serious and entrenched deficit, and domestic R&D would fall. These conclusions are explained below.

The Bell companies would not help the trade problem because they have little incentive to manufacture consumer products in the U.S., if at all. The market is dominated by imports from Asia, where labor is relatively cheap. Low margins have forced American companies, including AT&T and some of the Bell companies, to obtain consumer products sold under their name from the Far East, and that would not change if the decree were altered. In the office products market, all seven Bell companies are reportedly losing money.[16] AT&T has seen its business so unfairly squeezed in this market by Asian firms that it has had to resort to the anti-dumping laws for relief.

The more serious threat to the U.S. trade position is in the central office equipment market. The Commerce and Justice Departments, and the RBOCs themselves, recognize that the Bell companies would not start a switching business from scratch; the costs are too high. Instead, they would form joint ventures with established foreign manufacturers,[17] from whom they would thereafter purchase equipment exclusively. Who are the candidates—the national switch manufacturers of Germany, Japan, France, Sweden, Canada, and Britain, many of whom

are working to lift the decree's manufacturing injunction. This would have the effect of foreclosing AT&T, America's only central office switch manufacturer, and only full-line telecommunications equipment manufacturer, from making sales to the Bell companies, who represent 80 percent of the market.

The problem is not solved by the U.S.-based manufacturing facilities of Siemens, Nippon Electric, or other foreign firms. The profits of these operations are repatriated to Germany, Japan, and other foreign countries. More seriously still, the R&D and the good high-tech jobs would be in Germany and Japan. America's role, and American jobs, would then be principally confined to metal-bending.

The central office switch industry is contracting, even as the worldwide market is growing. The enormous research and development costs required to develop new products have caused mergers all over the world and more are expected. ITT has disappeared into Alcatel; Siemens has acquired the international operations of GTE; GEC and Plessey have together become GPT; AT&T has joint-ventured with GTE in the U.S. to upgrade GTE's switch with AT&T technology. Therefore, even if the Bell companies were to attempt to start their own switching business, they would not likely survive in a climate that cannot even support those already there.

Unheeded now, even within the NTIA, is the Commerce Department's warning these joint ventures "could pose the threat of destroying this country's indigenous central office equipment manufacturing capacity."[18] Yet this is precisely what is at risk. AT&T has no protected market; support for its worldwide efforts must come from success in the competitive U.S. market. If it must cede that market to the Bell companies' affiliated suppliers, AT&T and its research and development capabilities would vanish as an American presence in the global telecommunications equipment market.

Research and development in telecommunications has been a bright spot in the otherwise alarming decrease in research investment across the economy. Between 1982 and 1987, telecommunications research and development expenditures almost doubled for the industry, and more than doubled for the companies that comprised the old Bell System. AT&T Bell Laboratories' budget has increased by 35 percent over pre-divestiture levels—from $2 billion in 1983 to $2.7 billion in 1989—at the same time that AT&T's revenues have shrunk by 50 percent. This surge in research, so essential to the country, would be blunted if the Bell company markets were to close.

In summary, the foreign trade consequences of changing the manufacturing injunction would be devastating. It would (1) foreclose Amer-

ican markets to American firms, (2) deny American firms the revenue needed to sustain the research and development needed to sell equipment to Asian, European, Middle Eastern, and other foreign markets, and (3) give foreign firms captive markets and guaranteed sales in this country. The consequences would be especially severe because Japanese and European manufacturers have, to date, successfully excluded AT&T and other American firms from Japan, Germany, France, and other European markets. Removal of the injunction would have the extraordinary consequence that foreign firms would, through alliances with the Bell companies, exclude American firms from the American market as well.

The AT&T antitrust decree ensures that U.S. manufacturers can compete on an equal footing with each other and with foreign companies in supplying equipment to the monopoly Bell companies. This openness is what trade policy seeks in overseas markets, and it must be the policy in the U.S. as well, or the telecommunications trade picture will dim.

For the United States to continue to reverse its $109 billion trade deficit will require cooperation between business and government in a host of areas that cut across all economic sectors. Business's focus must be on producing for world markets the best products and services at the lowest prices, and on becoming smarter at marketing those products abroad. The government should continue to pressure foreign countries to open their markets to U.S. products, but policies that focus on trade alone are not enough. Fiscal and monetary policies affect the availability of capital, and whether American products are priced out of foreign markets. The failings of the American education system must be redressed by government, with the help of parents and business. Labor policies that are expensive can also affect the competitiveness of U.S. industry. These and other areas should be the focus of business and government's collective effort to ready America for global competition.

Timothy J. Brennan

In the context of telecommunications trade, how do we know whether the MFJ restrictions are good policy? As economic policy, the MFJ debate pertaining to trade, innovation, or other policies fundamentally hinges on two issues:[19] (1) the extent to which diversification by regulated local telephone monopolies would lead to discrimination and cross-subsidization, resulting in higher prices to consumers and exclu-

sion of more efficient firms from information services, interexchange markets, and equipment manufacturing; (2) the extent of economies of scope between local exchange service and these other businesses that could produce more efficient production and lower prices, and might outweigh any predicted harm from discrimination and cross-subsidization. Presumably, such consequential policies would not be undertaken without knowing their benefits, but they may be but an "enormous gamble," as Peter Temin has said[20] and as William Baxter observes in chapter 1. The question I want to address is not whether the MFJ restrictions are a good idea but whether, in the trade context, these questions are addressed, if not settled, on the basis of economic theory or empirical evidence?

The MFJ debate regarding trade takes on extra complications. Along with comparing the benefits of preventing abuse of the local exchange monopoly with the costs of sacrificed economies of scope, the policymaker must decide the extent of trade-related market failures or noneconomic factors that might change this cost-benefit test.[21] In addition, trade considerations can erroneously imply that the debate is turning on measurement rather than conjecture. Data that speak to the magnitude of the trade "problem" may not speak to the merit of rescinding or retaining the MFJ. If the MFJ impedes productivity and serves no purpose, it should be rescinded regardless of the sign or size of the telecommunications trade deficit. The crux of the trade and telecommunications debate is whether the MFJ should be retained even if it promotes an efficient, but import-supplied, telecommunications industry.

As both Kenneth Robinson and William Baxter observe, trade considerations figured but little in the initial divestiture decision. Robinson suggests that telecommunications trade was not running a substantial deficit at the time, and thus was not on the political agenda. Baxter's observations are more characteristically economic. Trade was not a consideration because, except as a threat to get other countries to open markets, there is no justification for policies solely to minimize imports. He says, "It certainly would not have influenced me in the negative to know I was going to increase international trade by taking the divestiture step." More bluntly, if Japan can sell CPE or central office equipment at lower cost than U.S. firms, the U.S. economy is better off buying their equipment rather than manufacturing its own. This conclusion holds, as Baxter points out, even if foreign countries maintain barriers restricting U.S. exports.

The contributors to this chapter offer three major arguments on why these trade figures matter for post-divestiture policy. (1) BellSouth's

Robert Blau indicates that trade deficit signals a decline in the productivity of the U.S. telecommunications industry relative to foreign producers. He views rescinding the MFJ as a major instrument for reversing that relative decline. (2) Eli Noam and Robinson argue that the trade deficit results in part by the unilateral opening of U.S. markets to foreign equipment, brought about by the FCC's registration program and the elimination of the "Buy Western" policy imposed on the local operating companies by AT&T prior to the divestiture. (3) Robinson also points out that the size of the telecommunication industry and its high-technology prominence make it politically important. Many jobs, profits, and political reputations are at stake.

Robinson and Noam cite data on the growth of the U.S. trade deficit in telecommunications since the divestiture. However, MFJ evaluation requires an assessment of what these trade figures mean, whether they reflect well or ill upon the U.S. economy, and how they should be weighed against the efficiency considerations underlying the divestiture. Michael Baudhuin claims that the trade data should not carry much political or economic weight. He finds that the deficit is largely in "lower end" CPE, a sector neither technologically significant nor one in which integrated BOCs would likely participate as domestic original equipment manufacturers. In his view, lifting the MFJ would result in the BOCs joining with foreign producers in production ventures and then foreclosing other firms, including AT&T, from their markets, thus exacerbating the trade deficit.

To make the trade data meaningful, the next step in the analysis should be verification of trade-related market failures that should affect MFJ policy. On this, the authors are generally silent, taking for granted that large deficits merit concern. The discussion is neither theoretical nor empirical; it seems to reflect political or business concerns rather than any clear conception of or fact about the public interest.[22] The absence of a general picture makes it difficult to take seriously the nearly explicit suggestion that AT&T's pre-divestiture procurement policy, discrimination, and cross-subsidization were good because they kept down imports.

The crucial argument is whether the MFJ keeps the U.S. telecommunications industry from being as efficient as it should be. Blau speaks of limited productivity and a decline in R&D spending, technological leadership, and competitiveness. Robinson fears that the U.S. will become a "technological colony" of the Japanese. Both suggest that the MFJ will contribute to these undesirable consequences, for reasons already familiar—that there are either economies of scope that make the BOCs especially efficient in the equipment markets subject to

import competition, or that BOC entry would improve the performance of firms with few competitors. The former argument would seem to apply more to the highly competitive CPE markets; the latter may apply to the more concentrated central office equipment business.

Resolution of this controversy could turn on empirical comparisons of the likely harms of the divestiture, the magnitude of economies of scope, and the benefits of competitive entry, or it could turn on theoretical argument, spiced with anecdote or the odd piece of supporting data. The statements and responses of Brown, Baxter, McGowan, and Judge Greene together suggest in chapter 1 that the policy arguments initially surrounding the divestiture combined a general theory of inefficient behavior by diversified regulated firms with, from a variety of perspectives, particular experiences associated with the unique history of AT&T.[23] The trade presentations here suggest that the trade aspect of the divestiture debate remains theoretical and anecdotal.[24] No commentator offers empirical evidence for or against the propositions that the BOCs produce more efficiently than other suppliers, domestic or foreign, or would act anticompetitively against them. The data supplied may or may not speak to a significant trade deficit, but they do not tell us whether lifting the MFJ would either reduce the deficit or—not necessarily the same thing—improve the performance of the U.S. telecommunications industry.[25] The debate here remains primarily theoretical, complicated by the introduction of trade considerations for which there are data but no analytical framework in which they have any ready meaning.

Interest in the development of the telecommunications industry since the 1984 divestiture by AT&T of its local telephone companies is not motivated only by the academic curiosity of the industrial historian. The normative question of whether the divestiture was sound legal and economic policy remains important. It could be thought of as a subject for sophistry, for regardless of one's opinion of Humpty Dumpty, there is no way to put the egg back together. However, courts, regulators, legislators, and industry participants address this issue daily when assessing the restrictions in the MFJ[26] that keep the BOCs from entering other telecommunications markets and replicating the structural conditions that drew regulators and antitrust litigators to hamstring and then disassemble AT&T.

Despite the understandable desire to ground telecommunications policy in empirical findings, it remains a largely theoretical enterprise. Data are often nonexistent or of limited relevance, especially when major policies are at stake. We do not have the luxury of a U.S. or world economy identical in every way to our own but for the divestiture and

MFJ against which we could compare our experience. Whatever the data, MFJ proponents can claim that the data would be worse but for the MFJ, while its opponents can claim the opposite; both are protected from empirical refutation. The counterfactual nature of the debate inherently implies that it will take place on theoretical grounds.[27]

The statements included here regarding the decision to divest and the subsequent policy debates regarding trade support this conclusion.[28] We need to tolerate, if regrettably, the absence of strong empirical evidence to resolve policy disputes, even those as consequential as the MFJ restrictions. Other ways of informing judgment, including simulations and anecdotes as well as theoretical argument, need to be recognized. More econometric evidence would be helpful, but there is little reason to think it will be forthcoming, if those with such strong financial, legal, and political interests in telecommunications policy have not yet put forth such evidence.

A corollary is that policy debate needs to be conducted without false hopes regarding the availability of empirical evidence and the relative speciousness of "mere theory." Otherwise, policy debate can be biased and hampered if one side can successfully place the burden of empirical proof on the other side. If this burden is insurmountable, the burdened side may lose even if it has the better theoretical and anecdotal case, and its opponent too lacks empirical support. Moreover, since incentives, benefits, and costs are ultimately in the subjective eye of the consumer, worker, and investor who perceive them, economic policy evaluation is unavoidably theoretical. We surely would not, and will not, have the best policy with regard to the MFJ, price cap regulation, ONA, or competitive policy, if the debate is shouldered with unrealistic expectations of and demands for "proof" and denigration of what theory can tell us.

ENDNOTES

1. AT&T 1982 Annual Report, p. 18.
2. Eli Noam, *Telecommunications in Europe*, forthcoming.
3. Eli Noam, "Beyond ONA: Designing a Modular Network as a Strategy for National Competitiveness," Center for Telecommunications and Information Studies, Columbia University Graduate School of Business, Working Paper, 1989.
4. See Bell Atlantic Corp., "Response to NTIA Request For Comments Concerning The Effects of The MFJ Restrictions On Bell Company Research, Development and Manufacturing," January 31, 1989, pp. 19–21; and Communications Workers of America, "Information Industry Report," October 19, 1988.

5. See AT&T Annual Reports for the years 1984 through 1988.

6. See "Less Manufacturing for AT&T: Allen's Vision For The '90s," *Communications Week*, October 2, 1989, pp. 1, 61. For a contrasting point of view on the competitive merits of manufacturing see "A Japanese View: Why America Has Fallen Behind," *Fortune*, September 25, 1989, p. 52.

7. See Laura D'Andrea Tyson and John Zysman, "Developmental Strategy and Production Innovation In Japan," in Chalmers Johnson, Laura Tyson, and John Zysman, eds., *Politics and Productivity, How Japan's Developmental Strategy Works* (Cambridge, Mass.: Ballinger, 1989), pp. 59–130.

8. *Wall Street Journal*, January 24, 1989, p. 7.

9. HTSUS Code 851782.00.40.

10. HTSUS Codes 851710.00.20, .40, .50, .70; 851790.30.00 and 852520.50.00.

11. TSUSA Code 685.25.00 and HTSUS Code 852520.50.00.

12. HTSUS Codes 851730.10.40, .10.80, .50.00 and 851790.20.00.

13. HTSUS Codes 851730.15.00, .20.00, .25.00, .30.00, .50.00 and 851790.05.00, .10.00, .15.00, .60.00.

14. Northern Business Information Reports, Transmission Equipment Market and Central Office Equipment Market, 1988 Editions.

15. *The Economist*, December 17, 1988, p. 70.

16. *Communications Daily*, February 17, 1989.

17. NTIA 1987 Trade Report, February 4, 1987, p. 92.

18. Id., p. vi.

19. For extended discussions of the theoretical justifications for the divestiture and the line-of-business restrictions, see Brennan, "Why Regulated Firms Should be Kept Out of Unregulated Markets: Understanding the Divestiture in *U.S. v. AT&T*," *Antitrust Bulletin* (1987) 32:741–93; "Divestiture Policy Considerations in an Information Services World," *Telecommunications Policy* (1989) 13:243–54. An especially relevant precursor to this analysis is Baxter, "How Government Cases Get Selected—Comments from Academia," *Antitrust Law Journal* (Spring 1977), 46:586–91.

20. Peter Temin, with Louis Galambos, *The Fall of the Bell System* (New York: Cambridge University Press, 1987), p. 365.

21. Examples of such market failures and noneconomic considerations are the misgivings voiced by Jerrold Oppenheim and Commissioner Sharon Nelson concerning threats to privacy and First Amendment freedoms posed by monopoly telecommunications technologies in an unregulated environment.

22. Baudhuin also notes that telecommunications constituted only 2 percent of the U.S. 1988 trade deficit, and suggests that any endemic problems caused or created by this deficit spread far beyond the telecommunications industry.

23. Not all of these parties to the creation of the MFJ world may agree with this conclusion. William Baxter admits (in chapter 1) that the MFJ "implicitly made a wager" that the losses predicted by this theory outweighed the gains from any economies of scope excluded by divestiture, and that "[i]t would be absurd to pretend that [the MFJ] was made on the basis of detailed econometric data." Judge Greene, however, is "convinced" of the divestiture's benefits and

strongly rejects Prof. Baxter's characterization of the divestiture as a "gamble."

24. The same conclusion could be reached regarding the debate over the MFJ's effects on telecommunications innovation.

25. For example, one wonders how those concerned with trade would regard lifting the MFJ, if doing so would speed the development of new information services that rely on imported CPE.

26. *U.S. v. American Telephone and Telegraph,* 552 F. Supp. 131, 226 (1982).

27. An extensive discussion of the methodological problems associated with empirical and industrial policymaking is in Brennan, "Economic Theory in Industrial Policy: Lessons from *U.S. v. AT&T,*" Graduate Institute for Policy Education and Research Working Paper 1989-1, George Washington University, 1989.

28. Ironically, they provide empirical support for the proposition that telecommunications is not empirically driven.