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A Property Rights Analysis

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Abstract: In 1917, after lengthy litigation, the Superior Court of Cook County, Illinois ordered AT&T to sell its Mid-West operating company, the Central Union Telephone Company. The Court reached this decision, in part, because AT&T had first required the minority stockholders of Central Union to bear some of the costs of technological change, and subsequently denied them the opportunity to share the associated gains. The Court's decision is used as a basis to evaluate current regulatory procedures in the telecommunications industry.

Divestiture, Spin-Offs, and Technological Change
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David Gabel¹

Progress in telecommunication technology has played a major role in the development of the American economy. At the turn of this century, the development of long-distance service aided the integration of regional markets. Today's equipment provides many highways which promote the development of information services.²

Group conflict is a likely byproduct of technological progress. Depending on how the gains are distributed, some customers or financial groups may be hurt by the changes associated with new production processes. Jonathan Hughes has argued that techniques of social control over economic life, such as regulatory commissions and anti-trust laws, have been established to offset market decisions that are the outgrowth of innovation. Where vocal sectors of the body politic began to

¹Assistant Professor, Queens College and Graduate Center, City University of New York; and Affiliated Research Fellow, Center for Telecommunications and Information Studies, Columbia University. I have profited from the comments of D. Rosenbaum, R. Clarke, J. Nix, and R. Stevenson.

²Alfred Chandler, The Visible Hand (Cambridge: Harvard University Press, 1977). For a discussion of the role of telecommunication services in the information age, see Congressional Office of Technology Assessment, Technology and the American Economic Transition: Choices for the Future, 1988.

lose advantages formally available from given lines of endeavor, they may lobby for non-market controls that mitigate or eliminate the otherwise draconic pending changes.³

Conflict associated with technological progress is not limited to the more well known cases of entrant firm versus incumbent firm, worker versus employee, or customer group versus supplier. Within a business, the introduction of new production processes can lead to conflicts between different groups. The purpose of this article is to summarize how one such conflict in the telephone industry led to the court ordered divestiture of the American Telephone and Telegraph Company's (AT&T) Mid-West properties. While much has been written about how conflict between competing suppliers, as well as consumer-stockholder strife, has led to court cases involving this firm,⁴ there is no discussion in the literature on the disagreement between the minority and majority stockholders of AT&T's Mid-West operating company at the turn of this century. This conflict was, in large part, the outgrowth of new technology. In the first part of this article, I will review the case, and the court ordered protection to minority stockholders. In the second section, I will explore the extent to which the protection provided to minority stockholders by the court should be used as a standard to resolve

³Jonathan Hughes, The Government Habit (1977).

⁴See, for example, Geoffrey Peters, "Is the Third Time the Charm? A Comparison of the Government's Major Antitrust Settlements with AT&T this Century," 15 Seton Hall Law Review 252 (1985).

disagreements between monopoly suppliers and their captive customers.

Equity With Technological Change:

The 1917 Court Ordered Divestiture of AT&T's Midwest Properties

In 1893, Alexander Graham Bell's telephone patent expired. Almost overnight, competitors of the American Telephone and Telegraph Company (AT&T), known as Independent Telephone Companies, sprung-up around the nation. The Independents were attracted to the industry because of the high profits earned by AT&T during the patent monopoly period, and because of widespread customer dissatisfaction with the quality of telephone service provided by the incumbent firm.⁵

The Independents were the most successful in the Mid-west, and the least successful in the East.⁶ The Central Union Telephone Company, AT&T's operating company in Indiana, Illinois and Ohio, fared especially poorly. Not only did it see its market share quickly fall from 100% to less than 50%, it also suspended dividend payments in 1894. Throughout the competitive period, 1894-1913, Central operated at a loss.⁷

⁵David Gabel, "The Evolution of a Market: The Emergence of Regulation in the Telephone Industry of Wisconsin, 1893-1917" (Ph.D. dissertation, University of Wisconsin--Madison, 1987), 42-82.

⁶United States Bureau of the Census, Telephones, Telegraphs and Municipal Signaling Systems: 1912 35 (1915).

⁷Telephone Securities Weekly, April 18, 1907, p.7.

Despite operating at a loss, Central was able to obtain money from AT&T for expansion and upgrading of its system. AT&T provided the money because it felt that its long-term success would be enhanced through the construction of an integrated, national network. Furthermore, with the advent of competition, AT&T announced that it would respond to competition in a manner similar to Selten's "chain-store paradox." Where entry occurred, AT&T responded aggressively, rather than as a cooperative duopolist. This response was adopted to signal entrepreneurs who were considering entering AT&T's profitable monopoly markets that, after entry, both firms would lose money. By establishing this reputation, AT&T likely improved its profits. Therefore, in order to develop its nationwide network, as well as to protect its monopoly exchanges elsewhere, AT&T had Central Union adopt policies that were in the best interest of its system.⁸

In the Central Union territory, two important effects of nationwide integration were operating at a financial loss for an extended period of time, and re-engineering the local network to meet the more stringent technical requirements of the long-distance network.

Until approximately 1892, AT&T had tried to develop long-distance service by constructing a toll, stand-alone network. The clarity of the connection on the existing exchange network

⁸Reinhard Selten, "The Chain Store Paradox," 9 Theory and Decision (1978): 127-59; L.N. Whitney, "Report on Conditions in Indiana," p.3, box 11, Museum of Independent Telephony; and 16 Western Electrician 98, 180, 185 and 186 (1895).

was inadequate for long-distance calls. The toll network involved connecting a customer to a switchboard through two wires, known as a metallic loop. Local service, on the other hand, was provided over only one wire (known as a grounded loop). The use of a second wire on the toll lines significantly reduced the level of electrical interference. Because of the difference in wiring, each service used a different type of transmitter and switchboard.

The annual, per-subscriber cost of providing service through the metallic system was approximately 35% higher than through the grounded loop technology.⁹

The price of a metallic loop reflected the difference in cost of service. Customers who wanted the new, long-distance service might have to rent the loop at a rate which was approximately \$20 to \$50 more a year than the price of access to the local, stand-alone network.¹⁰ Few customers, mostly wealthy residential and large business customers, were willing to subscribe to both systems. Often, in order to place or receive a

⁹T. Sheridan to J. Hudson, November 20, 1895, box 1275, "Maryland Telephone Commission--1895," AT&TCA.

A few years after integration began, the differences in annual operating expenses were negligible. Unsigned memorandum, "Memorandum: Concerning Certain Peculiar Features of Telephone Exchange Service...", September 10, 1901, box 12, "Telephone Rates-Basis-1880-1908," AT&TCA. This may reflect learning-by-doing productivity gains, reduced maintenance costs and that technological research was directed at improvements of metallic, not grounded service.

¹⁰E.J. Hall to J. Hudson, December 10, 1898, box 1287, "New York City--Rates--Changes in Basis," AT&TCA; and Hall to T. Vail, July 8, 1886, box 1011, "Building Early Long Distance Lines," AT&TCA.

toll call, a customer had to go to the telephone company's office and use the special equipment that was available there.

The combination of either paying a higher price for a toll line, or the inconvenience of having to visit the telephone company's office in order to place or receive a call, limited the development of toll telephone service prior to approximately 1892.¹¹ Faced with this retarded development, AT&T's central management conjectured that the situation could be improved by redesigning the exchange network to meet the more stringent technical requirements of the toll network. Not only would this eliminate the need for a stand-alone, toll network, but on the demand side of the market, it would expand the number of customers who could be directly reached over the toll lines. This demand-complimentarity was crucial to the success of AT&T's long-distance network. In formulating the plans for the network in 1885, E.J. Hall wrote President Vail that, "The success of the long distance business will be in proportion to our ability to connect existing exchange systems, and our income will be derived mainly from the tolls for that service."¹²

¹¹Testimony of Horace F. Hill, in *Read et. al. v. Central Union Telephone Company* (hereinafter *Read v. Central Union*), Superior Court of Cook County Illinois, Chancery General Number 299,689, p. 3006, 3575-7, 3585-6, American Telephone and Telegraph Company Corporate Archive, Warren, N.J. (hereinafter "AT&TCA"); E.J. Hall to T. Vail, May 12, 1885, box 1011, "Building Early Long-Distance Lines," AT&TCA.

¹²May 12, 1885, box 1011, "Building Early Long Distance Lines," AT&TCA. Three years later, Hall held the same view, but added "that the continued success of the local exchanges will be largely in proportion to their ability to connect satisfactorily with our lines." Hall to Hudson, January 21, 1888, box 1011,

The integration of the two networks met with some internal resistance, and therefore delay. For example, the chief engineer of AT&T's most important local operating company, the New York Telephone Company, argued that integration would raise the cost of providing exchange service. It was not clear that the benefits to the local company from more intensive use of its network, exceeded the incremental cost of upgrading its network.¹³

Many local operating companies shared this concern. They were unsure of the extent to which customers were interested in placing long-distance calls, and the division of toll revenue procedures established by AT&T did not provide sufficient economic incentive which would make it profitable for them to promote the toll service.¹⁴

"Building Early Long Distance Lines," AT&TCA.

¹³Neil H. Wasserman, From Invention to Innovation: Long-Distance Telephone Transmission at the Turn of the Century 38-39, 137 (1985); and Testimony of James P. Baughman, *United States v. American Telephone and Telegraph Company*, Civil Action No. 74-1698, filed December 2, 1981, p. 71.

¹⁴*Id.*, A-27; E.J. Hall to J.E. Hudson, January 7, 1889, author's file; Chas. J. Glidden to O.E. Madden, May 18, 1880, and W. Whitcomb to American Bell Telephone, May 20, 1880, in box 1210, "Boston-Extra-Territorial Lines--Revenue Allocations--1880;" and Hall to J. Hudson, January 21, 1888, box 1011, "Building Early Long Distance Lines;"

It is not surprising that the local managers were unsure about toll service. As a new, unproven product, the uses and the market were largely undefined. E.J. Hall, one of the primary architects of the long-distance system, stated in 1885 that "it would be impossible for anyone to so forecast the future as to settle all the questions which will arise in a business so entirely novel and containing so many unknown factors..." Hall to T. Vail, May 12, 1885, author's file.

On a system wide basis, the benefits likely exceeded the costs. But AT&T's local operating companies received little of the direct benefits associated with upgrading the network. The capital costs of the grounded-to-metallic network upgrade were paid in total by the local company. AT&T did pay its operating companies a fee for being allowed to connect its intercity toll lines to the local switchboard, but this payment did not seem adequate from the perspective of the local companies. It may have covered the additional operating expenses associated with billing and handling toll traffic, but it did not cover the incremental capital expenses.

AT&T did not own all of the stock of the local companies when long-distance service was integrated into the local network. Consequently, unless AT&T's payment to the local company, along with any additional revenue received due to demand-complementarity for local service, exceeded the incremental costs, the minority stockholders of the local companies would be financially worse off because of this integration. Even though the parent company's position was improved because of economies of scope¹⁵ and demand-complementarity between toll and exchange service, stockholders of the local company could be worse off.

That this was the situation in the Central Union territory was the claim of a few minority stockholders. In 1913, minority stockholders, holding less than four-percent of Central's stock,

¹⁵Economies of scope exist when the cost of providing multiple services through one supplier is less than the sum of the costs of providing the products on a stand-alone basis.

filed suit in the Superior Court of Cook County, Illinois, charging that they had been compelled to take on costs which were beneficial to AT&T, and had received few benefits in exchange.

The complainants (Read et. al.) claimed that the decisions made by Central Union's Board of Directors were intended to promote AT&T's national position, and that these interests did not coincide with the short-run interests of the minority stockholders. Read et. al. brought the complaint against AT&T because, in February 1913, after AT&T had defeated the Independents, the parent company attempted to sell Central Union's properties to other AT&T subsidiaries. The proposed sale price, \$29.6 million, was less than the amount Central owed AT&T for its bond holdings. The purchase price, in effect "would have eliminated the minority stockholders...altogether and made their stock worthless..." The complainants felt that the proposed price for their stock did not reflect the going concern value of the firm, and therefore amounted to confiscation.¹⁶

For years the market price of Central's stock had been approximately 25 to 50% of its par value. Read et al. felt that the long-term financial problems of the firm had been largely an outgrowth of the competitive war which had been waged on behalf of AT&T, and the construction of a network which best met the

¹⁶"Final Decree Entered by Judge William E. Dever," (hereinafter "Final Decree," in Read v. Central Union, slip op. at 84 (July 10, 1917). AT&T did offer the minority stockholders three shares of AT&T stock (par \$100) for eight shares of Central Union stock (par \$100). "Digest of Complaint and of Complainants Principal Affidavits," in Read v. Central Union, A.1 (index item 117).

interests of its majority stockholder, AT&T. The minority stockholders believed that these sacrifices had been made with the understanding that they would share the gains once the Independents had been driven out of the market.

The court decided the case largely in favor of the complainants. The judge found that AT&T's holdings in the Central Union Telephone Company were made with the intent to monopolize the industry at both the regional and national level. He also concluded that some of the money loaned to Central was not beneficial to its subsidiary, but was made to help the parent company in its national fight with the Independents. The judge ordered that the cost of the losses incurred due to rate cutting should be born by AT&T, in proportion to the benefits it obtained. The calculation of the appropriate charge to AT&T was to be made by a court master. The court master was also ordered to take control of AT&T's stock, sell the shares, and then return the proceeds to Bell after the transaction costs were deducted. The court enjoined AT&T from ever acquiring any of the assets of Central Union.¹⁷

Following the Judge's decision, the parties reached an out-of-court settlement.¹⁸ As a result, AT&T did not have to divest itself of the Mid-west properties. Since the decision was not reviewed by a higher court, we do not know to what extent the

¹⁷Dever, "Final Decree," 32-33, 96-102.

¹⁸N.T. Guernsey to H.B. Thayer, April 10, 1919, box 54, "Central Union--Read Case--Receivership," AT&TCA.

history of the American Telephone Industry would have been different if the settlement had not been reached. Nevertheless, the case is of historical importance because the contract law issues addressed in the case persist through today, and they suggest some potential differences between customer and stockholder rights.

The Read decision might have been upheld by a higher court, because the majority had failed to sustain its fiduciary obligation to the minority stockholders. The complainants case was consistent with contract law: if party A provides party B with a commodity or service under the assumption that party B will provide party A with something in exchange, then it is a violation of the law for party B not to carry out the agreement. In Read, the minority stockholders felt that Central Union had been asked to sacrifice current earnings in exchange for future profits. When those future profits were effectively denied them through the reorganization of the firm, the contract law standard had been violated.

The stockholders believed that the existing (exchange) network was used to promote the growth of AT&T's nationwide network. Through the synergies of the local and toll system, AT&T's toll lines became profitable. In a sense, the Central Union stockholders were asked to sponsor the growth of Bell's national network.¹⁹ When the gains of the integrated network

¹⁹On the role of sponsorship in network industries, see Michael Katz and Carl Shapiro, "Technology Adoption in the Presence of Network Externalities," 94 Journal of Political

were not shared, due to self-dealing by the majority stockholder, the court found this to be in violation of the law.

There are two sections of the decision that suggest interesting parallels for today's conflicts arising from technological change: division of revenue and strategic response to competition. First, regarding cost and revenue allocations, once toll and exchange services were provided through common facilities, AT&T established a standard procedure throughout the nation for the division of toll revenues. Starting in 1891, the local operating company through which the call originated, received a commission of 15%, but not to exceed five cents for any message.²⁰ The compensation was intended to compensate the local exchange company for the billing and operator costs associated with toll calls.

Read et. al. did not feel that the division of revenue procedure was fair to the minority stockholders of Central Union. They rejected AT&T's argument that the compensation was fair as long as it covered the incremental cost of offering toll service. AT&T's calculation of incremental cost was based on the assumption that a metallic-loop-network already existed.²¹ The

Economy 822 (1986).

²⁰The maximum payment to the operating company was increased to ten cents in 1893. Federal Communications Special Investigation No. 1, "Control of Telephone Communications," v. III, 111, June 15, 1937; and Dever, "Final Decree," 49.

²¹The difference may be illustrated as follows. If grounded loop technology was used to provide service, the annual cost of connecting a customer to the network was \$68. The cost of originating a local call was approximately 2.5 cents. If a

complainants felt, instead, that they should receive compensation for the use of their facilities:

[I]t would be unfair to apply the excess cost test theory...that in determining what would be a fair division of the joint revenue derived from this joint business the relationship should be regarded as a partnership, and that the revenue derived from the business should be apportioned to the two companies on the basis of the investment of each company in the property required for the doing of this business and the reasonable cost of operating it.²²

The court sided with Read, finding that the introduction of toll service through the facilities of Central Union established a "partnership," and that toll revenue should "be fairly apportioned between the two companies in accordance with the cost to each of operating the business, and the capital investment of each company in the lines, equipment and apparatus actually used in connection with said business."²³

Read et. al. also asked the court to order compensation for

metallic loop network was used, the cost of originating a call was still 2.5 cents, but the cost of connecting a customer to the network increased to \$92.

Cost-of-service on grounded loop: $\$68 + .025 \times \text{number of calls}$.

Cost-of-service on metallic loop: $\$92 + .025 \times \text{number of calls}$.

AT&T provided compensation for the per call cost, but not the incremental \$24 cost associated with the change in technology.

²²Opinion Rendered by Judge William E. Dever," Read v. Central Union, slip op. at 110-11 (January 20, 1917). In the parlance of telephone separations' procedures, the complainants rejected AT&T's board-to-board theory, and instead subscribed to the station-to-station theory. Peter Temin and Geoffrey Peters, "Cross-Subsidization in the Telephone Network," 21 Willamette Law Review 201 (1985).

²³Dever, "Final Decree," 49. AT&T was ordered to compensate the complainants on "a fair and equitable" basis for the toll calls handled by Central Union between 1891 and 1917. Id., 106.

costs Central incurred as part of AT&T's national response to competition. As mentioned above, where it faced direct competition, AT&T responded aggressively. It did this in order to establish a reputation as a non-cooperative duopolist. Reputation can be an effective means of deterring entry, and AT&T's managers believed that this was a sensible strategy to follow after the expiration of Alexander Graham Bell's patent in 1893.

As the Mid-west was the area of the country in which its rivals were strongest, an aggressive response could be quite costly to the local operating companies, depending on how the cost of this strategy was shared. According to the complainants, the burden of this strategy was absorbed by the stockholders of the local operating company. Read felt that compensation should be given to Central's minority stockholders, otherwise they would have incurred costs that were beneficial to AT&T, without receiving compensation. AT&T argued on the other hand, that the expenditures incurred by Central during the competitive era were imperative to its own survival.²⁴

The court sided with Read, finding that Central had absorbed the "whole burden of the fight against competition." Judge Dever felt that if not for AT&T's objective to control the national market, Central Union would have adopted a more cooperative position to entrants:

²⁴"Brief and Argument for Appellant, American Telephone and Telegraph Company," March 1918, *Read v. Central Union*, 278.

[T]hat had the Union and American Companies been acting independently of each other under the same conditions as actually existed in Union Company territory, it is not conceivable that the Union Company's officials would have permitted that company to have borne the full burden of this expensive fight; that in the interest of its stockholders the officers of the Union Company might have restricted the field of its operations rather than expanded it, and the court holds that thereby competition could have been met in limited territory without loss or impairment of the Union Company's capital...²⁵

Since AT&T benefited from Central Union's aggressive response to competition, the Court ordered that AT&T share the associated costs based on "the extent to which it benefited thereby."²⁶

A principal theme running through Judge Dever's decision was that Central Union had adopted policies that were in the best interest of its majority stockholder, AT&T, but "against the interests of the minority stockholders." Because the benefits of Central's policies mostly accrued to AT&T, while the costs were largely absorbed by the license Company, the "dealings" were "set aside [at] the instance of [the] nonassenting [minority] stockholders."²⁷

Central Union had helped sponsor the growth of AT&T's integrated, nationwide system, but was denied the opportunity to share in the benefits because of the contracting terms imposed by AT&T, and by the terms of sale considered by the licensee's board

²⁵Dever, "Final Decree," 74.

²⁶Dever, "Final Decree," 76.

²⁷Dever, "Final Decree," 38.

in February 1913. Since AT&T had abused its fiduciary relationship with minority stockholders, the complainants were entitled to court ordered compensation. Judge Dever ordered that relative benefits of joint undertakings be used as the method to determine the appropriate allocation of joint costs. The judge decreed that a court master should review "the contracts, dealing and transactions" between Central Union and AT&T that were at issue in the case, and

that in so far as any funds of said Union Company were used for the joint benefit of the American Company and the Union Company the master shall apportion the amount which is chargeable to each of said parties upon a fair and equitable basis, having regard to the benefits resulting to said companies respectively from the expenditures made for their joint benefit...²⁸

PART II The Challenge of Regulating Technological Change

A. The Impact of Technological Change on Depreciation Expenses and the Depreciation Reserve

In Read v. Central Union, the Court held that it was illegal for the majority stockholders to self-deal. Minority stockholders had helped sponsor the introduction of long-distance service, and incurred substantial losses in order to protect AT&T's national market position. When, through reorganization, the long-term gains were effectively denied the minority stockholders, the Court held that the majority had failed to

²⁸Dever, "Final Decree," 103 (first quote), and 104 (second quote).

sustain their fiduciary responsibility.

Today, a similar issue arises with the development of the information age infrastructure. There are many media which can be used to transmit high-speed data and video services. The telephone companies have seen large, business customers establish private networks, in part, because the utilities were unable to supply these, as well as plain-old-telephone service, at competitive prices.²⁹ Telephone companies are currently involved in a re-engineering of their networks in response to this lost business. In the first stage, it involves replacing analog with digital switching equipment. In the second stage, it will involve providing fiber-optic connections to all customers. With fiber optics, the utilities will be able to provide video and high-speed data services to all customers at a low, incremental cost.

The low incremental cost of usage on a fiber network is not achieved without cost. As with the introduction of the metallic loop technology, fiber-optics in the local loop will increase the fixed cost of serving customers. It has been estimated that the cost of re-engineering the network for these new services is approximately \$2000 per subscriber, or \$200 billion in capital

²⁹Eli Noam, "The Public Telecommunications Network: A Concept in Transition," 37 Journal of Communications 30 (1987); Re Pacific Bell, 69 PUR4th 225, 236 (1985); and Jane L. Racster, Michael D. Wong, and Jean-Michael Guldmann, "The Bypass Issue: An Emerging Form of Competition in the Telephone Industry," National Regulatory Research Institute, 84-17 (1984).

costs for the nation.³⁰ The comparable embedded investment per existing copper line is approximately \$600 per subscriber, and near-zero incremental capital cost.

The exchange companies have been investing in these new technologies with little need to turn to external capital markets.³¹ The companies have been able to rely on internal cash flow, to a large extent, because state and federal regulatory bodies have approved higher depreciation rates³² in the past ten years. Higher depreciation expenses raise the regulated price of service in the short-run, and they increases a utility's internal cash flow.

The composite annual depreciation rates of telephone companies has increased from 5.1% to 7.4% between 1975 and

³⁰Marvin Sirbu, Frank Ferrante and David Reed, "An Engineering and Policy Analysis of Fiber Introduction into the Residential Subscriber Loop," Carnegie Mellon University, Department of Engineering and Public Policy Working Paper, September 1988. The \$2,000 incremental capital cost does not include the additional switching investment. No data is available for this part of the network because the technology is currently being developed.

³¹Bruce L. Egan, "Phone Companies Are Businesses Too," Columbia University Center for Telecommunications and Information Studies, Autumn 1988.

³²The Supreme Court recently defined depreciation "as the loss in service value of a capital asset over time. In the context of public utility accounting and regulation, it is a process of charging the cost of depreciable property, adjusted for net salvage, to operating expense accounts over the useful life of the asset." Louisiana Public Service Comm'n. v. Federal Communication Comm'n, 476 U.S. 355, 364 (1986) (hereinafter Louisiana v. F.C.C.).

1986.³³ The increase in depreciation rates has been driven by technological change and the telephone companies' desire to provide new services. Just as AT&T found it uneconomical to provide toll and exchange services through stand-alone networks, the exchange companies believe that integrating existing products with new ones will lower the total cost of providing telecommunication services. The following passage from Michigan Bell Telephone's 1983 Depreciation Report to the Federal Communication Commission illustrates the factors the firm feels are forcing it to increase its depreciation rates:

The ability to switch high speed data at a variety of speeds is essential. Processor retrofits and generic updates will only provide intermediate relief to the growing network demand. In the short term, use of multiple systems to perform additional switching functions like video, seems reasonable. But as demand on the network expands, the multiple switch concept will become too expensive to maintain. Instead of having three switching units in a central office, one for POTS (Plain Old Telephone Service), another for data and a third for video, it will be more economical to place a multiple purpose switch.³⁴

Currently Michigan Bell, and other local exchange companies, are providing high-speed data, video and basic telephone services through separate networks. These suppliers are accelerating the retirement of existing facilities because they believe their

³³National Association of Railroad and Utility Commissions' Capital Recovery Task Force, 2-3, March 9, 1988. Depreciation is the local exchange companies' largest operating expense. 1986 Federal Communications Comm'n Statistics of Communication, Table 14.

³⁴Michigan Bell Telephone, 1983 Depreciation Report to the Federal Communication Commission, 6.

profits will be increased in the long-run if all products are provided through one switch. Just as AT&T believed that the demand for long-distance service would increase if it was integrated with exchange service, carriers hope that the integration of video and high-speed data with existing services will generate demand complementarities.

The deployment of a multiple purpose switch raises the price of standard telephone service in the short-run because the retirement date of existing equipment is advanced. In the short-run, there are few customers who obtain video and high-speed data services from the telephone company. Therefore, the short-run incremental accounting expense from the deployment of the new technology exceeds the incremental revenue. This increases the expenses that must be covered by basic services.

Telephone prices are also higher in the short-run because telephone companies are being allowed to recover depreciation short-falls. Authorized regulatory depreciation rates in prior years were too low because the Commissions did not adequately anticipate rapid technological progress and changes in the market structure.³⁵

Due to technological advances, such as fiber-optics, local area networks (used to connect together computer terminals), and relatively inexpensive microwave transmitters, the earlier depreciation rates were based on incorrect assumptions about the

³⁵Louisiana v. F.C.C., 476 U.S. 355, 358-59 (1986); Property Depreciation, 83 F.C.C. 2d 267 (1980); and Property Depreciation, 87 F.C.C. 2d 916 (1981).

economic life of the facilities. The telephone utilities, starting in the mid-1970s, concluded that the book value of their plant exceeded the economic value of their plant. In order to correctly signal to investors and others the financial status of the firm,³⁶ as well as to improve their market position relative to competitors and potential entrants,³⁷ the utilities concluded that they needed to accelerate their recovery of existing investments. All commission's found that ratepayers were legally obligated to compensate the utilities for the decline in the value of their assets.³⁸

Each year, depreciation expenses are booked to reflect the decline in the value of property. Corresponding to these depreciation charges are credits that are entered in the utility's depreciation reserve account. In order to determine the utility's rate base, the portion of investment from which a firm is allowed to earn a profit, these accumulated credits are deducted from the original cost of the in-service facilities. The firm's "rate base is reduced according to a depreciation schedule that is based on an estimate of the item's expected

³⁶Property Depreciation, 83 FCC2d 267, 270 (1980).

³⁷Re Northwestern Bell Telephone Company, Iowa Department of Commerce: Utilities Board, RPU-88-6, Slip op. at 38-41 (1989).

³⁸See, e.g. Property Depreciation, 83 FCC2d 267, 276 (1980); Property Depreciation, 87 FCC 2d 916 (1981); Re Northwestern Bell Tel. Co., 94 PUR4th 132, 137 (1988). Also see, for example, Re Southern Bell Tel. and Telegraph Co., 82 PUR 4th 682, 685 (1987); Re New York Tel. Co., 77 PUR4th 119, 129 (1986); Re New England Tel. and Telegraph Co., 63 PUR4th 356, 361 (1985); and Re Pacific Bell, 69 PUR4th 225, 228 (1985).

useful life."³⁹

For example, a depreciable asset with an original cost of \$10,000, no capital improvements, a salvage value of \$500, and a lifetime of ten years is given a depreciation rate of ten per cent and is depreciated at the rate of \$950 per year over its ten-year life. At the end of two years, the firm would be allowed to earn a return on its rate base of \$8,100.

The difference between the market and book value of the assets arises when the expected useful life of the plant turns out to be incorrect. If in the above example, the correct service life of the plant turned out to be four years, there would be a reserve deficiency⁴⁰ of \$2,850 at the end of the second year that the plant was in-service [$\{(\$9,500/4) - 950\} * 2$ years].

Due largely to technological change,⁴¹ as well as changes in the market structure that were the byproduct of the new technologies, growing markets, and a reduction in regulatory barriers-to-entry,⁴² the service life of telecommunications

³⁹Louisiana v. F.C.C. 476 U.S. 355, 365.

⁴⁰The Michigan Public Service Commission has defined the depreciation reserve deficiency as "the difference between that depreciation reserve maintained on the company's books and that which would have been accrued had the actual service lives and salvage values been known at the time the asset was placed into service." Re Michigan Bell Tel. Co., 77 PUR4th 535, 537 (1986).

⁴¹Re Southern Bell Tel. and Telegraph Co., 82 PUR4th 682, 684-5 (1987); Re New York Tel., 77 PUR4th 119, 129 (1986).

⁴²Re New England Tel. and Telegraph Co., 63 PUR4th 356, 361 (1985); Amicus Brief of the United States Telephone Association, Louisiana v. F.C.C., 476 U.S. 355, filed November 12, 1985, 7-8;

equipment has been reduced in the past decade.⁴³ The lower service life increases a utility's annual depreciation expenses, and, at least in the short-run, leads to higher prices.⁴⁴

B. Judicial and Regulatory Standards in the Era of Embedded Cost-Rate-Making

In the prior example, the shortened service-life would raise the annual depreciation expense by \$1,425 (\$2,375 - \$950).⁴⁵ This increased expense would be reflected in customer rates. As a second issue, and one that has received little regulatory consideration, is who should bear the cost of the unanticipated technological change? Participants in regulatory hearings have mostly argued over timing of the recovery of assets, and have

and Re Pacific Bell, 69 PUR4th 225, 234-36, 259 (1985).

⁴³Re Northwestern Bell Tel. Co., 91 PUR4th 52, 55, 57 (1988); and Re General Tel. Co. of the Northwest, Inc., 78 PUR4th 576, 580 (1987).

⁴⁴Louisiana v. F.C.C., 476 U.S. 355, 376 (1986); RE Southwestern Bell Tel. Co., 77 PUR4th 358, 360 (1986); and Re Mountain States Tel. & Telegraph Co., 76 PUR4th 667 (1986); Re Wisconsin Bell, Inc., 77 PUR4th 138 (1986). Accelerated depreciation may lead to lower rates in the long-run because of the reduced rate base, potential maintenance savings associated with the introduction of new equipment that is financed, in part, through accelerated depreciation, and lower capital costs due to less investment risk. Re General Tel. Co. of the Northwest, Inc., 78 PUR4th 576, 579 (1987); Re Continental Tel. Co., 81 PUR4th 153, 155-56 (1987); and Re Northwestern Bell Tel. Co., 91 PUR4th 52, 54 (1988).

⁴⁵This example assumes that the regulatory body has adopted remaining life accounting procedures. For a description of the whole life versus remaining life methods, see, Louisiana v. F.C.C., 476 U.S. 355, 360-61 (1986).

accepted that rate-payers are obligated to increase their payments in order to eliminate the depreciation reserve deficiency. On this issue, the Federal Communications Commission (FCC), established the boundaries of debate in 1981 when it found:

[I]t is settled law that capital prudently invested in a regulated public utility must be recovered through annual charges to depreciation expense. The depreciation process spreads this recovery over the average estimated service life of the various plant categories in such a way as to provide full capital recovery. The only question addressed in this proceeding is the speed at which this recovery will occur, i.e. the allocation of the cost among present ratepayers and future ratepayers.⁴⁶

In our example, this means that the depreciation reserve deficiency of \$2,850 must be paid for by current and future ratepayers. Stockholders are not made to bear any of the loss of the unanticipated technological change. In recent years in the telecommunications industry, this has involved requiring customers to recover a cumulative reserve deficiency that was estimated to be as high as \$26 billion dollars in 1986.⁴⁷

Why were the losses of technological change borne by customers and not stockholders? Is this approach consistent with competitive market theory, or can the decision be explained as an equitable resolution to an error made by regulatory commissions?

Having the ratepayers bear the cost of unanticipated changes

⁴⁶Property Depreciation, 87 FCC2d 916, 918 (1981). Most states have adopted a similar policy. See, e.g., Re New England Tel. and Telegraph Co., 71 PUR4th 652, 661 (1986); Re Pacific Bell, 69 PUR4th 225, 265 (1985); and Re Northwestern Bell Tel. Co., 91 PUR4th 52, 54 (1988); .

⁴⁷Louisiana v. F.C.C., 476 U.S. 355, 359 (1986).

in the market suggests that regulatory bodies are not using competitive market theory as a guide for depreciation policy. In a competitive market, if the book value of a firm's assets exceeds its market value, it is common practice to write off the excess capitalization as a stockholder loss.⁴⁸

The policy of having consumers recover the losses associated with technical change can not be justified on the basis that the regulatory commissions failed to approve the utilities' earlier requests for higher depreciation rates. If prior to this era of rapid technological change, the utilities believed that the depreciation rates authorized by the regulatory commissions were too low, and therefore their authorized prices did not cover the full cost of service, the firms could have sought court relief. If rates fail to recover the cost-of-service, they are confiscatory and in violation of a firm's fourteenth amendment constitutional rights.⁴⁹ Since court relief was either not sought, or not provided, the regulatory commissions should not bear exclusive blame ex post.

Even if the Commission had ignored the utilities' request for higher depreciation rates, does it logically follow that current customers should pay for the mistake of a government agency? Addressing this issue, the Iowa Utilities Board concluded that

⁴⁸For example, the American Telephone and Telegraph Company "wrote off \$6.7 billion worth of obsolete equipment" in 1988. New York Times, at D6, March 15, 1989.

⁴⁹Federal Power Comm'n. v. Hope Natural Gas, 320 U.S. 591 (1944).

Even if all [original emphasis] of the responsibility for inadequate depreciation could be attributed to the FCC and the Board, which is a disputed premise in these proceedings..., the placement of blame on the regulators would not be relevant to the task the Board faces. Additional costs must be paid and neither the Board nor the FCC will pay them. Under the hypothetical premise of total blame on regulators, the Board still would have to apportion the resulting costs between totally blameless shareholders and totally blameless current and future ratepayers.⁵⁰

The Iowa Utilities Board, like all other state commissions,⁵¹ in the end, followed the lead of the F.C.C. in holding customers responsible for the losses of unexpected technological change. The F.C.C. concluded in 1980 that stockholders are entitled for full reimbursement of "prudently invested" capital regardless of changes in technology.⁵²

The F.C.C. cited Democratic Central Committee of the District of Columbia v. Washington Metropolitan Area Transit Commission, 485 F.2d 786 (1973), cert. denied, 415 U.S. 935

⁵⁰Re Northwestern Bell Tel. Co., 94 PUR4th 132, 135 (1988). The Board added that it was unanticipated technological progress, not government error that was responsible for the reduction of the value of the firm's assets. Id., 137.

If the regulatory commission was an agent for ratepayers, it would be appropriate to have customers pay for the mistakes of their agent. But this is not the case. Regulatory bodies hear contested cases where interested parties, including customers, present their affirmative case. The government agency, after considering the evidence presented, sets "'just and reasonable' rates" that "balance[e]...the investor, and the consumer interests." Federal Power Comm'n v. Hope Natural Gas, 320 U.S. 591, 603 (1944).

⁵¹Re Northwestern Bell Tel. Co., 94 PUR4th 132, 137 (1988). Also see, for example, Re Southern Bell Tel. and Telegraph Co., 82 PUR 4th 682, 685 (1987); Re New York Tel. Co., 77 PUR4th 119, 129 (1986); Re New England Tel. and Telegraph Co., 63 PUR4th 356, 361 (1985); and Re Pacific Bell, 69 PUR4th 225, 228 (1985).

⁵²Property Depreciation, 83 FCC2d 267, 276 (1980); and Property Depreciation, 87 FCC 2d 916 (1981).

(1974) as the applicable case law.⁵³ In Democratic Central Committee, the D.C. Court of Appeals was confronted with the issue of was a utility or its customers entitled to the capital gains obtained from property recently sold by the bus company. The Court contended that the issue should be resolved by evaluating the procedures used to establish rates, and what the rate-setting process suggested about the contractual relationship between customers and stockholders. When utility regulation began, most rate-making was based on the fair-value of a utilities property. Fair value was determined by calculating the market value or reproduction cost of the supplier's assets.⁵⁴ Stockholders were afforded the opportunity to earn a rate-of-return on a rate-base that reflected the current value of the assets. If the assets grew in value because of inflation or some other market change, the value of the rate-base, as well as rates, increased.⁵⁵

⁵³Property Depreciation, 83 FCC2d 267, 276 (1980).

⁵⁴Democratic Central Committee of the District of Columbia v. Washington Metropolitan Area Transit Commission, 485 F.2d 786, 800-01 (hereinafter Central Committee v. Area Transit); and Alfred Kahn, The Economic of Regulation: Principles and Institutions 1:37-38 (1988).

⁵⁵The regulatory process was not symmetrical. Market changes that led to a reduction in the cost-of-service, did not necessary lead to a lowering of rates. Under the reproduction cost methodology, if technological change lowered the value of the assets, the rate-base could be reduced. But the Supreme Court was reluctant to pass on to customers all of the benefits associated with technological change. In Pacific Gas v. San Francisco, the Court held that it was improper for the city to lower gas rates when the utility adopted cost-saving technologies. The Court noted that if the adoption of new production techniques led to lower rates which did not provide

Beginning in 1933, an era of economic depression and declining prices, the Supreme Court held that it was not necessary to use reproduction costs in order to determine the value of the rate base. In 1944, in the Hope Natural Gas case, the Court held that Commissions did not have to base rates on the fair value of assets. Subsequently, Commissions have almost exclusively used embedded investment to calculate the rate base.⁵⁶

Whereas the rate base valuation is based on the book value of a firm's assets, the utility is not allowed to increase its rates if the market value of the assets increases. Denied the opportunity to earn these capital gains, the Courts and Commissions have largely found that consumers should bear the risk of premature obsolescence of equipment: "The risk of loss from premature retirement of assets because of obsolescence, as a general rule, ... falls on consumers."⁵⁷

for the cost of premature obsolescence of earlier equipment, "successful efforts to improve the service will prove extremely disadvantageous..." 265 U.S. 403, 416 (1923).

⁵⁶Central Committee v. Area Transit, 485 F.2d 786, 801-02; Federal Power Comm'n. v. Hope Natural Gas, 320 U.S. 591, 601-02 (1944); and Kahn, Economics of Regulation, 1:40-1.

⁵⁷Central Committee v. Area Transit, 485 F.2d 786, 807 (quote), 808-10; and Property Depreciation, 83 FCC 2d 267, 276 (1980).

If the assets are not "used and useful," the investment may be excluded from the rate-base. The Pennsylvania and Indiana Supreme Courts recently held that if a nuclear plant is not operating, regardless of how prudent the investment initially may have been, the investment may be excluded from the rate base. The Pennsylvania Court, disallowed the inclusion of investment associated with the Three Mile Island Nuclear Plant since the facility was inoperable. The Indiana Court held that since an

With the adoption of setting rates based on the embedded investment, stockholders are afforded the opportunity to earn a return on the capital invested, and any gains or losses from asset price fluctuations are realized by consumers.⁵⁸ The Court of Appeals held in Central Committee that "what has...prevailed" since the demise of fair-value rate making, "is the central idea that the investor's legally protected interest resides in the capital he invests in the utility rather than in the items of property which that capital purchases for provision of utility service."⁵⁹

Concurrent with the demise of the fair value theory of rate making, the risk associated with fluctuations in the value of the assets has been transferred from the stockholders to the ratepayers. It was this evolution that was the legal basis for

abandoned reactor had never been placed in service, consumers should not bear the cost of a facility that was no longer economical. Metropolitan Edison Co. v. Pa. Public Util. Comm'n., 502 Atlantic Reporter 2d, 130, cert. denied 106 S. Ct. 2239 (1986); and Citizens Action Coalition of Indiana v. Northern Indiana Service Co., 485 N.E. 610, 615 (1985), cert. denied 106 S. Ct. 2239 (1986). The Indiana Court qualified its decision by pointing out that if the nuclear plant had been placed in-service, and subsequently taken-out of service, it might have reached a different conclusion. Citizens Action Coalition of Indiana v. Northern Indiana Service Co., 485 N.E. 610, 616 (1985).

While this case law suggests that commissions are not obligated to have consumer's pay higher rates that will allow the telephone companies to recover their depreciation shortfall, as described infra, this has not been done.

⁵⁸Central Committee v. Area Transit, 485 F.2d 786, 806-07; Property Depreciation, 83 FCC 2d 267, 276 (1980).

⁵⁹Central Committee v. Area Transit, 485 F.2d 786, 797 n. 82, 801 (quote).

requiring consumers to pay for the losses from recent technological change, the depreciation reserve shortfall.

Technological change not only destroys value, but it also creates new economic opportunities. Organization theory suggests that since customers have borne some of "the risk of the difference between stochastic inflows of resources and promised payments to agents," they are "residual claimants" on the gains associated with technological change.⁶⁰ Using Dever's sharing rule, this would mean "apportion[ing]" the profits on new services between existing customers and stockholders "upon a fair and equitable basis, having regard to the benefits resulting to the" parties "respectively from the expenditures made for their joint benefit...⁶¹"

Recent regulatory developments suggest that ratepayers may not receive their equitable share of the benefits associated with technological change. Local exchange companies have, or are in the process of reconstructing their networks in a fashion that improves their competitive position in the provision of video and high-speed data services. These new services are not considered "essential" services, and furthermore, close substitutes exist in the market. After the demand for the new products has taken-off, in the sense that a price greater than marginal cost of service is sustainable, the local exchange companies may argue that the

⁶⁰Eugene F. Fama, and Michael C. Jensen, "Agency Problem and Residual Claims," 26 Journal of Law and Economics 327, 328 (1985).

⁶¹Dever, "Final Decree," 38.

services need not be regulated.⁶²

If these new services were spun-off from the regulated operations of the local exchange companies,⁶³ the issue may be raised, are the subscribers of existing, basic telephone services entitled to the same protection as the minority stockholders of Central Union? Should they be allowed to share the gains associated with the new services during the mature stage of the

⁶²These two criteria, that the product is essential and no effective competition exists, are often considered necessary conditions for there to be an economic case for imposing regulation. See, for example, National Telecommunications and Information Administration, U.S. Department of Commerce, "Regulatory Alternatives Report," 52-53 (1987).

⁶³During the past ten years, it has increasingly become a regulatory practice to deregulate new and enhanced services. Even though these new services may share the same facilities, they are treated as a service provided by a non-regulated subsidiary. The separation of costs between the regulated and non-regulated subsidiary is often based on relative use, or the short-run incremental cost of using common facilities. These methods do not take into account the cost impact of upgrading the network for the new service. The approach is similar in concept to the excess cost test adopted by AT&T when it introduced long-distance telephone service.

For a discussion of the mechanics of the relative-use procedure, as adopted by the F.C.C, see "Separation of Costs of Regulated Telephone Service From Costs of Nonregulated Activities," CC Docket no. 86-111, 2 Federal Communications Comm'n Record 6283 (1987).

The majority of state regulatory commissions have not established standards for separating costs between regulated and nonregulated activities. Only 37% of the state utility commissions have, or are in the process, of establishing a methodology. Mark Jamison, "Memorandum to the National Association of Railroad and Utility Commissioners' Communications Committee Members, May 26, 1988. Where standards have been established for competitive, regulated services, the State Commissions have largely adopted incremental costs as the appropriate cost standard for rate setting. State Telephone Regulation Report, at 1, 3-6, December 1, 1988.

product cycle?⁶⁴

In short, what is the implicit contractual relationship between utilities and its customers? The relationship has changed through time due to changes in relative prices, technology, regulatory and legislative policy, and judicial interpretation of the law.⁶⁵ The evolving terms is an outgrowth, in part, of the absence in the enabling legislation of regulatory commissions of any clear definition of the objectives of regulation.⁶⁶ There exists in the legal and economic literature a number of well defined regulatory goals,⁶⁷ such as emulation of competitive market behavior,⁶⁸ protection of monopoly rate

⁶⁴This issue is raised in the National Association of Regulatory Utility Commissioners "1982 Report of the Ad Hoc Committee on Utility Diversification," p.18: "'If funds are provided through the utility, especially if provided by the ratepayers, ratepayers may want a share of the diversified earnings.'" as cited in Jeffrey W. Knapp, "Effective State Regulation of Energy Utility Diversification," 136 University of Pennsylvania Law Review 1690 n. 56 (1988).

⁶⁵Central Committee v. Area Transit, 485 F. 2d. 786; and Michael W. McConnel, "Public Utilities Private Rights," Regulation (1988).

⁶⁶Thomas McCraw, Prophets of Regulation: Charles Francis Adams, Louis D. Brandeis, James M. Landis, and Alfred E. Kahn, 19 (1984).

⁶⁷Douglas N. Jones, "Regulatory Concepts, Propositions, and Doctrines: Casualties and Survivors," 22 Journal of Economic Issues 1089 (1988).

⁶⁸Citizens Action Coalition of Indiana v. Northern Indiana Public Service Company, 472 N.E. 2d 938 (1985), cert. denied, 106 S. Ct. 2239; Charles F. Phillips Jr., The Economics of Regulation: Theory and Practice in the Transportation and Public Utilities Industries 19 (1965); and Commissioner Hanford Erickson, "Importance of Costs in Valuations and Rate Making," series 1324, Wisconsin State Historical Society (n.d.). Posner, on the other hand, argues that "[t]he existence of the internal

payers,⁶⁹ aiding the development of the nation's infrastructure,⁷⁰ providing utilities the opportunity to earn a rate-of-return that is "commensurate" with earnings in fields with similar risk,⁷¹ and the establishment of market order in an industry that is otherwise subject to ruinous competition.⁷² These regulatory targets often suggesting conflicting courses of action. For example, rate base treatment of assets that are consistent with competitive market behavior may endanger the financial health of the utility,⁷³ and higher telecommunication

subsidy (e.g. free communication channels to educational television channels) is an embarrassment to proponents of the...view that regulation is imposed in order to bring about results approximating those of competition...[T]he internal subsidy brings about results unthinkable in a competitive market..." Richard A. Posner, "Taxation by Regulation," 2 Bell Journal of Economics and Management Science 27 (1971).

⁶⁹Brief for Appellant, appendix D, Louisiana Public Service Comm'n., "State Ratemaking Orders," June 30, 1981, in Louisiana Public Service Comm'n. v. Federal Communications Comm'n., 476 U.S. 355 (1986); Jeffrey W. Knapp, "Effective State Regulation of Energy Utility Diversification," 136 University of Pennsylvania Law Review 1677, 1685 (1988); Martin G. Glaeser, Public Utilities in American Capitalism, 196 (1957); and Phillips, Economics of Regulation, 28-31, 41.

⁷⁰Property Depreciation, 83 FCC 2d, 267, 281 (1980); Property Depreciation, 87 FCC 2d, 916, 918 (1981); and Re General Telephone, 86 PUR4th 626, 652 (1987).

⁷¹Federal Power Comm'n. et. al. v. Hope Natural Gas, 320 U.S. 591, 603 (1944); and A.J.G. Priest, Principles of Public Utility Regulation, 2: 788-89 (1969).

⁷²George T. Brown, The Gas Light Company of Baltimore: A Study of Natural Monopoly, 68-69 (1936); and Richard A. Posner, "Natural Monopoly and its Regulation," 21 Stanford Law Review 585 (1969).

⁷³Metropolitan Edison Co. v. Pa. Public Util. Comm'n., 502 Atlantic Reporter 2d 130, 135-36 (1985), cert. denied, 106 S. Ct. 2239 (1986).

prices that aid the development of the nation's infrastructure by increasing a firm's internal cash flow, may be injurious to monopoly rate payers.⁷⁴ The Supreme Court summarized the regulatory dilemma in its Permain Basin Rate Cases decision when it stated that "neither law nor economics has yet devised generally accepted standards for the evaluation of rate-making orders."⁷⁵

During the era of fair-value rate-making, it was the Supreme Court's position that customers do not have a claim on the value of utility assets: "The relation between the company and its customers is not that of partners, agent and principal, or trustee and beneficiary." The Court added that "[c]ustomers pay for service, not for the property used to render it...[b]y paying bills for service they do not acquire any interest, legal or equitable, in the property used for the convenience or in the funds of the company."⁷⁶ The substitution of original cost for fair-value of assets changed this relation. Ratepayers are now seen as having a claim on the change in the value of assets, that is, they are in a sense stockholders.⁷⁷

⁷⁴Re New England Tel. and Telegraph Co., 71 PUR4th 652 (1986); Virginia State Corp. Comm'n. v. F.C.C. 737 F. 2nd 388, 399 (1984) (Widener dissenting).

⁷⁵390 U.S. 747, 790 (1968). For a more recent discussion, see McCraw, Prophets of Regulation, 301.

⁷⁶Board of Pub. Util. Comm'rs. v. New York Tel. Co., 271 U.S. 23, 31 (1926).

⁷⁷Central Committee v. Area Transit, 485 F.2d 786, 801 (1973); and Property Depreciation, 83 FCC 2nd 267, 276 (1980). In the classical model of the firm, the firm's assets remain

The customers of the utility which bear the risk associated with technological change, are not necessarily protected from majority self-dealing to the same degree that the courts afforded protection to the minority stockholders of Central Union. As new, information age services become profitable, the local exchange companies may decide to spin-off these services to a non-regulated subsidiary of the company. When services are spun-off from the regulated entity, the payment to the regulated entity for shared facilities frequently reflects the direct or incremental cost-of-service.

The use of incremental costs is consistent with static, neo-classical economic theory and anti-trust law.⁷⁸ Nevertheless, this method does not take into account the costs incurred by existing customers in sponsoring new services. First, as already

the exclusive property of those who have supplied financial capital. The relevance of the classical model is currently being debated. For example, labor often makes risky commitments to a firm. Labor may make firm-specific investments in the sense of increased human capital that is valued most highly by its current employer. Erik G. Furuboth writes:

Objectively viewed, labor's investment in the firm can be understood as a vital input; the capital in question represents nothing less than one part of the total capital stock needed by the firm for production. In effect 'joint investment' takes place, and workers, just as conventional stockholders, contribute to the firm's total capital requirements. It is arguable, then, that worker-investors should be regarded as equity holders [emphasis added].

"Codetermination and the Modern Theory of the Firm: A Property-Rights Analysis," 61 Journal of Business 165, 168 (1988).

⁷⁸Sanford V. Berg and John Tschirhart, Natural Monopoly Regulation: Principles and Practice (1988); and David L. Siddall, "Antitrust Law--Predatory Pricing: A Ninth Circuit Wrinkle,": 12 Journal of Corporation Law 765 (1987).

described, some of the funds for the new technology that make new services potentially profitable are often obtained through the depreciation process from ratepayers. Secondly, in general, the introduction of new technology raises the fixed cost of production and lowers the marginal cost. For example, the fixed cost of serving a customer on a fiber optic loop is higher than the cost on the prior generation of copper loops. The higher fixed cost may lead to an increase in subscriber fixed monthly charges for basic service. Customers of plain-old-telephone-service may therefore be paying for a technology for which they have little or no need. On the other hand, once this fixed customer cost is incurred, the cost for usage is lower on a fiber network.⁷⁹

The incremental costing approach, which is currently used by utilities in their rate proposals with commissions, assumes the state-of-the-art technology has already been deployed, that the increased fixed cost is recovered from all customers, and that the relevant incremental cost of usage for new services is the incremental cost on this new network.⁸⁰ This method is the same

⁷⁹See, e.g., Re General Telephone, 86 PUR4th 626, 651 (1987); and William Lehn and Roger C. Noll, "ISDN and the Small User: Regulatory Policy Issues," 1-2, 20 n. 18, 41, 44, Center for Telecommunications and Information Studies, Columbia University (1988). Lehr and Noll suggest that the deployment of the new technology, with its high-fixed and low-incremental cost-structure, "is consistent with a strategy of uneconomic entry-foreclosing investments." Id. 44.

⁸⁰Alfred E. Kahn and William B. Shew, "Current Issues in Telecommunications Regulation: Pricing," 4 Yale Journal on Regulation 191, 219-21, 228 (1987).

as the excess cost test found to be illegal by Judge Dever in Read. When new services are spun-off to unregulated portions of the firm's corporate structure, the method provides no compensation to existing customers for having sponsored the deployment of new technologies.

Conclusion

There are some notable parallels between the introduction of long-distance service in 1885, and the development of new information services in 1989. In both cases, existing facilities were replaced with equipment that changed the cost-structure of the industry--they raised the level and proportion of fixed costs. The higher fixed costs were recovered from existing services. In addition, the deployment of new technologies coincided with an expansion of the number of telecommunication suppliers. Finally, the use of incremental costing to allocate the cost of shared facilities raises questions of equity.

In both Read and Central Committee the courts concluded that as a matter of equity, "he who bears the financial burden of particular utility activity should also reap the benefit resulting therefrom."⁸¹ Concurrent with the demise of the fair-value theory of rate-making, utility customers have been assigned privileges and responsibilities which previously were the domain of stockholders. In light of this change, customers should be

⁸¹Central Committee v. Area Transit, 485 F.2d 786, 806 (quote) (1973); Dever, "Final Decree," 104.

afforded the same protection from self-dealing as provided to the complainants in Read. Since the regulatory agencies have required customers to cover the losses that are the byproduct of technological change, utilities should not be allowed to spin-off successful new services unless appropriate compensation is provided.

Commissions need to consider what is the appropriate regulatory treatment of new, non-essential services. Judge Dever concluded in Read that using an incremental cost test to identify the costs associated with a new service does not provide adequate safeguards for the group that sponsors the products. In light of this decision, what cost standard should be used to identify the costs assigned to information age products that share facilities with existing telecommunication services? Should the methodology used to determine capital recovery be changed so that utility stockholders bear the loss associated with technological change? If this was done, they would gain claim to the profits that may be realized from new products.

The issues raised in this paper deal with equity during an era of rapid technological change. The telecommunications industry is a crucial part of the nation's infrastructure. Policies should be established that insure that the nation maintains its efficient, ubiquitous network. Dynamic objectives are not incompatible with equity. When new products reach their mature stage of their product cycle, regulators should insure that those who sponsored the new technology, receive the

appropriate compensation.