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## The United States Postal Service: A Government Corporation Requiring Changes: Past, Present, Future

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**The United States Postal Service:  
A Government Corporation Requiring Changes.  
Past, Present, Future**

**Senior Honors Project and Independent Study**

**Economics 450**

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**April 30, 1990**

## ***I. Introduction***

The Postal Service shall have as its basic function the obligation to provide postal services to bind the Nation together through the personal, educational, literary, and business correspondence of the people. It shall provide prompt, reliable, and efficient services to patrons in all areas and shall render postal services to all communities. The cost of establishing and maintaining the postal service shall not be apportioned to impair the overall value of such service to the people.  
(39 U.S. Code 3628)

This project determines the cost of maintaining the postal service currently. It explores whether this cost is justifiable on the grounds of “binding the Nation together” or if these costs are “impairing the overall value of such service to the people”. Whether these costs are viewed as reasons for continued postal deficits or seen as the need for radical changes in the structure and operation of the postal service (even to the point of creating a private corporation from it) will determine the future course of action in regard to it.

The paper is divided into seven sections. Section I is introductory, describing the current predicament and issues facing the United States Postal Service. Sections II and III provide a history of the predecessor of the current postal service, the Post Office Department, and gives an account of the effects of its service emphasis on costs. Costs were supposedly brought under control by the Postal Reorganization Act of 1970. The fourth section examines the effectiveness of this legislation, and also discusses current issues facing the service. Section V sets out an economic model of the total revenue and total cost functions for first class postage. Section VI discusses the empirical results of the model, and posits the possible policy options available given the model’s results.

## ***II. History of the Post Office Department 1792-1969***

The Post Office Department (hereinafter “Department”) , and its successor, the United States Postal Service, have been delivering the mails through rain, sleet, and snow for almost two hundred years. It is important to view these two agencies in their proper historical context in order to comprehend more fully how many of the inefficiencies of providing postal service developed and how deeply institutionalized “public service” expectations towards this government corporation

are today. Until the passage of the Postal Reorganization Act in 1970 the Post Office Department was predominantly service oriented.

The authors of the Constitution intended to authorize a postal monopoly, (Priest, p. 46) but they originally had in mind the notion of a monopoly operated by the government for the advancement of communication. The Constitution states "The Congress shall have Power . . . To establish Post Offices and post Roads." (*United States Constitution*, Article I, sect. 8, cl 7.) Despite their determination to define who should have the power of establishing a postal system, they seemed relatively unsure of how to structure this system or who should bear the responsibility of costs. The Act of 1789 created a temporary "Post Office Department", but said nothing whatsoever about the position this new creation should occupy in the executive branch (Cullinan, p. 35). Five years later the Department was made permanent and added as an adjunct of the Treasury. Any deficits or surpluses were given over to this agency.

The Department incurred heavy losses from the period 1794-1840. This was due in part to the expensiveness of receiving a page of written material--comparable at the time to buying five dozen eggs (Cullinan, p. 38). Because it was so expensive to use this service, there was very low demand for it. Mail usually wasn't delivered unless it was determined the recipient could pay for postage. Another consideration was the perceived need for expansion into frontier areas to provide a communication link between legislators and "every county seat", without consideration for the efficiency of routes or locations. Between 1800 and 1830 the number of post offices doubled every ten years (Fleishman, p. 119).

During the 1830's, Andrew Jackson's distrust of government and his desire to put those loyal to him in power had disastrous effects on the Department. Jackson created the tradition of presidential appointment of the postmaster generals. The average length of term of succeeding postmaster generals decreased from six years to two years, eight months, and their desire to effect meaningful changes in the Department waned as well. Postmasters in major cities became Jacksonian appointees, and most postmasters from Jackson's time through 1970 ". . . were political patronage appointees whose managerial talents were not always apparent and whose

loyalties to organization came second to their loyalties to political patrons.” (Tierney, *Managing*, p. 31) A seemingly insignificant occurrence during this period was to have far reaching political and economic implications for the Department’s budget. The Act of July 2, 1836, asserted the right of Congress to confirm postmasters in major cities and reaffirmed its right to set postal rates. The Department lacked solid leadership and adequate funding during much of its development.

The period 1830-1860 was a time of tremendous expansion for the Department as well as for the nation. The population increased by 144 percent and the volume of mail handled increased by 1,300 percent (Cullinan, p. 80). The method of delivering letters improved dramatically in the 1840’s with the adoption of self adhesive stamps (thus initiating costs attributable to the sender) and initiating a uniform delivery rate throughout the nation based on weight, not number of pages. An ever expanding rail service made it relatively cheap and easy to transport bulk quantities of mail, and delivery was enhanced by constructing mail distribution and sorting points along major rail routes. This period marked the last major technological innovation until the ZIP code in the 1960’s and the optical letter reader in the 1980’s.

The year 1845 marked the passage of the Private Express Statutes. This law was passed partly in response to competition that the Department was receiving from individuals and firms who were offering comparable mail service between the larger eastern cities at lower rates. Congress felt it was the government’s duty to provide postal service to non-paying frontier and rural areas, and that the granting of natural monopoly status to the Department was the only equitable way of providing this service. By passage of the Private Express Statutes, Congress affirmed the Department’s right to cross-subsidize the deficit-ridden frontier and the profitable eastern markets in order to minimize costs associated with this natural monopoly, and made it illegal for others to carry “letters” for profit.

The political patronage of the Department begun during the Jackson Administration had continued throughout this period. It became so widespread that employee hiring and firings within post offices became politically or personally motivated. One example of this was the “spotter system”, in which individuals hired by the postmaster conducted secret surveillance of postal

employees and reported “dereliction of duties”, insisting the employee be fired. The Civil Service Act of 1883 was implemented to eliminate these and other political abuses of postal positions. In addition, postal employees began to organize themselves, as did so much of the unskilled labor during this period. By 1908 the rural letter carriers, postmasters, and postal supervisors had all created associations and lobbies to represent their interests. Over time they influenced greatly the expenditures Congress authorized to the Department, and not only influenced their employers’ attitudes towards employees, but directly affected the growth of the Department as well. It has been suggested the the unions “kept wages up, prices down, [and discouraged] spending on technology.” (Tierney, Managing, p. 7) There was no serious opposition to the unions, because the public continued to pay very little for postal services. The increased appropriations which the Department received undoubtedly contributed to x-inefficiency. X-inefficiency occurs when a firm does not seek to maximize profits by lowering average variable costs to the greatest extent possible. Congress appropriated funds yearly to cover the previous year’s deficit and current operating expenses, so there was no incentive during this period for the Post Office Department to reduce x-inefficiency.

In the mid-1920’s the number of post offices and employees reached its peak. During this time the four classes of mail obtained their present distinctions as well. The Depression saw a large decrease in volume and, consequently, the Department cut costs. It replaced the rail sorting centers with the more cost efficient trucking system; however, the number of employees remained constant throughout the Depression, perhaps due to the strong influence of unions and lobbyists and the government commitment to keep as many working as possible.

The post-World War II years brought an explosion in mail volume. Between 1945 and 1970 mail volume increased by 130 percent. (Sorkin, p. 13) The Service began hiring new workers to fill the need. This was practically the only choice left, as it would have been difficult to justify building more facilities when predecessors were closed only ten years before. The diminishing returns of labor resulted in large deficits, but the postal service continued the practice of hiring more workers to meet increased mail volume. Stopgap funding measures were only a temporary

solution, and several additional problems arose throughout the 1950's. The continued reliance on large trucks transporting the mail taxed facilities located in inner city areas designed to handle only rail deliveries. The "white flight" from the inner city to the newly created suburbs increased delivery time and other costs. Population in some geographic areas grew phenomenally, contributing to a greater strain on some already overworked and inefficient postal employees. In 1966, one million pounds of mail piled up at the Chicago Post Office, the nation's largest, before extra employees were hired and overtime hours were authorized to tackle the huge mountain of mail that had built up. The Department sought a rate increase in 1964 to cover increased labor and other expenditure costs, but its request was not dealt with by Congress until after the 1966 elections. Issues such as rate increases are not popular with Congressmen in election years.

Larry O'Brien, Postmaster General under President Lyndon Johnson, was not the first postmaster general to express concern over large deficits, but was the first to take action. In 1967, with the approval of Johnson, O'Brien chose Frederick Kappel, ex-Chairman of the Board for AT&T, to head a commission to examine possible solutions to the deficit problem. Kappel's zeal for efficiency was well known, and this came to bear heavily on the selection of other members to the committee which bore his name. One of Kappel's policies was to attract the best managers and employees by paying wages that "reflect in some appreciable degree the level of responsibility involved in the office held" (Myers, p. 28) The Kappel Commission recommended this policy, and suggested as well that "... productivity in some cases could be increased 50 percent through the application of such existing technology as handling devices and containerization." (Myers, p. 48) As researcher Charles Benda has expressed it, the Kappel Commission "outlined the problems of the postal system from the perspective of the ... managers and provided a solution based on the needs of the ... managers." (Fleischman, p. 59) The Kappel Commission's Report added fuel to the postal "reformation" fire ignited by O'Brien. With the support of many large corporations, the Citizens Committee for Postal Reform was organized, and within three years had become Capitol Hill's tenth largest lobbying group (Tierney, *Managing*, p. 16). Guarantees of large subsidies persuaded national publishers to endorse the reorganization, and labor was bought into supporting

reform by the promise of a fourteen percent across the board pay increase for 1971. The stage was set for the reorganization of the nation's third largest employer and largest government departmental agency. Congress acted with lightning quick speed, and within three years of O'Brien's first suggestion for reform the Postal Reorganization Act of 1970 was passed.

### *III. Postal Reorganization Act of 1970*

The original intent of the Postal Reorganization Act (hereafter, "Act") was to disengage the postal system from the influence and whims of politicians and operate it like an efficient, no-frills, nose-to-the-grindstone corporation. Several radical changes were implemented to accomplish this task, which can be summarized as follows:

- 1) Changing the status of the Department from a government agency to a new government corporation, the United States Postal Service (hereafter "Service").
- 2) Establishing a Board of Governors and Postal Rate Commission to manage the Service and set rates;
- 3) Strengthening the position of the Service regarding union bargaining power
- 4) Providing appropriations for a specific length of time in the "public interest" until such time that the Service's total revenues equaled total costs.

The change of status from a government agency to a government corporation allowed the service greater flexibility in choosing its factor inputs. No longer was it required to pay wages that were set by Congress or to receive approval from this legislative body to authorize purchases of goods and services and to initiate research and development. The service became more flexible in wage setting as well as hiring-firing practices under its new status. It could issue its own debt instruments (up to ten billion in 1.5 billion maximum yearly increments) to finance operating costs and capital investment, but remained, nonetheless, subject to Congress, who retained the authority to approve or reject recommended changes. As will be shown, Congress has on many occasions differed in its opinions with the Service as to which course of action should be taken.

Perhaps the greatest benefit to the Service has been the provision allowing it to manage its own affairs and set its own rates. No longer are rates set by Congress and the Bureau of the Budget and policy set forth by such diverse organizations as the Civil Service Administration, General Services Administration, or General Accounting Office, to name but a few (Tierney, *Managing*, p.



11). These tasks are now the responsibility of the Board of Governors of the Postal Service (hereafter “Board”) and the Postal Rate Commission (hereafter “PRC”).

The eleven member Board can be considered the main top management body of the Postal Service. Nine members of the Board are picked by the president and approved by the Senate. These nine members then choose a postmaster general, this procedure ensuring the postmaster general is not politically swayed. An eleventh member, the Deputy Postmaster General, is then selected. The function of the Board is to guarantee that operations are proceeding smoothly and to oversee the appointment of postmasters. Incidentally, the selection of postmasters changed under the Act to a merit system, thus encouraging upward mobility for employees and removing the problems associated with politically appointed postmasters.

The PRC was not part of the original Postal Reorganization Act, but was added later by Congress to stand in as a regulatory watchdog in protecting the public interest (Fleischman, p. 16). It is a five member committee, usually comprised of accountants, economists, and lawyers requested by the President and confirmed by the Senate. After several bribery scandals in the early 1970’s they are now subject to strict rules of conduct. The main function of the PRC is to recommend rates, rate changes, and mail classifications based on information received from the Board. When it receives a rate increase request from the Board, the PRC initiates a rate increase “trial”. There is a neutral “judge” to preside over the trial, and lawyers and economists representing those in favor of rate increases or those opposed to such increases present their cases. The judge decides a “verdict” and gives it to the PRC to examine and vote on. The PRC can either approve the rate increase or reject it and return the proposal to the Board. The Board has the right to approve a rate increase itself if the PRC rejects three requests, and has done so once already in 1980. Congress has voiced qualms over the inaccessibility of the Board to definitive regulation, feeling it cannot express adequately to the Board objections of concerned citizens who may not see the need for a rate increase.

The “trials” conducted by the PRC have provided a wealth of usable economic data. They have removed the political aspect from rate increases and made the issue of proposed rate increases one

in which efficiency arguments play the deciding factor. There are advantages and disadvantages to such a system, though. The advantage of reasoned economic analysis of costs is countered by the disadvantage of postal service data that is unverifiable by independent sources or those opposing rate hikes; the advantage of “trials” is opposed to the disadvantage of lawyers’ fees and “trial” costs, which can generate up to 40,000 pages of evidence. The trials do make the Service document and clarify its costs, and many suggestions have been made that have resulted in improved service.

How did postal unions fare under the Postal Reorganization Act? Although they lost their lobbying power and influence in Congress when rate setting passed to the Board and the PRC, it appears that they have lost very little of their ability to influence employee wages. Union strikes are forbidden, and the Service can hire and fire employees more easily, but it is still bound by a “no layoff” clause and is left with a large labor force during recessions. Collective bargaining is required when there are unresolvable contract disputes and the third party binding arbitration has “enhanced union ability to extract favorable compensation increases for postal workers.” (Tierney, *Managing*, p. 79) The indexation of union wages to the Urban Consumers Price Index has created additional costs for the government’s most labor intensive organization.

The fourth stipulation set forth by the Act was to provide a “public service” appropriation to the Service until such time when its revenues covered its operating costs. It was felt that a thirteen year period would suffice, and Congress eventually decided to appropriate \$920 million for fiscal 1972 (ten percent of fiscal 1971). This appropriation continued until 1982, decreasing by \$92 million yearly. After 1982 a fixed subsidy of \$460 million was to be provided annually. Additional subsidies were approved for second class mails (partly to secure their support in passage of the Act) as well as to third class mails for educational and library materials. In 1976 the third class mail subsidies were extended until 1992.

#### IV. *The United States Postal Service 1970-1989*

The major benefits of the Act were the recognition of the problems of “managerial flexibility, stifled innovation, discouraged cost consciousness, and catering to the demands of special interests.” (Tierney, *Managing*, p. 1) The change in goals also reveals the strong impact the Kappel Commission had on the new Service. The new emphasis on revenues covering expenditures and reduction of costs was a 180 degree turnaround from the service oriented Department, the fledgling Service was unable to operate as efficiently as hoped.

The Service immediately utilized the new powers Congress had authorized to it. From 1970-1973 a hiring freeze was enacted and many older, experienced employees were coerced into early retirement. The Board also immediately began to compile data to substantiate a claim for rate increases. In 1972 there were 64,000 fewer employees, and 393 million dollars had been spent on modernization (Myers, p. 119). By 1973, the number of complaints of poor service had nearly quadrupled (compared to 1969), and an unexpected surge in mail volume placed a strain on postal facilities and employees. In the main New York City post office, for example, from January 1972 to January 1973 mail volume was up 11.7 percent, the number of employees decreased 14.5 percent, and overtime hours increased by 467.5 percent (Myers, p. 11). This is only the first of many instances where the Service has experienced difficulties resulting from poor management decisions and inability to predict future mail volume. Postal unions clamored for an end to the hiring freeze and demanded (and got) seven percent pay increases for both 1973 and 1974, plus unlimited cost of living increases and additional fringe benefits (Myers, p. 9).

A great deal of criticism was directed toward the service during its first three years for its pricing policy. The United States Code provides as follows:

Each class of mail or type of mail service should bear the direct and indirect postal costs attributable to that class plus that portion of other costs of the postal service reasonably assignable to such class or type. (39 USC 3622(b)(3))

This section of the Act clearly prohibited price discrimination, which is charging a higher price for products in markets with inelastic demand and lower prices for products in markets of elastic

demands in order to maximize profits. The door was left wide open, however, in the determination of the method of assigning “attributable” costs to each class and what portion of “other costs” (such as building and equipment maintenance, etc.) can be assigned to each class of mail. The problem of deciding what “attributable” and “other” or “institutional” costs were was tantamount to determining whether the correct rates were being charged. Overall, though, it can be seen that Congress intended the postal service to be self sufficient, reaching the point where revenues would equal expenditures.

There are differences in legal opinion as to what Congress intended by “attributable” costs. The terms “demonstrably related costs”, “marginal costs”, and “incremental costs” were used interchangeably throughout the hearings and other proceedings, but each has a different and unique meaning. Demonstrably related costs are the costs associated with each class of mail. Incremental costs are defined as the change in total cost of providing remaining services were one service to be added or done away with. Thirdly, marginal cost is the change in total cost from changing output by one unit. The definition of “attributable” costs as put forth by Congress is therefore unclear .

Determining the portion of “incremental” costs that arise from each class of mail was also difficult, since all the classes of mail by and large utilize the same facilities. There was and still remains virtually no incentive to reduce inefficiencies, because rate increases could be sought on the grounds that incremental costs for all classes of mail had increased. There are many examples of the Service’s inefficiency in allocating the appropriation it receives for incremental costs as well. One of many such examples was ex-Postal Service General Counsel Timothy May’s testimony during 1976 Senate hearings. He asserted that rate increases earmarked for retiring prior year operating debt and paying into long term workmen’s compensation had instead been spent on current operating expenses.

The Service originally used an inverse elasticity pricing formula, a pricing rule for a monopolist with several products in different markets. The monopolist must know the elasticity of demand (percentage change in Q/percentage change in P) for each product (in this case each class of mail), the “value” of each product, and its market share and/or ability to influence price in markets where

it lacks a monopoly. The Postal Service, when applying this rule to itself, did not have a verifiable elasticity of demand for each mail class, nor was it sure of whether it was at a stage of productive capacity where it experienced increasing costs with scale. Both of these are requirements of effective implementation of inverse elasticity pricing. What postal economists were doing was ranking the categories of mail in accordance with their judgement of the relative demand elasticity for each class, and then using these rankings as their primary, but not exclusive, basis for assigning unattributed costs among the various classes (Tierney, *Managing*, p. 124). The decision in the case of *National Association of Greeting Card Publishers vs. United States Postal Service* rendered this subjective methodology illegal. Afterwards the Service began using service related costs based on the fixed costs of operating the system six days a week. This pricing formula is not as precise, and seemingly allows the Service to set rates based on costs that are not easily verifiable. Sherman and George (1979) posited adjustments which the Service could use in order to obtain a better estimate of demand elasticities using the inverse elasticity rules.

The arguments over the right to set rates and defining “attributable” cost continued through the federal courts into the 1980’s. Several lower court decisions against the Service were overturned and then reexamined before the Supreme Court decided itself to settle the dispute in 1983. On June 22 of that year, it ruled on several points, stating:

1. The actual costs of delivering a letter, magazine, or package should form a base for postal rates, but the PRC should have flexibility to decide how to distribute other costs.
2. Congress intended costs non-traceable to any one particular class of mail to be distributed across all classes, the only requirement being a causal link between particular costs and a class of mail.

The effects of the Court’s ruling are twofold. It does give the PRC greater freedom in passing rate increases based on a causal relationship which may or may not be existent. It does not require it to furnish strictly economic arguments to support this causality. X-inefficiency is a more substantive threat because of this decision, because the Service can raise postal rates virtually unopposed. The rate trials are now little more than mere technicalities to the passage of rate increases.

The postal deficits during 1974 and 1975 were 1.8 billion and 2.0 billion, respectively. Mail volume had tapered off, but service complaints continued, especially from businesses. These deficits were small in comparison with 1976's, the year twenty one new Bulk Mail Handling Centers were opened. These centers had been planned in the 1960's and constructed thereafter to stem the competition for package delivery that United Parcel Service placed on the Postal Service. The reasoning underlying the center's construction is not clear, as it was nearly impossible for the Postal Service to compete efficiently with UPS. UPS had only 1,000 distribution centers, compared to USPS' 30,000 "centers", namely post offices, where it was legally obligated to deliver packages. Furthermore, UPS' non-unionized employees handled well wrapped, business to business packages among steady customers. The Postal Service offered no business pickups or other frills, and frequently lost packages en route. It also did not consider studies showing the emphasis placed by businesses on predictability of arrival, not speed of service. The new centers actually damaged more packages and slowed delivery time than before they were built. Volume of packages decreased, and this, coupled with the need to pay for the centers themselves, led to a rate increase. Nisson and Lago (1975) estimated the USPS-UPS cross price elasticity at .544. This would suggest that a one percent change in United Postal Service prices would result in a one-half percent change in postal service prices in the same direction. Nisson and Lago showed that UPS rates decreased approximately 20% from 1957 to 1970, while Postal Service rates increased during this period. This supports the contention that UPS-USPS are substitutes and that during this period USPS was changing its prices in the wrong direction. The actual total volume of parcels decreased as well, so substantial losses to fourth class revenues were the result of competition with UPS .

Several Congressional committees were formed in 1976 and 1977 to examine the ever increasing deficits. Senate Bill 2844 provided a one time, one billion dollar appropriation to help the Service meet its obligations. The same bill also stipulated that no more than three commissioners of the PRC could be members of the same party. Several committees reacted

negatively to requests by the Service to allow it to reduce service to five days a week and conduct a letter carrier route evaluation in an attempt to reduce costs and increase efficiency in mail delivery. These committees, heavily influenced by the National Association of Letter Carriers and the League of Postmasters, refused to pass these proposals on to the Congress on the grounds of “reduced social benefit”. The General Accounting Office’s proposal that small, inefficient post offices be closed was similarly rejected, several senators citing their constituents’ value of the local post office for cultural and community values on which a price could not be put. The law is clear on the importance of postal *service* as well, stating:

The postal service shall provide services to rural areas, communities, and small towns where post offices are not self sustaining. No post office shall be closed solely for operating at a deficit, it being the specific intent of Congress that effective postal services be insured to residents of both urban and rural communities.

(Tierney, *Managing*, p. 63)

It would appear that even cross-subsidation would be allowed in order to maintain service.

The Service’s high labor expenses continued throughout this period as well, as postal unions sought to protect their workers against double digit inflation. There was a very small gain in reducing the number of workers, significant for an organization used to hiring additional workers yearly (Fleischman, p. 52). Nonetheless, real wages remained high. A 1983 study by Perloff and Wachter found that between 1969 and 1983, wages for clerks and mail handlers increased 21.9 percent faster than wages for nonsupervisory, nonagricultural, private sector workers. This study is unique in that it is thorough in its comparison of wages for USPS workers and similarly skilled workers, not just studies of postal wages and comparable white unionized males’ wages. The Perloff and Wachter study revealed that wages are 21.1 percent higher for the postal service than those similarly skilled and working in the private sector, and 32.7 percent higher than those employed in the service sector. Other studies show that postal workers have fared approximately twice as well as other government employees during this time (Fleischman, p. 12).

The Postal Reorganization Act allowed the Service to become more efficient, but Congress refused to allow it to implement changes in service that would allow it to compete with business

corporations providing cheaper substitutes. The comparison of USPS and UPS services and relative costs during this period are a good case-in-point. Unfortunately for the Postal Service, technology has enabled telecommunications corporations to provide cheap substitutes for first class mail, the postal service's main revenue generating service.

Another consideration to the Service is technology. The available technology in electronic message relay has proceeded at an astounding rate, reaching a point today that 1980-1982 publications predicted would not be obtainable until at least 1992. The last six years of technology advancement have put the Service in the awkward position of trying to become more efficient while maintaining services to businesses and other regular users of first class mail in order to keep them from switching to substitutes.

How has the Postal Service handled the new electronic technology threat? During the late 1970's it appeared uncertain whether the Service would take any action at all,

... not from a lack of commitment or from any contrary politico-economic ideology, but from a reluctance to create even more controversy than already surrounded the Postal Service and a realistic concern that the Postal Service simply did not then have available the managerial talent required to compete in the fast moving world of telecommunications. (Fleischman, p. 4)

There were many in management and labor who did not perceive technology to be a threat. For example, James LaPenta, then Secretary and Chief Negotiator of the Postal Service Negotiating Committee for the American Postal Workers Union and National Association of Letter Carriers and Mail Handlers, stated during a 1978 roundtable discussion, "I don't see it [electronic delivery of messages] happening in the next decade, though; I agree with postmaster general Bolger that we will be delivering hard copy for a long time." (Daly, p. 2) Despite its differences of opinion, the Service did initiate new programs utilizing electronic technology, beginning in 1978. The most promising of these was E-COM, Electronic Communication of Mail, which was to send messages from post office "A" electronically through phone lines to post office "B", which received the message, typed it, placed it in an envelope, and usually delivered it the same day. In this way E-COM was very much the equivalent of FAX machines.



Several restrictions were placed on the use of E-COM by the Service, and these, in addition to the high cost of using the service, contributed to its demise. Letters had to be sent in batches of 200 or more, could not include stuffers, and could not be in color or use company letterheads or logos. E-COM and a similar transmission system which used satellites to transmit foreign mail, INTELCOM, were challenged in federal courts by private telecommunications corporations. The legality of the government entering into and contracting with companies in fields as highly competitive as telecommunications was questioned, and if achieving little else, delayed these systems' implementation to the point where they themselves were technologically obsolete. After a \$100 million expenditure, E-COM was scrapped in 1982.

Also in 1978, USPS introduced Express Mail, a guaranteed overnight or one day delivery of "hard copy" (that is, letters) within certain geographical areas. Unlike E-COM, Express Mail found a market with small quantity mailers as well as larger corporations. USPS went to considerable expense promoting this new product in terms of advertising, creating and placing special collection boxes, and upgrading of facilities to accommodate overnight delivery. Express Mail proved to be a very profitable venture until 1983, when nationwide overnight delivery of 13 oz. and heavier parcels was offered by Federal Express and others. Since that time, revenues from Express Mail and the Service's nationwide rapid delivery service have fallen considerably, and the Service has only a 12% market share with Express Mail (Bovard). The Service has appeared to take little initiative to retain its decreasing market share. Even as recently as March 1990, Jerry K. Lee, Sr., a high ranking postal official stated that "We are still seeking to increase the revenues of Express Mail through corporate sponsorship and other means."

The lessons USPS learned about competition during the 1970's and 1980's were hard ones. It saw its market share eroded in two highly competitive areas--bulk mail and rapid "letter" delivery, as well as being legally prohibited from pursuing developments in electronic transmission of messages. Whether because of poor management, time required to change bureaucratic procedures, or lack of initiative, it is obvious the postal service has not been able to respond as quickly as privately owned corporations to the rapidly changing communications environment.

The competitive stance of the postal service in such fields is an issue that needs to be dealt with.

In the 1980's, one area of progress for the postal service in terms of increasing productivity has been its legal monopoly, first class mail. At the root of this progress is automation in coding and sorting equipment. Postal officials refer to automation as their "silver bullet" to profits (Lee "Keynote speech"), but just which side of the gun they are standing on isn't very clear at this point.

From the early 1960's until 1980 the Service relied heavily on letter sorting machines, machines which would mechanically place a letter in front of an employee, who would have .6 seconds to read the zip code and punch in the first three digits before the next letter was placed before him. The letter was sorted by the machine into the appropriate bin, where it was sent to a final destination or taken for further sorting by hand or machine. While significantly more productive than manual sorting (15,000 vs. 3,000 letters per hour, respectively), by 1980 the postal service acknowledged it was "approaching the saturation point" and "expected no further improvements in productivity" from the LSM (Tierney, *Status*, p. 79).

In 1980 the Service began implementing electronic automation. ZIP+4, Optical Character Readers, and Bar Code Scanners were to be used in conjunction to decrease sorting time and increase productivity. However, USPS failed to inform Congress and the American public of ZIP+4 or its plans for it, and this, combined with delays in OCR development, led to Congressional intervention in 1981 and postponement of even partial automation until 1984. A kickback scandal involving the chairman of the Board of Governors in 1986 further derailed the program.

ZIP+4 was designed to increase the accuracy of mail sorting for handlers and carriers. Rather than sorting only by city, as with the 25 year old ZIP code, the new 9 digit ZIP+4 sorts by specific street, post office box cluster, or building. Aimed primarily at businesses, and *usable only for first class mail*, the Service planned to offer large volume mailer incentive discounts, but were reluctant to give even a general estimate of this discount. This caused innumerable problems when the discount incentive rate case went before the PRC, because "the PRC would not grant the discount

until a specific number of mailers using it could be given, and mailers were reluctant until they knew the discounts.” (Tierney, *Status*, p. 82.)

The effective utilization of ZIP+4 also depended on development of Optical Character Readers and Bar Code Scanners. The technology operates like this: The ZIP+4 code on a letter is “read” by an electronic eye in the OCR. It then goes through ink jets which spray on the proper bar code. The letter is then sent to one of up to 60 channels, depending on model. (*Letter Mail Equipment*) Once it has the bar code, the letter does not need to pass through the OCR again; it can be sorted solely by Bar Code Sorters, which read the bar code and sort electronically in the same way the employee operated letter sorting machine did. The postal service offers hefty discounts (.5 cents per piece) for pre-bar coded mail, believing the savings from not purchasing as many OCR’s will offset the discount.

The benefits of this automation are readily apparent to the Service. It costs \$35.00/1000 letters to manually sort, \$15.00/1000 to sort by machine, and \$3.00/1000 by OCR (Carey, “Automation”). In addition, USPS has a free ZIP+4 look up service, which will provide a complete set of updated ZIP+4 directory on laser disk or floppy disk to the large volume mailer every thirty days. Not only is this convenient to the mailer, but cuts down on the costs of forwarding mail for USPS.

The OCR is far from perfect, and many question whether it has even been worth the resources spent on it. It has an first pass read rate of only 55-90%, dependent on whether pre-coded for non-coded mail is being sorted. The Service is already shifting mail sorting procedures to centers with OCRs despite their dubious maintenance schedule, not giving considerable thought to the fact that a breakdown in an OCR would lead to a considerable backlog of mail. Nevertheless, USPS has committed itself to OCR/BCS technology. The other problems associated with the OCR are listed in Tables 1 and 2.

**Table 1**  
**Automation Costs**

	Each OCR	\$200,870,741	
	Each BCS	\$ 79,109,840	
Phase I Costs	\$234.3 million		(252 OCRs, 248 BCS)
Phase II Costs	\$450.2 million		(403 OCRs, 452 BCS)
	\$205.1 million		252 converted OCRs
	\$ 45.0 million		auxiliary equipment
	\$ 6.2 million		site preparation
	<hr/> \$940.8 million total		

Source: Senate, *Annual Report 1989*, p. 139

**Table 2**  
**Potential OCR Rejections**

Letter has too much dust on it	pre-printed forms
address skewed (not horizontal)	window blocks address
characters too wide or thin	characters printed too lightly
character slant (cursive writing)	characters spaced too widely
	or closely
paper not white or pastel color	background interference
address not positioned correctly	colored background

Sources: *Addressing for Automation Mail*, p. 31-39.

The OCR/BCS system has not actually decreased total costs. As a 1989 Postal Rate Commission Report has noted, "We found no savings and no impact on postal productivity for the three-quarters of a billion dollars spent on automation." (Bovard) It appears that increases in productivity are being offset by increasing input costs, which are moving upward at 7% yearly. (Senate, *Annual Report*, 1989). Total Factor Productivity, the ratio of total output to total postal input or resources used, has been relatively flat for five years, which, whether due to higher personnel costs (up \$400 million in 1988 alone) (House, *Act Amendments I*, p. 7) or other factors, must be remedied. Costs are simply out of control. The Service is in a Catch-22 situation currently, trying to lower costs by getting rid of employees and raising postage costs. This in turn has negatively affected employee morale and mail volume (*Washington Post* "Automation...")

Not only has Congress intervened in the way automation has been implemented, but exerted its influence on the postal budget as well. In October 1985, the Service, which had been in the black for three years, was brought "on-budget". This meant it was included in the aggregate federal deficit. In the 1987 Omnibus Budget Reconciliation Act, Congress "engaged in the kind of sleight of hand that citizens would find so repugnant if they knew of it." (Tierney, *Status*, p. 105) by cutting the postal service budget as a means of reaching the deficit reduction requirements of Gramm-Rudman-Hollings. The Service was left with two options: either (theoretically) increase revenue by raising rates, or decrease expenditures. A rate case had already been filed at that time, so rather than refile, a reduction of 10% in window hours, elimination of Sunday mail pickups, and suspension of ZIP+4 look up services were imposed. Long term commitments were affected heavily as well, including reductions in the following areas:

Equipment/Mechanization	-61.8%
Vehicle Purchases	-36.0%
New Construction	-81.5%
Repairs	-66.4%

( House, *Act Amendments* 1988, I., p.7)

The public outcry against the suspension of services was so great that Congress, under HR 17070 (Postal Reorganization Act Amendment of 1988) allowed the Service to be placed "off-budget" (no longer part of the federal deficit), apportioned a one billion dollar subsidy to cover increased health costs from Omnibus..., and permitted it to increase borrowing from 1.5 to 3.0 billion. Not many cost saving incentives in this package.

I believe that, if nothing else, the experiences with the 1987 Omnibus Budget Reconciliation Act and 1988's Postal Reorganization Act Amendment reveal the incredible short sightedness of both Congress and the Postal Service itself. Congress most concerned with satisfying GRH, gave absolutely no consideration to the long term funding needs of the Service--new land purchases and construction in developing areas and maintenance of current vehicles and buildings. It is estimated that over 750 real estate projects were lost in 1988 because of Congress' action (Senate, *Annual*

*Report*, 1989, p. 24), not to mention unmeasurable losses to OCR/BCS and transportation purchases.

The postal service is not without fault during this period either. The Service's claims of necessary service reduction may have been warranted, but one wonders what the effect was on an already less than supportive public. Every business is usually concerned with its image. Less attention is given to the fact that several thousand new jobs were added to the Washington, D.C. office, and one sees no mention made of whether the several dozens of \$140.00/hour consultants and \$239/hour consulting firms (*Senate Annual Report* 1988 p.21) were let go. It would seem to make more sense to do that than keep them and have nothing to consult about, and much more sense than suspending one of the most attractive features of your automation program, ZIP+4 look-up.

Perhaps the greatest lesson to be learned from the 1980's is that the United States Postal Service is a government corporation that has failed to walk the line of providing adequate service while covering costs. Despite attempts at operating as a private corporation, it is still very much dependent on other sectors of government for its operating revenues, decisions about how to set rates, and even how to automate. Furthermore, the postal service doesn't have an incentive to profit maximize, as it cuts essential services, charges forward with unproven technology, and is unable to contain costs. Costs are increasing at a rate of 7% annually. Automation will, at best, decrease total costs by 2% annually. This leaves a 15% increase in price every three years to cover costs (*Senate Annual Report* 1989, p. 14) One wonders whether the service is able to cover costs at all given the fact that a deficit being incurred yearly despite rate increases.

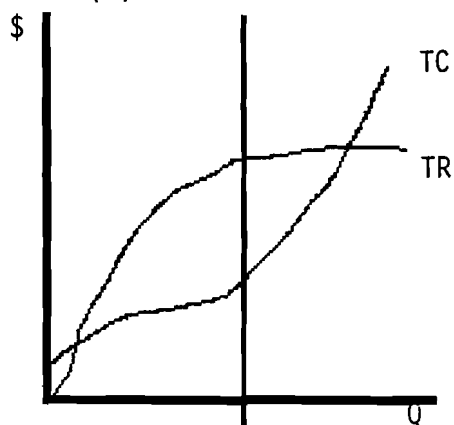
## V. *The Model*

An estimation of the total revenues and cost functions of first class mail will determine where revenues are in relation to costs. This estimation will allow one to see if the postal service is at a profit maximizing quantity of output or if measures need to be taken now and in the future to reach this quantity.

This model estimates these total revenue and cost functions. A comprehensive definition of the market known as first class mail is sealed parcels weighing less than 13 oz. These and other restrictions of the Private Express Statutes of 1845 serve to give the postal service a legal monopoly on this market. Express Mail is a subclass of first class mail, but will not be examined, as it is felt that Express Mail is in a separate market, one classifiable on “speed of delivery” and other factors. Analysis of second, third, and fourth class mail will not be performed due to the fact that there are no comparable substitutes for second or third class mail. Second class mail consists of nonprofit mailings, publications bound for classrooms, and within county mailings. The rates charged for second class mail depends on a variety of factors: the nature of the publication, ratio of editorial to advertising content, and weight of mailings, so there is no uniform rate nationally as for first class mail. Fourth class bulk package mail is not examined because it is a shrinking market, and the a separation of the effects of competition and the shrinking market could not be determined. I felt that a variety of other unmeasurable but significant factors would also be frequency of delivery, free package pick up, and insurance.

There were no references in the economic literature as to the shapes of the total cost or total revenue functions of the postal service. For a typical monopolist, one would expect a cubic cost function and a squared total revenue function. These are shown in Fig. 1(a) and (b) and 2 (a) and (b), with these graphs and their interpretations taken from *Microeconomics* by Pyndick and Rubinfeld, p. 335-340. To maximize profit, the monopolist will choose to produce output such that marginal revenue (the additional revenue from selling an additional unit) equals marginal cost (the additional cost of producing another unit). This is shown by price  $P^*$  and quantity  $Q^*$ .

FIG. 1(a)



(b)

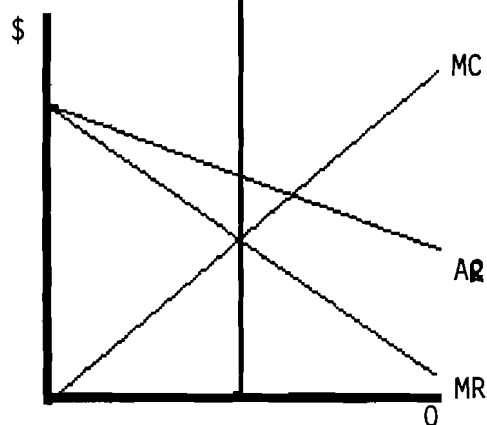
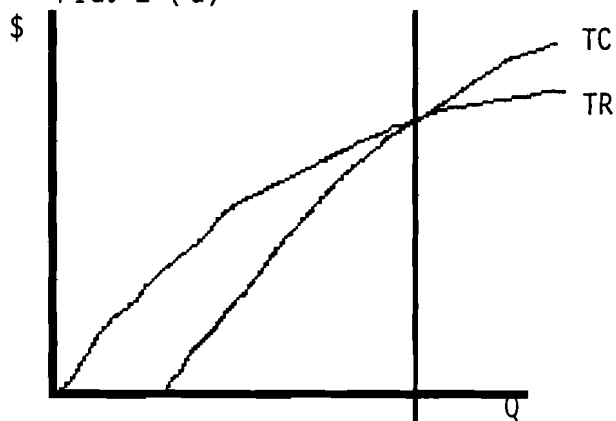
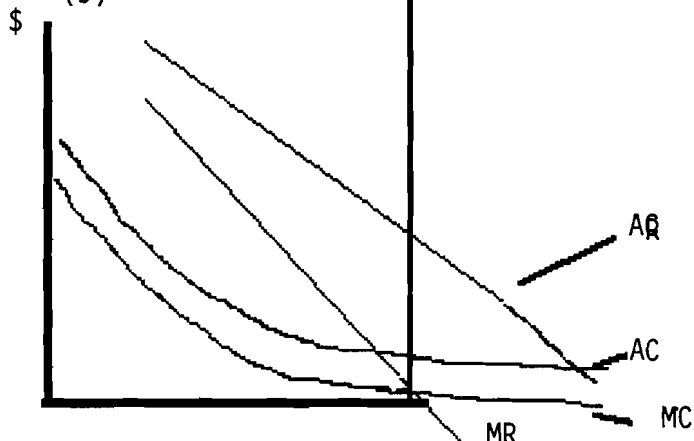


FIG. 2 (a)



(b)



A slightly altered construction of total revenue and total cost functions is feasible if one assumes economies of scale exist in first class mail. This is exhibited in figures 2(a) and (b). By this reasoning average costs of providing first class mail service decline as the quantity of mail increases. The marginal cost per piece is decreasing as quantity increases. Total costs are increasing at a much slower rate than in Fig. 1, and the intersection of marginal revenue and marginal cost could occur at a much greater quantity than in Fig. 1(b). For example, this could be because as mail volume increases, postal workers could sort the increased amount in the same time period (increasing productivity and reducing average costs), the increased amount of mail could be transported without the need for additional trucks or routes, etc.

Of course, both these hypotheses assume that the postal service is a monopoly. This contention is supported by the facts that its legal monopoly on "letters" gives it monopoly or near-monopoly power. Also, despite decreasing costs on near substitutes such as long distance phone



rates and facsimile machines, the volume of first class mail has increased annually since 1976.

(*Annual Report 1989*, p. 35)

It was hypothesized that total cost is a cubic function of quantity. As the quantity of mail increases, marginal cost increases faster than marginal revenue. Equation 1 represents total cost as a function of quantity; in addition, several other variables for factors which could shift the total cost curve are included to control for them. Total costs for first class mail were not available and total costs for all classes of mail had to be used. However, since automation costs are primarily attributable to first class mail, changes in first class mail costs will be reflected in changes in total cost.

$$\{1\} \quad TC = a_0 + a_1 QFCM^3 + a_2 QFCM^2 + a_3 QFCM + a_4 PROD. + a_5 W + a_6 TRANS. + u$$

-or-  $TRANS(UNL)$

where

TC = real total cost of providing first class mail service (deflated)

QFCM<sup>3</sup> = total quantity of first class mail, cubed

QFCM<sup>2</sup> = " " " " , squared

QFCM = total quantity of first class mail (thousands of pieces annually)

PROD. = productivity of postal employee. (Quantity mail per employee per year)

W = real wage of postal employee

TRANS. = real unit cost of one gallon of regular leaded gasoline

TRANS(UNL) = real unit cost of one gallon of unleaded gasoline

I hypothesized that the quantity cubed coefficient would be significant and positive, since the function could not be negative (total costs are never negative). The productivity variable is a measure of the quantity of mail handled per employee per year. It was calculated by dividing the quantity of first class mail by the total number of postal employees. While quantity per handler or clerk would have been a preferred measure (since they are most directly involved in handling first class mail), such a measure was not available. This variable will be negatively related to total costs. That is, as productivity increases, more mail is handled in the same period of time by the same number of employees. Total costs decrease as a result.

A positive sign is expected for the wage and transportation coefficients. As wages and transportation costs increase, the total cost of providing first class mail service increase as well. The wage cost per employee was calculated by dividing the total wage bill by the number of postal employees. This amount, as with all other variables that were measured in dollars, was stated in real dollars by utilizing the GNP deflator. Also mentionable is the fact that two alternative transportation cost indexes were utilized, one reflecting the price of regular leaded gasoline, the other unleaded. Federal law required that all vehicles manufactured after 1978 operate on unleaded

gasoline only, and by including both variables in the equation it was believed that costs associated with this law change would be reflected in either one or the other variable.

I estimated total revenue as a function of quantity of first class mail squared. Every letter mailed represents a "demand" for first class mail; therefore, the actual quantity of first class mail represents demand. Other explanatory variables were included, and equations 2 and 3 represent these relationships:

$$\{2\} \quad TR = b_0 + b_1 QFCM^2 + b_2 QFCM + b_3 UCT + b_4 \text{BUS PROF} + b_5 \text{FAX} + u \\ b_6 \text{RECESSION} \\ b_7 \text{DI}$$

$$\{3\} \quad QFCM = c_0 + c_1 \text{AVER} + c_2 UCT + c_3 \text{DI} + c_4 \text{FAX} + u \\ c_5 \text{BUS PROF} \\ c_6 \text{RECESSION}$$

where

R = real average revenue from first class mail

UCT = unit cost of a long distance phone call, cents per minute

RECESSION = dummy variable value of 1 if recession, 0 otherwise

BUS PROF = real business profits

DI = real personal disposable income

FAX = yearly sales of facsimile machines or average price

I expected a negative value for the squared quantity term since the function  $y = -x^2$  exhibits the expected shape of the total revenue curve. It was theorized the coefficient for phone costs would be positive—that is, as unit phone costs increased, people would phone less and instead write more letters, increasing total revenues for first class mail. As for the business cycle variables, it was hypothesized that total revenues decrease in periods of slower economic activity (firms have less business and send out less correspondence) and increase in periods of heightened economic activity. In terms of the model, a positive sign for the coefficient on real business profits would be the result. I expected a positive sign for real personal income. As an individual's income increases, he/she is more likely to spend a proportion of that income, subsequently increasing the number of letters sent to pay bills, order merchandise, or other associated activity.

Similarly, it can be seen from figure 1 that quantity is a function of price, other facts *ceteris paribus*. I would posit that many of the coefficient signs would be the same for equation 3 as for equation 2. Equation 3 would allow one to calculate a demand curve. One coefficient, that of average revenue, would be negative-- a lower price would increase people's quantity demanded of first class mail, and increase the yearly quantity of first class mail.

## RESULTS:

Approximately 25 different ordinary least squares regressions for equations 1 and 2 were undertaken utilizing different combinations of variables, lags in variables, and first differences. The sample size consisted of annual data from 1972-1989. The “best” equations were as follows:

$$\{1\} \quad TC = 14,205.17 + .000002293 \text{ QFCM}^2 - 120.51 \text{ PROD.} + 385.80 \text{ W} \quad R^2=.9938$$

(19.26)                      (6.44)                      (7.11)

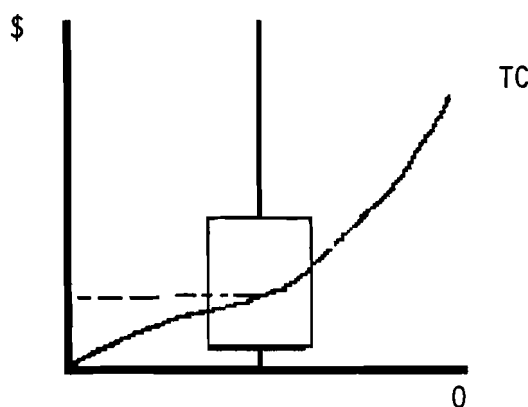
$$TC = 13645.76 + .000002293 \text{ Q}^2$$

$$TC' = .000004586 \text{ Q}$$

PROD. = 112.4141 (1989 data)

W = 33.73406 (1989 data)

The figures in parentheses are t-statistics. Perhaps the most noticeable change of equation 1 from its predicted form is that it is not a cubic equation. Results indicated that each quantity variable alone contained as much explanatory power as the three collectively. A matrix of correlation coefficients revealed a high correlation among all three variables. For example, .9973 between  $Q^2$  and  $Q$ , .9895 between  $Q^3$  and  $Q^2$ , and .9975 between  $Q^2$  and  $Q^3$ . It was decided, therefore, that the most accurate results and the best in conjunction with theory would be to use  $Q^3$  alone. However, the fit of the regression was not as good using  $Q^3$  as it was using  $Q^2$ . The  $R^2$  was lower and all *ceteris paribus* variables were insignificant. A possible reason for this can be seen by looking back at Figure 1. If the sample size were such that the variation in a small section of the total cost curve (the boxed area in Fig. 3 below), then a squared function would explain a greater deal of variation in the sample than a cubic function would.



The best fit is the regression utilizing a squared quantity variable. The cubic function was not significant, but this may be due to the fact that the range of data is not at a point where a cubic function would be estimated. There were problems with the *ceteris paribus* variables as well. The

transportation variable was insignificant in all tests. Some possible explanations are 1) a combined weighted regular/unleaded unit cost should have been used, reflecting federal regulations to convert to unleaded gasoline in newer model cars, 2) the postal service's switch to battery operated vehicles in many areas 3) the Service's contracting out mail delivery services, which use different methods of accounting for transportation costs.

$$\{2\} \text{ TR} = 20,920.51 + .000000935 \text{ QFCM}^2 - 11117.63 \text{ UCT} - 777.50 \text{ RECESSION}$$

(2.41)
(3.27)
(2.50)

$R^2=.931$

$$\{3\} \text{ QFCM} = 175,507.84 - 144,518.47 \text{ AVER} - 36563.90 \text{ UCT} + 5.60 \text{ DI}$$

(1.69)
(7.45)
(2.27)

R2=.888

$\{4\} \quad TR = 10025.2326 + .000000935 Q2 \text{ (based on equation 2)}$   
 UCT = .98 (1985 data)  
 RECESSION = 0 (1989 data)  
 DI = \$12,006 (1989 data)

Equation 2 is a quadratic function, as was theorized. However, this equation has the wrong sign for the Q squared variable. It shows an upward sloping demand curve, which is not in keeping with theory. The quantity variable was dropped because of multicollinearity as discussed in the total cost function. A dummy variable with a value of 1 if recession year was a more significant indicator of business activity than deflated personal income or business profits. These variables (BUS PROF and DI) were lagged to see if there were current effects of past business activity, but such variables proved insignificant.

Perhaps the most startling result was the negative sign of the significant telephone cost variable. It was hypothesized earlier that as unit phone costs decrease, more people would utilize phones than first class mail, resulting in lower total first class revenues. However, recent research (Tierney, *Status*, p. 137) has suggested that as phone rates decrease, banks, insurance companies, and other businesses will phone clients more often or pursue new clients to increase sales (this would be more so the case in the last 6 years in the strong economy), thus generating more mail from increasing sales through bills, receiving payments, bank statements, etc.

A big disappointment was the lack of information on average cost or yearly sales of FAX machines. I can do little more than speculate about the affect this increasingly popular mode of communication on postal service revenues. According to a personal interview with Judy Perrani, a marketing consultant with Bis Cap International in Norwell, Massachusetts, the average price to send one page of material by FAX is now 37 cents. She said that FAX machines are currently substitutes largely only for overnight message delivery services of UPS, Emery, and others. She

Fig. 4

# Total Revenue and Total Cost

(First Class Mail)

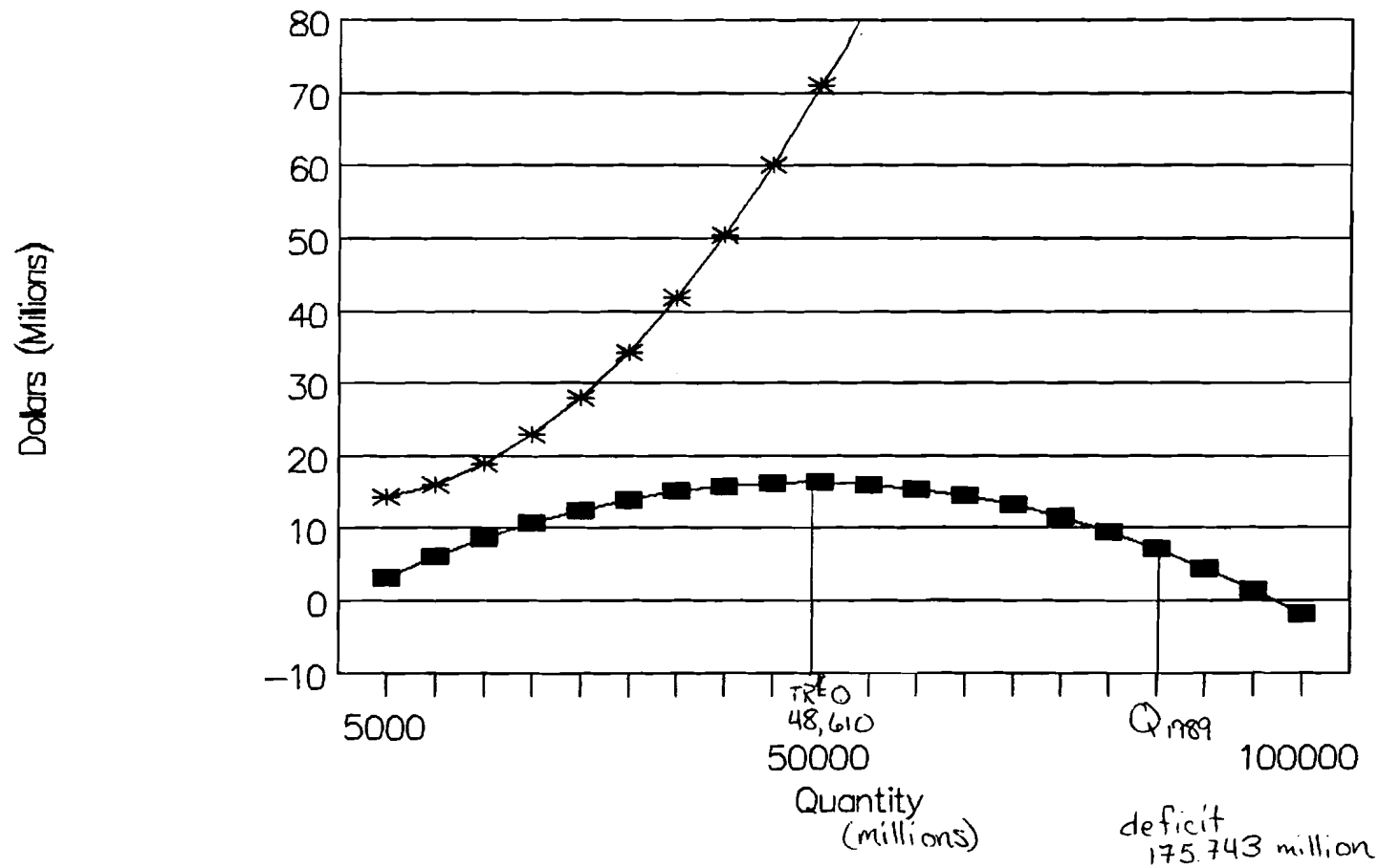
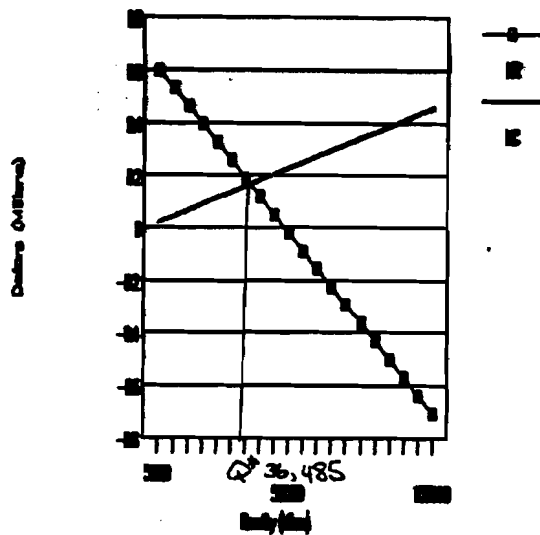


Fig 4 (b)

# Marginal Revenue and Marginal Cost



Q	TR	TR'	TC	TC'
5000	3181.611	0.601822	14219.01	0.02293
10000	6018.223	0.532822	15938.76	0.04586
15000	8509.834	0.463822	18805.01	0.06879
20000	10656.45	0.394822	22817.76	0.09172
25000	12458.06	0.325822	27977.01	0.11465
30000	13914.67	0.256822	34282.76	0.13758
35000	15026.28	0.187822	41735.01	0.16051
40000	15792.89	0.118822	50333.76	0.18344
45000	16214.5	0.049822	60079.01	0.20637
50000	16291.11	-0.01918	70970.76	0.2293
55000	16022.73	-0.08818	83009.01	0.25223
60000	15409.34	-0.15718	96193.76	0.27516
65000	14450.95	-0.22618	110525	0.29809
70000	13147.56	-0.29518	126002.8	0.32102
75000	11499.17	-0.36418	142627	0.34395
80000	9505.784	-0.43318	160397.8	0.36688
85000	7167.395	-0.50218	179315	0.38981
90000	4484.007	-0.57118	199378.8	0.41274
95000	1455.618	-0.64018	220589	0.43567
100000	-1917.77	-0.70918	242945.8	0.4586

cited the shifting emphasis of these companies' commercials to overnight package delivery, not over overnight message delivery as proof. She did not feel FAX was a serious competitor for first class mail, but emphasized that as the use of FAX becomes more widespread, the price of machines will decrease (basic models now cost approximately \$900-\$1500), and as the cost of postage increases, substitution of FAX for first class letters becomes more likely.

As for equation 3, the average total revenue coefficient is only marginally significant, with a rejection probability of .132. I believe this could be due to the total cost and total revenues being for all classes of mail, not just first class.

Figure 4 is a graph representing equations 1 and 3. Figure four is plotted beyond range of the data, 48 billion pieces in 1972 to 85 billion in 1989. Caution should be used in interpreting points outside of this data range. Equation 2 was originally used in conjunction with equation 1 to plot total revenue and total cost curves, but as can be seen, equation 2 is an increasing total revenue function, which is not in keeping with the expected "inverted U-shape" economic theory would predict this function should have. It is possible to rearrange equation 3 into a total revenue function with the predicted shape by transforming it into equation 4.

$$\begin{aligned}
 Q &= a - bP - cUCT + dDI \\
 Q2 &= aQ - bPQ - cUCT(Q) + dDI(Q) \\
 PQ \text{ (total revenue)} &= (a/b)Q - (1/b) Q2 - c/bUCT(Q) + d/b(DI)(Q) \\
 \{5\} \text{ TR} &= .6708223 Q - .0000069 Q2 \\
 \{6\} \text{ TR}' &= .6708223 - .0000138Q
 \end{aligned}$$

$$UCT = .98$$

$$DI = \$12,006$$

By setting marginal revenue and marginal cost equal to each other and solving for quantity (Q), the quantity at which marginal cost and marginal revenue intersect is 36,485 million pieces. This is the quantity which the postal service would handle annually in order to maximize profit. By setting marginal revenue equal to zero in equation 6 and solving for Q, placing that quantity into equation 4, the maximum of total revenue can be calculated. This is because the slope of total revenue (marginal revenue) equals zero at the point of revenue maximization.

As can be seen from Fig. 4, total cost is greater than total revenue at all quantities. This means that the postal service is operating at a deficit at all quantities of first class mail. There were 85.855 billion pieces of first class mail in 1989, which when calculated from equations 1 and 3 give total revenue and cost of 6.7 million and 182.443 million, respectively. At this volume a deficit of 175.743 million is incurred annually.

## VI. POLICY RECOMMENDATIONS

It is apparent from the model that drastic steps need to be taken to keep a bad situation from becoming worse. With its current cost and revenue structure, there is a disincentive for

privatization-turning over the postal service to the private sector to be run as a profit maximizing firm. There is no profit maximization point in Figure 4, only a loss minimization quantity. Before the issue of privatization can be considered seriously, a break-even point of revenues and costs must be reached. This will need to take place through decreasing total cost, increasing total revenue, or a combination of the two.

Perhaps the easiest quick fix solution to the postal predicament would be to raise revenue enough to cover the 175.743 million deficit. This is a plausible economic solution, since by being to the right of its profit maximization quantity it is in the inelastic portion of its demand curve. Given that the total (1-4th classes) mail volume is 161.6 billion, an increase of approximately 11 cents per piece (175.743 million/161,600 million) would eradicate the deficit. But with the recent uproar over the proposed 5 cent increase (which is for first class mail only), I do not believe a favorable political climate exists for such an endeavor. Such a large increase could have a serious effect on all mail classes that may raise revenue quite a bit less than expected. The postal service should continue, however, to raise rates in order to raise revenues.

Another method of increasing total revenue could be through reduction in mail service and initiation of a "subscription fee" in conjunction with this reduction. The procedure would operate like this: mail delivery would be reduced to four days a week. Studies have shown that 90% of the current mail volume could be handled in a four day a week schedule (House, *Recommendations*, p. 40). Anyone wishing to receive mail on the other two days could "subscribe" for those two days; that is, pay to have mail delivered on those days.

This system would reduce cost and provide a source of revenue that did not fluctuate with changes in mail volume. However, due to the political climate in which the postal service operates, it is doubtful that Congress would be particularly supportive of a reduction of service and having to pay for what was formally provided in weekly service. A possibility an enactment of such a tax is imaginable, if total cost were reduced significantly before the tax was sought. Perhaps then Congress could be convinced that the only way to reduce cost more would be to cut cost and raise revenue in this way.

The postal service's most promising prospect would be to control that which it has more direct control over-namely, total cost of providing mail service. By independent party verification of costs, better employee-management relations, and perhaps through productivity gains can meaningful reductions in cost be achieved.

Government is nearly synonymous with inefficiency in the minds of many Americans. The Pentagon horror stories of \$200 screws, etc. have their equivalents in the Annual Report of the Postmaster General before the Senate. The incentive of doing this for the Service would be a willingness to take initiative in dealing with high cost, and using resources as efficiently as possible.



The Service must also change its attitude in terms of employee relations. Rather than an us-against-them mentality, employees should be utilized as the valuable resource that they are. Increased productivity, less absenteeism, and overall improved working conditions could be the result of better relations, with a subsequent decrease in total cost. Although some morale boosting programs have been initiated, including the Supervisory Training System and Employee Involvement/Quality of Work Life Programs, much more needs to be done. Implementation of profit sharing is one means to increase motivation and pride in employment. Labor cannot be blamed for all the inefficiency abounding in this government corporation. Labor as well needs to continue to make concessions, realizing that with automation the postal service does have the option of firing rather than compromising.

It has yet to be seen whether automation will increase productivity significantly and reduce costs. The OCR/BCS technology has been delayed in its implementation and has experienced many mechanical difficulties, but it does appear to be a significant improvement over existing means of mail processing. Whether its productivity increases will justify its costs will be seen within the next three years according to postal authorities.

Privatization cannot be seriously considered until cost is brought under control. There is no incentive for entrance into the market as it stands currently. If and when cost is contained privatization can become a viable alternative.

Approximately 85 billion pieces of first class mail were handled last year. As can be seen from Figure 4, this quantity is more than double the revenue maximizing output, 36 billion pieces annually. The postal service was handling this quantity at its inception in 1972, but quantity has nearly doubled since that time. Even though it is a monopolist, it cannot deny service to reduce quantity to 48 billion. Given that and the fact that quantity is increasing at 1.5% yearly, privatization would seem to be a reasonable alternative to handle increasing volume. Many questions arise when the privatization issue is considered, however. How should privatization be brought about? How would mail services be affected? Who would these firms service? These are just three of many questions that would have to be answered before a private firm could begin assuming postal service responsibilities and to ensure continued regular delivery of the mail. The answers are respectively: Slowly. Dropping some services and modifying others. Everyone.

Unlike deregulation of the long distance telephone industry, privatization of the postal service could be accomplished in a series of steps over a long period of time. Each class of mail is in itself a market, and theoretically the provision of service of each class could gradually be taken over by private firms. These firms could be limited to a particular geographic area, and allowed to cross-subsidize profitable urban areas with non-profitable rural areas with that region. The country could be divided into four to six regions. Indeed, mandatory service to all patrons within the geographic area could be required by law. As for trans-continental mailings across postal zones, cost could be

charged according to distance. For example, if I were to mail a letter from New York City (zone 1) to Los Angeles (zone 4), I would pay zone 1-4 postage. However, that same letter, if mailed to Chicago (zone 2) would pay zone 1-2 postage. Although this would seem to add quite a bit of expense in terms of rate calculation, it would be a more equitable way of covering costs. It is possible that the current regulatory branch of the postal service could be maintained to ensure a regulatory function and prosecution of privacy intrusions and fraud on a national level for all the companies involved.

A discussion of the effects of privatization on each class of mail is beyond the scope of this project. It would be possible to have firms handling 1st, 2nd, or 3rd class mail, or one firm in each geographical region operating all three classes in conjunction. The trend towards large mailers pre-sorting and pre-barcoding their own mail could continue to be encouraged, with the private postal service maintaining primarily a transportation role in mail service.

The picture is not rosy for fourth class, or bulk mail. The postal service has not been able to compete with UPS in package delivery, and it is doubtful that any private corporation that took over this service from USPS would be able to make a profit either. From the standpoint of economic efficiency, therefore, USPS should be allowed to discontinue this service. This would go a long way towards lowering total cost, but one could also argue this service is essential and fulfills a vital service in "binding the Nation together" as was mentioned in the introduction as being a requirement of the Service. The real question then becomes: Does the cost of maintaining this service "impair the overall value of such service to the people"? In this case I would assert yes, because of the availability of substitutes. Others could have an opposing view and argue just as vehemently that the service is essential and should not be halted for any reason. The law needs to be clarified on this point.

The postal service should not be allowed to enter into new markets. The experiences with bulk mail, E-COM, and Express Mail are just three examples of the inability of the Service to adjust to competition in markets where it does not have a legal monopoly. It would be an advisable policy to follow, therefore, that the postal service simply maintain its presence in the markets it is already involved in and can make a profit, and exit those markets where it is currently participating but not making a profit.

What will be the effect of technology on the quantity of mail handled in the next few years? It may be the case that FAX machines become as common as telephones, especially if prices continue to fall for these items and privacy features such as "passwords" are initiated. Regardless of the future, the postal service needs to be acting now to decrease cost and increase revenue, in order to ensure that it does have a future. Privatization is a future option, depending on how the United States Postal Service responds to the challenges facing it. As Postmaster General Anthony Frank has said,

The initiative is ours. The abstractions offered by privatization advocates can only take hold if they find sufficient room in the shortcomings and failures of the postal system itself.

(Senate, *Annual Report.1988*, p.4)

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Information provided by Dr. Margaret Chapman

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