

APPENDIX E — Electronic Diversion of Mail Volumes[†]

The “new economy” has been extensively discussed in the popular and academic press. How the Internet will revolutionize everyday life and lead to dramatic changes in business practices, particularly between businesses and households, has been the key topic. Depending upon how communications are transformed by the Internet, the Postal Service could see significant losses in revenue, which could ultimately threaten the Postal Service’s ability to meet its universal service obligation.

The Internet creates both opportunities and threats to the Postal Service. The opportunities come in the form of increased markets for mail products, such as increased package volumes resulting from online retail sales. In addition, recent advances in computing and communications technologies have made the mail an even more efficient medium for direct marketing, as a result of significant improvements in database collection and management.

The threats come in the form of electronic diversion of mail volumes. The term electronic diversion is usually used to characterize the reduction in mail volumes resulting from the use of new electronic alternatives facilitated by the Internet, for example, electronic funds transfer, e-mail, and electronic data interchange instead of the mail. Some electronic diversion of mail volumes to these new media has already occurred. For example, Social Security checks that were previously mailed are now automatically deposited to the recipients’ bank accounts, and electronic filing of tax returns and online bill payments are becoming increasingly popular.

The ultimate effects of the Internet and other new electronic messaging media, such as electronic funds transfer and electronic data interchange, on Postal Service volumes and revenues are still difficult to determine, even though some of these ‘new’ media have been in use for more than a decade. Analysts do not always agree on the timing or level of impact of these new media. Notwithstanding recent fluctuations in e-commerce activity, most analysts do agree, though, that the question is not whether the Internet will have an impact on Postal Service volumes and revenues, but rather when. Even if overall volumes remain at current levels, a change in distribution of mail volumes across classes due to electronic diversion could have a significant impact on the Postal Service’s ability to meet its universal service obligation. According to many analysts, significant electronic diversion could occur within the next five years.

Electronic Diversion Has Already Affected the Postal Service

Throughout its history, the Postal Service has faced competitive threats from many alternative messaging media. Earlier alternatives include the telegraph, the telephone, and the facsimile machine. More recently, alternatives include electronic data interchanges, automatic teller machines, electronic funds transfer, and e-mail, with many of these recent alternatives being supported by the Internet. For nearly a decade, e-mail has been used as an alternative for some business and personal

[†] This appendix was prepared for the United States Postal Service by Laurits R. Christensen Associates, Inc., an economics consulting firm in Madison, WI, that specializes in regulated industries, including natural gas, electricity, telecommunications, transportation, and postal services.

correspondence, as well as for advertising. Adoption rates for alternative bill payment methods such as pay by phone, by credit card, and by electronic funds transfer have slowly but steadily increased. Federal and state governments have contributed to electronic diversion of mail volumes by encouraging the electronic filing of tax returns and the use of electronic funds transfer for tax payments and refunds. The Paperwork Reduction Act of 1995 resulted in significant diversion of First-Class Mail volumes, including the loss of monthly volumes of Social Security checks, which are now automatically deposited in the recipient's bank accounts.

In spite of the introduction of these competitive messaging media, and a noticeable amount of electronic diversion in recent years, mail volumes have continued to grow over time. However, mail volume growth has slowed in recent years. The official Postal Service data that tracks Revenue, Pieces, and Weight (the RPW Report) shows that volume declined 0.2 percent in Government Fiscal Year (GFY) 2001¹, and growth rates have been steadily declining since 1997. First-Class Mail single piece volumes fell 2.7 percent in GFY 2001, the fourth straight year of declines for this mail category, which includes bill payments. In evaluating the separate factors that affect mail volumes, the official Postal Service forecasting model shows that electronic diversion was one of the principal factors responsible for declines in this mail category. Single-piece First-Class Mail letter volume declined by 3.8 percent over the five-year period ending in the third quarter of 2001, but over the same period electronic diversion is estimated to have caused these volumes to decline by 8.6 percent,² thereby more than offsetting any positive effect of economic growth and growth in the number of households.

Total mail volume fell by 5.5 percent in the first quarter of postal fiscal year 2002 over the first quarter of 2001's level, although this decline cannot be attributed to electronic diversion. It will not be known for some time how the events of September and October of 2001 have changed mail volumes in the long run, but these events could be the driving force that leads businesses and consumers to make permanent changes in the way they use the mail.

One indication that the Internet economy is expected to become more important in the future is the fact that the U.S. Department of Commerce now maintains separate statistics on the Internet economy. In addition, research centers have been established at several leading academic institutions to study issues related to the Internet economy. One Internet site compiling links to research centers indicates that there are almost 40 academic research centers now studying these issues.³

How Does Internet Activity Affect Postal Mail Volumes?

The Postal Service provides products and services to market segments defined, in part, by specific customer applications. These market segments are:

¹ GFY 2001 ended on September 30, 2001, so this volume decline includes any transitory effects on mail volume resulting from the September 11th attacks. For Postal Fiscal Year 2001, which ended September 7, 2001, total mail volume grew 1.0 percent.

² See Docket No. R2001-1, USPS-T-7 (Testimony of George Tolley), page 37.

³ www.internetpolicy.org/research/directory.html.

- Bills, statements, and payments (money);
- Business and personal communications (messages);
- Publication delivery (news);
- Advertising (marketing); and
- Package delivery (merchandise).

Within each market segment the demand for various products and services is further differentiated by the relationship between sender and recipient. Communications between businesses differ from communications between businesses and households, which differ from communications between households. Table 1, *Postal Market Segments*, provides a breakdown of the competitive threats and opportunities for the Postal Service by market segment.

While it is relatively easy to identify which Internet activities could affect various mail volumes, the actual impact is difficult to determine at this point in time. For example, one might assume that online catalogs will substitute for the mailed version, thus resulting in lost mail volume. However, consumer surveys show that this is not necessarily the case. Many consumers order from online catalog sites only after having researched products in traditional catalogs. Consumers also request to be added to the mailing lists for offline catalogs from catalog companies they discover during online searches or from online ads, thereby increasing mail volume. This behavior is driven in part by tastes and habits (e.g., some consumers prefer printed catalogs because they are familiar with them, or because they can easily share them with friends). This behavior is also driven in part by technology. Consumers who access the Internet by a dial-up modem may find that online catalog pages download too slow. Future usage of online catalogs is likely to be driven in part by the penetration rates for high-speed modems, cable modems, and home printers.

Another example of the complicated effects the Internet has on mail volumes can be seen with Periodicals mail volumes. Increased usage of e-mail newsletters, online magazines, and online news sources could lead to lower Periodicals and First-Class Mail volumes. Web sites for offline publications can also lead to declining mail volume, in that online subscription signups can lead to a decrease in business reply mail volumes. However, Web sites for offline publications can lead to new subscriptions, and therefore increased mail volume, as new audiences are introduced to the publications through Web searches, pop-up ads, and free trial subscriptions.

TABLE 1: POSTAL MARKET SEGMENTS				
Market Segment	Customer Applications	Class/Subclass	Competition/Threat*	Opportunity*
Bills, Statements, and Payments	Bills, bank statements, financial statements, other account information	Presorted First-Class Mail	Online billing, electronic funds transfer, e-mail, electronic data interchange	Increased number of accounts per household
	Bill payments	Single-Piece First-Class Mail	Online billing, electronic funds transfer, electronic data interchange, automated teller machines, payment by credit card, payment in person	Increased number of accounts per household
	Government transfers, including Social Security	First-Class, government	Direct deposit	
Business Communication and Personal Correspondence	Business communications	Single-Piece First-Class Mail, Presorted First-Class Mail; Priority Mail, Express Mail	E-mail, Internet, facsimile, telephone, in person, local couriers, FedEx, UPS, Airborne Express, enhanced electronic data interchange and automated clearing house transactions	Internet (requests for more info, free samples on Web sites), online data (permission-based marketing)
	Other business (e.g., proxy votes, product registrations)	Single-Piece First-Class Mail, Presorted First-Class Mail; Business Reply Mail	E-mail, Internet, facsimile, telephone, in person, local couriers, FedEx, UPS, Airborne Express	
	Personal communications	Single-Piece First-Class Mail, Priority Mail, Express Mail	E-mail, Internet, facsimile, telephone, in person, local couriers, FedEx, UPS, Airborne Express, electronic greeting cards	
	Other (e.g., tax returns, tax payments, tax refunds)	Single-Piece First-Class Mail	E-mail, Internet, facsimile, telephone, in person, local couriers, FedEx, UPS, Airborne Express, direct deposit/debit	
Publications Delivery	Magazines, professional journals, newspapers, newsletters	Periodicals, Standard Mail, First-Class Mail (orders/renewal)	E-mail, alternative delivery services, online magazines/newsletters, Internet news services, TV & radio; online ordering and renewal	Internet subscriptions/free trial offers; online data (permission-based marketing)
Advertising	Direct ad mail	Standard Mail, First-Class Mail, Periodicals (indirect)	E-mail, alternative delivery services, Internet ads, online catalogs	Online data (permission-based marketing); online businesses as mailers
	Catalogs	Standard Mail, Bound Printed Matter	E-mail, alternative delivery services, Internet ads, online catalogs	Online retail sites (can sign up to get catalog mailed); online data (permission-based marketing); online businesses as mailers
Package Delivery	Packages	First-Class Mail, Priority Mail, Express Mail, Standard Mail, Parcel Post	Alternate delivery (UPS, FedEx, Airborne, Express, local couriers)	Online retail sales; online data (permission-based marketing); online auctions

*Effects on all market segments: changes in tastes, economic growth, industry concentration/level of competitiveness, number of households, cost of paper, postal rates

The effects of e-mail on ad mail will depend in part on how the Internet is employed, especially in terms of targeted mailings. Permission-based marketing, where consumers agree to provide information about their interests, buying habits, income, and education levels in exchange for product information, sales notices, and even discounts or coupons, has received much higher response rates (i.e. customer sales and inquiries) on the Internet than the first generation of Internet ads (pop-up ads and banner ads) and unrequested e-mails. Permission-based e-mails achieve response rates as high as 30 percent, while unsolicited e-mails, pop-ups, and banners generally only have response rates of 1 to 2 percent.⁴

The effects of electronic billing on mail volume also depends upon the way the Internet is employed. Some online bill payments still involve bill presentment by mail, and only the bill payment is diverted. Other online billing services and automated payments by electronic funds transfer and credit card usually involve the loss of two mail pieces—the bill presentment/statement and the bill payment, although in the short run billers or payment processors may still mail a statement or payment confirmation in order to attract customers to the electronic alternative.

Secondary effects further complicate the effort of forecasting the effects of alternative messaging media on mail volumes. The impact of these secondary effects is often difficult to predict or quantify. For example, as online retail sales increase, package mail volume is likely to increase⁵, and there may also be related increases in catalog mailings and ad mail, if the online purchase results in the placement of the consumer's name on a mailing list. However, permission-based marketing could negatively affect mail volumes, if companies use it for more targeted advertising (online or offline) instead of mass advertising.

The relationship between Internet-based companies and traditional messaging media, including the Postal Service, is also a complicated one. For example, America Online facilitates billions of e-mail messages, but it is also a major user of direct mail, and Amazon.com uses ad mail in addition to e-mail to contact existing customers about sales and to send coupons.

4 Sources: The Institute for the Future, *The Posts in an Interactive World*, 2001; and Bob Tedeschi, "E-Commerce Report," *New York Times*, August 9, 1999.

5 In a recent Media Metrix study of the top fourteen online retail sales categories, twelve involved the physical shipping of goods (travel services, clothing/apparel, auction, computer hardware/peripherals, books, electronics, computer software, music, health/beauty, home and garden, flowers/gifts/cards, video, fitness/sports equipment, and toys), as opposed to the downloading of music or software.

FIGURE 1: MAIL VOLUMES IN THE ELECTRONIC ECONOMY

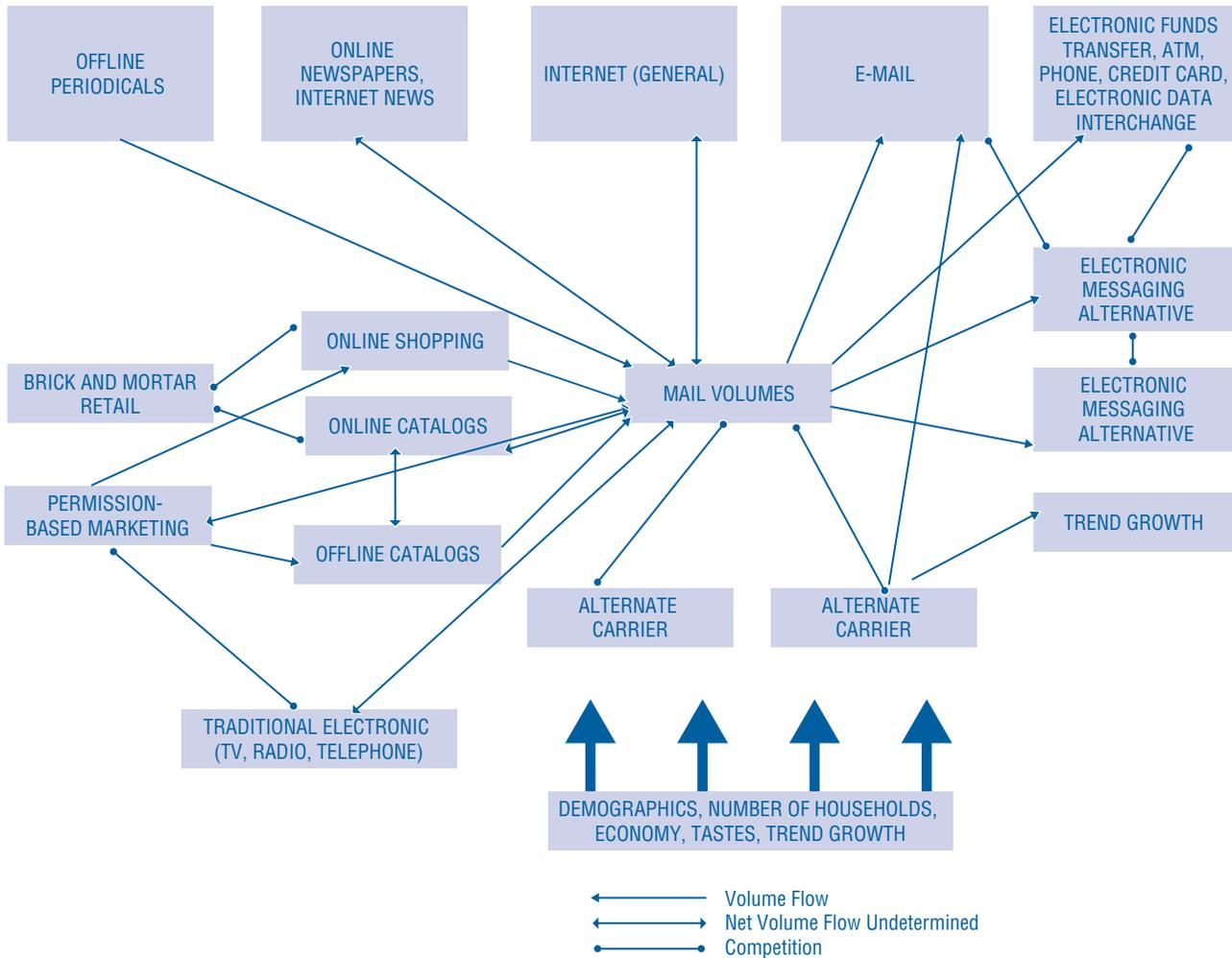


Figure 1, *Mail Volumes in the Electronic Economy*, illustrates the complexity of the interactions between the Postal Service, its competitors, alternative messaging media, and various factors affecting mail volumes, and why it is difficult to determine the effects electronic diversion will ultimately have on the Postal Service.

Forecasts of Electronic Diversion

The Postal Service is constrained in its ability to develop strategies to deal with electronic diversion because of the difficulties in forecasting when and to what degree mail volumes will be diverted. Since these alternative messaging media represent new technologies, historical data do not provide the information needed to develop rigorous forecasts of their use or impact on existing media. There were many cases recently where this failure to forecast the impact of the new technologies was evident. In the mid-1990s, many predicted that the Internet would lead to immediate declines in First-Class Mail volumes, as households and businesses switched from the mail to online

alternatives for correspondence, bill presentments and payments, and advertising. For example, the Yankee Group predicted 13.8 million households would pay bills online by 2000, while in fact only 3.4 million people paid bills online by 2000 (Time Magazine-Digital, April 2000).

While there has been some diversion to date, the persistence of personal habits, uncertainty about the security of the Internet, the lack of financial incentives, and competition among electronic alternatives have led to a lower than expected adoption of electronic services by consumers. Furthermore, the high rate of economic growth, increased advertising by bank card issuers, and increased use of direct mail advertising have all led to increases in mail volume until very recently. One must note, however, that changes in these underlying factors, including more widespread adoption of the Internet, could lead to a trend of declining mail volume.

Uncertainty concerning the timing and the degree of the effects of the new economy on mail volumes and revenues stems, in part, from the unpredictable nature of change, especially as it relates to human behavior and habit formation. Postal Service products are well-established and highly valued tools for both businesses and consumers. Survey results show that customers like the ease of use, security, and reliability of Postal Service products. Surveys also show that the primary reasons why households have been reluctant to adopt electronic services like online billing are concerns about security and privacy, as well as control over the timing of bill payments. In addition, there are start-up costs associated with learning how to use online billing systems, and to date most households do not perceive any financial incentive in making the change. Bill payment by mail is a firmly entrenched habit among most bill payers.

Predicting if or when these attitudes will change is difficult. One source for this change is generational differences. Younger adults are more likely to have experience with the Internet and other new media at a younger age than their parents, and therefore are more likely to feel secure making financial transactions online. The Census Bureau found that in 2001 the rate of use of online bill payments was highest for the 25 to 34 age group. These generational differences have implications for future mail volumes, as the degree to which consumers are aware of and feel secure with financial transactions over the Internet is directly related to the level of online experience. As Internet services evolve, financial incentives, technological innovations, customer service improvements, and security improvements will determine, in part, the degree of migration to electronic messaging media.

One must also recognize that the Internet is a new, rapidly developing, and still evolving technology. Many businesses and consumers do not want to make the investment in adopting an Internet service like online billing until a dominant technology is established. Payment processors have driven costs from traditional processing technologies and will be reluctant to change to Internet technologies until the financial incentive to do so is clear. Some businesses have also indicated a reluctance to adopt online billing because of the perceived lack of control over customer contact and customer service with current electronic billing methods.

Current forecasts of online billing adoption are more modest than the forecasts of a few years ago, but still represent significant challenges for the Postal Service. Two

consulting groups have projected that approximately 40 percent of households will be paying bills online by 2004.⁶ This level of diversion would substantially impact Postal Service mail volume and net revenues.

By 2004, most billers and payment processors will be capable of meeting any demand for online bill payment—by year-end 2000, nearly half of all high-volume U.S. consumer billers were already capable of presenting consumer bills on the Internet. Households will also have the technical capability to use Internet services. According to the Census Bureau, in 2001 over half of all households had access to the Internet.⁷ Not only will this percentage increase in the near future, but more households will also have substantially faster access to the Internet. Jupiter Media Metrix forecasts that 71 percent of the population (210.8 million people) will have online access by 2006, and more than thirty million households will have broadband access to the Internet by 2005. However, there is still a question as to whether households will embrace the new technology for bill payments. The Institute for the Future found in 2001 that 65 percent of North American consumers indicated that they were uncomfortable with electronic billing and less than 10 percent of consumers were using online bill-paying services.

Surveys show that a household's comfort level with the security of the Internet for financial transactions is directly related to the level of experience with other Internet activities. Households are increasingly using the Internet for services beyond e-mail and information searches. In the last half of 2000, Nielsen/NetRatings found that 74 percent of online users in the United States browsed for products online, and 30 percent purchased products online. Jupiter Media Metrix forecasts that online retail sales will reach \$104 billion in 2005, and \$130 billion by 2006. In a March 2001 survey, Jupiter Media Metrix found that online buyers are increasingly less hesitant to register and give out personal information to retailers. Seventy percent register to receive e-mail for new products and special offers, 68 percent register prior to making a purchase, 50 percent register to store personal information on the site, and 41 percent register to receive mail via the Postal Service on products and special offers.

Electronic Diversion May Lead to Higher Rates and Reductions in Service Even if Overall Mail Volume Continues to Increase

In the Postal Service, there are substantial costs that are not related to the volume of mail delivered. For example, the costs associated with sending carriers on their delivery routes do not increase or decrease in proportion to mail volume fluctuations. In the Postal Service rate-setting environment, markups over volume-related costs are used to develop rates so that revenues cover non volume-related costs. The markups for First-Class Mail volumes are higher than for other mail classes, so First-Class Mail makes a larger contribution to covering the non volume-related costs than other mail classes.

⁶ The Gartner Group assigns a 60 percent probability to this forecast. Jupiter Media Metrix forecasts a similar adoption rate for online billing (40.2 million households), but by 2005.

⁷ According to the results of the September 2001 Current Population Survey, as reported in "A Nation Online: How Americans are Expanding Their Use of the Internet," compiled by the National Telecommunications and Information Administration and the Economics and Statistics Administration.

The mailstream most vulnerable to electronic diversion is First-Class Mail letters. In Government Fiscal Year 2001, First-Class Mail letters and cards accounted for 46 percent of all mail volume, 47 percent of all revenue from mail (excluding services like Certified Mail), and 66 percent of contribution to cover non-volume costs. The contribution per piece for First-Class Mail letters was \$0.177, and, in contrast, was only \$0.061 for Standard Mail. This difference in contribution per piece is what makes the change in mail mix so important to the Postal Service. When one piece of First-Class Mail letter mail is diverted, but total volume stays the same because there is one additional piece of Standard Mail, contribution falls by almost \$0.12.

Because of these differences in contribution per piece, a substantial change in the mail mix involving a decrease in First-Class Mail volumes, even if an increase in Standard Mail volumes leads to overall mail volume growth, will threaten the Postal Service's ability to cover non volume-related costs.

The Postal Service, the Internet and the Future

As is often witnessed during the early stages of technological innovation, change seems to take longer than those who are promoting the change would like, which makes forecasting difficult. For example, the electrical dynamo was supposed to be the breakthrough of the 19th century, when it was introduced. However, it took decades before the use of electricity became widespread. There were lags in the diffusion of electricity in the production economy, even though it was a superior production input. As Barua, et al. state, "It wasn't enough that visionaries could see the potential of new technological breakthrough."⁸ Electricity gained widespread acceptance only after organizations re-engineered their business processes to suit the new technology and after a generation of workers learned how to use the new technology (i.e., when complementary innovations were made). This history provides some insight into the process by which the Internet may come to affect the economy in the future.

The new economy will continue to evolve—further changes in the scope and nature of e-commerce transactions are expected because electronic business methods permit the players to change their roles relatively easily and they will increasingly do so (e.g., manufacturers and wholesalers selling directly to consumers over the Internet).⁹ The focus, however, is starting to shift from one of technology to one of information. Two years ago, a survey of marketing managers found that problems with online marketing were related to processing payments, getting page-download times under seven seconds, preventing fraud, and having an easy checkout process. Recently, this ongoing survey showed that the problems cited by marketing managers are now personalization, assorted ad formats, and rich media e-mail.¹⁰ This indicates that there is a shift in focus from making Internet services possible to making their adoption probable. Service providers on the Internet are progressing to the point of fine-tuning their services, indicating that more diversion of mail volumes is likely.

8 Barua, et al., "Measuring the Internet Economy: An Exploratory Study," Working paper, Center for Research in Electronic Commerce, University of Texas at Austin, 1999; Paul A. David, "The Dynamo and the Computer: An Historical Perspective on the Modern Productivity Paradox," *American Economic Review*, May 1990, 355-361; Robert J. Gordon, "Does the 'New Economy' Measure Up to the Great Inventions of the Past?" *Journal of Economic Perspectives*, Fall 2000.

9 Mesenbourg, Thomas L. "Measuring Electronic Business: Definitions, Underlying Concepts, and Measurement Plans." www.census.gov/epcd/www/ebusiness.htm (1999).

10 Alexis D. Gutzman, "The Biggest Problem in Online Marketing," *Ebusiness Illuminator* (http://ecommerce.internet.com/news/insights/ebiz/print/0,,10379_805821,00.html) July 20, 2001.

Some would point to continued use of printing and writing paper and consumers' revealed preference for paper as indicators that the Postal Service is not facing significant electronic diversion. However, in early phases of new technology adoption, there are typically transition periods where both old and new technologies are used concurrently before a full transition to the new technology takes place.

It is important to note that Internet growth and the resultant changes in business practices are not necessarily a foregone conclusion. Paul Romer, professor of economics at the Stanford Graduate School of Business and an expert in economic growth theory, warns against a *technological determinism*, that is, a belief that technological progress will continue along a given trajectory regardless of the choices people make. Not only will the Internet shape society, according to Romer, but society will reshape the Internet through its decisions about taxation, antitrust policy, support for new types of standards organization, privacy and intellectual property rights protection, and regulation of bandwidth connectivity.¹¹

The ability of the Postal Service to help shape its own future in this regard, either through cost reduction, productivity improvement, new product development, or through partnerships with online businesses, will depend in large part on the regulatory structure in place in the future. The Internet is bringing significant changes to the way businesses operate and compete, and flexibility is needed to respond to these changes. Likewise, the mailing industry can continue to have a hand in shaping business and personal communications, not only through the products and services provided, but also through emphasizing and reminding customers of its strengths—the reliable, secure, private, and timely provision of information services in a form consumers prefer, and especially the joy provided by personal communications. What happens with First-Class Mail volume trends will depend, in part, on how tastes change over time, and whether the mailing industry can do anything to affect tastes. Even with this effort, the Postal Service is likely to face significant challenges in the near future in determining how to respond to further electronic diversion while meeting its universal service obligations.

¹¹ George J. Church, "The Economy of the Future?" in *Time*, November 29, 1999.