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Report to the Ranking Senate Minority Member of the Joint Economic Committee

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INTERNATIONAL ELECTRONIC COMMERCE

Definitions and Policy Implications

GAO-02-404

Preface

The rapid growth in the use of Internet-based computer technologies over the past several years has significant implications for the United States. In particular, the ability to conduct business via the Internet has brought about important changes not only in the way companies do business with each other but also in the way they interact with consumers. The Internet allows businesses and consumers from different countries to interact as easily as if they were physically close to each other. This borderless aspect of international electronic commerce creates a wider marketplace that facilitates new transactions and business relationships. However, the potential for widespread adoption of international electronic commerce by businesses and consumers raises a number of questions, from the technical to the policy-related. These fall into several areas, including the following: (1) What is international electronic commerce? (2) What data on international electronic commerce (IEC) does the U.S. government collect? (3) What is being done to remove obstacles and facilitate consumer and business use of international electronic commerce? (4) What are some of the efforts being made to adapt the legal framework for international electronic commerce transactions? and (5) How do international trade agreements and negotiations address barriers to international electronic commerce? This report provides information on these emerging electronic commerce issues.

Overview

Despite widespread use of the term "international electronic commerce," it has no commonly accepted definition. Different institutions use the term electronic commerce to describe different things. For example, some definitions imply use of the Internet, while others define electronic commerce more broadly to include transactions that involve devices such as facsimile (fax) machines, telephones, and computer-based systems. However, for measurement purposes, there is general agreement that the on-line commitment to sell a good or

service is necessary for any transaction to be categorized as electronic commerce. International electronic commerce, as a subset of total electronic commerce, generally involves an on-line commitment to sell that results in the import or export of goods and services.

The U.S government does not produce an official statistic for the value of international electronic commerce. Current government statistics for electronic commerce are drawn only from selected industries: namely, manufacturing, merchant wholesale trade, selected services, and retail trade. However, these statistics do not distinguish between domestic and international electronic commerce. Although statistics on international trade in goods and services cover many major types of international electronic commerce transactions, these statistics do not distinguish between electronic and traditional types of transactions.

Policymakers are working on how to facilitate consumer use of international electronic commerce. They recognize that the adoption of international electronic commerce will depend in part on consumers' confidence that they will be treated fairly in on-line transactions and that their personal information will be protected. Therefore, the efforts to adopt international electronic commerce address the problems of coordinating consumer protection measures internationally and protecting data privacy on line. In addition, policymakers consider that ensuring the security of financial information on computer networks is important to ensuring consumer confidence, and that concerns about existing payment mechanisms for some international consumers is a challenge to the future growth of international electronic commerce.

International electronic commerce also creates new challenges for the legal regimes governing cross-border

commerce. For example, although international electronic commerce offers the potential to execute contracts electronically, only a few countries currently have laws in place that recognize the validity of the electronic signatures and contracts that would make this possible. Several U.S. government departments and agencies, as well as U.S. businesses and civil society groups, are working through international forums to adapt the existing legal, intellectual property, and taxation regimes to remove the obstacles that hinder international electronic commerce from thriving. However, many of these actions are still in the early stages.

Finally, while the Internet facilitates electronic commerce across national boundaries, some steps in an electronic transaction still face physical or legal barriers at the frontier (such as delivering a physical product ordered on line). Ongoing trade negotiations are addressing barriers that reduce the efficiency of conducting business and consumer transactions in Internet services, information technology products, express shipments, and other components of international electronic commerce.

We undertook this review at the request of the ranking Senate minority member of the Joint Economic Committee. As arranged with that office, unless the contents are publicly announced earlier, we plan no further distribution of this report until 30 days after its issue date. At that time, we will send copies to interested congressional committees and the Honorable Paul O'Neill, secretary of the treasury; the Honorable Donald Evans, secretary of commerce; the Honorable Colin Powell, secretary of state; the Honorable John Ashcroft, attorney general; and the Honorable Robert Zoellick, U.S. trade representative. Copies will also be made available to others upon request.

In this report, we provide general information. For readers who are interested in more detailed information on the topics covered here, we have included relevant sources and Web site addresses. If there are any questions regarding this report, please contact Loren Yager at (202) 512-4347. Additional GAO contact and staff acknowledgments are listed in appendix IV.

Loren Yager
Director, International Affairs and Trade

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Abbreviations

BEA	Bureau of Economic Analysis
EU	European Union
EDI	Electronic Data Interchange
FTAA	Free Trade Area of the Americas
FTC	Federal Trade Commission
IEC	International Electronic Commerce
OECD	Organization for Economic Cooperation and Development
NCCUSL	National Conference of Commissioners on Uniform State Laws
UETA	Uniform Electronic Transactions Act
UNCITRAL	United Nations Commission on International Trade Law
USTR	U.S. Trade Representative
WIPO	World Intellectual Property Organization
WTO	World Trade Organization

Section 1: Defining International Electronic Commerce

International electronic commerce (IEC) involves cross-border transactions through computer networks. It is a subset of electronic commerce (E-commerce), which itself generally involves buying or selling on line. Definitions of IEC vary widely, although general agreement exists that an international electronic commerce transaction must involve an on-line commitment to sell a product that results in the import or export of goods or services. The value of IEC is not generally measured, as only one private research firm has made an estimate of its size. The estimate suggests that IEC accounts for a small portion of overall international trade.

Q. How Is International Electronic Commerce Defined?

There is no widely accepted, specific definition for international electronic commerce. Nevertheless, several government and private-sector entities have developed functional definitions of electronic commerce so that they can collect useful statistics.[1] These efforts have led to a general acceptance of transaction-based definitions, many of which require an on -line commitment to sell a good or service for an activity to be categorized as electronic commerce. In a transaction-based definition, electronic commerce is restricted to buying and selling, as distinct from conducting E-business. E-business includes all aspects of on -line business activity—purchasing, selling, tracking inventory, managing production, handling

[1] Institutions such as Statistics Canada, the U.S. Department of Commerce, the Organization for Economic Cooperation and Development (OECD), and several U.S. private research and consulting firms have pioneered this work. The Department of Commerce's E-business steering group was initiated in 1998 and drew heavily from previous work by Statistics Canada. The OECD is an international organization representing 30 countries that researches a variety of economic, social, and governance issues to help member states better address the challenges of a global economy.

logistics, and supplying communications and support services. Therefore, international electronic commerce, as a subset of overall electronic commerce, can be generally defined as any transaction that involves an on-line commitment to purchase and results in the import or export of goods and services.

Q. What Are Some Examples of International Electronic Commerce and Non-electronic Commerce Transactions?

Although a variety of definitions exist, the following transactions would likely be considered international electronic commerce, provided the on-line orders generate the cross-border movement of goods or services: (1) the purchase of a book ordered over the Internet from Amazon.com by a French customer, for delivery in Paris; (2) the reservation of a hotel room or rental car over the Internet by a U.S. citizen traveling to Italy; (3) the purchase of the rights to download software by a manufacturer in Moscow from a California-based company; or (4) the purchase of office supplies from a U.S. company, using an on-line auction service, for delivery to a business in Canada.

Other E-business transactions that generate disagreement over whether they qualify as E-commerce under this definition include international transactions that (1) occur over non-Internet applications or private networks or (2) do not involve an on-line commitment to engage in a transaction. Examples of these transactions include (1) the conducting of research by a Mexican car dealership on car prices on the Web site of a Detroit-based manufacturer that leads to an off-line purchase; (2) the purchase of raw materials by a Belgium-based company from a U.S. manufacturer using the latter's private, interactive network; (3) the purchase of catalog items by a U.S. citizen from a London-based company using an interactive telephone system; and (4) the

withdrawal of money from an automated teller machine in Nigeria from an offshore account in New York.

See appendix II for a more detailed discussion of electronic commerce definitions.

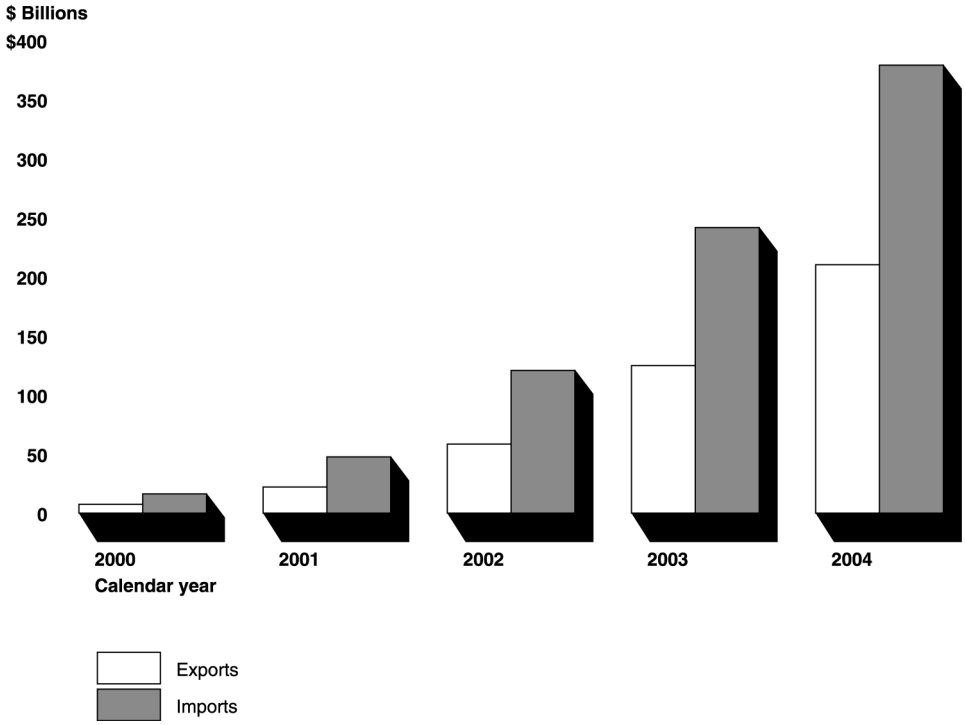
Q. What Is the Value of U.S. International Electronic Commerce?

Forrester Research, an independent research firm that analyzes technological trends and their impact on business, industry, and the economy, estimates that U.S. on-line exports accounted for $7.4 billion and on-line imports for $16.2 billion in 2000. These figures amount to just 0.69 percent of total U.S. exports and 1.12 percent of total U.S. imports. Forrester defines international electronic commerce as international trade in goods and services in which the buyer places the final order over the Internet. The U.S. government does not collect statistics specifically on international electronic commerce (see section 2), and Forrester Research, Inc., is the only research firm that produces estimates and forecasts for international electronic commerce.[2] Although international electronic commerce accounts for a small fraction of international trade at present, Forrester predicts that international electronic commerce will experience rapid growth, ultimately making up 20.5 percent of total U.S. exports and 25.6 percent of total U.S. imports by 2004.

[2]We met with researchers from Forrester Research, Inc. However, we did not independently analyze the quality of the company's methodology for developing international electronic commerce estimates. The methodology used to arrive at the company's estimates relies on a mix of quantitative and qualitative analysis. (See appendix I.)

Forrester Research's international electronic commerce forecasts for 2000–2004 indicate that there was a small Internet trade deficit (the amount by which imports into the United States exceed exports from the United States) in 2000 and that even larger deficits will develop in subsequent years (see figure 1). Forrester's finding that on-line imports dominate on-line exports is consistent with existing aggregate trade patterns. At present, aggregate imports of goods and services exceed exports in U.S. trade. However, because there are no comparable official government statistics and GAO has not done a systemic analysis of Forrester's methodology, we cannot evaluate the reliability of these estimates.

Figure 1: Estimates of U.S. International Electronic Commerce, 2000–2004



Source: Forrester Research, Inc. (2001).

(See appendix II for a more thorough presentation and discussion of electronic commerce measurement, including the Census Bureau's electronic commerce measurement program.)

Web sites for more information on electronic commerce measurement

U.S. Bureau of the Census: www.census.gov/estats

eMarketer: www.emarketer.com

Section 2: Collecting U.S. Government Data on International Electronic Commerce

The Commerce Department's U.S. Census Bureau and Bureau of Economic Analysis (BEA) collect general trade statistics. The focus of these agencies' programs is on complete coverage of international transactions, not on separate data for international electronic commerce. Collecting such data is difficult, because electronic commerce is a recent and rapidly evolving phenomenon and because additional surveys would be needed. In some cases, the phenomenon would require agencies to reassess their methodologies and data-gathering techniques and to devise new techniques to fill the gaps in their statistics. In other cases, the agencies would need to expand the detail collected on existing surveys of services and on the administrative records used to compile the statistics on goods. The Census and the BEA have been attempting to improve the quality of their aggregate international trade statistics. Over the last several years the BEA has added new surveys and made others mandatory to provide estimates of previously unreported services.

Q. What Other Data Does the U.S. Government Collect on the Value of International Electronic Commerce?

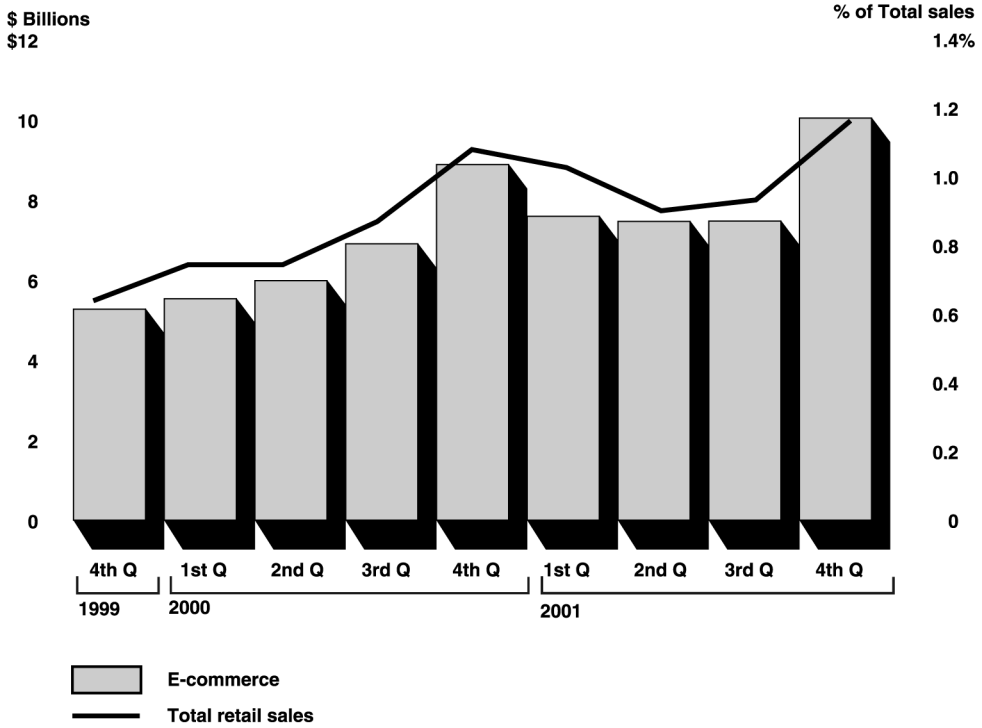
Currently, the United States collects no separate, official data on the value of international electronic commerce. The Census Bureau and the Bureau of Economic Analysis provide aggregate trade data but do not collect statistics specifically on international electronic commerce. (See appendix III for a discussion of international trade statistics collection.) The Census Bureau also conducts a measurement program that focuses on total electronic commerce activity in selected sectors of the U.S. economy. However, international electronic commerce statistics are not among the electronic commerce statistics that the bureau provides.[1] In its measurement program, the bureau produces baseline measurements of electronic commerce, and some consider the Census Bureau to be

the definitive source for this information. Figure 2 shows U.S. electronic commerce retail sales from 1999 through 2001. These statistics show that electronic commerce represented only a small share (approximately 1 percent) of overall U.S. retail sales. U.S. Department of Commerce officials believe that the vast majority of electronic commerce transactions are captured in the aggregate international trade statistics. However, Commerce officials also acknowledge that some significant gaps may exist in the coverage of international transactions because of unresolved data collection challenges posed by international electronic commerce (see next question), and that ongoing efforts are necessary to ensure that the data collection system responds to new developments.[2]

[1]Although the U.S. Census Bureau surveys generally do not allow a separation of international from domestic transactions, data from a 1999 bureau retail survey provide a rough "guess-estimate" about the size of electronic commerce-related international trade. In that survey, the bureau attempted to get an estimate for international electronic commerce by asking companies to check the percentage range for electronic commerce sales that were generated by foreign customers. While a large number of companies did not report, the respondents typically noted that international electronic commerce sales accounted for less than 5 percent of total E-retail sales. If this percentage were applied to the entire sample, it would imply that international E-retail sales were less than $264 million for the fourth quarter of 1999 (a small portion of an already small number). One Census Bureau official noted that from this rough estimate it appears that the leading electronic commerce retailers are channeling international E-sales through foreign subsidiaries in lieu of conducting cross-border trade in goods and services.

[2] See Barbara Fraumeni, "Electronic Commerce: Measurement and Measurement Issues," *American Economic Review* 91 (May 2001): 318–22; Ralph Kozlow, "International Accounts Data Needs: Plans, Progress, and Priorities," prepared for presentation to BEA Advisory Committee, Washington, D.C. (November 17, 2000); and Barbara Fraumeni, Ann Lawson, and Christian Ehemann, "The National Accounts in a Changing Economy: How BEA Measures Electronic Commerce," presented at the Brookings Workshop on Measuring E-commerce, Washington, DC (September 1999). Likewise, the president's 2003 budget submission to Congress states that the growth of electronic commerce presents challenges to the statistical agencies and threatens the accuracy and timeliness of the nation's key statistics.

Figure 2: U.S. Electronic Commerce Retail Sales, 1999–2001



Source: U.S. Bureau of the Census.

Q. What Challenges Does International Electronic Commerce Present for Collecting Statistics?

Collecting statistics on IEC poses several challenges, as listed below:

- *Accounting for the growth of low-value exports.* The rise of electronic commerce may lead to an increase in the volume of low-value goods exports (valued at less than $2,500), including exports shipped out in small parcels through the postal service. Because the

Census Bureau does not directly count low-value shipments but rather estimates them on the basis of information from 1989, this export-undercounting problem is likely to intensify (see appendix III for a discussion of low-value shipments and the undercounting problem).[3]

- *Dealing with transactions that are underreported.* International electronic commerce, if it leads to an increase in small-scale services, may exacerbate problems with collecting data on service transactions that fall below the threshold requirements set by the BEA for businesses reporting on their transactions. For several types of services, such as legal services, the exemption levels are so high ($1 million) that the BEA has to indirectly estimate some types of transactions.
- *Providing coverage for new services.* Use of the Internet results in new, electronic commerce-related services that are not covered in current BEA surveys, such as on-line auction services. Figure 3 shows the steady increase in the net revenues of eBay Inc., an international on-line marketplace, from 1997 to 2001. Unless these electronic commerce activities fall within the scope of existing service categories, aggregate trade statistics may not include those transactions. For example, in 1989 BEA discovered an additional $20 billion in net receipts for U.S. service transactions for 1985–1987 by improving the

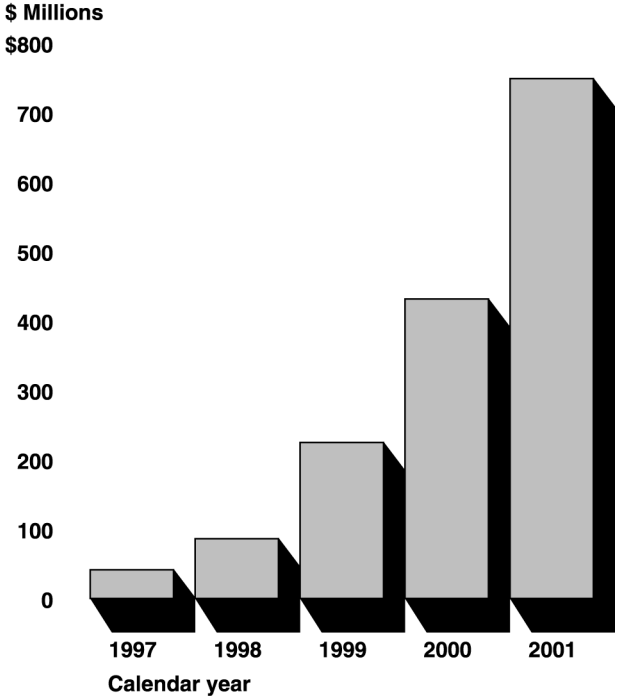
[3] There is some skepticism about whether electronic commerce will lead to an explosion in low-value exports, since the Census Bureau's estimates indicate that business-to-business manufacturing and wholesale trade dominate electronic commerce activities and are more likely to consist of higher-valued goods. Forrester's research also suggests that international electronic commerce consists primarily of large packages, with low-value transactions making up a tiny portion of this commerce. Moreover, analysts and government officials maintain that because the electronic commerce-related portion of international trade is very small, the quality of the international trade statistics is not compromised. However, as the volume of electronic commerce trade increases, the undercounting of low-value transactions may worsen, if the information used to value them is not updated.

coverage of its surveys on travel and adding new surveys on other selected services.[4] The BEA has added new Internet-related services to its surveys as it has become aware of them, either as separate categories or as examples given in definitions and instructions for existing categories. Some new categories, including auction services, have been added to BEA surveys, beginning with data for 2001.[5]

[4] National Research Council, *Behind the Numbers* (Washington, D.C.: National Academy Press, 1992).

[5] The president's 2003 budget submission to the Congress highlights the U.S. Department of Commerce's request for funding to generally strengthen federal statistics, especially in light of the growth of E-commerce. For example, Commerce requested funds to improve measurement of services in the new economy, mainly through new quarterly surveys.

Figure 3: eBay Net Revenue, 1997–2001



Source: eBay, Inc.

- *Quantifying the amount of service transactions.* Electronic commerce increases the output of "difficult-to-measure service sectors" such as the finance, insurance, and real estate industries. To the extent that the Internet facilitates international banking, insurance, and brokerage services as well as other on-line service activities, data-collection will be more difficult. Electronic commerce may also result in an increase in transactions conducted by individuals and smaller companies that, according to

BEA officials, are inherently difficult to survey in a detailed fashion.[6]

- *Determining which transactions to record as international.* Electronic commerce may result in transactions occurring between domestic and foreign parties that may not be recorded as international transfers. This situation may arise because it can become difficult at times to establish the residency of buyers and sellers of services over the Internet. As a result, U.S. companies and individuals may not be aware that they are conducting transactions with foreign parties. The BEA has attempted to mitigate this problem by adding new instructions to its existing surveys and indicating that Internet transactions are to be reported according to who is involved in the transactions, not according to where the buyer and seller are located.
- *Distinguishing between a good and a service.* Electronic commerce also blurs the distinction between international goods and services. When a book or a magazine is transmitted electronically, has the person received a good or a service? Electronic books and magazines include features such as searching capabilities that may resemble services. While the distinction between goods and services has always been problematic, with electronic commerce the line can become even fuzzier. This issue affects domestic measurement as well. However, conventions have been adopted for data collection purposes. Electronically transmitted items do not pass through customs or enter into tabulations of goods trade, and are therefore collected in the BEA's surveys as trade in services.

[6] Kozlow, "International Accounts Data Needs," November 2000.

- *Locating new service providers.* Electronic commerce poses additional measurement challenges, because E-businesses can expand their product lines and enter into entirely new kinds of activities at a much faster rate than companies previously could do.[7] Because the BEA must locate new service providers in order to survey them and to obtain trade information, identifying and monitoring electronic commerce imposes additional challenges to ensuring the comprehensiveness of international trade statistics.

[7]Fraumeni et al., "National Accounts in a Changing Economy."

Section 3: Removing Obstacles and Facilitating International Electronic Commerce

Although international electronic commerce provides consumers with many benefits, including a 24-hour global marketplace and convenient shopping from their own homes, it also may create new opportunities for fraud, abuse, and invasions of privacy. If buyers find that they do not have effective consumer protections, that their personal data are not safeguarded, that their transmissions are not secure, or that shopping on line is more cumbersome than purchasing off line, then they may be less likely to use the Internet to make purchases. For example, a 1998 survey found that 61 percent of those who had never made an on-line purchase cited concerns about credit card security as a reason.[1] The United States, the European Union, and other government, business, and consumer interests have placed a high priority on fostering confidence in electronic commerce by addressing concerns in four areas: (1) on-line consumer protection, (2) data protection and privacy, (3) security, and (4) payment methods. However, constructing a coherent international framework for addressing these issues is challenging because national approaches differ and technologies continue to evolve.

Q. How Does International Electronic Commerce Affect Consumer Protection Efforts?

International electronic commerce complicates consumer protection activities because most efforts have traditionally focused on handling domestic complaints, providing enforcement, and disseminating education. Prior to the development of the Internet, most consumers did not directly interact with foreign

[1] See Pew Research Center for the People and the Press, "The Internet News Audience Goes Ordinary," at http://www.people-press.org/tech98sum.htm.

retailers when making consumer purchases.[2] Therefore, consumer protection activities did not require international coordination. However, as international electronic-commerce transactions increase, consumers may experience greater problems with fraud and deception from foreign-based enterprises. Although international consumer complaints still make up a small share of the total number of electronic commerce–related consumer complaints that the U.S. Federal Trade Commission (FTC) receives, the FTC has seen an increase in both the number and percentage of them in the past five years. To meet this growing challenge, efforts are under way to better coordinate activities among different countries' national authorities. In the following pages, we answer several questions related to how international electronic commerce complicates consumer protection efforts:

- What is the U.S. government doing to foster on-line consumer protection internationally?
- How has the private sector tried to promote consumer confidence?
- What problems do consumers and businesses face in resolving on -line disputes?
- What alternatives exist outside of the court system for resolving international on -line disputes?

Q. What is the U.S. government doing to foster on-line consumer protection internationally?

The United States attempts to protect consumers on line by coordinating with other countries' authorities on education and enforcement. The Federal Trade

[2] Exceptions to this general pattern of consumers dealing only with domestic retailers include cases such as going on foreign travel or using international mail order catalogs. However, because these were not widespread activities compared with those in the overall economy, authorities focused primarily on handling domestic complaints.

Commission and the U.S. Department of Justice are the principal government agencies tasked with enforcing consumer protection laws and preventing fraud for domestic and international electronic commerce.[3] Besides providing consumers with information on common Internet fraud schemes and tips for on-line shopping, the FTC and Justice also bring law enforcement actions to discourage fraud and deception on the Internet.[4] Both the FTC and Justice pursue Internet fraud cases regardless of whether they are domestic or international in scope. In addressing international electronic commerce issues, the United States collaborates with other national consumer protection and law enforcement agencies both bilaterally and through multilateral forums.

On enforcement issues, the Federal Trade Commission participates with 28 other countries in the International Marketing Supervision Network, which seeks to improve cooperation and information sharing among law enforcement agencies and to address deceptive international marketing practices. In 2001, the FTC began hosting a pilot Web site for consumers from the United States and 12 other countries in the Network to file electronic commerce complaints (http://www.econsumer.gov).[5] Consumer protection and law enforcement agencies can use this site to track

[3] For certain types of products, other regulatory agencies may also provide consumer protection. For instance, the Food and Drug Administration is involved in addressing international pharmaceutical sales over the Internet.

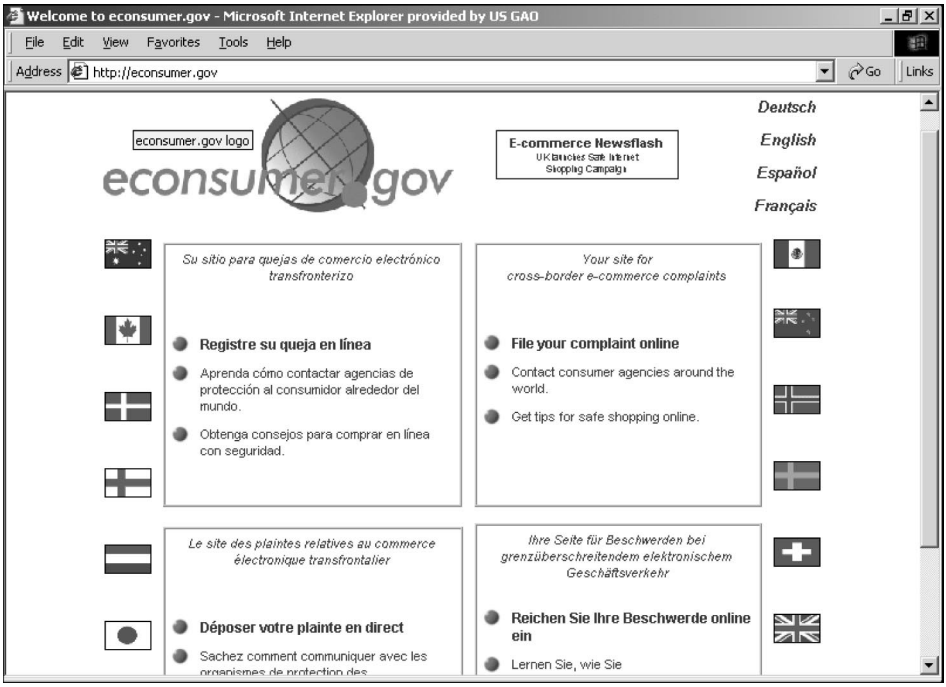
[4] For example, the FTC has brought more than 140 law enforcement actions since 1994 against more than 490 companies and individuals. Similarly, Justice has brought a number of criminal prosecutions against individuals and groups involved in Internet fraud, including auction schemes, investment schemes, and credit card fraud. However, most of these cases involved domestic issues.

[5] This effort built upon FTC's existing database, Consumer Sentinel, which collects consumer complaints from the United States as well as Canada and Australia.

complaints and identify patterns of fraud. In addition, Justice (through the Federal Bureau of Investigation) and the National White Collar Crime Center (a national network for law enforcement agencies) jointly established the Internet Fraud Complaint Center (www.ifccfbi.gov) to receive on-line complaints, analyze them to identify the types of fraudulent schemes, and refer the complaints to law enforcement agents.[6] (See figures 4 and 5 for the Internet home pages of both econsumer.gov and the Internet Fraud Complaint Center).

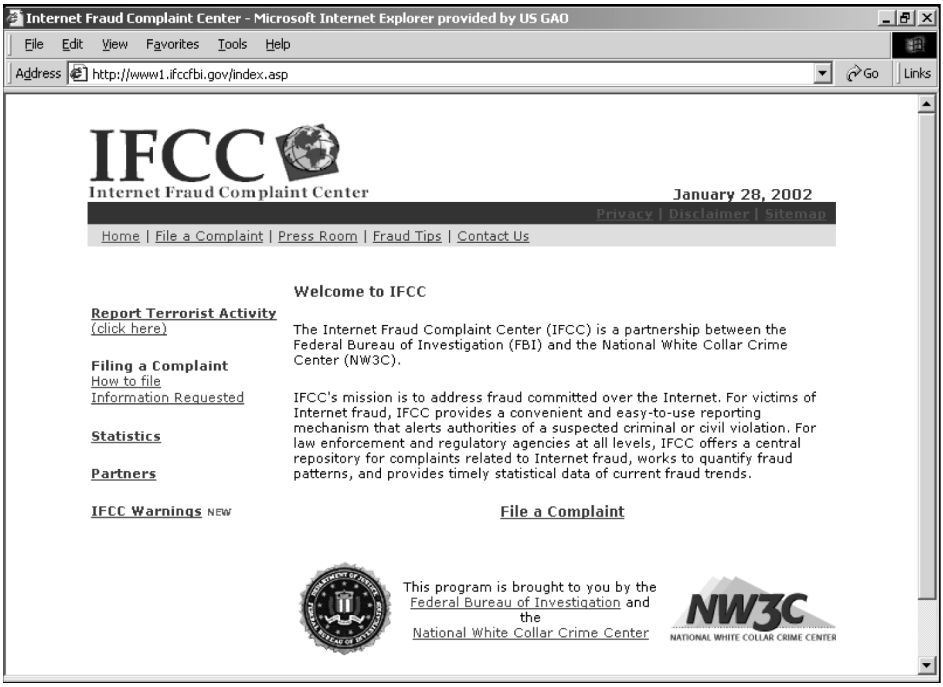
[6] Both the Internet Fraud Complaint Center and econsumer.gov receive on-line complaints from consumers. Information can be shared from both sites, depending on the relevancy to each site's mission. FTC's econsumer.gov addresses consumer complaints broadly, while Justice's Internet Fraud Complaint Center focuses on criminal activity whether or not it involves consumers.

Figure 4: The U.S. Federal Trade Commission's Econsumer.gov on the Internet



Source: Econsumer.gov at www.econsumer.gov.

Figure 5: The Internet Fraud Complaint Center on the Internet



Note: The Internet Fraud Complaint Center is a joint effort of the Justice Department's Federal Bureau of Investigation and the independent National White Collar Crime Center.

Source: The Internet Fraud Complaint Center at www.ifccfbi.gov.

To coordinate consumer protection policies, the Federal Trade Commission and the Department of Commerce collaborate with the other 30 member countries of the OECD in the Committee for Consumer Policy. In 1999, the OECD adopted international guidelines for consumer protection. According to the guidelines, on-line shoppers should be afforded protection that is not less than the protection afforded offline. Although not legally binding, the guidelines provide a blueprint for governments, the private sector, and consumers about

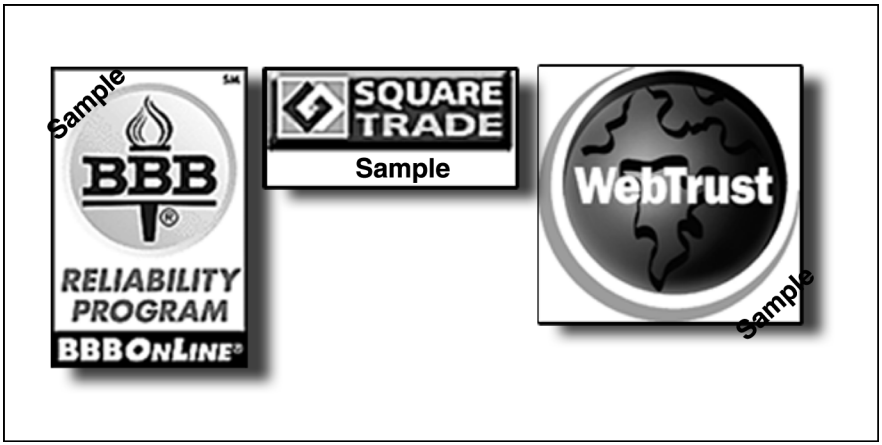
fair business practices on line. The United States also has addressed coordination of international consumer protection through the Asia-Pacific Economic Cooperation forum. This group of 21 economies from the Pacific Rim area, including Australia, China, Japan, and the United States, provides a forum for sharing information on government policies and is also currently developing a set of voluntary consumer protection principles.

Q. How has the private sector tried to promote consumer confidence?

Private-sector groups have been seeking ways to improve consumer confidence in electronic commerce through developing guidelines and codes of conduct for on-line transactions. Some businesses that comply with these principles can choose to post seals, or "trustmarks," on their Web sites indicating that they adhere to the principles. These trustmarks provide consumers with an indication of the types of policies with which a business complies and may increase consumers' confidence in dealing with a particular Web site. For example, the Better Business Bureau's BBBOnline (http://www.bbbonline.org/) has a set of good business guidelines. If businesses comply with these guidelines, they can display the bureau's reliability seal on their Web site. Other organizations also provide trustmarks to enable businesses to demonstrate to potential customers that they abide by guidelines that promote fair business practices. Some examples shown in figure 6 are SquareTrade (http://www.squaretrade.com), and CPA WebTrust (http://www.cpawebtrust.org/).[7]

[7] The Global Business Dialogue provides an inventory of trustmarks at http://consumerconfidence.gbde.org/t_inventory.html.

Figure 6: Examples of Trustmarks for BBBOnline, SquareTrade, and CPA WebTrust



Note: The trustmarks shown above are graphical representations indicating a Web site's compliance with the providers' principles and criteria. They are reproduced here for illustrative purposes only.

Source: BBBOnline, SquareTrade, and CPA WebTrust.

Q. What problems do consumers and businesses face in resolving on-line disputes?

Currently, consumers and businesses may face uncertainty in seeking legal redress for problems arising in electronic commerce. First, there are concerns about the appropriate jurisdiction to adjudicate the dispute: Can the consumer sue the business in the consumer's home court? Second, there are concerns about applicable law: Which country's laws will govern a cross-border E-commerce transaction? Finally, there are concerns about enforcement: Even if the consumer sues in his or her home court and obtains a favorable judgment, can the judgment be enforced against the business in its home country?

There has been an ongoing public policy debate about the first two issues of jurisdiction and applicable law.

U.S. courts generally allow consumers to sue businesses in the consumers' home forum, as long as it is fair and reasonable to do so. They also generally apply the consumers' home country law, based on the application of several factors. European law gives, if a number of requirements are met, consumers the right to sue businesses in the consumer's home country and for the consumer protection laws of the consumer's home country or key aspects of those laws to be applied in determining the dispute.

Generally, consumer groups favor a "country of destination" approach, under which consumers can rely on their home country protections and sue in their home country courts. They argue that this is the only way to ensure adequate consumer protection. Some industry groups favor a "country of origin" approach, under which companies would be subject only to the laws and courts of their home country. They argue that this approach is needed to encourage the growth of electronic commerce, as the "country of destination" approach would be too costly for businesses. The U.S. government has been involved in discussions on these issues and has been promoting alternative dispute resolution as a method of providing practical and cost-effective dispute resolution for E-commerce transactions, and it continues to engage in the public policy debate on these issues.

The issues of jurisdiction and enforcement of consumer judgments are being discussed in negotiations on a Hague Convention for Jurisdiction and Judgment Recognition. The negotiations under the Hague Conference have been under way for several years, and no deadline has been set for when they will be completed.

Q. What alternatives exist outside of the court system for resolving international on-line disputes?

Some organizations have been developing new mechanisms for resolving international on-line disputes between businesses and consumers outside of the court system. Given the costs and difficulties that both consumers and businesses face in pursuing international litigation, government, consumer, and business interests are discussing how to develop alternative dispute resolution mechanisms. The goal of these efforts is to create mechanisms that can provide practical and inexpensive redress for consumers without unduly burdening business. For example, a U.S. consumer who purchases a product from a French business and experiences a problem could file a complaint through an on-line alternative dispute resolution system. The complaint could be examined by a neutral third party, with the business responding on line, so that neither party has to travel. Currently, most on-line alternative dispute resolution mechanisms for consumers primarily address domestic complaints. However, some organizations have begun operating international alternative dispute resolution mechanisms, and others have announced plans to develop them.[8] There have also been discussions in many forums on ways to promote and develop alternative dispute resolution mechanisms. Businesses and consumer groups tend to disagree on certain aspects of the mechanisms. For example, consumer groups argue that consumers should never be bound by the outcome of alternative dispute mechanisms and should always be permitted to go to court. Business groups disagree. Nevertheless, both

[8] For example, the Better Business Bureau has announced partnerships with European, Japanese, Korean, and Chinese associations to offer international alternative dispute resolution with compatible complaint resolution procedures and technologies. See www.BBBOnline.org.

businesses and consumer groups support voluntary alternative dispute resolution.

Web sites for more information on consumer protection issues

U.S. Federal Trade Commission: www.ftc.gov/ftc/consumer.htm

U.S. Department of Justice Internet Fraud: www.usdoj.gov/criminal/fraud/Internet.htm

U.S. Department of Justice Consumer Litigation: www.justice.gov/civil/ocl/index.htm

European Union Consumer Affairs: www.europa.eu.int/comm/consumers

Organization for Economic Cooperation and Development: www.oecd.org

Asia-Pacific Economic Cooperation: www.apecsec.org.sg and www.apec.org

Hague Conference on Private International Law: http://www.hcch.net

Q. How Does International Electronic Commerce Affect the Privacy of Personal Data?

Technology has enhanced the capacity of on-line companies to collect and analyze vast amounts of data from and about consumers who visit their Web sites, which raises concerns about how this information is treated. Businesses worldwide routinely collect a variety of information about their customers in order to better understand their clients, target special offers, and improve their business operations. Whereas before the creation of the Internet, a company could track an

individual customer's purchases, now a company can also track what a customer looks at by recording what pages of a Web site a customer chooses. Such information can be compiled with data from other sources to construct a profile of individual customers. The increase in the collection and use of data has raised public awareness and consumer concerns about on-line privacy.[9] Governments have responded by using different approaches, including establishing and enforcing laws and regulations and encouraging business self-regulation. However, these different approaches have led to different national standards and may create difficulties for companies that transmit personal data between operations located in different jurisdictions. In the following pages, we answer questions related to how international electronic commerce affects the privacy of personal data:

- How does the United States foster the protection of individuals' personal data and privacy?
- How does the EU's approach to data privacy differ from that of the United States?
- What international principles exist for ensuring data protection?

Q. How does the United States foster protection of individuals' personal data and privacy?

The United States has generally promoted industry self-regulation, supplemented by government laws and regulation in certain sectors, as the best approach to ensuring data privacy in an evolving area like electronic commerce. Specifically, U.S. privacy laws provide

[9] Consumer surveys have found that consumers are also concerned about government access to and monitoring of their personal information on line. However, law enforcement agencies' ability to deter and prosecute criminal activity on line requires some degree of access to personal information.

protection for personal health and financial information and for all personal information about children (see table 1). However, different interests in the United States, including consumer groups, businesses, and various FTC commissioners, have debated the need for more comprehensive legislation. In some countries, these laws are comprehensive, covering all types of personal data; in other countries, such as the United States, the laws are specific to certain types of information.

Table 1: U.S. Laws Governing Privacy of Personal Information

Name of law	Purpose of law
Fair Credit Reporting Act (1970)	Covers communication of an individual's personal information by consumer reporting agencies (CRAs), such as credit bureaus. This was the nation's first major privacy protection law that seeks to strike a balance between privacy and the use of consumer information and allows for disclosure of information by CRAs only for "permissible purposes." The law provides consumers with avenues for learning the information about them in the files of CRAs, and for correcting erroneous information.
Health Insurance Portability and Accountability Act (1996)	Provides certain rights for consumers in terms of the use of their personal health information.
Identity Theft and Assumption Deterrence Act (1998)	Makes the FTC a central clearinghouse for identity theft complaints, which occur when an individual's personal information is used fraudulently to create new financial accounts, such as credit cards. Makes identity theft a federal crime with substantial penalties.
Children's On-line Privacy Protection Act (1998)	Prevents the collection of personally identifiable information from young children without their parents' consent. Self-regulatory programs can set up their own compliance mechnanisms for the act and apply to the FTC for safe harbor status. If approved for such status, companies that adhere to safe harbor programs will be deemed in compliance with the law.
Gramm-Leach-Bliley Act (1999)	Provides certain rights for consumers in terms of the use of their personal financial information, requires financial institutions to notify customers about their privacy practices, and allows consumers to "opt out" of having their nonpublic personal information disclosed to nonaffiliated third parties. Also outlaws "pretexting" (calling a financial institution claiming to be a customer to get personal information).

Note: Except for the Children's On-line Privacy Protection Act, the above laws are not specific to the Internet or international electronic commerce. However, these laws do affect how personal information is treated, including data transferred electronically.

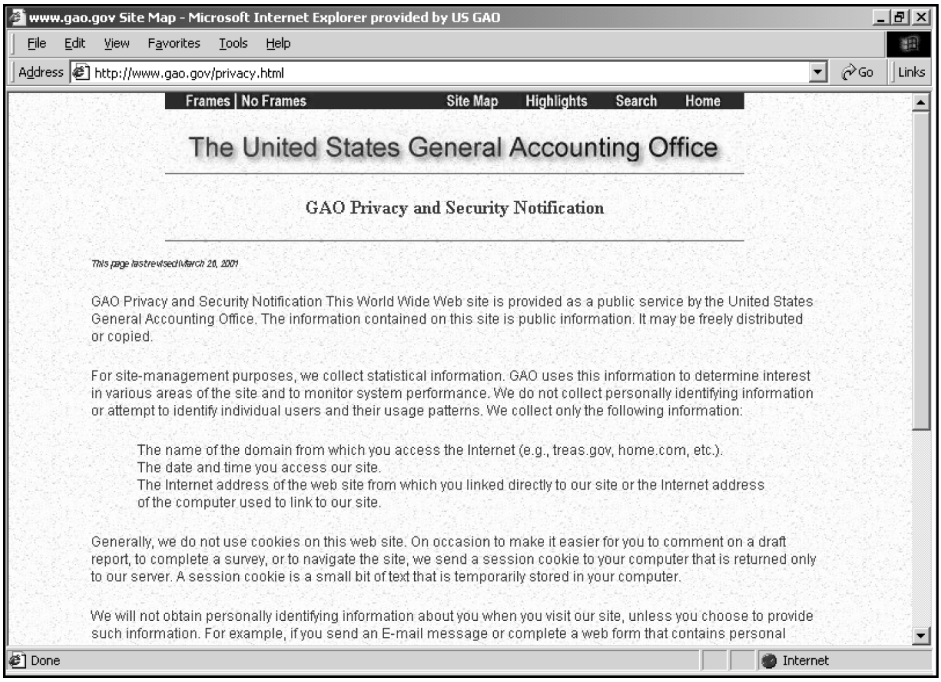
Source: The U.S. Federal Trade Commission and the Department of Health and Human Services.

In addition to these laws, the FTC can provide further protections to consumers under the 1914 FTC Act when businesses violate their own stated privacy statements. Many businesses state their privacy policies on their Web sites. In fact, the FTC and several business and consumer groups seek to have businesses post such privacy policies to provide consumers with information on their practices. For example, see figure 7 for the General Accounting Office's (GAO) privacy statement on the Internet. If a business violates its stated practices, the FTC may challenge the company for using deceptive business practices. Recently, the FTC has brought several legal actions against on-line companies who sold consumers' personal information in violation of their posted privacy policies.[10] The FTC has also brought a recent law enforcement action against a company that did not adhere to its stated privacy and security policies.[11] The FTC has noted an increase in the number of on-line companies adopting and posting privacy policies, including the majority of the most popular websites.

[10] See, In the Matter of Geocities, File No. 982 3051 (1998), available at http://www.ftc.gov/opa/1998/9808/geocitie.htm; FTC v. Liberty Financial, File No 982 3522 (1999), available at http://www.ftc.gov/opa/1999/9905/younginvestor.htm; FTC v. Toysmart.com, LLC, and Toysmart.com, Inc. (Civ. Action No. 00-11341-RGS) (D. Mass. 2000), available at http://www.ftc.gov/opa/2000/07/toysmart2.htm.

[11] See, In the Matter of Eli Lilly, File No. 012 3214 (2002), available at http://www.ftc.gov/opa/2002/01/elililly.htm.

Figure 7: GAO's Privacy Statement on the Internet



Source: U.S. General Accounting Office at www.gao.gov/privacy.html.

Q. How does the EU's approach to data privacy differ from that of the United States?

In the European Union, data protection legislation is comprehensive, covering how a company in any field may collect, store, and process personal information. The 1995 EU Data Protection Directive became effective in 1998 and stipulates that if a company transfers personal information outside the European Union, the country in which the receiving company resides or the company itself must have adequate data protections in

place.[12] When the directive first came into force, there were concerns about how these requirements would affect data regularly transferred between U.S. and EU companies, because the United States has a different approach to privacy protection than the European Union has. Negotiations began between the European Commission and the U.S. Department of Commerce. A framework, known as the Safe Harbor, went into operation in 2000 to bridge the gap between the U.S. and EU approaches.

The Safe Harbor framework allows data from subjects of EU member states to be transferred to U.S. companies that self-certify with the Department of Commerce that they comply with the Safe Harbor framework (see www.export.gov/safeharbor).[13] The framework has allowed data transfers to continue between the United States and the European Union, and the functioning of the framework is currently under European Commission review. More than 150 companies have self-certified under the Safe Harbor framework, including Microsoft, Intel, Hewlett-Packard, Proctor & Gamble, and DoubleClick. The European Commission has also adopted its own draft of model contract clauses that could be used as an alternative means for U.S. companies to comply with the EU directive. However, the U.S. Departments of Commerce and the Treasury, as well as U.S. industry, have criticized the European Commission version as being overly

[12] A country is considered to have "adequate" data protections if the European Commission certifies that its laws and regulations maintain the same levels of protection as the EU law. A company can be considered to have adequate data protections if the commission certifies it individually or if a special arrangement is made (such as a model contract) that is considered adequate by the commission.

[13] The Safe Harbor is available to companies subject to enforcement of their privacy commitments by the Federal Trade Commission of the Department of Transportation. At the time the Safe Harbor framework was concluded, both sides agreed to continue discussions on the financial sector. The U.S. Treasury will lead these discussions.

burdensome for U.S. companies and not a practical alternative for ensuring compliance. The International Chamber of Commerce has proposed an alternative to the European Commission's clauses, but this alternative has not yet been certified by the European Commission. Several countries, including Canada, Australia, New Zealand, and Argentina, have also adopted comprehensive data privacy legislation. So far, the United States has not adopted agreements with these countries similar to the Safe Harbor framework with the European Union.

Q. What international principles exist for ensuring data protection?

Internationally, the 30 member countries of the Organization for Economic Cooperation and Development agreed in 1980 to the principles in the OECD's *Guidelines Governing the Protection of Privacy and Transborder Flows of Personal Data* (see table 2). These principles were developed by government agencies in the United States, Canada, and Europe.

Table 2: Summary of Basic Principles of Data Privacy and Protection Laws in the OECD Guidelines

Principle	Definition
Notice/awareness	Data collectors (such as Web sites) should provide consumers with clear and conspicuous notice of their information practices, including what information they collect; how they collect it; how they use it; and how they provide choice, access, and security to consumers.
Choice/consent	Data collectors should offer consumers choices about how their personal identifying information may be used beyond the use for which the information was provided (for example, to consummate a transaction). Consumers should have the choice of whether the information could be used internally, as well as whether it could be disclosed to outside firms.
Access/participation	Data collectors should offer consumers reasonable access to the information a Web site has collected about them, including giving them a reasonable opportunity to review information and to correct inaccuracies or delete information.
Integrity/security	Data collectors should take reasonable steps to protect the security of the information they collect from consumers.
Enforcement/redress	Some entity should have authority to enforce the above principles, and consumers should have avenues for redress when the principles are violated.

Source: The U.S. Federal Trade Commission's summary of the basic principles embodied in the OECD guidelines (http://www1.oecd.org/dsti/sti/it/secur/prod/PRIV-EN.htm) and other privacy laws.

Specific legislation will vary on how countries implement the components. For example, on "choice/consent," the Gramm-Leach-Bliley Act requires financial institutions to provide customers the opportunity to "opt out" of having their nonpublic personal information shared with nonaffiliated third parties, with certain exceptions.[14] If the individual does not respond to the opportunity, the company then may share the individual's personal information. The Children's On-line Privacy Protection Act, however, requires on-line companies to first gain the consent of

[14] A financial institution is obligated to comply with the opt-out provisions under Subtitle A only with respect to individual consumers who obtain a financial product or service to be used primarily for personal, family, or household purposes.

the child's parent before collecting information. This is known as an opt in requirement. It is a more stringent privacy requirement than an opt out, because an individual is not required to do anything in order to keep his or her personal information from being collected.

Web sites for more information on data privacy

U.S. Federal Trade Commission: www.ftc.gov/privacy/index.html

U.S. Department of Commerce Safe Harbor Web site: www.export.gov/safeharbor

European Union Data Protection: www.europa.eu.int/comm/internal_market/en/dataprot/index.htm

Canadian Commissioner for Privacy: www.privcom.gc.ca

Organization for Economic Cooperation and Development: www.oecd.org

Q. How Does International Electronic Commerce Affect Security Efforts?

There are several security threats to consumers' transactions that may affect consumer adoption of international electronic commerce. Criminals in foreign countries have successfully penetrated computer systems of major U.S. financial institutions, and numerous cases of credit, debit, and ATM card fraud, telemarketing fraud, and copyright piracy have caused significant losses for U.S. individual and corporate victims. Equally important as these well-publicized cyber attacks are traditional crimes committed by means of the Internet, such as theft of proprietary information and content, fraud, money laundering, and

identity theft. Specifically, some of the challenges that law enforcement faces on the international front include improving cooperation in locating and identifying perpetrators across borders, securing electronic evidence of their crimes so that they may be brought to justice, and overcoming differences in countries' criminal laws. As with other aspects of international electronic commerce, jurisdictional issues arise at each step. In the following pages, we answer some questions related to how international electronic commerce affects security efforts:

- What are some of the security challenges for IEC?
- To what extent are new security arrangements for IEC being developed?
- How are security challenges being addressed by the private sector?

Q. What are some of the security challenges for IEC?

- *Cooperation.* National laws apply to the Internet and other global networks. But while the enactment and enforcement of criminal laws have been, and remain, a national responsibility, the nature of modern communications networks makes it impossible for any country acting alone to address this emerging high-tech crime problem. For example, consider a computer hacker in Paris on the left bank of the Seine who disrupts a corporation's communications network on the right bank. Before accessing his victim's computer, he routes his communication through service providers in Romania, Australia, and Argentina. In this case, French police will need assistance from law enforcement authorities in Bucharest, Canberra, and Buenos Aires before discovering that the criminal is right in their midst. Because of the perishability of evidence and the mobility of people, evidence must be gathered

quickly to minimize the chances that the data will be unavailable or lost.

- *Legislation*. The failure of a country to criminalize computer-related offenses is one such obstacle. When one country's laws criminalize certain activities on computers and another country's laws do not, effective cooperation in solving a crime and prosecuting the perpetrator may not be possible. The investigation of the "Love Bug" virus provides an example. Although U.S. investigators worked closely with investigators in the Philippines, international coordination would have proceeded more quickly and effectively had there existed common computer crime laws between the two countries.

Q. To what extent are new security arrangements for IEC being developed?

- *Council of Europe*. The U.S. government is working with foreign governments through many channels to address global threats related to computer crime. For example, the United States has participated in the drafting of the Council of Europe (COE) Convention on Cyber-Crime since the project began in 1997.[15] Specifically, the United States, represented by the Departments of Justice, State, and Commerce, in close consultation with other U.S. government agencies, has actively participated in the negotiations in both the drafting and plenary sessions, working closely with both COE and non-COE member states. Among other non-COE states participating in the negotiations were Canada, Japan, and South Africa.

[15] The Council of Europe (website: www.coe.int) consists of 43 member states, including all of the members of the European Union. It was established in 1949 primarily as a forum to uphold and strengthen human rights and to promote democracy and the rule of law in Europe. Over the years, the COE has been the negotiating forum for a number of conventions on criminal matters in which the United States has participated.

By virtue of their having participated in the convention's elaboration, the United States and these other non-COE states will have the right to become parties to the convention if they choose to do so. On June 29, 2001, the Council of Europe released the final text of the draft Convention on Cyber-Crime, which is the first multilateral instrument to address the problems posed by the spread of criminal activity on computer networks. The Convention makes progress in this area by (1) requiring signatory countries to establish certain substantive offenses in the area of computer crime, (2) requiring parties to adopt domestic procedural laws to investigate computer crimes, and (3) providing a solid basis for international law enforcement cooperation in combating crime committed through computer systems. On November 23, the United States signed the treaty. Criminals, including terrorists, can cause large economic losses and threaten our infrastructure through computer-related attacks (for example, hacking, viruses, and denial-of-service attacks). Criminals around the world are also increasingly using computers to commit traditional crimes, such as fraud, child pornography, and copyright piracy. The Cybercrime Convention is expected to be of considerable benefit to the United States, because it will help remove procedural and jurisdictional obstacles to international cooperation that can delay or endanger law enforcement investigations and prosecutions of computer-related crime.

- *EU Forum*. The European Commission intends to establish and chair an EU Forum, similar to forums that exist in certain EU member states. The EU-wide forum would bring together law enforcement agencies, service providers, network operators, consumer groups, and data protection authorities. Their aim would be to enhance cooperation by raising public awareness of the risks posed by criminals on the Internet, promoting best practices

for information technology security, developing effective counter-crime tools and procedures, and encouraging further development of early warning and crisis management mechanisms. In addition, the European Commission promotes security and trust through a number of programs.[16]

- *OECD Security Guidelines*. The OECD has convened an Experts group to review the 1992 OECD Guidelines for the Security of Information Systems (the Security Guidelines). The Experts group is charged with the mission of reviewing the Security Guidelines and reporting their recommendations to the OECD Working Party on Information Security and Privacy (WPISP). Delegates to the Experts group include government representatives from OECD member countries and representatives of industry and consumer interests. The U.S. delegation is made up of representatives from the FTC and the Departments of State, Commerce, Justice, and the Treasury. The original Security Guidelines, adopted in 1992, were issued prior to the explosive growth of the Internet and E-commerce. Their provisions have become particularly relevant since the tragedies of September 11.

Q. How are security challenges being addressed by the private sector?

The private sector is trying to address security challenges through the use of security-enhancing technologies. For example, the common use of Secure Socket Layer (SSL) technology provides the benefit of

[16] These programs include, but are not limited to, the eEurope initiative (http://cybercrime-forum.jrc.it/default/), the Internet Action Plan (http://www.europa.eu.int/information_society/programmes/iap/index_en.htm), the Information Society Technologies IST Program (www.cordis.lu/ist) and the next framework program for Research, Technological Development and Demonstration (RTD).

encryption for information exchanged with certain Web sites. Software solutions to address security challenges include applications that look for patterns of questionable behavior or other indicators of irregularity. Address verification services (AVS), conducted by payment processors, help ensure that a payment cardholder's billing address matches the shipping address. Payment card companies have also tried to address security concerns. Visa has recently rolled out a new service to its U.S. customers that allows consumers to add personal passwords to existing Visa cards ("Verified by Visa"). Recently, some issuers have also introduced "disposable" card numbers that can be used only once. In addition, others use smart cards that embed card data in a microchip.

Web sites for more information on security issues related to IEC

Council of Europe: press.coe.int/cp/2001/893a(2001).htm

Council of Europe: www.coe.int/T/E/Communication_and_Research/Press/Themes_Files/Cybercrime

U.S. Department of Justice: www.cybercrime.gov/

Federal Trade Commission: www.ftc.gov/bcp/menu-internet.htm

U.S. Department of Commerce: www.ciao.gov/

National Institutes of Standards and Technology: http://csrc.nist.gov/

Q. How Does International Electronic Commerce Affect International Payment Methods for Consumers?

International electronic commerce gives consumers the ability to search for goods and services around the world. In some cases, however, consumers may have difficulty finding a reasonable way to pay for the product. American consumers are generally able to purchase goods from foreign sites using credit cards but may be deterred by security and fraud concerns (see the section on security). However, foreign consumers shopping for goods and services from U.S. sites are less likely to use credit cards and therefore may face expensive or time-consuming payment options that could deter purchases. In the following pages, we answer questions related to how the IEC affects international payment methods for consumers:

- What are the limitations of existing payment mechanisms?
- To what extent are new payment mechanisms for IEC consumer transactions being developed?

Q. What are the limitations of existing payment mechanisms?

As table 3 shows, traditional payment mechanisms can have significant limitations for low-value, international electronic commerce transactions. For example, a German consumer in Berlin can search for goods on a Web site from a small U.S. company based in Minnesota. But if the consumer finds a product he or she likes, how can he or she pay for it? Ideally, the German consumer would be able to send a payment to the U.S. company electronically.

Table 3: Limitations of Existing Payment Mechanisms

Payment mechanism	Limitations
Cash	A U.S. retailer probably will not accept an envelope full of euros, and it would be costly and time-consuming for a German consumer to exchange euros for dollars and then send the dollars via the mail.
Check	A U.S. company may not accept a check drawn on a foreign bank because of concerns about fraud and the possible extra expense of depositing a euro-denominated check in its local bank.
Credit card	A credit card could work, if a German consumer has one and a U.S. company accepts it. However, consumers in many other countries do not use credit cards as often as American consumers do. In addition, some U.S. on -line retailers will not accept foreign credit cards because of concerns about fraud.
Wire transfer	Most banks offer international wire transfers. However, the fees that banks charge for this service (typically $20–$40 per transaction) could exceed the cost of the item being purchased.[a]

[a] A September 2001 EU study of 1,480 credit transfers of $93 found that the average feewithin the European Union was $22.35.

Source: GAO analysis.

Q. To what extent are new payment mechanisms for IEC consumer transactions being developed?

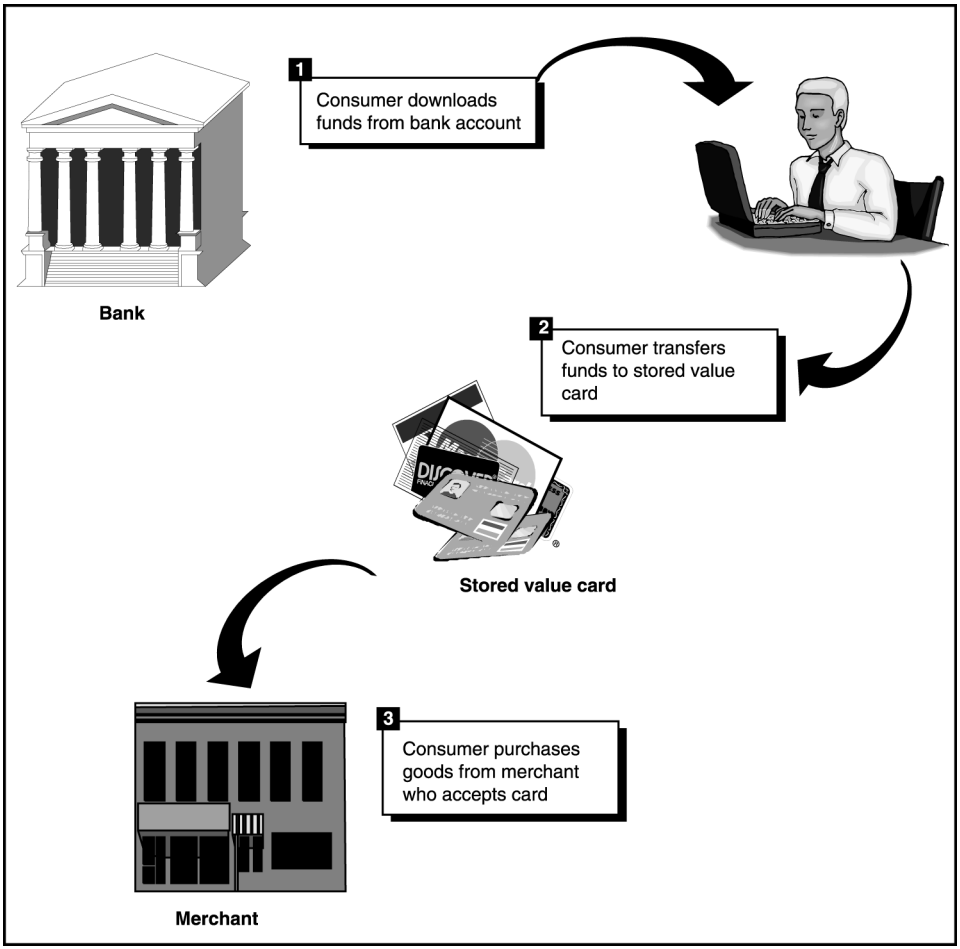
The global reach of the Internet, combined with the limitations of existing payment mechanisms, creates market pressure for alternative ways to pay for purchases that can quickly, cheaply, and safely transfer small amounts of money across borders. However, the development of new, international, Internet-based payment systems is still in its early stages. For example, in November 2001, the Bank for International Settlements reported that so-called electronic money

was in use or being planned in 82 countries.[17] Most electronic money systems allow the user to add money to a smart card that can be used to purchase items from certain vendors. Some even allow users to "download" money to their cards or account via the Internet (see figure 8 below). However, most forms of electronic money cannot be used across borders. The few that do allow international purchases are generally linked to a preexisting credit card account. An official from the U.S. Federal Reserve Bank told us that E-money alternatives that are not linked to existing payment mechanisms face significant barriers to entry because of uncertainties about cost, potential market, and profitability.[18]

[17] The Bank for International Settlements defines electronic money as "a stored-value or prepaid product that allows consumers to make small-value transactions using a chip or smart card or over computer networks such as the Internet." Internationally, the bank has been researching the potential policy implications of electronic money since 1996. The bank issues an annual report on the current status of electronic money development in countries around the world.

[18] Within the U.S. government, the Federal Reserve takes the lead on tracking issues associated with the development of alternative payment systems. According to one Federal Reserve official, the issue is still too small to be of much concern. However, the Fed tracks the issue quite closely, because it could someday directly affect the Fed's primary mission of conducting monetary policy and providing oversight of the country's banking system.

Figure 8: Example of an Electronic Money Transaction



Source: GAO analysis.

Because development of new international payment mechanisms is still in the very early stages of growth, discussion of the policy implications is largely based on speculation about what could happen in the future. Also, creating new forms of payment to ease

international transfers of funds raises potential concerns about money laundering and the financing of international criminal activity. In fact, the ability of private companies to "issue" money or provide payment services could someday pose challenges to banking supervision and the applicability of banking laws.[19]

Web sites for more information on payment methods

Federal Reserve Board: www.federalreserve.gov

U.S. Treasury: www.fms.treas.gov/payments.html

NACHA, the Electronic Payments Association: www.nacha.org

Bank for International Settlements: http://www.bis.org/cpss/index.htm

European Union: http://www.europa.eu.int/comm/internal_market/en/index_ob.htm

[19] In one domestic example, when Florida State University initially developed an E-money system to allow students to pay for books, fees, and other items from local vendors state banking regulators found the university was improperly engaging in banking without a license.

Section 4: Adapting Commercial and Legal Frameworks

The continued growth in international electronic commerce is creating new complications for the legal system governing international commercial transactions. As businesses, consumers, and governments develop new and innovative ways to interact, existing commercial frameworks are under increasing pressure to adapt. For example, international commercial transactions have long created legal complexities in the areas of contracts, intellectual property rights, and taxation. The development of entirely new ways of conducting business, coupled with the jurisdictional uncertainties arising from international electronic transactions, makes dealing with long-standing legal complexities in international commerce even more complex. In this section, we discuss some of the efforts under way to adapt existing regimes in three areas: (1) commercial law, (2) intellectual property rights, and (3) taxation.

Q. What Are the Implications of International Electronic Commerce on Commercial Laws?

The ability to conduct transactions on line as easily as those traditionally conducted off line is integral to fully exploiting the potential of international electronic commerce. Commercial laws differ considerably from country to country, and as discussed previously in the section on consumer protection, there is uncertainty with respect to which country's laws will apply and where disputes will be adjudicated. For example, businesses and consumers cannot be certain that electronic signatures and contracts will be considered legally binding. In the following pages, we address specific areas closely related to international electronic commerce transactions:

- Is there a global E-signature policy?
- What are some of the U.S. and EU efforts to facilitate electronic transactions?

- What international initiatives promote electronic contracting?

Q. Is there a global E-signature policy?

Harmonizing the use of electronic signatures is important to the growth of international electronic commerce, but there are difficulties in achieving international harmonization. For example, E-signature policies vary by degree of technological neutrality (the degree to which the policy requires or assumes a specific technology) and regulation. Developing and other countries may follow very different models, thereby creating multiple E-signature policies. This situation could lead to disputes over contract authenticity in the future.

Q. What efforts have the United States and the European Union made to facilitate electronic transactions?

- *Electronic signatures*. On June 30, 2000, the Congress passed the Electronic Signatures in Global and National Commerce Act (ESIGN Act).[1] The ESIGN Act is intended to promote electronic commerce by providing a consistent national framework for electronic signatures and transactions. It is also intended to eliminate legal barriers to the use of electronic technology to form and sign contracts, collect and store documents, and send and receive notices and disclosures. Specifically, section 101(a) of the act places electronic records and signatures on a legal par with their paper and ink counterparts. In the European Union, most member states have already recognized the equivalence between electronic and handwritten

[1] Public Law No. 106-229, 114 Stat. 464 (2001).

signatures and have recognized the admissibility of electronic signatures as evidence in court proceedings. The European Union has also adopted a 1999 Electronic Signatures Directive that lays out the framework for the use of electronic signatures for reliable and legally valid communication by electronic means.[2] Under this directive, electronic signatures accompanied by a valid certificate will now be considered equivalent to handwritten signatures throughout the European Union.

- *Electronic contracts*. In the United States, the legal rules governing contracts and commercial transactions have traditionally been established by the state governments, working through an organization of legal experts called the National Conference of Commissioners on Uniform State Laws (NCCUSL). In July 1999, NCCUSL approved the Uniform Electronic Transactions Act (UETA) and sent it to state governments for adoption. This measure builds on the international consensus established by the UNCITRAL Model Law on Electronic Commerce and contains specific provisions that the states can use to remove paper-based barriers to electronic transactions. ESIGN and UETA are somewhat complementary; ESIGN may apply in those states that have not adopted UETA. It is likely, as electronic commerce and particularly international electronic commerce grow, that more changes will be needed in existing legal and regulatory frameworks to make these transactions as convenient and reliable as traditional ones. The European Union has taken several measures to facilitate the conclusion of contracts by electronic means, such as the 2000 Electronic Commerce Directive. It provides, for example, that any kind of contract may, in principle, be validly concluded

[2] The EU "Directive on a Community Framework for Electronic Signatures," 1999/93/EC, dated December 1999.

electronically. EU member states are, however, permitted to exclude certain categories of contracts from this general rule (for example, contracts regarding real estate and contracts involving public notaries, public authorities, or the courts, among others).

Q. What international initiatives promote electronic contracting?

Internationally, UNCITRAL has completed work on a model law that supports using international electronic contracts for conducting business. This model law

- establishes rules and norms that validate and recognize contracts formed through electronic means,
- sets rules for forming contracts and governing electronic contract performance,
- defines the characteristics of valid electronic writing and of an original document,
- provides for the acceptability of electronic signatures for legal and commercial purposes, and
- supports the admission of computer evidence in courts and arbitration proceedings.

At its 33rd session, UNCITRAL in 2000 held a preliminary exchange of views regarding future work in the field of electronic commerce. Three topics were suggested:

- *Electronic contracting*. Participants believed that additional work is needed to develop uniform rules to govern dealings in services or "virtual goods": that is, items (such as software) that might be purchased and delivered in cyberspace.
- *Dispute settlement*. Participants believed that in order to improve IEC dispute settlement options, current laws might have to be amended or

interpreted to authorize the use of electronic documentation and, in particular, to do away with existing requirements regarding the written form of arbitration agreements. In addition, new rules should be designed to facilitate the increased use of on-line dispute settlement mechanisms. For example, one such rule might deal with making dispute settlement techniques such as arbitration and conciliation available to both commercial parties and consumers.

- *Dematerialization of documents of title, in particular in the transport industry.* Participants believed that more has to be done by way of establishing a uniform statutory framework to replace the traditional, paper-based bills of lading with electronic messages. It was widely felt that such work should not be restricted to shipping but should also include other modes of transportation.

More recently, according to a State Department official, UNCITRAL has prepared a draft convention on electronic contracting. As conceived, the proposed treaty will address the rules on formation of contracts through computer communications. It would apply to transactions in tangible goods and would exclude consumer contracts, licensing of software, and sales of "virtual goods" (where the products are data rather than tangible goods).

Web sites for more information on efforts to facilitate the use of electronic signatures and contracting

UNCITRAL (Working Group IV on E-Commerce): www.uncitral.org/en-index.htm

World Trade Organization: www.wto.org

Organization for Economic Cooperation and Development: www.oecd.org

European Union: www.europa.eu.int

Hague Conference on Private International Law: www.hcch.net/e/

UNIDROIT: www.unidoit.org

Q. What Are the Implications of International Electronic Commerce on Intellectual Property Rights?

Commerce on the Internet will often involve the sale and licensing of intellectual property such as music, movies, and games. To promote this commerce, sellers must have confidence that their intellectual property will not be stolen, and buyers must have confidence that they are obtaining authentic products. International agreements that establish clear and effective copyright, patent, and trademark protection are therefore necessary to prevent piracy and fraud. While technology, such as encryption, can help combat piracy, an adequate and effective legal framework is also necessary to deter fraud and the theft of intellectual property and to provide effective legal recourse when these crimes occur. In the following pages, we answer several questions related to how IEC affects intellectual property rights:

- How are intellectual property rights protected internationally?
- What are the principles underlying these treaties?
- What are some of the European efforts under way to improve intellectual property protection for IEC?

Q. How are intellectual property rights protected internationally?

The World Intellectual Property Organization (WIPO) is an important forum for addressing the development of intellectual property protection.[3] The organization currently administers 11 treaties that set out internationally agreed rights and common standards for intellectual property protection. The states that sign these treaties agree to apply those rights and standards within their own territories.

While the cornerstones of WIPO's treaty system remain the Paris and Berne Conventions, subsequent treaties have widened and deepened the protection they offer and have encompassed technological change and new areas of interest and concern. Two recent examples are the WIPO Copyright Treaty and the WIPO Performances and Phonograms Treaty. These treaties contain basic rules updating the international protection of copyright and related rights to the Internet age. U.S. copyright law has been modified to conform to the WIPO treaties.[4]

While there is no such thing as an international copyright, there is a set of international treaties that establishes minimum standards for protecting the copyrighted works of participating nations. The situation is complicated, because worldwide there are different legal traditions applicable to the protection of what the United States regards as copyrighted works.

[3] WIPO administers 23 treaties (2 of those jointly with other international organizations) and carries out a program of work, through its member states and secretariat, that seeks to: harmonize national intellectual property legislation and procedures; provide services for international applications for industrial property rights; exchange intellectual property information; provide legal and technical assistance to developing and other countries; facilitate the resolution of private intellectual property disputes; and marshal information technology as a tool for storing, accessing, and using valuable intellectual property information.

[4] The United States ratified the World Intellectual Property Organization Copyright Treaty and WIPO Performances and Phonograms Treaty following the Senate's advice and consent, after the enactment of the 1998 Digital Millenium Copyright Act.

For example, under U.S. copyright law, sound-recording producers and performers are regarded as joint authors of sound recordings. Under a different legal system, such producers' and performers' rights would be protected differently and may be protected at a lower level as entirely separate and distinct from the rights granted under the U.S. system. These differences in the rights granted under various intellectual property systems are sometimes areas of conflict.

Q. What are the principles underlying these treaties?

The principle of national treatment is the cornerstone of many international intellectual property treaties as well as international trade treaties such as the General Agreement on Tariffs and Trade and the World Trade Organization (WTO). The principle of national treatment means that under a nation's laws, a foreigner enjoys the same rights and benefits that a citizen of that nation receives (subject to the specific terms of the relevant international conventions). In copyright terms, it means, for example, that a German work for which copyright enforcement is sought in the United States would be treated under U.S. law exactly as if it were a U.S. work.

Q. What are some of the European efforts under way to improve intellectual property protection for IEC?

The European Union has held a number of deliberations in various forums on the treatment of intellectual property over the Internet. Among the recent actions was the adoption in 2001 of a Directive on Copyright. The directive is intended to ensure a uniformly high level of copyright protection throughout the European Union for creators of copyright-protected works and related entities (artists, music editors, broadcasting

companies, and so on) whose works are transmitted over the Internet. The European Communities are a signatory to the WIPO Performances and Phonograms Treaty. In addition, the European regulatory framework provides directives on

- the legal protection of computer programs,
- the legal protection of databases,
- the rights for rental and lending,
- the rights related to broadcasting by cable and satellite, and
- the term (length) of protection.

Web sites for more information on efforts to protect intellectual property

World Intellectual Property Organization: www.wipo.org

World Trade Organization: www.wto.org/english/tratop_e/ecom_e/ecom_e.htm

U.S. Copyright Office: www.loc.gov/copyright/

U.S. Patent and Trademark Office: http://www.uspto.gov/

Q. What Are the Tax Implications of International Electronic Commerce?

The taxation of international transactions involving U.S. companies and consumers is currently based on (1) the statutory tax laws of the countries in which each party to the transaction is a citizen and (2) a series of bilateral tax treaties between the United States and its major trading partners. The advent of international electronic commerce creates additional complexities in the interpretation of these statutes and treaties, as well as raises entirely new issues. The extent to which

international electronic commerce complicates taxation efforts depends on the product and the transaction.

According to a U.S. Treasury official, existing tax regimes can in general be applied to international electronic commerce without significant modifications being required, and without raising significant new tax policy or administrative issues. For example, with respect to physical products ordered on line and then shipped across borders, IEC has not significantly complicated the implementation of statutory provisions or international tax agreements. The only difference is in how a product is ordered, not in how it is shipped or taxed. However, for digital products such as books and magazines, authorities differ on whether these should be considered goods or services. This distinction may have an important effect on the tax levied. In the following pages, we answer several questions related to how the taxation of international electronic commerce is being addressed:

- How does IEC complicate international taxation?
- What is the U.S. position on IEC taxation issues?
- How does the U.S. position differ from the European Union's position on taxation issues for IEC?
- What is the position of business groups?
- Where are international differences in IEC taxation policy addressed?

Q. How does IEC complicate international taxation?

IEC creates new kinds of goods and services, including those that can be "shipped" digitally. Adapting existing tax regimes to address these new kinds of products has proven to be difficult and at times contentious.

- The borderless nature of electronic commerce can frustrate efforts to define where income is earned, a product is purchased, or value is added.[5] There are many new ways to conduct business or trade that were not envisioned several years ago, when many U.S. bilateral tax treaties were negotiated and tax laws promulgated. As a result, it may be difficult to determine under these rules at what point profits are being made and what country is allowed to tax them.

- The ability to access books, magazines, music, and video on line has led to disagreements about what tax rules to apply if a consumer in one country downloads material from a Web site based in another country. If taxation is based on where the consumer is located, businesses face the technological challenge of determining where their users are located and the administrative challenge of complying with tax regulations from several different countries. Currently, a state or local government in the United States cannot require a foreign company to collect taxes from U.S. citizens downloading material if the company does not have a physical presence in that government's jurisdiction.[6]

According to Treasury and EU officials, the decisions on these issues are not likely to have much impact on tax revenue in the near term although countries have concerns about setting precedents that will affect future agreements and disadvantaging their corporations' ability to compete globally. Taxation policies adopted today could have important implications for future

[5] Taxes in the United States are generally levied based on the income earned or retail price of the product in question. In addition to income taxes, EU member countries also collect taxes based on the value added during each stage of the production and distribution process.

[6] U.S. local and state governments may, however, collect taxes on that material directly from their own residents.

revenue streams and trade flows. How ongoing differences over the taxation of IEC are resolved in the next couple of years will set the foundation for future taxation of what is widely expected to be a much more significant revenue stream.

Q. What is the U.S. position on IEC taxation issues?

The general U.S. policy on the federal taxation of international electronic commerce has remained consistent since 1998, when the U.S. supported the following principles articulated by the Organization for Economic Cooperation and Development:[7]

- use existing tax treaties to the extent possible;
- do not discriminate between electronic and physical products: that is, tax the digital version of a product in the same way as the physical version;
- minimize compliance costs;
- enact clear and simple tax rules;
- provide for effective and fair taxation;
- set up flexible systems for taxation to ensure that they keep pace with technological changes.

Q. How does the U.S. position differ from the EU's position on taxation issues for IEC?

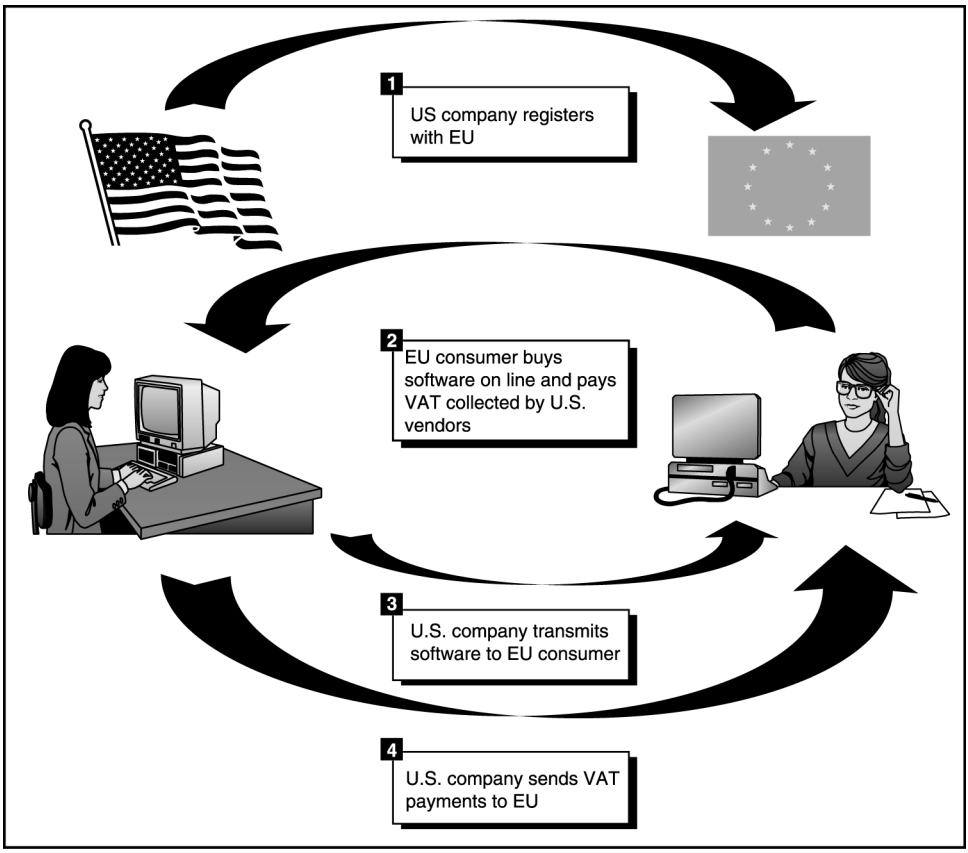
The United States and the European Union agree on the six principles of international electronic commerce taxation outlined above. However, they disagree on how these principles should be applied in a number of cases. For example, in early 2000, the European Union proposed that companies that transmit digital products to consumers located in the European Union should be

[7] The OECD is an international organization representing 30 countries that researches a variety of economic, social, and governance issues to help member states better address the challenges of a global economy.

required to pay an EU value-added tax on the product.[8] In practice, this would require U.S. companies to register with EU tax authorities and send value-added tax proceeds to the European Union for purchases made by consumers resident within the European Union (see figure 9).

[8] In February 2002, the finance and economics ministers from all 15 member states of the European Union agreed on the broad outlines of this approach. The proposal will go into effect in July 2003.

Figure 9: Proposed EU Approach for Collecting Value-added Tax on Transactions Involving EU Citizens

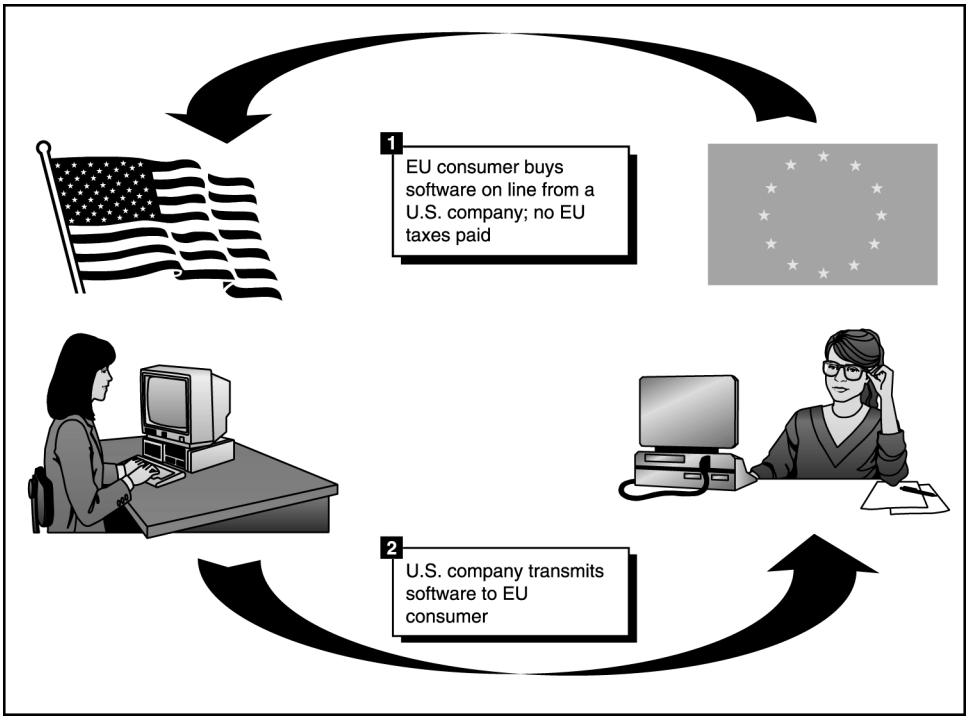


Source: GAO analysis.

The United States views this proposed tax regime as placing an unfair compliance burden on U.S. firms, noting that companies cannot know for certain where a consumer is resident. The United States also contends that the proposed regime will discriminate against U.S. companies by requiring them to collect EU value-added tax charged at a higher rate than will be charged on sales

of identical products to the same consumers made by EU companies. The European Union's position is that the proposed tax was based on the desire to harmonize rules within the European Union and to ensure fair treatment for EU firms. Under the current system, EU firms that provide digital products to EU consumers must pay the value-added tax, whereas U.S. firms do not (see figure 10). The European Union contends that this gives U.S. companies an unfair advantage.

Figure 10: Current Approach for Collecting Value-added Tax on EU Citizens



Source: GAO.

Q. What is the position of business groups?

Business groups want clear, consistent rules that do not hinder international commerce.[9] For example, the Global Business Dialogue's working group on taxation policy supports principles of taxation that are similar to those articulated by the OECD and the U.S. government:

[9] We spoke with the European American Business Council, a business association representing a large number of companies in North America and Europe, as well as several individual U.S. companies involved with international electronic commerce.

neutrality, simplicity, fairness, and enforceability.[10] The Global Business Dialogue has worked with the U.S. government and the European Union to ensure that electronic commerce continues to grow, and to avoid competitive distortions and excessive compliance burdens.

Q. Where are international differences in IEC taxation policy addressed?

The Organization for Economic Cooperation and Development has been the primary forum for discussing and resolving these and other tax-related issues. In 1998, OECD member countries agreed to general principles on taxation and created several working groups to address technical issues. Since then, representatives from OECD member countries have surveyed member states on various aspects of tax policy and discussed potential approaches to the taxation of IEC in an effort to build international consensus. Agreements reached at the OECD are not binding on its member states, although, according to U.S. Treasury officials, they do carry weight in bilateral discussions.

Web sites for more information on taxation:

Organization for Economic Cooperation and Development: http://www.oecd.org

Department of the Treasury, Office of Tax Policy: www.treas.gov/taxpolicy/index.html

[10] The Global Business Dialogue is a business association representing companies from North America, Europe, and Asia that works with national governments and international organizations to further the development of a global policy framework for electronic commerce.

European Union: www.europa.eu.int/comm/taxation_customs/taxation/taxation.htm

Global Business Dialogue: www.gbde.org/taxation/

Section 5: Addressing Barriers through International Trade Agreements and Negotiations

International trade agreements, such as those produced multilaterally through the World Trade Organization, and negotiations, such as those ongoing bilaterally and regionally with countries in the Western Hemisphere and Asia, are deeply involved in addressing issues concerning IEC. These agreements and negotiations discuss electronic commerce as it relates to trade and attempt to expand the use of IEC through minimizing barriers to bolstering its efficiency. The United States, as a key developer and user of IEC, participates in these discussions in order to foster an open trading environment.

Q. How Is International Electronic Commerce Affected by International Trade Agreements?

International electronic commerce is affected by international trade agreements because barriers to goods, services, and investment affect the development of the structures and networks that facilitate international electronic commerce transactions. Faced with expanded use of the Internet and eager to foster its potential economic benefits, U.S. trade negotiators have begun to consider how existing trade agreements cover electronic commerce activities and whether new commitments are needed. These topics include

- tariffs on information technology products,
- customs duties on electronic transmissions,
- existing trade agreements' coverage of electronic commerce,
- intellectual property protections for original works on the World Wide Web,
- improvements to customs facilitation,
- removal of barriers to Internet service providers.

International electronic commerce encompasses a wide variety of issues, because it can be used to facilitate different steps in the production, distribution, and

payment of products across national borders using a variety of networks (depending on the product). A bottleneck at any point in this chain of operations—whether it is the imposition of high telecommunications costs, restrictions on express shipments at airports, or placement of onerous customs requirements—may reduce the benefits to consumers and businesses of connecting to a global market. As a leading user and developer of electronic commerce, the United States has a commercial interest in expanding its use and maintaining an open trading environment for digital products and services. The explicit trade policy of the United States is to expand market opportunities for U.S. goods, services, and intellectual property by keeping electronic commerce free from trade barriers.[1] In the following pages, we answer questions related to how international trade agreements and negotiations address barriers to international electronic commerce:

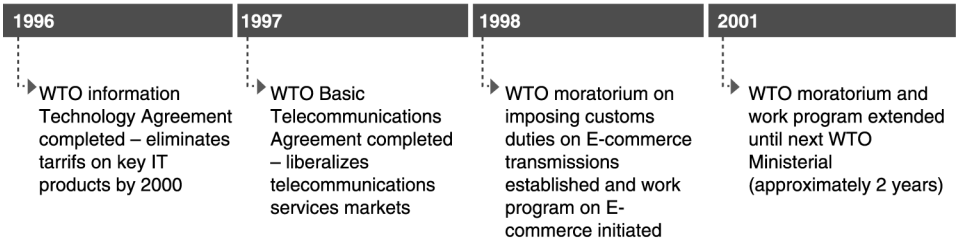
- What has the World Trade Organization done to address IEC issues?
- How have bilateral and regional trade negotiations addressed IEC?

Q. What has the World Trade Organization done to address IEC issues?

The WTO, a primary forum in which the United States has pursued its electronic commerce agenda, has undertaken several initiatives that are important to the development of electronic commerce. Figure 11 shows a time line of key WTO agreements and decisions related to electronic commerce.

[1] See the president's 2001 International Trade Legislative Agenda at http://www.ustr.gov.

Figure 11: Time Line of WTO Agreements and Decisions Related to Electronic Commerce



Note: IT = information technology.

Source: World Trade Organization.

As of 2000, 55 WTO members were participants in the Information Technology Agreement, which covers 95 percent of trade in the $600 billion-plus global market for information technology products. Also, 69 WTO members made market opening commitments in 1997 under the Basic Telecommunications Agreement, which liberalizes the telecommunications services market—part of the infrastructure of the Internet and electronic commerce. WTO members committed under the 1998 moratorium to continue the current practice of not imposing customs duties on electronic commerce transmissions. This moratorium was extended again at the WTO Ministerial meeting in Doha, Qatar, on November 14, 2001, until the next WTO Ministerial Meeting.

In addition to these commitments, several areas of importance to electronic commerce are currently under discussion at the WTO. In 1998, WTO members began a work program involving each of the major bodies of the WTO (the Council for Trade in Goods, the Council for Trade in Services, the Council for Trade-related Aspects of Intellectual Property Rights, and the Committee on Trade and Development). Through this work program, WTO members have discussed the classification of

digital products (such as electronic transmissions of books, music, and software), the application of the existing WTO agreements to electronic commerce, and other issues related to trade and electronic commerce.

In particular, the classification of digital products has been an important area of disagreement among WTO members. Some members, such as the European Union and Singapore, argue that these digital products should be classified as services, because their electronic qualities give them unique features more similar to services. For example, digital newspapers, unlike their paper versions, can be electronically searched, copied, and manipulated. However, the United States and other members are concerned that classifying all digital products as services may allow countries to place higher trade barriers on digital products than on their physical counterparts.[2] The United States believes that it is premature to reach a definitive conclusion on the classification of electronic commerce, given its evolving nature and the uncertainty of how such a decision could affect market access and other trade rights.[3]

In addition to the work program, WTO members recently initiated at the Doha Ministerial, a new round of trade negotiations scheduled to be completed in 2005. The results of this round, particularly in areas such as services and customs facilitation, could have important ramifications for the development of electronic commerce, even if new agreements do not address

[2] Services are negotiated under a separate agreement from goods, and members are able to negotiate commitments in a way that may limit the expansion of electronic commerce. For example, members may limit market access for suppliers of telecommunications services, which could thereby prevent the expansion of important services necessary for electronic commerce.

[3] As a general principle, the United States has proposed that digital products should, at a minimum, receive the most liberal trade treatment possible under existing trade rules.

electronic commerce directly. Greater trade liberalization and facilitation could lead to removing some of the bottlenecks that international electronic commerce currently faces in various markets.

Q. How have bilateral and regional trade negotiations addressed IEC?

The United States has pursued discussions on electronic commerce with other trade partners through negotiations of free trade agreements.[4] One potential benefit of these narrower negotiating arenas is that the United States and the individual partners may be able to craft state-of-the-art agreements that can then be used to promote U.S. objectives for electronic commerce in wider forums, such as the WTO. The 2000 U.S.-Jordan Free Trade Agreement was the first free trade agreement to include explicit language covering electronic commerce.[5] In the agreement, both countries stated that they would "seek to refrain from" imposing customs duties on electronic transmissions, creating unnecessary barriers on electronic transmissions, and impeding the electronic supply of services that were being liberalized under the agreement. In future free trade agreements, such as those being negotiated with Singapore and Chile, U.S. negotiators are seeking to develop these types of disciplines into more concrete obligations that will maintain the current liberal trade environment for electronic commerce.

[4] Free trade agreements generally eliminate tariff duties and other barriers on substantially all trade between the member countries and may include other provisions covering subjects such as antidumping of goods, investment, and government procurement.

[5] For more information on U.S. trade agreements, see the Web site of the U.S. Trade Representative at www.ustr.gov. For the text of the U.S.-Jordan Free Trade Agreement, see www.ustr.gov/regions/eu-med/middleeast/US-JordanFTA.shtml.

At the regional level, the negotiations on the Free Trade Area of the Americas with 33 other Western Hemisphere countries include the presence of a "non-negotiating" committee on electronic commerce.[6] This committee comprises both government and private-sector representatives and is tasked with making recommendations to trade negotiators on how to increase and broaden the benefits to be derived from the electronic marketplace. It also provides a forum for countries to share their experiences and initiate approaches to encouraging the development of electronic commerce activities. The committee has issued two public reports that made recommendations on topics such as increasing the use of governments, smaller economies, and small businesses that engage in electronic commerce; clarifying the rules of the electronic commerce market; developing on-line payment services; and addressing security issues. Besides the Free Trade Area of the Americas, the United States has also been involved in electronic commerce discussions through the Asia-Pacific Economic Cooperation forum and the Organization for Economic Cooperation and Development, focusing on trade as well as consumer protection, privacy, and other areas.

Web sites for more information on international trade

U.S. Trade Representative: www.ustr.gov/sectors/electronic commerce.shtml

Free Trade Area of the Americas: www.ftaa-alca.org/SPCOMM/COMMEC_E.ASP

[6] Free Trade Area of the Americas negotiators established nine negotiating committees to draft different components of the eventual trade agreement, such as services, agriculture, and investment. In addition, three non-negotiating committees, including electronic commerce, were established to provide input to negotiators on broad, cross-cutting issues.

World Trade Organization: www.wto.org

Asia-Pacific Economic Cooperation forum: www.ecommerce.gov/apec

World Customs Organization: www.wcoomd.org

Organization for Economic Cooperation and Development: www.oecd.org/ecommerce

Objectives, Scope, and Methodology

At the request of the Ranking Senate Minority Member of the Joint Economic Committee, we undertook a review of international electronic commerce. Specifically, our objectives were to answer the following questions: (1) What is international electronic commerce (IEC)? (2) What data on international electronic commerce (IEC) does the U.S. government collect? (3) What is being done to remove obstacles and facilitate consumer use of international electronic commerce? (4) What are some of the efforts being made to adapt the legal framework for international electronic commerce transactions? (5) How do international trade agreements and negotiations address barriers to international electronic commerce?

To define electronic commerce, we interviewed officials and reviewed documents from the Bureau of the Census, the Bureau of Economic Analysis, and the Departments of Commerce and the Treasury. In addition, we met with representatives from electronic commerce and business consulting firms that specialize in electronic commerce, including International Data Corporation; Forrester Research, Inc.; and eMarketer, Inc. These firms presented us with a general overview of their methodologies and access to their estimates on electronic commerce activity. However, we did not analyze the quality of the methodologies, nor did we independently verify their estimates. The methodology use by Forrester to arrive at their estimates on international electronic commerce transactions reported in section 1 of this report relies on a mix of quantitative and qualitative analysis based on economic data and surveys.

To determine what data the U.S. government collects on international electronic commerce, we interviewed officials from the Office of the U.S. Trade Representative; the Board of Governors of the Federal Reserve; the Departments of State, Commerce, and the Treasury; and the U.S. Federal Trade Commission.

To examine efforts to remove obstacles and facilitate consumer use of international electronic commerce, we interviewed officials from the Office of the U.S. Trade Representative; the Board of Governors of the Federal Reserve; the Departments of State, Commerce, Justice, and the Treasury; the European Commission Delegation to the United States; the U.S. Federal Trade Commission; and several representatives of private-sector firms and organizations. In addition, we reviewed documents including papers and articles, industry journals, and information available at various sites on the World Wide Web from several U.S. government, international, and private organizations, including the Departments of State, Commerce, Justice, and the Treasury; the Office of the U.S. Trade Representative; the Board of Governors of the Federal Reserve; the Asia-Pacific Economic Cooperation Forum; the Council of Europe; the European Commission; the Organization for Economic Cooperation and Development(OECD); the Bank for International Settlements; the International Marketing Supervision Network; the Global Business Dialogue; and NACHA, the Electronic Payments Association.

To identify the efforts to adapt the legal framework for international electronic commerce transactions, we interviewed officials from the Office of the U.S. Trade Representative; the Board of Governors of the Federal Reserve; the Departments of State, Commerce, and the Treasury; the European Commission Delegation to the United States; the U.S. Federal Trade Commission; and several representatives of private-sector firms and organizations. In addition, we reviewed papers and articles, industry journals, and information available at various sites on the World Wide Web from the Departments of Commerce and the Treasury, the Advisory Commission on Electronic Commerce, the OECD, the European Commission, and the Global Business Dialogue. Documents from these sources included former U.S. policy and strategy documents for

approaching electronic commerce, research studies by the technology practices of investment banks, law firms, and consulting firms, as well as the research studies and publications firms specializing exclusively in Internet or electronic commerce issues.

To determine the extent of efforts in international agreements and trade negotiations, we interviewed officials from the Office of the U.S. Trade Representative; the Departments of State, Commerce, and the Treasury; and the European Commission Delegation to the United States. In addition, we reviewed U.S. government, international organization, and private-firm documents, reports, and articles; industry journals; and information available at various sites on the World Wide Web. International organizations included the World Trade Organization (WTO), the Free Trade Area of the Americas, the Asia-Pacific Economic Cooperation Forum, the OECD, and the World Customs Organization.

The information on foreign laws and regulations in this report is based on secondary sources and interviews and does not necessarily reflect our independent legal analysis.

We conducted our work in Washington, D.C., New York, and Boston between May 2001 and November 2001, in accordance with generally accepted government auditing standards.

We requested comments on the technical accuracy of this report from officials at the Departments of State, Commerce, and the Treasury; the Office of the U.S. Trade Representative; the U.S. Federal Trade Commission; and the European Commission Delegation to the United States. Their comments have been incorporated where appropriate.

Definitions and Measurement of Electronic Commerce

The definition and measure of international electronic commerce (IEC) is dependent on how electronic commerce (E-commerce) is defined and measured more broadly. This appendix presents information on available definitions and measures of electronic commerce. The first portion shows that there is no single definition of electronic commerce and that available definitions differ in scope. The second section shows the variation in the available estimates of the size of electronic commerce from official government sources. The third section reports on private-sector estimates of electronic commerce. As a consequence of the variation in definition and measurement of electronic commerce, IEC, in turn, lacks a single definition or measure.

Definitions of Electronic Commerce

Despite the prevalence of the term "electronic commerce," it has no widely accepted definition. Some academics use very broad definitions, because their focus is primarily on electronic commerce as a business model and on its impact on industrial organizations. Policymakers at times employ equally broad definitions that emphasize the impact of electronic commerce on all aspects of economic activity. At other times, narrower definitions are used to address specific policy areas, such as taxation or intellectual property rights. Statisticians typically use more precise definitions that focus on the transaction, where a product or service is exchanged between two parties. Even for statistical purposes, the definition used varies with the measurement objective and, in the case of private consulting firms, with particular client needs.

Electronic commerce can be separated into two broad categories: business-to-business (B-to-B) and business-to-consumer (B-to-C). Other types of on-line interactions involve governments and transactions between consumers (consumer-to-consumer, or C-to-C).

While electronic commerce definitions can include all transactions, including C-to-C transactions, measures of electronic commerce focus primarily on B-to-B and B-to-C electronic commerce. B-to-B and B-to-C electronic commerce estimates are typically collected using narrow, transaction-based definitions but differ with respect to the type of activity that is considered to qualify as electronic commerce. Essentially, these narrow electronic commerce definitions differ because of two key elements:

1. *Networks*. Definitions for electronic commerce differ with respect to what types of communications networks are included. Many definitions include only transactions that occur over the Internet (a worldwide system of *public* [open] computer networks, through which users can access, send, and share information) as electronic commerce. Although the Internet is in the public domain, recent adaptations of the Internet technology, the Intranet and the Extranet, are *private* (closed) networks. An Intranet computer network is *internal* to a particular enterprise, while an Extranet is part of a company's Intranet that is extended to select users, including, for example, vendors outside the firm.[1] Before the widespread adoption of the Internet, electronic transactions between businesses were conducted via electronic data interchange (EDI).[2] The main purposes of the Extranet and EDI are to share confidential information with important

[1] Intranet computer networks are used to share confidential information and resources among an enterprise's employees without having the data available to everyone who has Internet access.

[2] EDI allows the direct communication of standardized trading messages between computer systems. In the pre-Internet era, EDI systems were used primarily by large businesses and were strictly proprietary: that is, conducted over private networks. This interchange required custom software and dedicated communication links and, at times, strictly compatible equipment. With the advent of the Internet, some EDI systems were transformed into open networks.

nonemployees such as suppliers, vendors, partners, and customers, including basic orders and invoices. Given these different networks, electronic commerce definitions vary according to whether they include Intranet, Extranet, and EDI transactions or focus solely on the Internet.[3]

2. *Type of transaction.* Electronic commerce definitions also vary with respect to the scope of the transactions included. Some definitions broadly include all business activity that involves any on - line activity (including advertising and research), while others include only transactions that involve on-line processes at particular steps in conducting a transaction. Most definitions agree that at a minimum, an electronic commerce transaction must involve the on-line commitment to buy or sell a good or service, emphasizing that the method of payment or delivery of the good or service is immaterial.[4]

Table 4 illustrates the variation in definitions of electronic commerce by selected sources attributable to differences in their inclusion of different networks and types of transactions. The variation in the definitions helps to explain the wide range of estimates for electronic commerce discussed in the following sections.

[3] Some electronic commerce definitions include transactions enabled by other electronic communication media such as facsimile (fax) and automated teller machines.

[4] The emphasis on commitment extends directly from the standard definition for commerce itself. According to the American National Standards Institute's definition, commerce is "the process by which an order is placed or accepted, therefore representing a commitment for a transfer of funds in exchange for goods or services." Consequently, the majority of the entities with electronic commerce–measurement programs consider a transaction to be an electronic commerce transaction if the commitment to buy a good or service is expressed on line.

Table 4: Definition of Electronic Commerce

Defining source	Definition of electronic commerce
Boston Consulting Group	Internet- and EDI-based transactions
eMarketer	Internet transactions in which the buyer completes the purchase order or transactional contract via the Internet; includes only Web-based EDI
Forrester Research, Inc.	Trade of goods and services in which the final order is placed over the Internet; excludes EDI
Gartner Group	Sales of goods and services for which the order-taking process is completed via the Internet; includes Internet EDI, e-marketplaces, and Extranets, but excludes activity over proprietary networks
International Data Corporation	The process by which an order is placed or accepted via the Internet, therefore representing a commitment to transfer funds in exchange for goods and services; excludes EDI transactions that do not use a Web-enabled gateway
Jupiter Media Metrix	Any transaction where the terms or the majority of the terms are agreed upon on line, or where the majority of item features are configured on line
Keenan Vision	Internet transactions that create a sale process that ultimately performs an electronic funds transfer between buyer and seller
Organization for Economic Cooperation and Development	*Broad:* The sale or purchase of goods and services conducted over computer-mediated networks; includes EDI; excludes Intranet transactions *Narrow:* the sale or purchase of goods and services conducted over the Internet; includes Web-enabled EDI and any other Web-enabled application; excludes Intranet transactions
U.S. Census Bureau	The value of any monetary transaction completed over a computer-mediated network that involves the transfer of ownership or rights to use goods and services; includes Internet, Intranet, Extranet, and EDI transactions[a]
Yankee Group	Total value of goods and services exchanged electronically between businesses

[a] The Census definition includes propriety networks such as pure electronic data interchange, which predates the Internet. However, most definition in table 4 include EDI only if it is Web-enabled (for example, if the business uses the Internet as the front end to the EDI system.

Sources: eMarketer, Forrester Research, Inc., IDC, U.S Bureau of the Census.

Official Government Data on Electronic Commerce

Because electronic commerce is a relatively recent development, the U.S. government's statistical agencies are just beginning to collect information in this area. As a result, U.S. official electronic commerce statistics exist only for selected segments of the economy. The

U.S. Census Bureau first began in 2000 to collect the information necessary to form estimates for electronic commerce retail sales, manufacturing shipments, merchant wholesale trade, and electronic commerce revenues for selected services. However, Census's E-Stats measurement program does not include the entire economy, only the sectors and industries covered by its existing monthly and annual surveys with the major emphasis on retail trade.[5] The Census estimates suggest that despite rapid growth, electronic commerce accounts for only a small percentage of total economic activity in the U.S. sectors surveyed. Section 2 of this report showed that U.S. electronic commerce retail sales between 1999 and 2001 made up only about 1 percent of total sales.

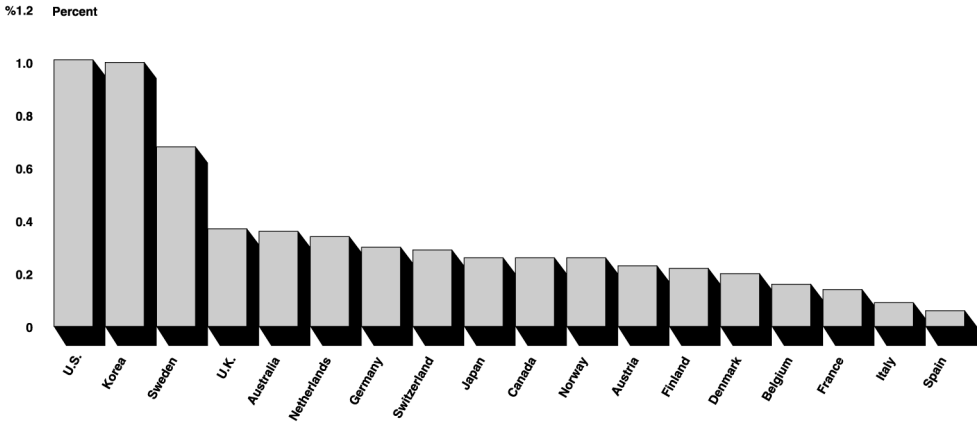
Electronic commerce accounts for an even smaller percentage of retail sales in Europe than in the United States (see figure 12). This low level of penetration reflects the fact that a limited number of consumers are using the Internet for commercial purposes. OECD research shows that electronic commerce (the percentage of individuals using and ordering goods over the Internet) is unevenly developed in the OECD countries. Especially notable is the difference between North America and northern Europe, on the one hand, and the rest of the OECD countries, on the other.[6] The OECD reports that the largest numbers of Internet

[5] These include the Annual Survey of Manufactures, the Annual Trade Survey, the Service Annual Survey, and the Annual Retail Trade Survey. Census's electronic commerce estimation program does not cover agriculture, mining, construction, utilities, non-merchant wholesale trade, or some parts of the service sector and therefore does not measure the entire E-economy.

[6] An important prerequisite for international electronic commerce is that the population must have access to the Internet, which in turn requires a personal computer. However, within the OECD, the rates of home computer ownership and network connection differ dramatically (see OECD, "Measuring the New Economy: Trade and Investment Dimensions," Working Party of the Trade Committee, 2001).

transactions take place in the United States, and most frequently among U.S. residents.

Figure 12: Electronic Commerce as a Percentage of Total Retail Sales, 2000: An International Perspective



Source: OECD, "Business-to-Consumer Electronic Commerce," 2001.

Although Census has primarily concentrated its electronic commerce statistics collection (published quarterly) efforts on retail sales, it also has annual estimates for 1999 for three other sectors—selected services, manufacturing, and merchant wholesale trade. (The 2000 figures for these three sectors are scheduled to be released in March 2002.) Electronic commerce accounted for just 0.6 percent ($25 billion) of the total selected services industry revenue in 1999. The numbers for the manufacturing and merchant wholesale trade sectors suggest a more significant role for electronic commerce, however. The Census data show that electronic commerce accounted for 12 percent ($485 billion) of all manufacturing shipments and 5.3 percent ($134 billion) of total merchant wholesale sales in 1999.

Census does not collect separate data on B-to-B and B-to-C electronic commerce, so there are no official estimates. However, Census arrives at 1999 estimates for both indirectly by assuming that all manufacturing shipments and wholesale trade were entirely B-to-B and that all retail and service sales were B-to-C. With this simplifying assumption, the numbers suggest that about 90 percent of electronic commerce transactions occur between businesses.[7]

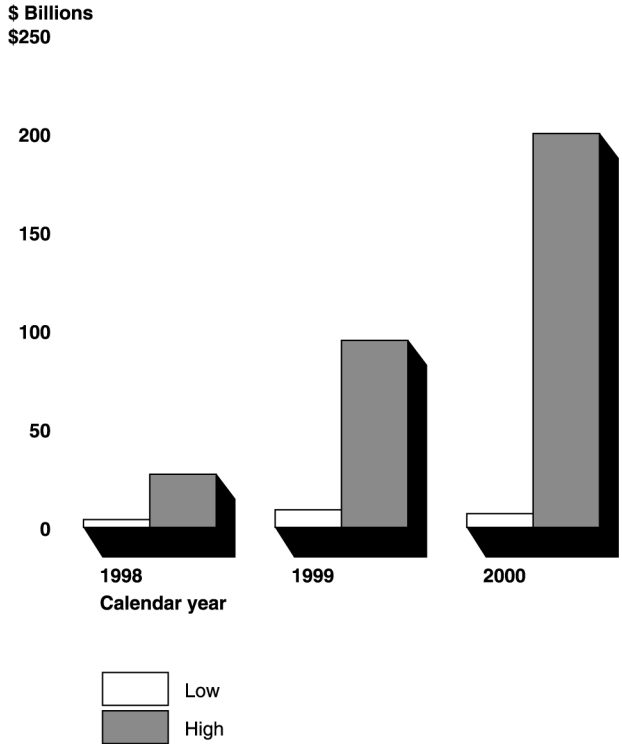
Private-sector Data on Electronic Commerce

In the absence of extensive official statistics, the gap has been filled by private estimates and by forecasts from Internet organizations and research, polling, and consulting firms. The resultant electronic commerce estimates vary widely. Figure 13 shows that the statistics for U.S. B-to-C electronic commerce in 2000 present a high estimate of $200 billion and a low estimate of just $7 billion, a difference greater than a factor of 10. eMarketer, a secondary research firm that specializes in aggregating and analyzing information on various aspects of the Internet, reported estimates for B-to-C electronic commerce that ranged from $15.9 billion to $61.1 billion for 2000 (see figure 14 for seven estimates). All these private-sector estimates of B-to-C electronic commerce are dwarfed by the sales revenue of Wal-Mart Stores ($191.3 billion in 2000).[8] The B-to-B electronic commerce estimates show greater variation than the B-to-C estimates (see figure 14). Measurement problems such as double counting are a serious concern in this area, to the extent that some deem many of the estimates to be exaggerated.

[7] See Thomas Mesenbourg, "Measuring the Digital Economy," http://www.census.gov/estats.

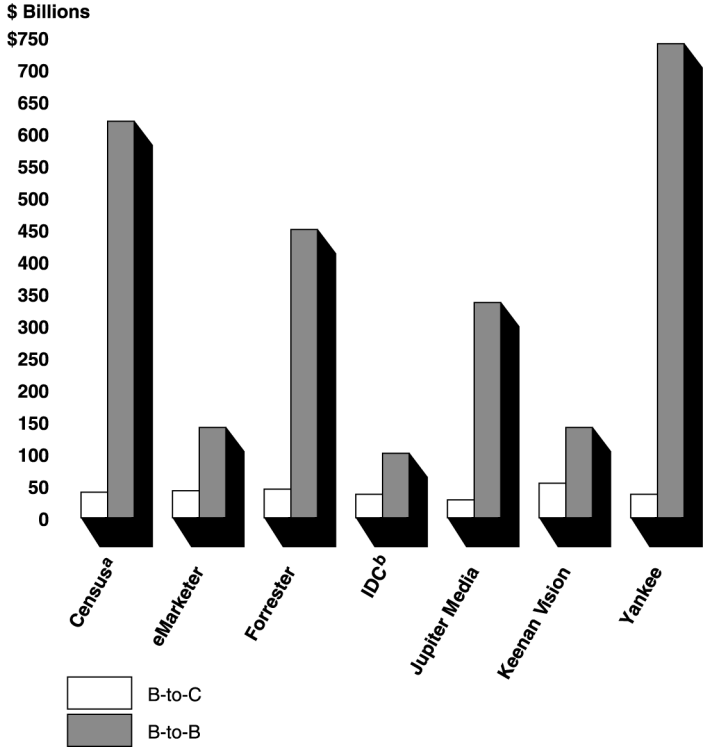
[8] eMarketer, Inc., *eCommerce: B2C*, 2001.

Figure 13: U.S. B-to-C Electronic Commerce Estimates, 1998–2000



Sources: Barbara Fraumeni, "Electronic Commerce: Measurement and Measurement Issues," *American Economic Review* 91 (2001): 318–22.

Figure 14: Seven Estimates of U.S. B-to-C and B-to-B Electronic Commerce Revenue, 2000



Note: These numbers were reported in eMarketer's March 2001 release (prior to Census's yearly estimate for retail E-sales). Some estimates may have been revised since then. We are including just those data produced by the research firms monitored by eMarketer, and for which we have definitions of E-commerce.

[a]Census figures are for 1999.

[b]IDC = International Data Corporation

Sources: eMarketer, Inc. (2001), U.S Bureau of the Census.

The wide variation in estimates produced by private firms is attributable to several factors:[9]

- *Differences in client base*. In serving the diverse needs of their clientele, firms emphasize different indicators for the potential of electronic commerce.
- *Differences*[10] *in methodologies and in varying sample sizes (sometimes small)*.
- *Differences in definition for electronic commerce*, as was discussed above.
- *Differences in coverage*. For example, Keenan Vision includes insurance and adult entertainment in its measure of B-to-C electronic commerce—areas that are excluded in most other estimates.

With differences in definition, coverage, and methodology, it is difficult to accurately compare and evaluate the conflicting estimates, even though they purport to measure the same thing. Commerce officials noted that they have not performed a systematic analysis of the various private-sector estimates, but eMarketer holds many to be overly optimistic. The client focus and the small sample sizes also imply that the data are not always representative of the whole U.S. economy.

[9] Differences in definitions, methodologies that underpin the estimates, assumptions about growth potential, and sample sizes guarantee not only a wide range of estimates for electronic commerce but also difficulty in comparing and evaluating those estimates.

[10] GAO economists were instructed on the methodologies used by Forrester Research, IDC, and eMarketer by these firms, respectively. The differences between the methodologies were significant, partly explaining the large discrepancies in forecasts. However, there is debate over which of the many private-sector estimates are more accurate, especially because for many estimates the methodology, coverage, and survey questions underlying the estimates are not transparent.

U.S. Government Collection of International Trade Statistics

The Census Bureau and the Bureau of Economic Analysis (BEA) in the Department of Commerce are the primary agencies responsible for compiling, processing, and publishing international trade statistics in the United States.

Census

Census produces the statistics on the trade in goods, which are drawn from import and export documents that the U.S. Customs Service collects at various ports and points of entry throughout the United States. In lieu of filing paper documents, exporters and importers may file electronically through the Automated Export System for exporters or the Automated Commercial System for importers. Two-thirds of all U.S. exporters utilize the Automated Export System filing procedure to declare their shipments, and 99 percent of all import transactions are transmitted directly to Customs electronically, resulting in more accurate trade estimates. The filing procedure is mandatory only for exports shipped with a value greater than $2,500 or for those that require a license (for dual-use goods: that is, goods with military and commercial applications, some textiles, dairy products, and others). Likewise, the reporting threshold for importers' documents is $2,000, or $250 for restricted items (such as furs, leather, toys, and those under quota). The Census Bureau estimates the value of "low-value" international goods and services transactions by using information on historical trade patterns (the historical relationship between low-value shipments and total shipments) rather than by counting them individually.

BEA

BEA collects statistics for international trade in several dozen types of services, using a variety of mandatory surveys that vary in frequency, extent of coverage, level of detail, and level of exemption from reporting requirements. BEA uses a periodic survey methodology,

because there are no official locations or "checkpoints," such as ports-of-entry, where service transactions can be recorded, and therefore there is no official record of customs documentation. Thus, an important difference between the data-collecting programs conducted by Census and BEA is that BEA must actually locate service providers in order to survey them to get the relevant data. To accomplish this task, BEA mails surveys to potential respondents—those who reported previously and those identified as potentially having engaged in covered transactions, based on various government sources. Full coverage is difficult, because it is hard to locate all possible providers of a service, including new companies. Respondents who engage in transactions that fall below the varying exemption levels are not subject to mandatory reporting requirements on the sample surveys. Low-value international service transactions are collected using BEA's extensive 5-year benchmark survey (essentially a census), which has a lower dollar reporting threshold and more detail than the sample surveys. In this benchmark survey, U.S. firms are still exempt from reporting data by service but must provide information on the aggregate value of transactions. For periods not covered by a benchmark survey, low-value transactions are estimated indirectly by extrapolating forward the data reported on the benchmark survey, based on growth in the data reported on sample surveys.

Problems with international trade statistics have been well documented by the statistical agencies themselves, GAO, and others.[1] Numerous improvements have been made in recent years to enhance the quality of the international trade statistics, but some problems remain unresolved. One major problem is the undercounting of exports, partially attributable to the use of outdated information to estimate low-value shipments. The Census Bureau estimates that the actual undercount ranges from 3 percent to 10 percent of the published export value. The Census Bureau has not collected data on exports valued below $1,000 in more than 10 years. Information on transactions valued at between $1,500 and $2,500 has not been reported since 1989.[2] Although it is widely held that the data on imports are of higher quality because tariffs, quotas, and other enforcement

[1] For example, see "U.S. Merchandise Trade Statistics: A Quality Profile," on the Census Bureau's Web site (www.census.gov); Ralph Kozlow, "International Accounts Data Needs: Plans, Progress and Priorities," (2000); J. Steven Landefeld and Barbara Fraumeni, "Measuring the New Economy," Survey of Current Business (March 2001); U.S. Trade Deficit Review Commission, "The U.S. Trade Deficit: Causes, Consequences, and Recommendations for Action," www.ustdrc.gov; November 2000; National Research Council, Behind the Numbers (Washington, D.C.: National Academy Press, 1992); U.S. General Accounting Office, Economic Statistics: Measurement Problems Can Affect the Budget and Economic Policymaking, GAO/GGD-95-99 (Washington, D.C.: May 1995); and Peter Hooper and J. Richardson, International Economic Transactions (Chicago: University of Chicago Press, 1991).

[2] U.S. Census Bureau, "Understatement Export Merchandise Trade Data," (Washington, D.C.: 1998); www.census.gov/foreign-trade/aip/expunder2.html.

activities are involved, GAO and others have reported problems in this area as well.[3]

Additionally, our previous work has indicated that statistics agency officials and users of trade statistics have stated that statistics on service transactions lacked adequate detail and coverage. BEA has taken numerous steps to improve the comprehensiveness and detail of its data on trade in services in general, instituting new surveys and making some existing surveys mandatory under strengthened legal authority. Nevertheless, complete coverage of international services has not been obtained, and a number of data improvement tasks remain.

Web sites for more information on trade statistics collection and methodology

U.S. Bureau of the Census: www.census.gov

Bureau of Economic Analysis: www.bea.doc.gov

[3] See, U.S. General Accounting Office, *Measuring U.S.-Canada Trade: Shifting Trade Winds May Threaten Recent Progress*, GAO/GGD-94-4 (Washington, D.C.: January 1994); U.S. General Accounting Office, *Customs Service: Trade Enforcement Activities Impaired by Measurement Problems*, GAO/GGD-92-123 (Washington, D.C.: September 1992); U.S. General Accounting Office, *Federal Trade Statistics—Some Observations*, GAO/OCE-89-1BR (Washington, D.C.: April 1989); U.S. Census Bureau, "U.S. Merchandise Trade Statistics: A Quality Profile" (Washington, D.C.: December 1998); www.census.gov/foreign-trade/aip/qprofile121198.html; National Research Council, *Behind the Numbers*.

GAO Contact and Staff Acknowledgments

GAO Contact

Emil Friberg (202) 512-8990

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Related GAO Products

General

Telecommunications: Characteristics and Choices of Internet Users (GAO-01-345, Feb.16, 2001).

Telecommunications: Technological and Regulatory Factors Affecting Consumer Choice of Internet Providers (GAO-01-93, Oct. 12, 2000).

Internet Census and Use Estimates (GGD-97-102R, May 12,1997).

Banking

Electronic Banking: Enhancing Federal Oversight of Internet Banking Activities (GGD-99-91, July 6, 1999).

Electronic Banking: Experiences Reported by Banks in Implementing On-line Banking (GGD-98-34, Jan. 15, 1998).

E-Government

Electronic Commerce: Small Business Participation in Selected On-line Procurement Programs (GAO-02-1, Oct. 29, 2001).

Electronic Government: Better Information Needed on Agencies' Implementation of the Government Paperwork Elimination Act (GAO-01-1100, Sept. 28, 2001).

Electronic Government: Challenges Must Be Addressed with Effective Leadership and Management (GAO-01-959T, July 11, 2001).

Electronic Government: Selected Agency Plans for Implementing the Government Paperwork Elimination Act (GAO-01-861T, June 21, 2001).

Internal Revenue Service: 2001 Tax Filing Season, Systems Modernization, and Security of Electronic Filing (GAO-01-595T, Apr. 3, 2001).

Information Management: Electronic Dissemination of Government Publications (GAO-01-428, Mar. 30, 2001).

USDA Electronic Filing: Progress Made, but Central Leadership and Comprehensive Implementation Plan Needed (GAO-01-324, Feb. 28, 2001).

Electronic Government: Government Paperwork Elimination Act Presents Challenges for Agencies (AIMD-00-282, Sept. 15, 2000).

Defense Management: Electronic Commerce Implementation Strategy Can Be Improved (NSIAD-00-108, July 18, 2000).

Internet: Federal Web-based Complaint Handling (AIMD-00-238R, July 7, 2000).

Electronic Government: Federal Initiatives Are Evolving Rapidly, but They Face Significant Challenges (T-AIMD/GGD-00-179, May 22, 2000).

Labor-Management Reporting and Disclosure: Status of Labor's Efforts to Develop Electronic Reporting and a Publicly Accessible Database (HEHS-99-63R, Mar. 16, 1999).

Internet and Electronic Dial-up Bulletin Boards: Information Reported by Federal Organizations (GGD-97-86, June 16,1997).

World Wide Web Sites: Reported by 42 Federal Organizations (Supplement to Internet and Electronic Dial-up Bulletin Board System Activities: Information

Reported by Federal Organizations) (GGD-97-86S, June 1, 1997).

Social Security Administration: Internet Access to Personal Earnings and Benefits Information (T-AIMD/HEHS-97-123, May 6, 1997).

Electronic Signatures

Bank Regulators' Evaluation of Electronic Signature Systems (GAO-01-129R, Nov. 8, 2000).

Electronic Signature: Sanction of the Department of State's System (AIMD-00-227R, July 10, 2000).

Infrastructure

Telecommunications: Characteristics and Competitiveness of the Internet Backbone Market (GAO-02-16, Oct. 16, 2000).

International Trade

Trade with the European Union: Recent Trends and Electronic Commerce Issues (T-NSIAD-00-46, Oct. 13, 1999).

Internet Governance

Department of Commerce: Relationship with the Internet Corporation for Assigned Names and Numbers (OGC-00-33R, July 7, 2000).

Law Enforcement and Regulation

Internet Pharmacies: Adding Disclosure Requirements Would Aid State and Federal Oversight (GAO-01-69. Oct. 19, 2000).

Commodity Exchange Act: Issues Related to the Regulation of Electronic Trading Systems (GGD-00-99, May 5, 2000).

Securities Fraud: The Internet Poses Challenges to Regulators and Investors (T-GGD-99-34, Mar. 22, 1999).

Postal Service

U.S. Postal Service: Update on Electronic Commerce Activities and Privacy Protections (GAO-02-79, Dec. 21, 2001).

U.S. Postal Service: Postal Activities and Laws Related to Electronic Commerce (GGD-00-188, Sept. 7, 2000).

Privacy

Internet Privacy: Implementation of Federal Guidance for Agency Use of Cookies (GAO-01-424, April 27, 2001).

Internet Privacy: Federal Agency Use of Cookies (GAO-01-147R, Oct. 20, 2000).

Internet Privacy: Comparison of Federal Agency Practices with FTC's Fair Information Principles AIMD-00-296R, Sept. 11, 2000).

Internet Privacy: Agencies' Efforts to Implement OMB's Privacy Policy (GGD-00-191, Sept. 5, 2000).

Security

Information Security: Weaknesses Place Commerce Data and Operations at Serious Risk (GAO-01-751, Aug. 13, 2001).

Information Security: IRS Electronic Filing Systems (GAO-01-306, Feb. 16, 2001).

IInformation Security: Software Change Controls at the Department of Commerce (AIMD-00-187R, June 30, 2000).

Critical Infrastructure Protection: "ILOVEYOU" Computer Virus Highlights Need for Improved Alert

and Coordination Capabilities (GAO/T-AIMD-00181, May 18, 2000).

Information Security: "ILOVEYOU" Computer Virus Emphasizes Critical Need for Agency and Governmentwide Improvements (GAO/T-AIMD-00-171, May 10, 2000).

Taxation

Update on State and Local Revenue Loss From Internet Sales (GAO-02-83R, Nov. 6, 2001).

Sales Taxes: Electronic Commerce Growth Presents Challenges; Revenue Losses Are Uncertain (GGD/OCE-00-165, June 30, 2000).

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