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# Electronic Commerce: An Introduction

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## Summary

Electronic commercial transactions over the Internet, or "e-commerce," have grown so fast over the last five years that many experts continue to underestimate its growth and development. Whether retail business-to-customer or business-to-business transactions, e-commerce is now a significant part of commercial transactions. In turn, policymakers both in the United States and abroad are likely to face increasingly complex issues of security, privacy, taxation, infrastructure development and other issues in 2001 and beyond. This report will be updated periodically.

## The Internet and E-Commerce

The convergence of computer and telecommunications technologies has revolutionized how we get, store, retrieve, and share information. Many experts contend that this convergence has created the Information Economy, driven by the Internet, and fueled a surge in U.S. productivity and economic growth. Commercial transactions on the Internet, whether retail business-to-customer or business-to-business, are commonly called electronic commerce, or "e-commerce."

Since the mid-1990s, commercial transactions on the Internet have grown substantially.[1] By 1996, Internet traffic, including e-commerce, was doubling every 100 days. By mid-1997, the U.S. Department of Commerce reported that just over 4 million people were using e-commerce; by the end of 1997, that figure had grown to over 10 million users. The rate of e-commerce growth continues so rapidly that projections often are outdated as fast as they are published. One 1998 industry estimate projected that U.S. retail transactions would reach $7 billion by 2000 — a figure now widely accepted as having been reached in *the year the report came out*.

[1] For statistics and other data on e-commerce, see: CRS Report RL30435, *Internet and E-Commerce Statistics: What They Mean and Where to Find Them On the Web*. Other sources include: [http://www.idc.com], [http://www.abcnews.go.com], [http://www.forrester.com], [http://earmarketer.com], and [http://www.cs.cmu.edu]. It is important to note that some measurements of e-commerce, particularly that data reported in the media, have not been verified.

Still, government and industry sources report huge annual jumps in e-commerce transactions. In May 2001 the Bureau of the Census, in the Department of Commerce, reported that for the first quarter of 2001, U.S. e-commerce sales hit $6.99 billion–up 33.5% from the first quarter of 2000, but down 19% from the fourth quarter of 2000. (This would be the first decline in six quarters, or since the fourth quarter of 1999, when the Bureau of the Census started recording such data). Business conducted over the Internet continues to grow, even with an economic slowdown and with many new "dot-com" businesses no longer in existence. The Forrester Research Group released a report in March 2001 that estimated 2000 world e-commerce at $657 billion, with a project growth to $6.8 trillion. The consulting firm IDC reported an estimated $354 billion in e-commerce sales in 2000, with a projected growth to $5 trillion in 2005. What these reports, and others like them, indicate is how difficult it is to precisely measure e-commerce on a macroeconomic scale, other than to say that it is likely that strong growth, particularly of e-commerce sales in the global economy, will continue over the long term.

Internationally, there are issues regarding Internet use and e-commerce growth. While the western industrialized nations dominate Internet development and use, by the year 2003 more than half of the material posted on the Internet will be in a language other than English. This has large ramifications for e-commerce and ease of transactions, security, and privacy issues. Policymakers, industry leaders, academicians, and others are concerned that this development will not correlate with equal access to the Internet for many in developing nations—therefore creating a global "digital divide." The United States and Canada represent the largest percentage of Internet users, at 56.6%. Europe follows with 23.4%. At the end of 2000, of approximately 200 million Internet users worldwide, only 3.1% are in Latin America, 0.5% are in the Middle East, and 0.6% are in Africa. The Asian Pacific region has 15.8% of all Internet users; but its rate of growth of Internet use is nearly twice as fast as the United States and Canada. In this respect, the U.S.-Canada share of Internet use may decline to 36% by 2005.

## The E-Commerce Industry

Even with some concern about accuracy and timeliness of e-commerce statistics, reliable industry sources report huge jumps in e-commerce transactions, particularly during fourth quarter holiday shopping. But long-term, industry growth has not been limited to just holiday shopping. According to a study undertaken by the University of Texas, the Internet portion of the U.S. economy grew at a compounded rate of 174% from 1995-1998 (the U.S. gross domestic product grew at 2.8% during the same period), and e-commerce accounted for one-third of that growth. Increasingly, many firms use "vortals"—vertically integrated portals or gateways that advertise or provide information on a specific industry or special interest. As a portion of e-commerce business, vortals provide targeted advertising for e-commerce transactions, and may grow from 35% of all e-commerce advertising to 57% by 2004. However, not all firms providing these services are profitable; in fact, most have yet to turn a profit.

One of the fastest growing sectors of e-commerce is business-to-business transactions–what is often called "B2B." The Forrester Group, a private sector consulting firm, estimates that by 2003, that sector of the U.S. economy will reach $1.5 trillion, up from nearly $200 billion in 2000. Business-to-business transactions between small and medium sized businesses and their suppliers is rapidly growing, as many of these firms

begin to use Internet connections for supply chain management, after-sales support, and payments.

## Clinton Administration Policies: 1998-2000

The Clinton Administration advocated a wide range of policy prescriptions to encourage e-commerce growth. These included calling on the World Trade Organization (WTO) to declare the Internet to be a tax-free environment for delivering both goods and services; recommending that no new tax policies be imposed on Internet commerce; stating that nations develop a "uniform commercial code" for electronic commerce; requesting that intellectual property protection— patents, trademarks, and copyrights—be consistent and enforceable; that nations adhere to international agreements to protect the security and privacy of Internet commercial transactions; that governments and businesses cooperate to more fully develop and expand the Internet infrastructure; and that businesses self-regulate e-commerce content.

The Clinton Administration's "The Emerging Digital Economy" (April 1998), "The Emerging Digital Economy II" (June 1999), "Digital Economy 2000" (June 2000), and "Leadership for the New Millennium, Delivering on Digital Progress and Prosperity" (January 2001) provided overarching views on domestic and global e-commerce. These reports provide data on the explosive growth of e-commerce, its role in global trade and national Gross Domestic Product (GDP), and contributions that computer and telecommunications technology convergence is making to productivity gains in the United States and worldwide. The Administration also argued that the effects that information technologies have had on raising national productivity, lowering inflation, creating high wage jobs, and contributing up to one-third of all domestic growth in the 1990s.

## Issues for the Bush Administration and the 107th Congress

Since the mid-1990s, Congress also has taken an active interest in e-commerce issues. Among the many issues, Congress may revisit policies that establish federal encryption procedures and provide electronic security in the wake of September 11, 2001. The 107th Congress has passed a bill that would extend the moratorium on domestic e-commerce taxation to November 2003. In addition, congressional policymakers are looking at the European Union (EU) and WTO policies and regulations in e-commerce.

**Protection and Security Issues.** There are a variety of protection and security issues that affect e-commerce growth and development. *Encryption* is the encoding of electronic messages to transfer important information and data, in which "keys" are needed to unlock or decode the message. Encryption is an important element of e-commerce security, with the issue of who holds the keys at the core of the debate. In September 1999, United States announced plans to further relax its encryption export policy by allowing export of unlimited key length encryption products, with some exceptions. It also advocated reduced reporting requirements for those firms that export encrypted products. The rules for implementing this policy were issued in September 2000 by the Bureau of Export Administration in the Department of Commerce. However, the events of September 11, 2001 have caused many in industry and government to review this policy–and the USA PATRIOT ACT of 2001 (P.L. 107-56) has given lawmakers greater authority to gain access to electronic financial transactions (for example, to ferret out

illegal money laundering). Consumers and civil liberties activists are very concerned about this development and have said they will monitor this law closely.

In a related area, the 106th Congress considered and passed legislation establishing standards for transmission and verification of electronic transmissions. *Electronic signatures* are a means of verifying the identity of a user of a computer system to control access to, or to authorize, a transaction. The main congressional interests in electronic signatures focus on enabling electronic signatures to carry legal weight in place of written signatures, removing the inconsistencies among state policies that some fear may retard the growth of e-commerce, and establishing federal government requirements for use of electronic signatures when filing information electronically. Neither federal law enforcement nor national security agencies oppose these objectives, and most U.S. businesses would like a national electronic signatures standard to further enhance e-commerce. When President Clinton signed into law the Electronic Signatures in Global and National Commerce Act (P.L. 106-229), the process of developing a national electronic signature standards was begun. Among its many provisions, this law also establishes principles for U.S. negotiators for setting global electronic signatures policies.

**E-Commerce Taxation.** Congress passed the Internet Tax Freedom Act on October 21, 1998, as Titles XI and XII of the Omnibus Consolidated and Emergency Supplemental Appropriations Act of 1999 (P.L. 105-277, 112 Stat 2681). Among its provisions, the Act imposes a 3-year moratorium on the ability of state and local governments to levy certain taxes on the Internet; it prohibits taxes on Internet access, unless such a tax was generally imposed and actually enforced prior to October 1, 1998; it creates an Advisory Commission on Electronic Commerce (ACEC), which may make recommendations to Congress on e-commerce taxation in the United States and abroad; and it opposes regulatory, tariff, and tax barriers to international e-commerce and asks the President to pursue international agreements to ban them.) The ACEC made its policy recommendations, after much debate and some divisiveness, to Congress on April 3, 2000. The ACEC called for, among its recommendations, extending the domestic Internet tax moratorium for five more years, through 2006; prohibiting the taxation of digitized goods over the Internet, regardless of national source; and a continued moratorium on any international tariffs on electronic transmissions over the Internet.

Congressional interest in Internet taxation has weighed concerns about impeding the growth of e-commerce by taxing revenues; enforcement and compliance of an Internet tax; and policies outside of the United States which do not impose an Internet tax. H.R. 1552, The Internet Tax Nondiscrimination Act (Rep. Cox) would extend the Internet tax moratorium through November 1, 2003. It was passed by both houses of Congress and signed into law on November 28, 2001 (P.L. 107-75; see also: Report RS20980, *Internet Tax Bills in the 107th Congress: A Brief Comparison*, for more information.)

**Connecting Small Businesses.** One of the concerns of many policymakers is that small and medium-sized businesses are not included in e-commerce growth. Many small and medium-sized firms contend that because of cost, lack of technical expertise, and ability to maintain web sites, they cannot compete with larger companies that have an Internet presence. In the 107th Congress, the Electronic Commerce Enhancement Act of 2001 (H.R. 524, Barcia), introduced February 8, 2001, is intended to help redress this imbalance, according to its supporters. This legislation directs the National Institute of Standards (NIST) to establish an advisory panel to examine the challenges facing small and

medium-sized businesses in integrating e-commerce technologies. The legislation also requires NIST's Manufacturing Extension Partnership to establish a competitive grant program to help businesses use electronic commerce technology. It passed the House of Representatives, 409-6, on February 14, 2001, and now awaits Senate action.

**The EU.** While much of the debate on the government's role in e-commerce has focused on domestic issues in the United States, the EU will likely have an important impact on global e-commerce policy development. The EU is very active in e-commerce issues. In some areas there is agreement with U.S. policies, and in some areas there are still tensions. While the EU as an entity represents a sizable portion of global Internet commerce, across national boundaries, Internet use and e-commerce potential varies widely. Supporters state that e-commerce policy should not be set by EU bureaucrats in Brussels. Therefore, the EU has approached e-commerce with what one observer has called a "light regulatory touch." Among contentious issues, the EU has supported the temporary moratorium on global e-commerce taxes, and supports making the moratorium permanent. But the EU has taken a different approach than U.S. policy by treating electronic transmissions (including those that deliver electronic goods such as software) as services. This position would allow EU countries more flexibility in imposing trade restrictions, and would allow treating electronic transmissions—including e-commerce—as services, making them subject to EU value-added duties. The EU also has taken a different approach to data protection and privacy, key components for strengthening e-commerce security and maintaining consumer confidence. The EU actions prohibit the transfer of data in and out of the EU, unless the outside country provides sufficient privacy safeguards. The U.S. position is to permit industry self-regulation of data protection and privacy safeguards. (For more information on the European data directive, see CRS Report RL30784, *Internet Privacy: An Analysis of Technology and Policy Issues*.)

**The WTO.** The WTO has presented another set of challenges to U.S. policymakers. The first two WTO ministerial meetings addressed issues that have an impact on e-commerce. The first WTO Ministerial conference was held in Singapore on December 9-13, 1996. Among the issues considered by the WTO participants was an agreement to reduce trade barriers for information technology goods and services. This issue was considered vital to the development of telecommunications infrastructure–including the Internet–among developing nations. A majority of participants signed an agreement to reduce these barriers. At the second WTO Ministerial conference, held in Geneva on May 18 and 20, 1998, an agreement was reached by the participating trade ministers to direct the WTO General Council to develop a work program on electronic commerce and to report on the progress of the work program, with recommendations, at the next conference. The ministers also agreed that countries continue the practice of not imposing tariffs on electronic transmission. While e-commerce was on the agenda at the third WTO conference in Seattle in 1999, disruptions at that conference curtailed discussions.

The WTO also has addressed e-commerce. In the October 27 draft Ministerial Declaration for the fourth conference in Doha, Qatar, the Chairman of the General Council stated that "electronic commerce creates new challenges and opportunities for trade for Members of all stages of development...[W]e instruct the General Council to consider the most appropriate institutional changes for handling the Work Programme, and to report on further progress to the Fifth Ministerial Conference" and that "Members will maintain their current practice of not imposing custom duties on electronic transmissions until the Fifth Session." This language was adopted as article 34 under the Ministerial Declaration

of November 14, 2001. Upcoming WTO conferences may address any additional e-commerce issues raised by WTO working groups on goods, services, intellectual property and economic development; or address related e-commerce issues raised at previous ministerial conferences in areas such as privacy, security, taxation, and infrastructure. (See CRS Report RS20319, *Telecommunications Services Trade and the WTO Agreement* and CRS Report RS20387, The World Trade Organization (WTO) Seattle Ministerial Conference).

## Issues

The 107th Congress may address a series of complex questions on e-commerce. They include: how viable is the continuation of the Internet tax moratorium, and can a consensus be reached on an e-commerce tax policy? What are the appropriate roles of government and industry in U.S. policies on encryption, digital signatures, and data storage and protection for e-commerce? What is the best mechanism for achieving standard and consistent e-commerce policies between the United States and other nations? Will the United States, by virtue of its large proportion of Internet use and e-commerce development, try to dominate global e-commerce policy? Internet use erases national boundaries, and the growth of e-commerce on the Internet and the complexity of these issues may mean that domestic and global e-commerce policies become increasingly intertwined.