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**CONSUMERS IN THE ONLINE MARKETPLACE
OECD WORKSHOP ON THE GUIDELINES: ONE YEAR LATER
Berlin, 13-14 March 2001**

BUSINESS-TO-CONSUMER E-COMMERCE STATISTICS

This document is tabled by the Secretariat as an addendum to Mr. John Dryden's presentation.

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BUSINESS-TO-CONSUMER E-COMMERCE STATISTICS

Introduction

1. To better inform the Committee on Consumer Policy's work on ensuring effective protection for consumers in the online marketplace, this document provides a quantitative overview of the status of business-to-consumer (B2C) e-commerce. Much of the data referenced is derived from private sources, because statistical offices of Member countries are only beginning to collect such data.

2. This paper begins with a discussion of the methodological challenges involved in quantifying e-commerce activity around the globe. Examples are presented in the following section of different estimates for total B2C e-commerce, as well as estimates of e-commerce distribution by sector/product and by geography. The paper then includes a brief overview of the relationship between access and pricing issues and the potential for e-commerce development. Turning to conclusions, the paper discusses the expected path of B2C e-commerce sales in the near future and the importance of gathering more data on B2C e-commerce.

Methodological issues

3. Until recently, there has been no internationally-agreed definition of what e-commerce is. It is therefore difficult to compare estimates of its size, breakdown and growth (OECD, 1999a; OECD 2000a). A variety of sources produce estimates, including IT market research firms, investment banks, and increasingly, national statistical offices. Not only are their definitions different, but the methodologies are often not comparable, leading to a wide range of estimates and forecasts. In addition to estimating the value of online purchases, different types of indicators can be used to collect additional information on B2C e-commerce; for example, the number of people who have purchased items online and the frequency of purchases. Although difficult to size, all studies agree on the fact that many facets of this economic activity are growing quite rapidly; a recent study estimates that about 40% of all Internet users have made at least one online purchase (Angus Reid, 2000).

4. Figure 1 presents a broad set of indicators about B2C e-commerce for selected OECD countries, while Annex 1 presents a more comprehensive list of indicators which can be used to measure B2C e-commerce activities in both quantitative and qualitative terms.

Figure 1. B2C e-commerce indicators in selected OECD countries for 2000 or latest available year

	Value of transactions (USD million)	Penetration rate of retail sales (%)	Number of buyers ('000's)	Number of buyers as a percentage of Internet users (%)	Internet shoppers as a percentage of working age population (%)
United States	25 845	1.01	19 666	27	16
Japan	7 644	0.26	..	20	6
Germany	1 199	0.30	1 370	17	5
France	345	0.14	310	7	2
Italy	194	0.09	360	7	1
United Kingdom	1 040	0.37	970	18	5
Canada	774	0.26	811	12	4.0
Australia	380	0.36	1 335	10	4
Austria	96	0.23	120	13	2.2
Belgium	82	0.16	90	11	3
Denmark	193	0.20	90	16	9
Finland	51	0.22	160	10	4.7
Greece	..	..	30	11	0.4
Ireland	..	..	40	13	1.6
Korea	1 008	1.0	2 140	15	7.7
Netherlands	182	0.34	320	12	5
Norway	61	0.26	100	19	11
Portugal	..	..	50	10	1
Spain ¹	70	0.06	220	7	1
Sweden	232	0.68	260	10	4.6
Switzerland	127	0.29	130	12	2.7

1. Portugal and Spain have been combined in the total transaction value and penetration rate of online sales.

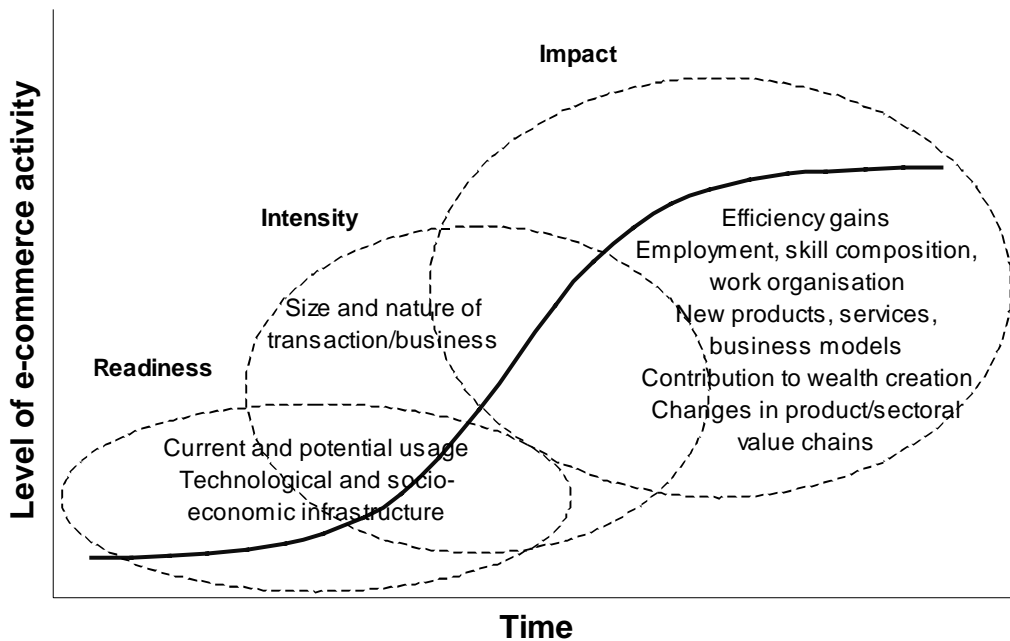
Source: OECD based on various sources including OECD (2000d); E-Commerce Promotion Council of Japan (ECOM) (2001), ABS (2000); NOIE (2000), Nua (2000), Taylor Nelson Sofres (2000a), NCA/MIC (2000).

OECD work

5. Following the Ottawa Ministerial Conference on E-Commerce (October 1998) an Expert Group from the Working Party on Indicators for the Information Society (WPIIS) was established to “compile definitions of electronic commerce which are policy relevant and statistically feasible”. In April 2000 a joint WPIE/WPIIS meeting was held and agreement was reached on a provisional framework and follow-up strategy (OECD, 2000a; OECD, 2000b). This framework consists of a set of definitions, a preliminary list of indicators for measurement, and a strategy for developing and refining future work. The framework is intended to assist OECD countries in developing their own statistical programmes for measuring e-commerce and improve international comparability, although it carries no binding obligation on countries to apply the definition or modify existing statistical procedures.

6. Ongoing analytical work at the OECD uses a life-cycle model to highlight three broad phases of e-commerce growth (Figure 2). Each phase can be measured with different sets of indicators which also correspond to different policy concerns for governments (OECD, 2000a; OECD 2000c, chapter 3). Many of the widely available indicators (from both public and private sources) refer to the “readiness” phase of the cycle. In the OECD framework, however, estimates of e-commerce transactions usually focus on the “intensity” phase, *i.e.* measuring the size and nature of these transactions.

Figure 2. Measuring e-commerce



Source: OECD (2000c).

7. When focussing on transactions, the OECD’s working definition of an electronic transaction (*transaction*) is a “sale or purchase of goods or services, whether between businesses, households, individuals, governments, and other public or private organisations, conducted over computer-mediated networks” (OECD, 2000b). This definition includes orders placed over a network, regardless of whether or not the payment and the delivery took place online. Other definitions only include Internet protocol-based networks (*i.e.* excluding Electronic Data Interchange (EDI) or other proprietary systems); others only include orders with online payment. This paper will focus on estimates of the value of these *transactions*, with particular emphasis in differences between countries and product groups.

Examples of estimates

Total B2C e-commerce

8. Estimates for B2C e-commerce vary widely depending on the source. Figure 3 and 4 show a range of estimates for Canada, Europe and the United States from a variety of private sector sources. It is difficult to compare these figures given the differences in methodologies (OECD, 1999b), which result in some cases in estimates that vary by a factor of two. Annex 2 compares various estimates and methodologies, while Annex 3 presents a more detailed technical explanation of how a particular example of a transaction estimation model is constructed, and how estimates are produced for each country and product group.

Figure 3. Estimates and forecasts of business-to-consumer e-commerce in Canada, Europe, the United States and the world, 1999 and 2003

In billions of USD

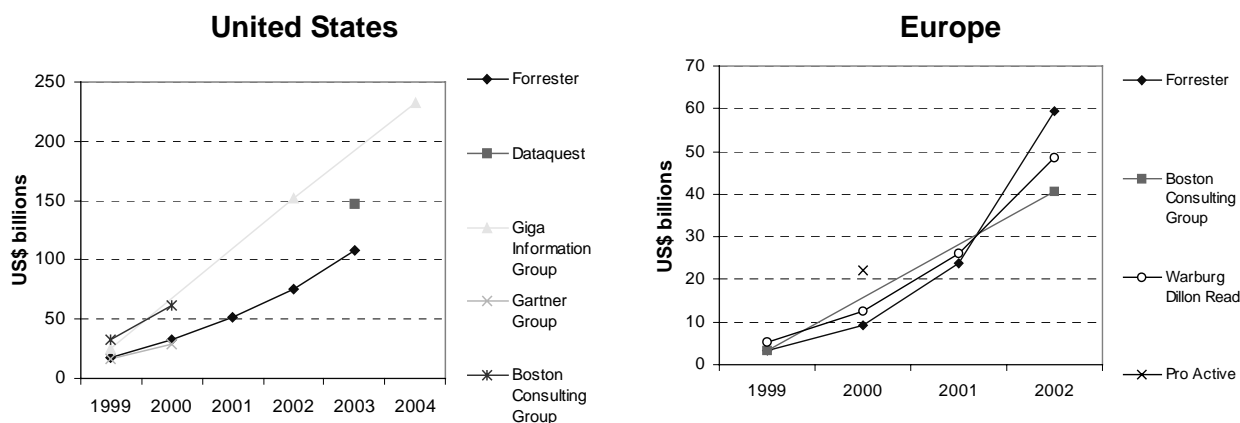
	1999	2003
Canada	1.0-1.9	8.5-16.8
Europe	3-5	40-60
United States	17-33	75-150
World total	20-40	144-380

Forecasts for Europe are for 2002.

Source: OECD based on various sources.

Figure 4. B2C e-commerce estimates for the United States and Europe

In billions of USD



Source: OECD based on various sources.

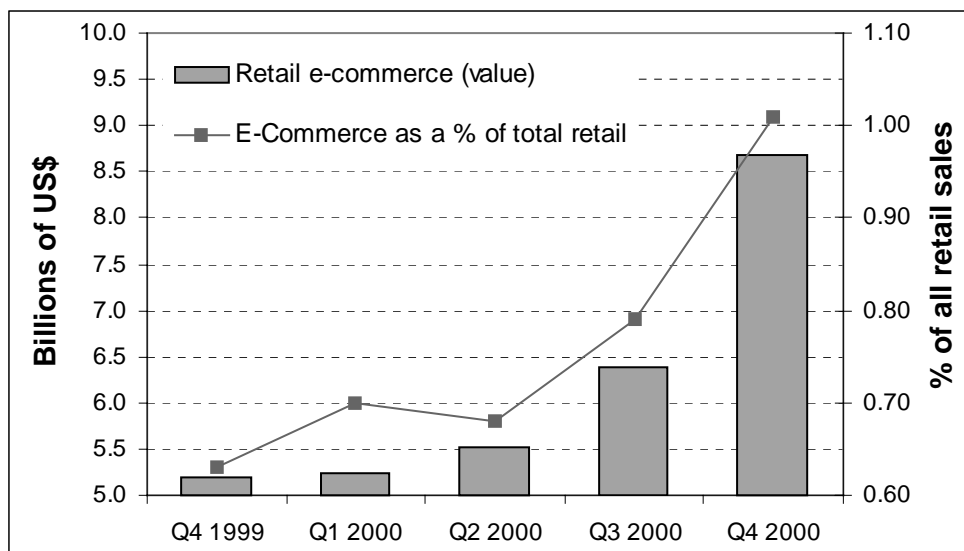
9. Statistical organisations in some OECD countries have begun to collect data on e-commerce, although the surveys do not necessarily use the same categorisation between B2C and B2B. Nonetheless, these surveys do provide insights into online consumer behaviour as they usually distinguish retail from wholesale trade.

10. Since 2000, the US Department of Commerce has been publishing data on quarterly online retail sales¹. Figure 5 presents data for the last five quarters. Online retail sales grew from less than USD 5.2 million in the last quarter of 1999 (or 0.63% of all retail sales), to almost USD 8.7 billion one year later (accounting for 1% of total retail sales). The total value of online retail sales (USD 25.8 billion for the year 2000) should be considered as a lower bound for B2C e-commerce and is not directly comparable with private sector estimates as it excludes certain categories which are included in other surveys, such as online travel services, financial intermediaries, and ticket sales agencies. As an illustration, a monthly survey conducted by the National Retail Federation (NRF) and Forrester Research (Online Retail Index), if adjusted to exclude airline tickets and hotel reservations, estimates online retail to be more than 40% higher (almost USD 37 billion in 2000).

1. A recent report by the US Department of Commerce estimates that B2C accounted for less than 10% of all e-commerce transactions in the United States during 1999 (US Department of Commerce, 2001).

Figure 5. Quarterly retail e-commerce sales in the United States, 1999-2000

Sales in billions of USD and share in %

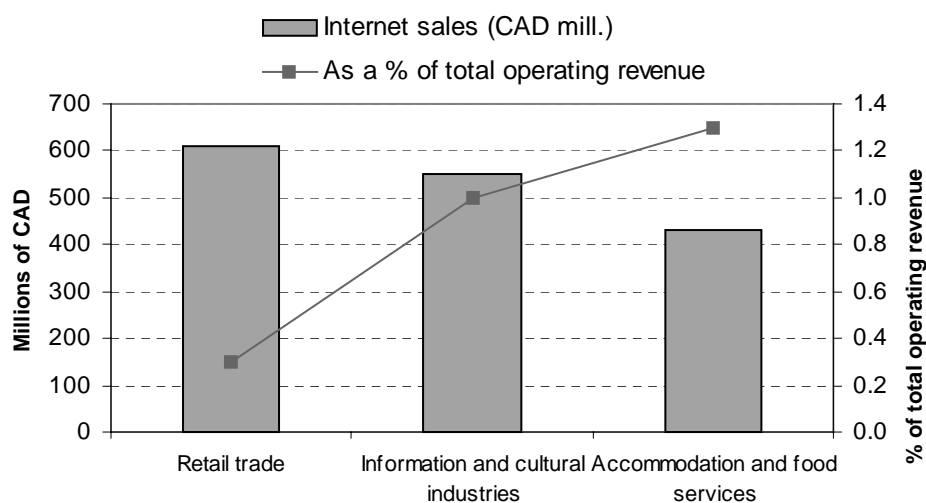


Source: US Department of Commerce, <http://www.census.gov/mrts/www/current.html> (February 2001).

11. Canada published its first official figures on Internet sales in mid-2000 (Statistics Canada, 2000a). Total Internet sales (which include both purchases by consumers and firms) reached CAD 4.4 billion during 1999. In the retail trade sector, sales in 1999 were CAD 610 million, or 0.3% of total operating revenue of the sector (Figure 6). In other sectors where consumers account for the largest component of purchases, Internet sales accounted for a much larger share of total sales (1% in the information and cultural industries sector; 1.3% in accommodation and food services sector).

Figure 6. Internet sales in selected sectors Canada, 1999

Sales in millions of CAD and shares in %



Source: Statistics Canada, ICT and E-Commerce Survey (August 2000).

12. A more recent study of Canadian Internet shopping (Statistics Canada, 2001) estimates that the value of online orders placed by households reached CAD 417 million in 1999. During that year, 15.3% of all Canadian households used the Internet for some aspect of Internet shopping, either for gathering information, or for placing orders online.

13. The Electronic Commerce Promotion Council of Japan recently estimated that the B2C market in Japan would grow rapidly in the next 4 years, from an estimated size of JPY 824 billion (USD 7.6 billion) in 2000, to around JPY 13.3 trillion (USD 123 billion) in 2005 (ECOM, 2001). However, it should remain far smaller than the B2B market, which is expected to reach JPY 110 trillion (USD 1 trillion) by 2005, against JPY 22 trillion (USD 204 billion) in 2000. According to this study, direct comparison of B2C e-commerce in Japan and the United States, in terms of relative intensity (the ratio of B2C e-commerce to total private sector spending by product segment traded), shows that Japan should reach the 2000 US level by 2003.

14. One of the main factors behind the rapid growth of the Japanese B2C market is the explosion of cellular phone Internet services. This new mobile commerce (“m-commerce”) market is currently estimated at some JPY 60 billion (USD 557 million). The rapid growth of m-commerce and the future expansion of broadband networks, such as IMT-2000 (third generation mobile telecommunication technology) are expected to further boost the development of B2C e-commerce. Mobile commerce accounted for less than 7% of the total B2C electronic commerce in 2000, but should grow to reach a share of 18% by 2005².

15. Denmark recently published its first official figures on Internet commerce – based on a narrow definition which only includes Internet-based transactions (excluding proprietary networks as discussed in paragraph 7 above). Statistics Denmark estimates that Internet commerce reached DKK 12 billion in 2000 (USD 1.5 billion), of which 13% (around DKK 1.5 billion or USD 193 million) was B2C (Statistics Denmark, 2001).

16. In Australia, 10% of all adults, or 1.3 million people, purchased or ordered goods and services for their own private use via the Internet (ABS, 2000). Furthermore, in just the three months prior to November 2000, 13% of Australian adults used the Internet to pay bills or transfer funds, an increase of 5% over the three previous months. While this is a large increase over a short period, it is still low compared to the 49% of Australians who paid bills or transferred funds via the phone, the 66% who used EFTPOS (Electronic Funds Transfer at Point Of Sale) for such transactions and 73% who used ATM facilities during the same period.

Sector / product distribution

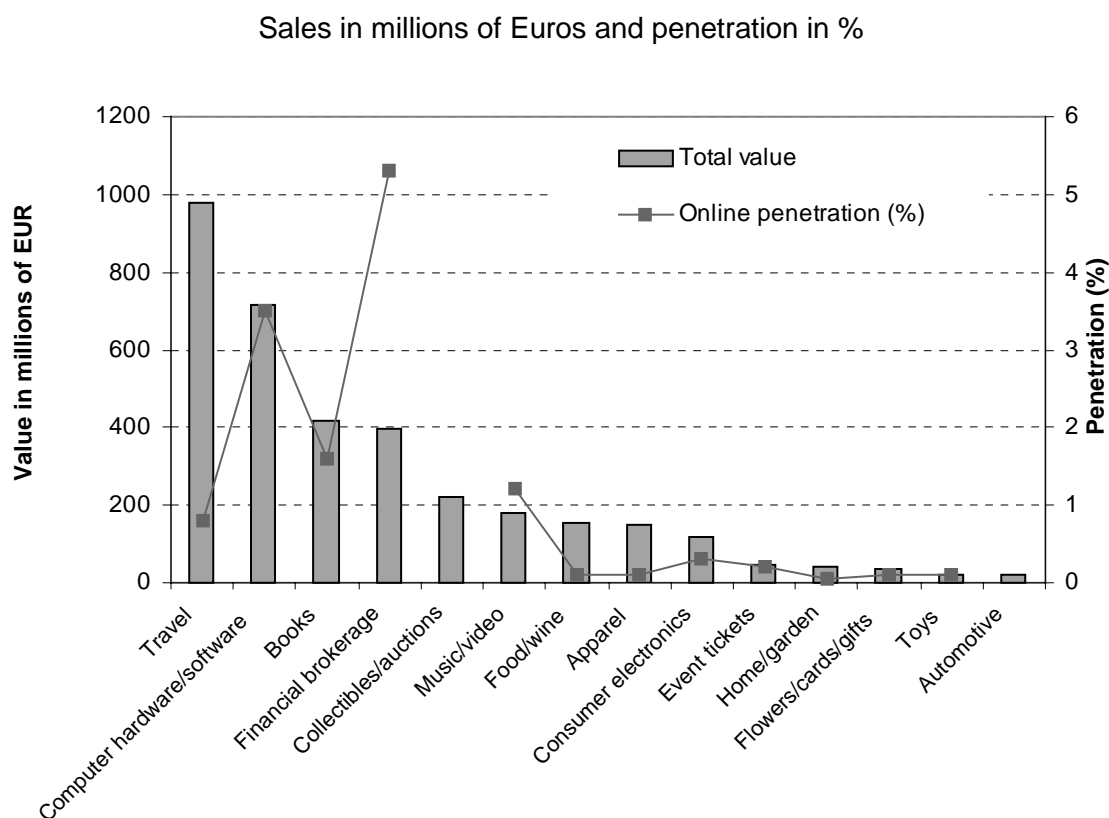
17. Growth is occurring unevenly, with different countries and product groups expected to reach different threshold levels. Still, B2C e-commerce remains concentrated in a few product groups: travel/tourism, banking/finance, ICT goods, books, and audio-visual products. Moreover, while these are the most popular product groups, the relative market share among them varies depending on the country. Two main criteria which influence the likelihood that the good will be sold online are its nature (physical vs. digital) and the level of customisation.

2. For some goods and services (such as books, music, and financial services) it is already significant and should grow at a faster pace than the total market. Entertainment is the only category for which mobile commerce is already predominant (currently more than 70% of all m-commerce in 2000).

Figure 7 shows the great level of variation in European B2C transactions both in terms of market size and penetration. For example, in 1999, the largest product segments were personal services (travel, financial brokerage) and certain goods (computer hardware/software, books). Collectibles and auctions also are an important and rapidly growing segment which reached EUR 244 million in 1999 (from EUR 21 million in 1998). In terms of penetration, financial brokerage had by far the highest uptake (more than 5%), but still only one-third of the level in the United States. Although the market for travel services is the largest, uptake is quite modest (less than 1%). There are of course wide variations by category between countries, for example:

- Online auctions were twice as popular in Germany as in other European countries.
- Computer hardware/software accounted for 20% of the European online market, but only 10% in France and Germany.
- Financial brokerage accounted for 30% of online revenues in France compared to only 3% in the United Kingdom.

Figure 7. European B2C e-commerce by type of product, 1999



Source: Boston Consulting Group (BCG) (2000).

18. Data for Japan show a somewhat different pattern with automobile being the largest segment of retail e-commerce (about 25% in 2000), followed by real estate (20% of retail e-commerce) and computers (11%) (Figure 8) (ECOM, 2001). Both computers and automobiles also have high penetration rates. Online purchases account for 6.1% and 2.1% of total retail sales of those products respectively. The shares of online sales for PCs, automobiles, travel services and books/CDs, are expected to exceed 10% by 2005.

Figure 8. B2C E-commerce in Japan, 2000 and 2005
Markets in billions of Yen and intensity in %

	2000		2005	
	Market size Billion Yen	Intensity ¹ %	Market size Billion Yen	Intensity %
PCs and related products	91	6.1%	556	29.0%
Travel	61	0.4%	2,095	13.0%
Entertainment	59	0.4%	980	5.7%
Books and music	20	0.8%	495	17.7%
Clothing & accessories	27	0.2%	1,050	6.0%
Gifts	4	0.1%	140	2.3%
Food	33	0.1%	837	3.0%
Hobbies, misc.& furniture	22	0.2%	695	5.0%
Automotive	202	2.1%	2,002	19.8%
Real estate	176	0.3%	1,185	2.1%
Other sales	54	0.3%	833	3.7%
Financial	44	0.6%	529	6.5%
Services	31	0.0%	1,939	1.6%
Total	824	0.3%	13,336	4.1%

1. Intensity = ratio of B2C e-commerce to total private spending by product group.

Source: ECOM (2001).

19. Figure 9 presents the most frequently visited (consumer e-commerce) sites in various OECD countries and confirms that books, and CD/videos are the most popular categories for online purchases, followed by clothing and travel. A study of Canadian Internet shopping (Statistics Canada, 2001) also finds that these categories, along with travel and software, were the most popular among online shoppers.

Figure 9. Most popular E-commerce sites in selected OECD countries, 2000

	Germany	France	Canada	Netherlands	United Kingdom	United States	Australia
Top-5 e-commerce sites	Amazon.com	Amazon.com	Chapters.ca	Bol.com	Amazon.com	Amazon.com	Amazon.com
	Otto www.bol.de KarstadtQuelle EBay	FNAC SNCF Alapage Degriffour	Sears Canada Amazon.com Future shop Ebay	Wehcamp.nl iBazar.nl Amazon.nl Kijkshop.nl	Jungle.com Audiostreet.com tesco.co.uk Blackstar.co.uk	Barnes&Noble.com eBay JCPenny Cdnw.com	Myer Direct dstore wishlist.com.au Dymocks Booksellers
Average amount spent online (in USD)	656	709	590	511	778	895	800

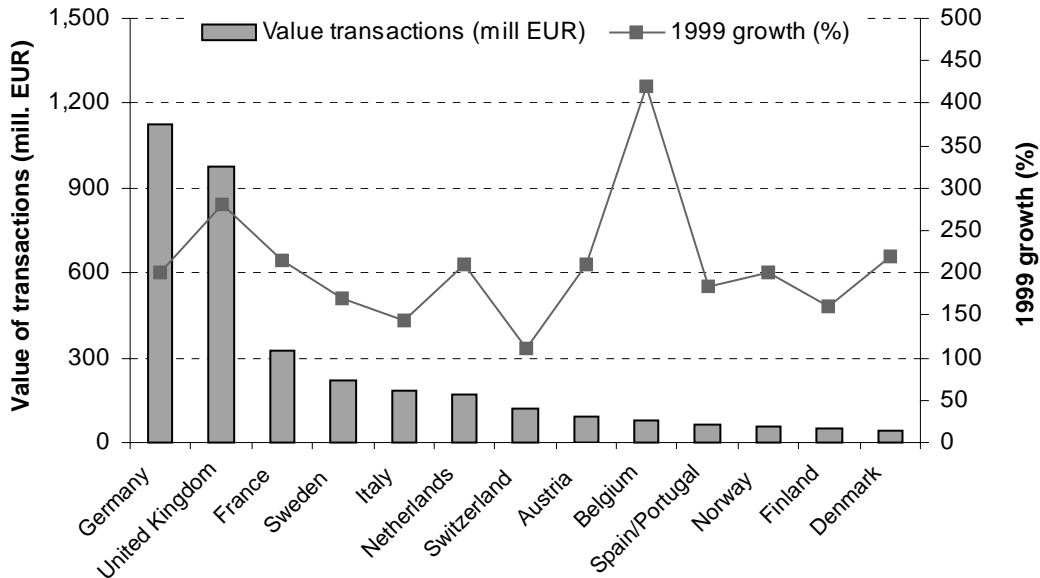
Source: Ernst & Young (2001).

Geographical distribution

20. The United States remains the largest market for B2C e-commerce, currently accounting for more than three-quarters of the world total. As B2C e-commerce develops in Europe, however, its market should reach about one-third of the United States' level within 2 to 3 years. Figure 10 shows the size and growth of B2C for various European countries.

Figure 10. European B2C e-commerce by country, 1999

Value in millions of Euros and growth in %



Source: BCG (2000).

21. Although e-commerce brings along the promise of borderless trade, online sales continue to take place mostly within the consumer's home country (or region): 80% of European B2C e-commerce takes place within Europe (Boston Consulting Group, 2000), and a recent survey of Canadian online consumers (Angus Reid, 2000) revealed that almost two-thirds had made their most recent purchase at a Canadian Web site, compared to less than one-third a year before. A survey of Australian online shoppers estimates that in late 2000, more than half of all online shoppers purchased or ordered from Australian sites only, compared to less than 40% in February of the same year (ABS, 2000). Price is an important factor for consumers considering online purchases, but other factors such as the quality of service and information, the speed and reliability of delivery, the ease of on-line ordering, and trust towards vendors (payment security, redress mechanisms), will increasingly determine their propensity to engage in e-commerce (Goldman Sachs, 2001 a and b).

The holiday season 2000

United States

Online sales, in the United States during the 2000 holiday season doubled compared to the previous year reaching around USD 10 billion (Goldman Sachs, 2001a and b). Mediametrix reports that unique visitors to e-commerce sites increased 21%, from 48.8 million in December 1999 to 59 million in December 2000. Some categories of goods and services have been particularly sensitive to the holiday seasonality, such as books, apparel, toys and video games, and consumer electronics (NRF/Forrester, 2001).

For those households already online, there is an increasing trend to do part of their holiday shopping via the Internet (Figure 11). Among the main reasons invoked by consumers for shopping online were their ability to avoid store crowds, to easily compare products and prices, and to have products delivered to home. On the other hand, the ability to return the product directly to the shop was not the main reason for choosing to shop at a physical location, but rather the ability to see and feel the product and to receive it immediately (Goldman Sachs 2001a and b).

Figure 11: Location of end-of-year holiday shopping by US online consumers, 1999-2000

	Nov.-Dec. 1999	Nov.-Dec.2000
Physical Store	64.7	49.0
Online Store	24.1	39.6
Catalog/Mail	10.9	9.2

Source: Goldman Sachs (2001a and b).

Europe

In Europe, the Internet is also becoming a significant channel for holiday shopping. The number of retail site visits in most European countries (G7 European, Sweden, Denmark, and Spain) peaked during the month of December (Jupiter/MMXI, 2001).

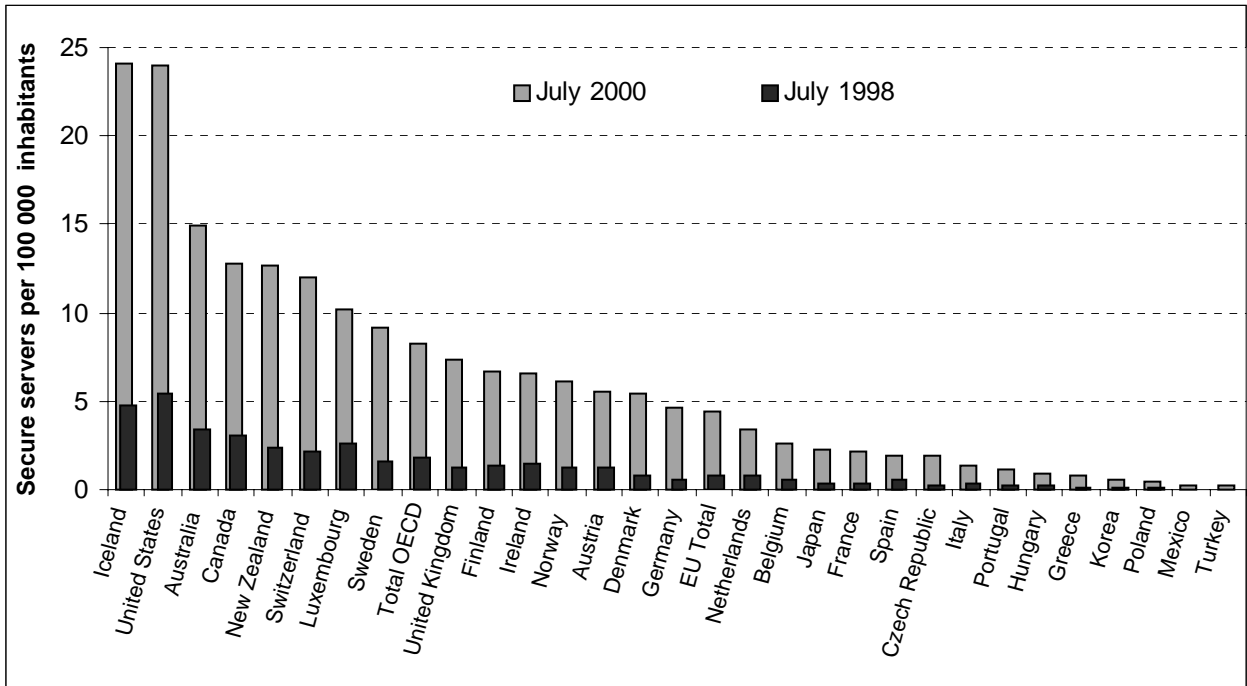
Beyond online shopping, in Europe the Internet is playing an increasing role in other ways. For example, in the United Kingdom, 90% of users consulted the Internet to help research their purchases this year, even though they did not conduct their holiday shopping online. (Taylor Nelson Sofres, December 2000b).

Access and pricing

22. The uptake of B2C e-commerce is also constrained by the availability of adequate infrastructure for secure transactions. When considering where the bulk of B2C e-commerce occurs, it is not surprising that data on secure servers (see Figure 12) show that the infrastructure for conducting e-commerce is unevenly distributed across countries, with Iceland and the United States having almost one server for every 4 000 inhabitants, while around half of the OECD countries have less than 5 servers per 100 000 inhabitants. Although growth of the relative availability of secure servers has been very rapid (on average increasing almost five-fold in one year throughout the OECD region), there are still wide (and growing) disparities.

Figure 12. Secure servers in OECD countries, 1998-2000

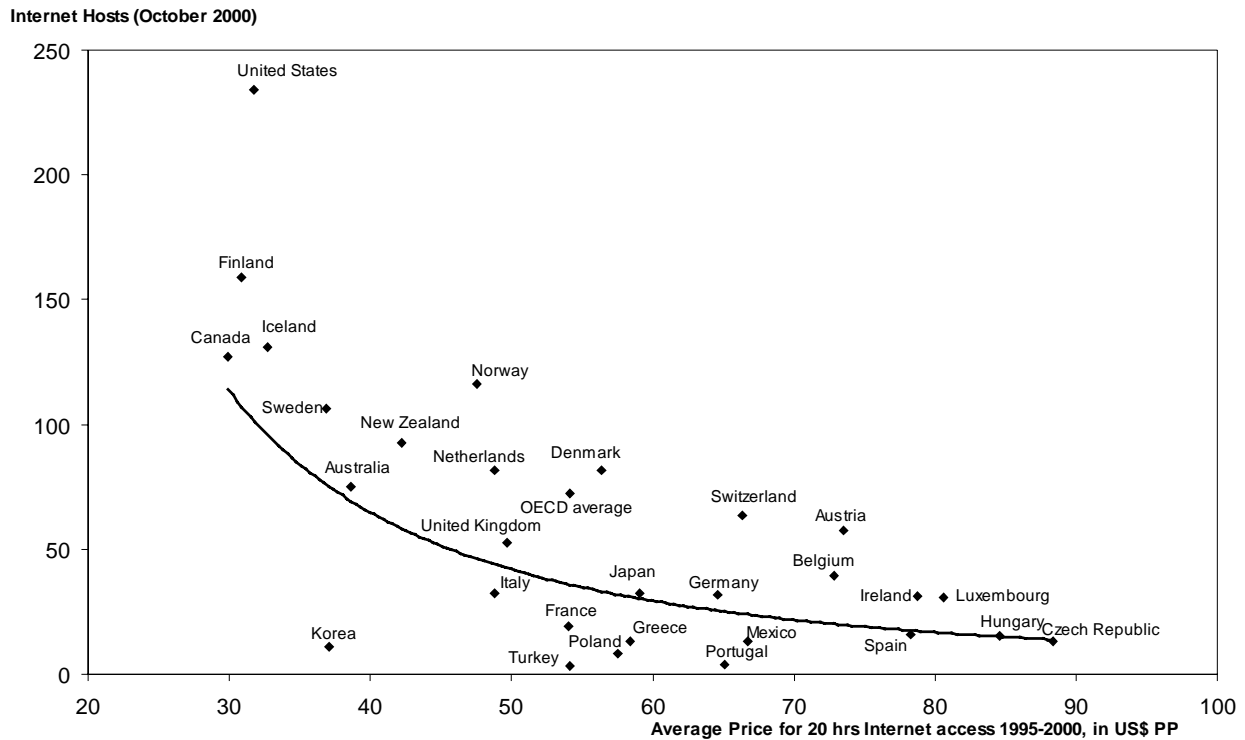
Number of secure servers per 100 000 inhabitants



Source: Netcraft. <http://www.netcraft.com>

23. For consumers, the cost of accessing the Internet is also a decisive factor for engaging in e-commerce activities. As shown in Figure 13, differences in Internet penetration (as measured by Internet hosts) are closely linked to the cost of accessing the Internet. While low prices do not guarantee high penetration (as seen for example in Korea), they are an important factor for more widespread development of the Internet and consequently, of electronic commerce.

Figure 13. Internet access costs and Internet hosts
Number of hosts per 1 000 inhabitants and price in USD PPP



Internet access costs include VAT including peak and off-peak. Survey undertaken every six months since 1999; annual data for 1995-1998.

Source: OECD (www.oecd.org/dsti/sti/it/cm) and Telcordia Technologies (www.netsizer.com).

Conclusions

24. With B2C e-commerce still accounting for a very small share of all retail trade in OECD countries, usually less than 1%, it is understandable that some public attention has shifted to the B2B e-commerce sphere which accounts for more than four-fifths of all transactions. However, increases in the B2C sphere are still expected and should not be overlooked by policy makers.

25. For example, in the United States, current estimates range from 1.0 to 1.5% of all retail sales, but this figure is expected to continue increasing and reach around 3 to 6% within the next few years. Similarly, in Japan, 4% of household consumption is expected to shift online by 2005 (ECOM, 2001). Data from other OECD countries varies widely with some countries already displaying a relatively high intensity (Sweden, Australia, the United Kingdom, and the Netherlands), while in others, uptake has been slower (Portugal, Spain, and Italy).

26. As governments continue to work to ensure that online consumers are afforded transparent and effective protection, whatever the medium, better data is needed to understand the rapid development of B2C e-commerce. More information not only on the volume of transactions, but also on their nature and on the attitudes and experiences of consumers towards e-commerce is needed.

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ANNEX 1: INDICATORS FOR MEASURING B2C E-COMMERCE

A wide range of indicators can be used to measure B2C e-commerce in qualitative and quantitative terms. These can be separated into four broad categories, each one focusing on a different aspect of the process: (i) transactions; (ii) consumers; (iii) businesses; and (iv) “readiness” indicators.

Transactions

This set of derived indicators focuses on the transaction itself. Usually e-commerce includes all online orders regardless of whether the payment takes place on- or off-line. In addition to the total value of purchases, other aspects of the transaction can be measured such as the type of product/service purchased, the relative importance of online sales, or the propensity to purchase from foreign sites.

- Total value of transactions (including seasonal purchases).
- Transactions broken down by type of product.
- Sales by product as a percentage of some other indicator (such as total retail sales, or domestic expenditure).
- Average value of purchases.
- Type of payment and delivery (off/online).
- Source of purchases: domestic or foreign retailer.

Consumers

This set of indicators provides additional information focusing on the consumers.

- Number of online shoppers or online shoppers as a percentage of population/online population.
- Socio-economic differences such as sales by gender or age group.
- Frequency of online purchases.
- Time spent shopping online.
- Technologies used to access e-commerce sites: PCs, mobile phones, personal data assistants (PDAs).
- Attitudinal data: perceived benefits and barriers.

Businesses

These indicators focus on the supply-side of online retailing.

- Number of businesses online/engaged in e-commerce.
- Number of businesses by sector of economic activity or type of product.
- Barriers to adoption.
- Type of retailer: existing retailer recently adopting e-commerce (multi-channel) or newly established, Internet-based retailer (“pure-play”).
- Most popular e-commerce sites.
- Industry concentration (market share) by type of product.

Readiness indicators

This fourth set of indicators is not directly related to transactions, but can be used to determine the “readiness” of countries/businesses/consumers to engage in e-commerce. These include some of the necessary (but not sufficient) conditions for e-commerce activities to develop (see OECD, 2000c).

- Percentage of households with PCs/Internet access.
- Number of Internet users.
- Number of Internet hosts.
- Number of secure servers.
- Internet access costs.
- Usage of credit cards or other payment systems.

ANNEX 2: ESTIMATING B2C E-COMMERCE - METHODOLOGICAL DIFFERENCES

Source	Region	1998	1999	2003	2004	Definition	Methodology
IDC (March, 2000) www.idc.com	World U.S. Canada	\$15.887 B	\$33.573 B	\$209.120 B		Refers to the purchase of goods and services via the World Wide Web. Transactions need not be completed over the Web (for example, telephone or fax completion is acceptable), but the transaction must be initiated from the Web. For IDC's purposes, commerce excludes funds transfer and home banking (except activity charges), stock trading (except fees, if any, for the privilege of trading over the Internet), and charges for basic Internet access. Commerce is typically limited to commerce over the WWW.	Data is based on the inputs to the Internet Commerce Market Model. The model brings both supply- and demand-side research, combining direct analysis of vendor activities with global measurements of customer behaviour. The model weighs a variety of factors such as the installed base of Internet devices against detailed survey results of consumer and business Web use.
Gartner Group (Oct 11/99) www.gartner.com	World U.S. Canada	\$11.24 B	\$31.20 B	\$380.5 B		The value of goods and services ordered on-line, including broker and agency revenue, but does not include the gross transaction value of shares and other financial instruments traded on-line.	Forecasts produced using a combination of supply- and demand-side data, including market and retail studies and consumer surveys, plus regional drivers and inhibitors.
Forrester Research www.forrester.com (Nov/99) (Mar/00)	World North America		\$20 B	\$144 B	\$454.4B \$204B	Trade of goods and services in which final order is placed over the Internet. Only includes EDI that is sent over the Internet. Includes sales and re-sales.	Conducted interviews with 100 North American on-line merchants in 11 categories as well as vendor and service providers. For consumer demand used Technographics Field Survey with 120,000 North American Households.

Source: Statistics Canada (2000b).

ANNEX 3: AN EXAMPLE OF E-COMMERCE ESTIMATION: THE FORRESTER MODEL

Forrester Research is a US-based IT market research firm which produces e-commerce estimates and forecasts. Its “eCommerce Threshold Model” is an example of how estimates of e-commerce transactions are generated using a combination of supply- and demand-side data. The model covers both B2B (online business trade) and B2C (online private consumption).

For each country, an “e-Commerce Potential Index” is calculated to determine when high-growth can be expected. This index reflects the “e-readiness” of each economy in terms of the business environment and the development of its technology infrastructure. The total e-commerce “potential” of each country and sector is thus calculated using both economic data (*e.g.* GDP, GDP/capita, market openness) and various measures of technological “readiness” (*e.g.* IT diffusion, ICT markets, telecommunication density).

For the B2C part of the model a second set of indicators is compiled and used for each country. It includes:

- “Technographic” data measuring the ownership and usage of PCs, surveys of consumers’ attitudes (such as the willingness to shop online or browsing habits).
- Population statistics (including household disposable income).
- Current data on consumption by type of goods; and
- Estimates of potential for online sales (in percentage) and expected timeline for both the high-growth phase and saturation (see Annex Table 1 for the United States).

Finally, a logistic model (or “S-curve”) is used to forecast growth for each country and product group based on these parameters. These estimates are complemented by studies of consumer behaviour (based on household surveys) as well as analytical research on IT markets and e-commerce vendors.

Annex Table 1. Expected uptake of e-commerce in selected product groups in the US

Type of product	Maximum expected penetration	Year of expected maximum uptake
Software	50.0%	2003
Computer hardware	44.1%	2004
Music	25.0%	2004
Apparel	17.4%	2009
Event tickets	16.8%	2005
Books	16.1%	2004
Health and beauty	15.5%	2006
Flowers	14.4%	2004
Toys	14.1%	2006
Consumer electronics	13.2%	2006
Appliances	11.6%	2003
Photo/film	10.1%	2005
Food and beverage	7.0%	2009

Source: Forrester Research (1999).