



OFFICE OF FAIR TRADING

E-COMMERCE AND ITS
IMPLICATIONS FOR
COMPETITION POLICY

Discussion Paper 1

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A report compiled by the
Frontier Economics Group for
the Office of Fair Trading

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PREFACE

This paper was commissioned by the Office of Fair Trading (OFT) from Frontier Economics. They were asked to undertake some research and to consider potential competition policy implications arising from the nature of, and growth in, e-commerce transactions.

Any views expressed are those of the authors and they do not necessarily reflect the views of the Director General of Fair Trading. The report is not and should not be treated as a guideline – draft or otherwise - issued as a consequence of the Director General’s obligation to publish general advice and information under the Competition Act 1998.

The paper forms the first of a new series of Economic Discussion Papers.

This paper is intended as a basis for discussion within a wider audience of practitioners and interested parties. The OFT plans to host a seminar in which issues raised in this paper can be discussed. If you would like to register an expression of interest in attending this seminar, or would like to comment on the paper, please write to me at the address below. Research proposals on other aspects of UK Competition and Consumer Policy would also be welcomed. Requests for additional copies of this paper (or OFT Research Reports) should, however, be sent to the address shown on page iii.

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CONTENTS

Preface	i
Office of Fair Trading Research and Discussion Papers	ii
Contents	v
1 Executive summary	1
Market definition	1
Assessment of market power	2
Individual agreements and conduct	3
2 Introduction	8
Background.....	8
Aims of this study.....	8
What is e-commerce?	9
Structure of the report.....	10
Acknowledgements	10
3 The nature and development of e-commerce	11
Key characteristics of the Internet	11
The nature of commercial transactions.....	12
Implications of the Internet for commercial transactions	14
4 Market definition	30
Product market definition	30
Geographic market definition	33
Applying the analytical framework for market definition.....	34
Conclusions and recommendations	37
5 Assessment of market power	39
Market shares.....	39
Entry barriers	41
Other factors in the assessment of market power	45
Conclusions and recommendations	45
6 Individual agreements and conduct	48
Excessive prices.....	48
Collusion.....	52
Price discrimination and undue preference	56
Predation.....	58
Vertical restraints.....	60
Refusal to supply access to essential facilities	65
Actions in related markets	66
Appendix	68

1 EXECUTIVE SUMMARY

- 1.1 The dramatic growth in transactions over the Internet will change the nature of commerce in a variety of ways. In some instances, e-commerce simply represents an additional distribution or marketing channel (in the same way that mail order represents a different sales channel from retailing). In others, it may create new products (e.g. electronic information products), services (e.g. comparison-shopping search engines) or marketplaces (e.g. online exchanges and auctions).
- 1.2 Many characteristics of e-commerce might be expected to increase competition. For example, competition between sellers will tend to be more vigorous when search costs, menu costs and transactions costs are low, and when buyers have a wide choice of suppliers. Some characteristics of e-commerce, however, may encourage or facilitate certain types of anti-competitive behaviour, or affect the ability of the competition authorities to monitor such behaviour.
- 1.3 The Office of Fair Trading (OFT) asked Frontier Economics to undertake research into the possible competition policy implications arising from the growth in e-commerce. To do this, we have examined the nature of commercial transactions and how these may be affected by e-commerce. From this, we identify competition concerns that could potentially arise, as well as implications for the OFT's ability to monitor and regulate such concerns.
- 1.4 In our view, e-commerce will not give rise to any entirely new forms of anti-competitive behaviour, nor will it raise any new issues that cannot be dealt with under the existing competition law framework. However, a number of areas will require careful monitoring, while there are other areas where detailed application of the rules may require some adjustment, or where further research may be useful.
- 1.5 This report looks in turn at three key elements of the application of competition policy: *market definition*, *assessment of market power*, and *assessment of individual agreements and conduct*. Our key conclusions and recommendations under each of these headings are as follows.

Market definition

- 1.6 The emergence of e-commerce is unlikely to raise new conceptual issues in the context of market definition. In particular, the 'hypothetical monopolist' (or 'SSNIP') test remains an effective tool for market definition.
- 1.7 This approach asks whether a hypothetical monopolist of a given set of products in a given geographical area could increase its profits through a small but significant, non-transitory increase in prices ('SSNIP'). In some e-commerce markets, where prices are not set by the seller but rather through the interaction of supply and demand within an online marketplace, this test may need to be modified slightly. However, the test can be equally well applied by considering a small but significant restriction of supply by the hypothetical monopolist, rather than an increase in price.
- 1.8 The key market definition issues likely to be raised by e-commerce are threefold.
- Whether e-commerce creates new markets for the purposes of competition policy, or whether e-commerce simply constitutes a new sales channel, which competes with traditional sales channels, and lies within the same market.
 - Whether product markets may be made more narrow or widened as a result of increased scope for price discrimination, or by the various changes in search costs, switching costs and economies of scale that might be expected to obtain under e-commerce.
 - Whether geographical markets will be widened as a result of the reduced importance of geographical location for transactions between buyers and sellers.

- 1.9 Over the short term, application of the hypothetical monopolist test to may be complicated by the lack of reliable sales and price data, and by the current speed of change in e-commerce markets. In particular, these rapid changes may affect the degree to which e-commerce services and traditional services compete, and thus the appropriate delineation of the product market, as buyers and sellers alter their behaviour. This will limit the relevance of using past data when analysing current (or future) market definitions. It will also limit the degree to which market participants and competition authorities can rely on precedent when assessing relevant markets.
- 1.10 Over the longer term, data may be more readily available to competition authorities, given that transactions are carried out electronically. These data may not however be preserved as a matter of course. The courts and government authorities might therefore wish to think further about procedures for keeping electronic business records for particular types of e-commerce operation (for example, online marketplaces).
- 1.11 It is not just competition authorities that need to be able to define relevant markets. Interested parties also need to do so in order to assess in advance whether their conduct will contravene competition law. However, there may be risks associated with allowing these parties access to proprietary sales information on other companies, for example from online marketplaces. In particular, such information transfer could potentially facilitate collusion.
- 1.12 Finally, while some barriers to international trade remain, e-commerce could potentially widen geographical markets, as location may become less of an obstacle to trade between parties. Where this occurs, jurisdictional issues could become more complicated, and increase the need for cooperation between competition authorities in different countries.

Assessment of market power

- 1.13 Many characteristics of e-commerce will tend to lower barriers to entry into both B2C and B2B e-commerce, reducing the potential for players to secure and exploit market power. These include, for example, lower search and selection costs on the buyer side, lower transactions costs, the reduced need for physical assets for many businesses, and the rapid expansion of the market.
- 1.14 There are, though, certain characteristics of e-commerce, and associated patterns of behaviour, that may tend to raise barriers to entry in e-commerce services. The most important of these are the following.
- *Sunk costs of establishing customer loyalty.* In the absence of a local customer base and physical sales outlets, and in the presence of potentially low buyer switching costs, reputation, branding and customer loyalty may become increasingly important, especially at the B2C level where customers are relatively small and unsophisticated. These factors are known as ‘neural real estate’, as opposed to physical real estate. The sunk costs involved in developing such neural real estate may create significant first-mover advantages, and act as a barrier to later entrants.
 - *‘Tippy’ markets.* Online marketplaces are often characterised by ‘network effects’, which occur where a system becomes more useful to its participants, the more participants it has. In such markets, the strong players become stronger and the weak weaker as consumers refine their search for the technology that will ultimately prevail. Such markets are called ‘tippy’, meaning they can tip in favour of one particular firm, with a potential entrant facing large barriers to entry. These barriers will be particularly high in markets where liquidity is important and exacerbated where market participants are tied into the market via proprietary supply chain management systems.
- 1.15 There are a variety of ways in which these first-mover advantages can be reduced.

- *Sunk costs of establishing customer loyalty.* The ability of sellers to provide tailored offerings to long-term customers, based on information they have gained about these customers, could be reduced if customers were able to ‘port’ their own database entries from site to site.¹ At the same time, the importance of brand name for winning customer trust can to some extent be reduced by effective consumer protection legislation, or by other companies playing a quality assurance role.
- *‘Tippy’ markets.* The tippiness of online marketplaces will be strongly affected by the ability of market participants to monitor different marketplaces and to switch easily between them. For example, in the C2C auction environment, *biddersedge.com* monitors a number of online auction houses on behalf of its users. This reduces the comparative advantage held by the larger auction houses (such as *eBay.com*) over smaller competitors and may help prevent the market tipping. Such intermediaries could potentially have a similar effect in B2B markets.

In order to carry out such a function, the intermediary will require access to the price information of all auction houses. However, this information is arguably proprietary and, in the US, *eBay.com* has successfully challenged the rights of *biddersedge.com* to use its proprietary price information. Such a ruling might be expected to serve to increase tippiness and market power.

- 1.16 Even where first mover advantages persist, they need not imply market power. High barriers to entry for e-commerce operators will not confer market power on incumbents if e-commerce operators compete in a wide product market that includes traditional commerce, and if barriers to entry into the traditional service are low. Likewise, even if the relevant market includes e-commerce operators only, high barriers relating to branding for ‘pure-play’ e-commerce operators (i.e. companies without any traditional market position) need not imply market power, so long as there are sufficient mix-play operators (such as *Tesco Online*) that are willing to leverage their existing brand name into an e-commerce context.
- 1.17 Increased buyer power (particularly of businesses) will also tend to limit the extent to which high market shares and barriers to entry will confer market power. E-commerce might be expected to increase buyer power for a number of reasons. Firstly, it facilitates searching by buyers, and thus increases the credibility of threats to switch suppliers. Secondly, it facilitates the creation of buying clubs, often run by an intermediary, whereby purchasers combine their buying needs in order to increase their total buying power with suppliers. Thirdly, buyers may be able to design auctions (and specifically reverse auctions) to their own advantage.
- 1.18 On the other hand, where first-mover advantages do confer market power, they may be of particular concern in rapidly expanding e-commerce markets, since they will tend to result in current market power being maintained and enhanced into the future, rather than being transient as might be expected within such dynamic markets.

Individual agreements and conduct

- 1.19 E-commerce may have implications for the nature, prevalence, and monitoring of a variety of forms of anti-competitive agreements and conduct, including *excessive pricing*, *collusion*, *price discrimination*, *predation*, *vertical restraints*, and *refusal to supply/essential facilities*.
- 1.20 Our key conclusions and recommendations in each of these areas are set out below. In investigating such behaviour, the competition authorities will need to evaluate the pros and cons of intervention with great care. On the one hand, where there are likely to be first-mover advantages, anti-competitive behaviour over the short-term can deliver significant long-term effects. Any delayed reaction to foreclosure by competition authorities could

¹ Proposals such as the Platform for Privacy Preference (<http://www.w3.org/P3P>) facilitate such portability.

therefore have substantial and prolonged implications. On the other hand, the area of e-commerce is highly innovative. Premature intervention by competition authorities could in some cases inhibit innovation and the development of new markets.

- 1.21 One potential approach to this problem might be to apply competition law with a light hand for the present, but to raise awareness of the large fines and risk of structural break-up that might occur at a later date if competition law is found to have been breached. However, threats of future penalties could equally well inhibit the development of markets unless the competition authorities provide explicit and detailed guidelines about the types of agreement and behaviour that may be found abusive *ex post*. Moreover, where a market exhibits strong network externalities (which may be the case for online marketplaces), structural break-up may not necessarily be an appropriate response, since it will reduce the value of that market to its participants.

Excessive pricing

- 1.22 The fact that few online operations are currently making any profits is perhaps the most well known aspect of e-commerce. Over the longer term, however, the possible 'first-mover' advantages held by some existing online marketplaces may place them in a relatively entrenched market position and confer upon them significant market power.

- 1.23 The emergence of e-commerce is likely to increase the number of competition cases alleging:

- excessive pricing resulting from distortions to *market design*;
- excessive returns to *intellectual property rights*; or
- excessively *low* prices achieved through *buying power*.

- 1.24 While there has been a recent OFT research paper on the third of these issues, there may be a role for further analysis of the competition implications of different forms of market design and some revision of intellectual property laws. With respect to the latter, the US Patent and Trademark Office has responded to criticism over the role of patents in cyberspace by saying it will overhaul its procedures for granting 'business method' patents.

- 1.25 In addition, certain characteristics of e-commerce businesses, such as the uncertainty of future profits, high risk of failure and high sunk investments in intangible assets, may create difficulties for the *empirical assessment* of excessive pricing or profitability. The competition authorities will need to ensure that a proper *ex ante* analysis of profitability is undertaken.² Further research into these issues may be valuable.

Collusion

- 1.26 Collusion may be facilitated where parties are able to communicate with each other, interact repeatedly, monitor and detect cheating, and put in place punishment mechanisms.

- 1.27 Internet technology might seem to offer the ideal micro-climate for collusion, due to increased communication and transparency in the market, as well as the potential for more frequent market interactions. In particular, collusion concerns may well arise with respect to market design and ownership within both online marketplaces and joint Internet sales ventures.

- 1.28 Three aspects of collusion are likely to create the highest uncertainty for businesses and may thus warrant further investigation.

² For a discussion of the importance of *ex ante* profitability analysis, see *The assessment of profitability by competition authorities*, Graham and Steele, OFT Research Paper n. 10.

- *Information sharing.* There are many benefits to interested parties from accessing market data. As such, it would be inappropriate for competition authorities to prevent information sharing unless it raised a serious risk of collusion. A better approach may be to provide guidance to businesses on the degree and types of information that may be shared. Such guidance might take into account the fact that the provision of *historical* sales data can have less impact on the potential for collusion than the sharing of *current* sales data.
- *Market design.* The way in which online marketplaces are designed, and their ownership structure, can have important implications for the ability of participants to collude. This is also an area in which further research would be worthwhile, given the rapid emergence of online marketplaces in a number of different industries.
- *Horizontal agreements.* More generally, guidance may be useful on which forms of horizontal agreement between competitors will generally be permitted, and a detailed description of how collusion will be assessed.

1.29 In order to improve the monitoring of collusion, the competition authorities might wish to develop their own market-monitoring search engine software, which might be used to track prices, sales and conversations in chat rooms, with the aim of detecting evidence of collusive behaviour.

1.30 Finally, the competition authorities need to be aware of some of these issues when imposing remedies on parties which relate to making prices publicly available on the Internet, even when the investigation relates to ‘traditional’ markets.

Price discrimination

1.31 E-commerce has a number of characteristics that might be expected to facilitate price discrimination, both in the B2C and the B2B arena.

- *First-degree price discrimination*, which involves a seller pricing to each individual customer at that customer’s maximum willingness to pay, may be facilitated by the growing use of auctions and exchanges within online marketplaces.
- *Second-degree price discrimination*, which involves self-selection by customers amongst a variety of different product offerings, may be facilitated through the use of yield management pricing systems and increased ‘versioning’.
- *Third-degree price discrimination*, which involves offering different prices to identifiable customer subgroups, may be facilitated by the use of ‘cookies’ alongside detailed customer databases, which enable companies to tailor their offerings to different categories of customers.

1.32 Price discrimination can often be efficient and beneficial for welfare. However, it can also both distort competition and facilitate excessive pricing.

1.33 Whilst price discrimination may become more widespread, the existing competition framework and tools would appear largely sufficient to deal with these various issues. There may, however, be benefits to be gained from preventing companies from sharing sensitive information about customers’ shopping habits and giving customers rights to greater access to the information held about them in suppliers’ databases. This might allow customers to make more sophisticated and informed choices between suppliers and would also reduce problems associated with ‘weblining’ (the Internet equivalent of ‘redlining’), whereby companies are able to mark out some types of customers as being unattractive.

Predation

- 1.34 It can often be difficult to distinguish predatory behaviour from vigorous competition, and this problem may well arise in e-commerce markets. Many e-commerce players are currently incurring short-term losses, with the expectation of profits over the longer term, as weaker players drop out of the market and the survivors gain stronger market positions.
- 1.35 As such, their behaviour might appear to satisfy all of the key steps of a predation test. The applicability of the usual predation test may, however, be compromised in this situation, due to the importance of sunk investments in intangible assets, economies of scale and uncertainty of future profits.

Vertical restraints

- 1.36 E-commerce may change the prevalence and nature of vertical restraints. This is because the characteristics of the Internet may result in more integration by suppliers into retailing their own products, the development of new intermediaries, increased buyer power for downstream firms, wider geographic markets, and increased ability for suppliers to monitor directly the behaviour of their retailers.
- 1.37 Such changes, and their implications, can all be assessed under the current competition policy framework. However, there are two key issues raised by vertical restraints within e-commerce.
- *Implications of 'first mover' advantages.* Short-term foreclosure, achieved through exclusive vertical agreements, can potentially have significant long-term effects if 'first mover' advantages are important.
 - *Evaluation of selective distribution systems.* The most common competition complaint in the e-commerce area currently relates to e-commerce operators being refused supply of products, when they are readily available to distributors in traditional sales channels. Under EC competition law, selective distribution would usually be exempted from Article 81 so long as the criteria adopted for choosing distributors are objective and qualitative, and there is no restriction placed upon passive sales by distributors within the system to other distributors' customers. By contrast, restrictions on active sales are considered acceptable.³

Differences between e-commerce and traditional commerce raise difficulties for applying the same qualitative criteria to both traditional and e-commerce retailers. In addition, it is far from clear how one would distinguish an 'active' from a 'passive' sale in the context of e-commerce. The conditions employed for assessing selective distribution may therefore require refinement as e-commerce develops as a sales channel.

Access to essential facilities

- 1.38 The conditions that must be met for a finding of abuse in essential facilities cases, as set out in the case of *Oscar Bronner v Mediaprint and others* [1998], are very strict. As such, they are unlikely to be met in many cases.
- 1.39 Refusal to supply access will often have important implications on competition in e-commerce markets.
- *Access to online marketplaces.* Where an online marketplace is owned by a number of the major buyers or sellers in a market, there is a risk of third-party buyers or sellers

³ Active sales occur where a supplier makes an active attempt to sell into the exclusive territory or to an exclusive customer group reserved to the supplier or allocated by the supplier to another buyer. (Commission Regulation (EC) No 2790/1999, Article 4).

being denied access to the market, or alternatively being given access only on such bad terms that they are unable to compete effectively.

- *Access to portals.* Links from portals can play an important role in bringing customers to a given e-commerce site and in encouraging trust in that site. Fair and non-discriminatory access to portals may thus play an important role in the success of e-commerce companies in certain B2C markets.
- *Access to software design.* For example, Amazon.com is currently engaged in a patent infringement case with BarnesandNoble.com for its 'one-click' software. If successful, Amazon may be able to preclude its competitors from using this feature, which could in turn limit their ability to compete.

1.40 As such, there may be a role for a more stringent treatment of those cases, than is suggested by existing EC precedent.

2 INTRODUCTION

Background

- 2.1 Electronic commerce (e-commerce) is growing rapidly. In September 1999, there were estimated to be over 200m Internet users world-wide, projected to increase by 74% to 350m in 2005. In the USA, where e-commerce markets are at their most advanced stage of development, inter-business transactions of goods and services over the Internet are expected to reach \$1.5 *trillion* (about £950 billion) by 2003, 14 times the size of total business-to-consumer transactions by the same date.⁴
- 2.2 In the UK, there were an estimated 12.5m Internet users in September 1999 (about 21% of the population). Consumer spending at UK sites in 1999 was around £118m, up from a meagre £9.7m in 1997, and projected to increase tenfold by 2005.⁵ Total revenues from all forms of e-commerce in the UK in 1999 were estimated at £2.8bn, rising to £29bn by 2002.⁶ Out of a sample of 357 European companies with turnover over £300m interviewed by KPMG in 1999, 85% had two-way electronic communication with their customers, and 33% had e-commerce facilities.⁷
- 2.3 How Internet technology is going to affect the structure and nature of markets is far from fully understood. This is reflected in the volatile stock market valuations of e-commerce companies – the FTSE techMARK 100 Index, which tracks high tech stocks, plummeted by over 50% between March and May 2000, from about 5,740 to 2,864. This loss of confidence in high-tech companies came after a period of initial euphoria, as shown by the increase in the index from its initial value of 2,000 when the Index was first launched in October 1999.
- 2.4 The uncertainties associated with the future developments of e-commerce make it difficult to predict its likely impact on market competition. Certain characteristics of e-commerce might be expected to facilitate entry and reduce costs, with the benefits of greater competition being passed on to consumers. On the other hand, first mover advantages, network externalities,⁸ switching costs and other barriers to entry may confer market power to a small number of large players and so reduce competition.
- 2.5 Competition authorities world-wide are faced with the task of ensuring that competitive forces are free to operate in the fast-changing e-commerce environment. The challenge is to protect consumers from companies' anti-competitive behaviour, without stifling new and innovative forms of competition, the key drivers of growth in the e-commerce sector.

Aims of this study

- 2.6 The Office of Fair Trading (OFT) asked Frontier Economics to undertake research into the possible competition policy implications arising from this massive growth in e-commerce. Specifically, the OFT asked us to examine:
- the characteristics of those markets where e-commerce was most likely to emerge as an important trading platform;
 - the types of products and services which may thus be most affected by e-commerce;

⁴ Estimates by Forrester Research Inc (<http://www.forrester.com>).

⁵ Source: NUA. (<http://www.nua.ie/surveys/index.cgi>).

⁶ *e.commerce@its.best.uk*, The Performance and Innovation Unit of the Cabinet Office, September 1999 (<http://www.cabinet-office.gov.uk/innovation/1999/ecommerce>).

⁷ *Electronic Commerce Research Report*, KPMG Consulting, 1999 (<http://www.kpmg.co.uk>).

⁸ Network effects (also referred to network externalities) exist when the value of a product to one user depends on how many others use that product.

- the possible forms of anti-competitive behaviour which could emerge within these new markets; and
- how this impacts on the way in which the OFT assesses competition problems.

2.7 Our approach to answering this question has been to look at how the basic characteristics of the Internet may change the nature of commercial transactions, so as to understand what transactions may look like in ‘the new electronic age’. This enables us to identify whether the forms of commercial behaviour that are likely to occur could, or would, be considered as anti-competitive, and how this may affect the OFT’s ability to monitor and police e-commerce markets.

What is e-commerce?

2.8 Defining e-commerce is far from straightforward. Several definitions have been put forward - for example, the UK Department of Trade and Industry has proposed the following definition of e-commerce:

*‘Electronic commerce is the exchange of information across electronic networks, at any stage in the supply chain, whether within an organisation, between businesses, between businesses and consumers, or between the public and the private sectors, whether paid or unpaid.’*⁹

2.9 Many definitions are very broad, and include within e-commerce a wide range of interactions undertaken through several different electronic or digital mediums. In this study, we focus on a much narrower definition of e-commerce, which we call ‘transaction e-commerce’ - namely all paid transactions of goods and services between businesses and consumers (B2C), or between businesses (B2B),¹⁰ which take place over the Internet (all references in the report, unless otherwise stated, are to transaction e-commerce). Based on this definition, our report does not cover the following issues.

- Competition issues related to the physical infrastructure of the Internet. These are covered, among other topics, in a separate report by the OFT, written in collaboration with OFTEL.¹¹
- Unpaid transactions, such as the free dissemination of information from the websites of public sector organisations (e.g. www.europa.eu.int), from private households’ websites, mailing lists, community chat-rooms, etc.
- Websites which are used solely for advertisement purposes, while the actual commercial transaction is carried out through traditional channels (telephone, fax, etc).

2.10 Our definition of transaction e-commerce has a number of ‘grey’ areas. For example, a number of online services (such as online estate agencies and online recruitment websites) are provided over the Internet, which are then settled through traditional channels. Similarly, other services are provided to customer free of charge (e.g. some online newspapers, portals, etc), but financed through alternative sources of revenues such as advertising or data publishing. These services are not covered in our analysis, unless otherwise specified.

⁹ See footnote 6.

¹⁰ While B2B and B2C are the main variants discussed, one also finds Consumer to Consumer (C2C) markets, which include exchanges for second hand products (such as www.ebay.com), or even Consumer to Business (C2B) markets, which include consumers selling market information to companies (such as www.plantfeedback.com). In this report, we do not consider these forms of e-commerce separately, since in many cases the discussion relates to both. We do, though, draw a distinction in some cases, where it seems helpful.

¹¹ *Competition in e-commerce: a joint OFTEL and OFT study*, draft consultation document, March 2000.

Structure of the report

- 2.11 This report provides a framework for analysing the implications of e-commerce for competition policy. This is done in two stages.
- 2.12 In *Section 3*, we discuss the impact of the Internet on commercial transactions, and the implications of e-commerce for the interaction of businesses along different stages of the supply chain. Our aim in this section is not to predict the evolution of e-commerce markets. Rather, it is to identify the characteristics of a transaction which make that transaction efficient, and then to understand how the Internet may change this. Our underlying hypothesis is that the nature of transactions will only change if new technology provides a more efficient method of undertaking commerce. Finally, we discuss which products and services are most likely to benefit from e-commerce.
- 2.13 Against this background, in the remaining sections we analyse what competition issues are likely to arise in the new e-markets.
- In *Section 4*, we discuss whether and how e-commerce is going to affect the task of defining economic markets for the purpose of competition policy. This discussion builds on the framework provided in the Competition Act 1998 (CA98) guideline *Market Definition* (OFT 403).
 - In *Section 5*, we analyse how the assessment of market power may be affected by the emergence of e-commerce. This discussion builds on the framework provided in the CA98 guideline *Assessment of Market Power* (OFT 415).
 - In *Section 6*, we look at the implication of e-commerce for the assessment of conduct and agreements. This discussion builds on the framework provided in the CA98 guideline *Assessment of Individual Agreements and Conduct* (OFT 414).¹²
- 2.14 Each section contains a set of conclusions and recommendations.

Acknowledgements

- 2.15 This report was written by Amelia Fletcher, Simon Gaysford and Adele Oliveri. We are grateful to Robert Lerner and Steven Sklivas of Charles River Associates for their many valuable contributions, to our colleagues at Frontier Economics and to the staff of the OFT for helpful comments and suggestions. We also gained insight from discussions with Julian Bond at E-exchange.com. All errors are of course ours alone

¹² CA98 guidelines are available free of charge from the OFT. They can be ordered or downloaded from the OFT's website (<http://www.of.gov.uk>), or requested by phone (0870 606 0321).

3 THE NATURE AND DEVELOPMENT OF E-COMMERCE

- 3.1 In order to understand the potential implications of e-commerce for competition policy, it is necessary first to understand the nature of e-commerce, how it may differ from traditional sales channels and how it is likely to develop.
- 3.2 In some instances e-commerce may represent an additional distribution or marketing channel, in the same way that mail order represents a different sales channel from retailing. In others, e-commerce may create new products, services and marketplaces.¹³ In either case, ‘transaction efficiencies’ drive the increased importance of the Internet as a trading platform.
- 3.3 In this section we look at the way in which the characteristics of the Internet may impact on commercial transactions. This analysis takes place in four stages.
- We first identify four key characteristics of the Internet.
 - We examine the nature of commercial transactions from the point of view of buyers, sellers and intermediaries.
 - We then consider how the four key characteristics of the Internet are likely to impact on each of these three types of player, and thus on the nature of commercial transactions.
 - Finally, we examine which products and services are most likely to be affected by the growth of e-commerce.
- 3.4 It is worth emphasising that this paper does not attempt to predict the evolution of e-commerce markets, but simply to highlight key areas where we believe the Internet will have the most impact. Likewise, in assessing competitive behaviour, it is impossible to predict what different players will do in such rapidly evolving markets. We seek only to identify patterns of behaviour which are either most likely, or which would be of most relevance to the OFT in its role as a competition authority.

Key characteristics of the Internet

- 3.5 The Internet can best be described as a ‘network of networks’, linking together otherwise independent computer networks (LANs, or Local Area Networks) and individual end-users. ISPs (Internet Service Providers) provide the link between end-users and the Internet infrastructure. The flow of information across interconnected computers is made possible by the establishment of a standardised ‘language’ in the form of open protocols such as TCP/IP (Transfer Control Protocol/Internet Protocol), HTTP (HyperText Transfer Protocol), HTML (HyperText Mark-up Language), XML (Extensible Mark-up Language)¹⁴ and others.
- 3.6 The inter-connectivity and standardisation of the Internet result in four key characteristics, which impact on transactions.
- *Universality of access.* Any end user (with the appropriate equipment) can gain access to the Internet, regardless of geographical location and time of day. Furthermore, many Internet sites (absent capacity constraints) are characterised by non-rivalry in consumption. That is, consumption of the site by one consumer does not preclude or diminish consumption by another consumer. This has consequences for the cost structures which emerge in e-commerce, discussed in paragraphs 3.25-3.40.

¹³ The question as to whether one sales channel competes with another, or whether it constitutes a separate market, lies at the heart of market definition, which we address in Section 3.

¹⁴ XML (or Extensible Markup Language) is an international standard for defining descriptions of the structure and content of different type of electronic documents, of which HTML is a specific application. A detailed description of XML, SGML and other protocols can be found at <http://www.xml-zone.com/>.

- *High-speed of information flows.* Thanks to the use of common standards, electronic data are broken down into separate ‘packages’ which are then re-assembled once they reach the final destination. Large quantities of data can thus be transmitted, retrieved and processed within a matter of seconds, independently of the geographic location of the start and end points. The speed of information flows will increase further as a result of new transmission technologies currently being developed.¹⁵
- *Interactivity.* Internet protocols facilitate considerable interactivity between websites and end-users. It is in fact possible to link databases to the Internet, so that any end-user with a browser and web connection can access the web front-end of the database. The end-user can then browse or enter information in the database through user-friendly interfaces (very similar to standard web pages), without any knowledge of the technical language for database maintenance and query. Moreover, the underlying databases can themselves be designed to carry out relatively complex processes on the basis of the data provided by end-users. ‘Cookies’ (a small text file that identifies the user) can also be used to tell servers that a user has returned to the server. That way, servers can display the information tailored-made to the individual customer’s preferences, including advertising, special offers, recommendations, etc.¹⁶ Cookies provide a way for websites to overcome the inherent anonymity of the Internet.
- *Integration.* Just as it is possible to link servers at remote destinations, using Internet protocols it is possible to link servers within a single organisation. These ‘Intranets’ can be used as platforms for corporate management and information systems. Moreover, linking (privately) the servers of different organisations can create ‘Extranets’, which can be used for inter-business transactions.¹⁷ As discussed in paragraphs 3.17-3.50, this potential for integrating the buyers’ and the sellers’ information systems is one of the main factors driving the adoption of e-commerce for inter-firm transactions.

3.7 These characteristics provide the Internet with some significant advantages over alternative sales channels, as we shall see in paragraphs 3.17-3.50. First, however, we look at the basic components of any commercial transaction.

The nature of commercial transactions

3.8 To understand how the Internet is going to affect commercial transactions, it is first necessary to understand the nature of a commercial transaction, from the point of view of (i) buyers, (ii) sellers and (iii) intermediaries. This will facilitate comparisons between e-commerce and commercial transactions carried out using ‘traditional’ channels.

Buyers and the buying process

3.9 Buyers want to find the most appropriate product for their needs at the lowest possible cost. Whether buyers are private consumers or large corporations, we can characterise the basic buying process as composed of three stages.

¹⁵ The next generation, Internet 2, is under collaborative development by 130 US universities, government agencies and corporate sponsors. It will consist of a high-speed, high-performance, high-bandwidth network called Abilene that is linked at state-of-the-art regional connection points called gigaPOPs. This will allow data transfers at 2.4 billion bits per second (bps). Most ordinary modems currently function at 28,800 bps or 56,000 bps. (Source: NUA Weekly Editorial. (http://www.nua.ie/surveys/analysis/weekly_editorial.html))

¹⁶ For more information on cookies, see www.microsoft.com/info/cookies.htm.

¹⁷ An ‘Extranet’ is a ‘firewalled’ (i.e. secure) network of servers in different organisations, relying on the same technology and protocols to transfer and display data as the Internet.

- *Search and selection.* This involves gathering and processing information about the prices and product characteristics of different goods/services so as to reach a purchase decision.¹⁸
 - *Payment.* Selection and payment need not take place simultaneously, and payment need not require the physical interaction of buyer and seller.
 - *Physical receipt of the good/service.* A transaction is concluded when the buyer actually receives the good/service.¹⁹ In some cases the buyer will incur direct costs in collecting the product, whilst in others the seller will add delivery costs to the invoiced price.
- 3.10 The complexity of these various constituent parts, and the relative importance of each, will vary depending on the nature of the buyer and the characteristics of the product. In terms of differences between buyers, the important characteristics will mainly relate to the size and sophistication of the buyer. Specifically, buyers will vary according to their demand for long term contracts (versus spot sales) arising from repeat transactions, price sensitivity, bargaining power, information availability, better information processing ability and the importance of processing costs. Relatively sophisticated buyers are more likely to be businesses than private individuals, and this is one reason why B2B markets are often treated separately to B2C markets. However, these differences are not clear-cut as there are many individuals who are sophisticated and many businesses which are not (certainly in relatively low value transactions).
- 3.11 Differences in product characteristics tend to be mainly reflected in the search and selection process.²⁰ Search and selection is easier for products which are easy to specify because they are:
- intrinsically simple or generic²¹;
 - bought frequently; and/or,
 - branded.
- 3.12 In these cases, the buyer may be willing to purchase from any supplier and the search process usually takes place around price. However, for products which are less easy to specify, the search process will involve quality (perhaps including service) and price dimensions. In these cases (often involving long-term experience goods or credence goods) the buyer may rely on branding (which could be product- or supplier-related), third party information sources (including government) or large investments in the search procedure. The buyer's transaction costs are often much higher for such products and sellers (or intermediaries - see below) often attempt to find the least cost methods of assisting this part of the buying process.

Sellers and the selling process

- 3.13 Sellers can increase their profitability by raising revenues or reducing costs. There are three key factors involved in increasing revenues.

¹⁸ For more information see *Consumer Detriment under Conditions of Imperfect Information*, Office of Fair Trading Research Paper no. 11, August 1997.

¹⁹ Strictly speaking, 'receipt' becomes less easy to define for intangible products or services such as insurance or for longer-term purchases such as consulting services. However, contracts usually specify when receipt has taken place.

²⁰ This is not entirely true since (as noted above) the buyer's preference for delivery will depend on whether the product is tangible (and then whether it is large or small) or intangible.

²¹ Products and services can also be simplified by sellers (a process often referred to as commoditisation), which can lead to more intense price competition. Car insurance is an example of this.

- *Attracting customers.* In order to make an informed purchase decision, buyers will need to be aware of a seller and also to take a view on the seller's quality. Information on sellers and sellers' quality is often provided through marketing and branding.
- *Retaining customers.* Sellers often rely on repeat purchases for much of their revenues. Retention of customers may be achieved by providing a good service or through a variety of other methods such as customer loyalty schemes, volume discounts, long-term supply contracts, and focused marketing.
- *Increasing revenue yield.* Sellers will increase their total revenue yield from a given customer base if they are able to charge customers a price which is close to customers' total willingness to pay for a product. This will be facilitated if sellers can charge different prices to different buyers, according to their willingness to pay (see paragraphs 3.25-3.40).

3.14 At the same time, sellers can reduce their costs by buying efficiently and so *reducing procurement costs* (both purchase and processing costs) and by:

- *Reducing distribution costs.* In some transactions, distribution costs will be included within the price of the product. In others, they will be specified separately. In either case, the seller has an incentive to minimise distribution costs.
- *Reducing inventory costs.* Sellers often face a trade-off between the ability to meet demand in a timely fashion and the costs of holding excess inventory. Inventory costs include not only the cost of the capital tied up in the inventory but also the wastage cost of inventory that is left unsold.
- *Reducing other costs.* Sellers also need to minimise other operating costs, including labour costs, rent, etc.

The role of intermediaries

3.15 In many supply chains there will be a number of intermediaries between the ultimate supplier and the end customer. This occurs when vertical separation is a more efficient business structure than vertical integration. More specifically, intermediaries will tend to emerge when they add value to the transaction. This is more likely when:

- there is a need to co-ordinate the interactions of a large number of buyers and sellers;
- there are high search costs on the part of the buyer which cannot be overcome by the actions of the sellers (in terms of branding or information disclosure); or
- the intermediary can aggregate transactions in order to benefit from economies of scale or scope (these may relate to information flows, risk sharing or other transaction costs).

3.16 There are many different forms of intermediary and their role can differ from market to market. For example, the taking on of inventory risk is one of the main differences between wholesalers and retailers, on the one hand, and agencies, brokers, auction houses and exchanges on the other. Likewise, a factor differentiating auction houses and exchanges from other intermediaries is their role in determining prices. While brokers and agents simply help buyers find the best price available to them on the market, auction houses and exchanges enhance price discovery through directly matching demand and supply.

Implications of the Internet for commercial transactions

3.17 The four main characteristics of Internet (universality of access, high speed information flows, interactivity and integration) are likely to affect several of these elements of commercial transactions, from the point of view of buyers, sellers and intermediaries.

Impact of the Internet on the buying process

- 3.18 In the previous section, we distinguished three key activities involved in the buying process: search and selection, payment, and receipt of goods/services.
- 3.19 The biggest impact of e-commerce on buyers will probably relate to the *search and selection* process. The overall ease and speed of searching will depend on the nature of the product, and in particular how easily its characteristics can be specified objectively. In many cases, however, the Internet will allow buyers to access any supplier readily, irrespective of geographical location or time of day, with little cost and effort. Searching is facilitated by intermediaries such as e-malls and search engines (including comparison-shopping search engines).
- 3.20 When the Internet contributes to lower search and selection costs, it is also likely to contribute to a *reduction in switching costs*, as buyers become more willing to ‘shop around’ for the best offer. Reduced search costs will also result in *increased transparency*, and in particular price transparency. The Internet is also a good medium for information provision and sharing, including links to third-party reviews and topical ‘chat rooms’.
- 3.21 The potential for buyers to shop globally online could result in *increased customer choice* and *wider geographic markets*. In reality, however, international trade may be limited by a variety of factors, including local preferences for particular sellers or brand names, and delivery costs.²²
- 3.22 In terms of *payment*, we would not expect procedures to change significantly for most transactions, although software like Amazon’s ‘one-click’ facility can make purchasing easier. For business customers, however, automated ordering, invoicing and payment procedures may substantially reduce transactions costs for buyers.
- 3.23 *Receipt of goods or services* is an area where e-commerce could potentially be less efficient than traditional commerce. However, the Internet is not disadvantaged in the selling of intangibles (such as tickets) or for products where there is no delivery (such as houses or insurance), and it may be a more efficient method of distribution for products which can be transmitted electronically (such as music, software or information goods). Moreover, even where delivery costs are high, some (time-poor) customers will be willing to pay these costs in order to avoid having to collect the goods personally.
- 3.24 Table 1 provides a summary of these different effects, identifying the advantages and disadvantages presented by the four key main characteristics of the Internet.

Impact of the Internet on the selling process

- 3.25 In paragraphs 3.13-3.14 we identified the main objectives of any seller involved in a transaction. The Internet can in many cases help sellers achieve these objectives and thus increase revenues and/or reduce costs. Indeed, there is some belief that the greatest benefits from transaction e-commerce are to be found on the supply side, rather than on the demand side.

Attracting customers - branding

- 3.26 Given the changes to the buyers’ search and selection process, branding will become more important with the growth of e-commerce, and especially B2C e-commerce. There are three main reasons for this.

²² Geographic market definition and the factors constraining international trade are discussed further in paragraphs 4.18-4.23.

Table 1: The possible impact of the Internet and e-commerce on the buying process

	<i>Advantages</i>	<i>Disadvantages</i>
Search and Selection		
Universality of access	Buyers can potentially access all suppliers, irrespective of their geographical location, at any time of the day. This can increase choice for buyers, whilst reducing search and switching costs.	Buyers are faced with a greater degree of choice, but sifting through this information to select the optimal combination of price and product specification may be an increasingly complicated task for small, time-constrained buyers.
High speed information flows	The Internet can be searched very rapidly and at low cost. This improves transparency - and specifically price transparency - allowing buyers to form rapid judgements about the position of different retailers. Price transparency will be further increased by the growth of protocols such as XML (see paragraphs 3.5-3.7). Large amounts of information can be made readily available to buyers, linking reviews to products, or even providing options to sample before purchase (with music or books). Such information can be updated in real time providing a more dynamic choice.	Other elements of the search process, such as quality or delivery times, are more difficult to verify and for some products the Internet will be an inferior search channel to the alternatives. Price transparency can be hindered by difficulties in specifying products precisely, hidden delivery charges, hidden discounts, or constantly changing prices (perhaps the result of reduced menu costs – see below).
Interactivity	Buyers may be able to specify their needs and use search engines to hunt out the best deal. Links between advertisements or reviews, and direct sales channels can be made immediately. Knowledge of the buyer can enable the supplier to offer tailored advice once a relationship is established. Wider use of auctions could result in greater product variety of particularly second-hand and ‘last minute’ products being made available.	Lack of physical interaction between buyer and seller implies that product quality can be difficult to verify and trust may be harder to build. This problem may partly be overcome by branding. Tailored sites may increase perceived switching costs on the part of the buyer. There may be concerns about consumer redress for faulty products, those purchased by mistake or where specifications differ ex post.
Integration of networks	The search process may be facilitated by intermediaries such as e-malls and comparison-shopping engines, which aggregate information from a variety of different sites (see paragraphs 3.41-3.50).	Integration of confidential internal systems with the Internet may be limited by security concerns.
Payment		
Universality of access	Payment can be made at any time of day, at the same time as selection (which is not true, for example, with mail order catalogues).	Some security concerns. Customers without access to credit or debit cards may be disadvantaged.
Interactivity	Once a relationship is formed, payment details can be stored thus reducing future transaction costs. Amazon’s ‘one-click’ technology is an example of this. One-click technology may increase switching costs by making transactions more convenient for buyers (see paragraphs 3.17-3.50).	If payment processing cost savings require the buyer to make relationship-specific investments in technology which is specific to a particular seller (or intermediary), this could increase its costs of switching to new sellers or intermediaries. Such switching costs are still likely to be lower than under alternative forms of electronic interaction (such as EDI – see paragraphs 3.41-3.50)
Integration of networks	Repeated transactions can be automated by integrating the transaction process with their invoicing and payment systems so as to reduce processing costs for both parties to the transaction.	

Receipt of good or services		
Universality of access	<p>At least as good as traditional for intangibles (such as tickets) or for products where there is no delivery (such as houses). Much better for products which can be transmitted electronically (music).</p> <p>Some (time-poor) customers will value the convenience of being able to avoid visiting the high street and having to collect the goods personally.</p>	<p>For some physical goods no real change. However, where buyers would traditionally take delivery in-store, delivery now takes time and can be expensive, particularly for perishable goods (e.g. groceries) or for urgent purchases (e.g. medicaments).</p> <p>In some markets the total cost of distribution may rise as economies of scale are lost through lower density distribution channels.</p> <p>Possible concerns over customer redress.</p>
Interactivity	<p>The buyer can track deliveries.</p> <p>The buyer can quickly complain or provide feedback to suppliers so as to improve services levels.</p> <p>After-sales service (such as manuals) can often provided readily over the Internet.</p>	

- *No direct customer interface.* Customers cannot observe the product they are purchasing directly in order to ensure quality, and they do not have face-to-face contact with the seller which may make customer redress more difficult. These factors tend to increase the importance of brand image and customer trust, at both the retail level and the product level. This will be particularly important for experience goods and credence goods, where the customers are unable to judge quality directly.
- *Enhanced potential for search.* A key benefit of the Internet is the ability to search for products both rapidly and cheaply. This benefit will be largest where products can be well-specified, as is generally the case for branded items. For example, branded consumer goods (e.g. Chanel No 5 Eau de Parfum or Montecristo No 4 Cigars) are generally well defined within their product specification. This will tend to increase the importance of brand name at the product level.
- *Importance of 'neural real estate'.* In principle, the growth of the Internet increases the potential customer base of any seller. However, the absence of a local customer base and physical sales outlets may make it difficult to reach these customers. In this situation, branding will become increasingly important for winning customers, especially at the B2C level where customers are relatively small and unsophisticated. Brand name and customer loyalty are sometimes known 'neural real estate', as opposed to physical real estate.²³

3.27 In establishing brand name, e-commerce sellers are in many ways at a disadvantage to traditional sellers in terms of attracting customers. Because the market is still in its infancy, Internet brand names have to be established from scratch. 'Mix-play' firms, which leverage their traditional brand name into e-commerce, may have an advantage over 'pure-play' online brands. Nevertheless, in some cases traditional companies have adopted new brand names for their online operations, suggesting that this advantage is perhaps not as great as it might appear.²⁴

3.28 The importance of brand name explains why might expect to see large-scale marketing campaigns for e-commerce companies, often using traditional display advertising media. Other forms of attracting customers, such as affiliations, will also be increasingly important. These are links from other websites - for example, portals²⁵ or comparison-shopping engines - for buyers interested in particular types of product.

Customer retention – increasing switching costs

3.29 Once websites have attracted customers, they will wish to retain them so as to generate repeat sales. That is, online sellers will need to increase buyers' switching costs, which would be relatively low otherwise in an online world (see paragraphs 3.18-3.24).

3.30 E-commerce sellers have four methods available to them to lock-in customers in this way.

- *Tailored customer offerings.* Whilst e-commerce suppliers lack a physical contact point with customers, the use of cookies alongside detailed customer databases may enable sellers to retain customers through personalised service and added convenience, it is possible to make different offers to different customers based on their profiles. For example, Jungle.com greets returning customers with personalised product recommendations, 'guessing' customers' tastes based on their previous purchases.

²³ See *Understanding digital markets: review and assessment* by Smith, Bailey and Brynjolfsson (1999), (<http://ecommerce.mit.edu/papers/ude>).

²⁴ This may be because the traditional brand name is not considered suitable for the online operation, or because there is a risk of the brand being devalued by poor Internet performance.

²⁵ 'Portals' are websites that act as a user's entry point to the Internet, providing links to - and hosting content from - other sites. Affiliations may enable the transfer of trust as weaker brands leverage off more powerful brands.

Similarly, Tesco online allows customers to compile shopping lists that are retained in the company's database and displayed when the customer logs on the company's website.

- *Reduced transactions costs.* Payment procedures will often be easier for repeat visitors. For example, Amazon stores customers' payment details and retrieves them through cookies each time a customer re-visits the site. This allows buyers to purchase books by hitting a single link (hence 'one-click'), without re-entering their payment details each time. This reduces further the time required to conclude the transaction and increases buyers' convenience.
- *Integration of IT systems.* At the B2B level, customers may be tied in through integration of their supply chain management systems with a particular seller (or online marketplace).
- *Network externalities.* Network externalities can be exploited in order to generate customer loyalty. These are most obvious in the case of online marketplaces, where all participants wish to use the same marketplace, and will have little incentive to leave a marketplace with high liquidity for one with low liquidity (see paragraphs 3.24-3.37). However, it may also be possible to create other forms of network externality by encouraging communication between buyers. This communication might be direct, as in chat rooms, or indirect, as in the reviews written by customers for Amazon.

3.31 Such attempts to increase switching costs, if successful, may have implications for market definition, barriers to entry and anti-competitive conduct, as discussed in Sections 4 to 6.

Increasing revenue yield – capturing consumers' willingness to pay

3.32 Internet transactions may be characterised by greater pricing flexibility than traditional markets. Menu costs might be expected to be lower in electronic markets, comprised primarily of the cost of making a single price change in a central database. Reduced menu costs should significantly increase the sellers' ability to change prices in response to demand conditions.²⁶ This will tend to increase sellers' revenues.

3.33 It has also been widely suggested that e-commerce could facilitate price discrimination between customers, resulting in market prices which relate more closely to customers' willingness to pay than to the costs of supply, and so increasing revenue yield.²⁷ There are three forms of price discrimination.

- *First-degree price discrimination* involves a seller pricing to each individual customer at that customer's maximum willingness to pay. This extreme form of price discrimination has traditionally been difficult, since suppliers have only limited ability to determine how much people are willing to pay for their product and to extract this value. However, the growing use of auctions and exchanges via online marketplaces may facilitate such price discrimination. These can to some extent be designed to incentivise truthful revelation by customers of their willingness to pay, and also to extract this value.
- *Second-degree price discrimination* involves self-selection by customers amongst a variety of different product offerings. In some cases, the customers are aware of the different price offerings available. In other cases, the customers may be less aware of

²⁶ See *Frictionless Commerce? A comparison of Internet and Conventional Retailers* by Brynjolfsson and Smith (1999), (<http://ebusiness.mit.edu/papers/friction>). This paper finds that Internet retailers undertake more frequent, and far smaller, price changes than do traditional retailers, presumably reflecting lower menu costs.

²⁷ See, for example, *Information Rules*, Carl Shapiro and Hal Varian, Harvard Business School Press, 1999

the different options.²⁸ The growth of e-commerce may facilitate the wider use of yield management systems, which are effectively a tool for second-degree price discrimination. The low cost of distributing information via the Internet also facilitates ‘versioning’, whereby sellers package information in slightly different ways in order to extract more revenue from customers. For example, some sites will sell up-to-the minute news at a higher price than ‘delayed’ news.

- *Third-degree price discrimination* involves a seller partitioning its market into identifiable subgroups, based on ‘exogenous’ characteristics, and offering these subgroups different prices. E-commerce retailers can do this by using ‘cookies’ alongside detailed customer databases in order to tailor their offerings to different categories of customers. Third-degree price discrimination is far from new, but it has usually been based on relatively broad subgroups of society, such as children, students, senior citizens and the unemployed. The dramatic increase in detailed information available to e-commerce retailers will potentially enable far more sophisticated forms of third-degree price discrimination than was previously possible.

3.34 However, it should be noted that a successful price discrimination strategy depends on a lack of arbitrage between different price offerings. Whether the Internet makes arbitrage easier is a question that can only be answered on a case-by-case basis. In general, there is very little evidence that these price discrimination strategies are currently exploited to any significant degree. We discuss price discrimination issues in more detail in paragraphs 6.58-6.71.

Reducing sellers’ procurement costs

3.35 E-commerce is expected to generate large cost savings for businesses through reduced procurement costs.

- *Procurement processes may be more efficient.* For example, this can be achieved through integrated supply chain management systems. Electronic procurement processes and exchange of data is not a new phenomenon. Electronic data interchange (EDI) over proprietary networks pre-dates the Internet. However, the high set-up and maintenance costs, and the use of proprietary electronic standards, meant that only the very large corporations could benefit from EDI and that such data exchange was generally bilateral, between long-term trading partners. The Internet offers major advantages over EDI. Access to the Internet costs little, electronic marketplaces are relatively cheap to set up and maintain, and the use of universal standards makes the technology flexible enough to provide a trading platform for any industry.
- *Buyer power may be increased.* E-commerce might be expected to increase businesses’ buyer power for a number of reasons. Firstly, it facilitates searching by buyers, which will give them access to a larger number of potential suppliers. This will increase the credibility of threats to switch, and so increase buyers’ bargaining power. Secondly, it facilitates the creation of buying groups, often run by an intermediary, whereby purchasers combine their buying needs in order to increase their total buying power with suppliers.²⁹ Thirdly, buyers may be able to design auctions (and specifically reverse auctions) to their own advantage.

3.36 While these are still early days to obtain reliable figures on the cost savings generated by e-commerce, several studies have been produced estimating the likely cost savings for

²⁸ For example, in choosing a ‘talk plan’, mobile phone customers will look at the different packages of fixed cost and per minute charge and choose the one which best suits their expected usage. On the other hand, when buying an airline ticket, a customer is generally aware that he may get a better price if he is willing to book early, but he does not know how much better, and whether this will justify the consequent reduction in his travel flexibility.

²⁹ The most famous example of such a buying club in the UK is the B2C site, www.letsbuyit.com. Buyer clubs are however likely to be more prevalent in the B2B arena.

different industries. For example, analysts at Goldman Sachs estimate that B2B e-commerce can bring about reductions in processing costs of between 10% and 35%, and reductions in product costs in excess of 20%.³⁰

Reducing inventory, distribution and other costs

- 3.37 A variety of other costs may be also be lower in e-commerce markets than in traditional markets.
- *Inventory costs* may be reduced by the growth in just-in-time operations and real-time pricing mechanisms.
 - *Delivery costs* may be cut significantly in markets where the Internet is the means of delivery as well as transaction (e.g. news services, broadcasting, information and data services).
 - *Staff costs* may be reduced where customer-facing and back-office processes can be more fully automated.
 - *Buildings costs* may be reduced. The fact that suppliers can reach customers world-wide with a single website means that there may be less need for a costly network of local outlets.
 - *The costs of product variety* may also be reduced, because increased variety no longer requires a network of local outlets to be expanded. For example, the costs to Amazon of making 1000 more books available will generally be lower than the costs of increasing a network of bookshops to house these books.
- 3.38 On the other hand, there are certain factors which may act to increase the costs of e-commerce operators. The lack of any local customer base means that successful suppliers will need to find other ways of developing a loyal customer base, including incurring large sunk costs of branding and customer acquisition. Companies may also need to invest in warehousing and distribution infrastructures, which increase fixed costs.
- 3.39 These changing cost structures may also have significant consequences for market structure. For example, if sunk costs fall, barriers to entry may be lower, resulting in relatively unconcentrated markets. Whether sunk costs will fall, however, is open to debate. If first-mover advantages are strong, advertising expenditures and brand building may need to be significant and this could result in relatively concentrated markets. The balance between these forces will vary from market to market and it is too early to predict which will dominate. However, the perception of low entry barriers and large first-mover advantages has probably resulted in over-entry in many markets, particularly those engaged in B2C. The issue of entry barriers is discussed further in paragraphs 5.12-5.37 whilst the issues of foreclosure, predation and refusal to supply (which can also impact on market structure) are discussed in Section 6.

Conclusions

- 3.40 Table 2 below summarises the way in which the characteristics of the Internet impact on sellers' main activities.

³⁰ *B2B: 2B or not 2B*, Goldman Sachs Investment Research, November 1999. In another study by Merrill Lynch, *The B2B Market Maker Book*, General Electric is reported to have made considerable savings following the implementation of an online procurement strategy.

Table 2: The possible impact of the Internet and e-commerce on the selling process

	<i>Advantages</i>	<i>Disadvantages</i>
Attracting customers		
Universality of access	Sellers can reach a large number of customers, irrespective of location.	Suppliers can find it difficult to become visible. A lack of physical presence means that branding will become more important. Large marketing expenditures may be required.
High speed information flows	Sellers can respond to customer enquiries quicker and can better tailor products and services to individuals' requirements.	Bad publicity (which can impact on brand reputations) may spread more quickly, so Internet brands may be more fragile.
Interactivity	Internet advertising has the benefit that it can be well targeted to customers that are interested in specific sorts of products. Such targeted advertising could potentially enable the development of new markets which cater to more specialised preferences.	A lack of direct customer interface will increase the importance of customer trust and branding.
Integration of networks	'Affiliations', which link e-commerce sites with other sites (such as portals), are an important form of Internet marketing.	Refusal of access to portals could act as a significant barrier to entry (see paragraphs 6.117-6.123)
Retaining customers		
Universality of access	With universal access, network externalities may provide an important way of retaining customers. Such network externalities often exist in online marketplaces, but may also occur as a result of communication between buyers.	Search and selection costs can be low for e-commerce buyers, so sellers may have low retention rates unless they can find other ways to lock customers into the relationship.
High speed information flows	Can react quickly to changing customer needs so as to better retain customers.	The rapid change in offerings that is possible on the Internet may make it difficult for buyers to form sustainable impressions about suppliers. This may encourage buyers to 'over' search every time they enter into a transaction.
Interactivity	Customer loyalty can also be improved by streamlining the purchasing process, for example by retaining customer shopping lists or payment details for repeat purchases.	
Integration of networks	The use of cookies and customer databases facilitates the retrieval and processing of customer-specific data. Companies wishing to sell over the Internet can then exploit these data to improve customer loyalty. At the B2B level, customers may be tied in through integration of their supply chain management systems with a particular seller (or online marketplace).	
Increasing revenue yield		
Universality of access		Universality of access may make it difficult to differentiate offerings between customers by geographical location.
High speed information flows	High speed information flows mean that suppliers have the ability to change prices rapidly and cheaply. In traditional distribution channels this is described as having low menu costs. The low cost of distributing information facilitates 'versioning' of information products distributed over the Internet. This can increase total revenues.	

Table 2: The possible impact of the Internet and e-commerce on the selling process

Interactivity	<p>The combination of customer databases and the use of cookies enables companies to tailor prices to different categories of consumers or, in extreme cases, to individual consumers, so as to extract their maximum willingness to pay.</p> <p>The Internet facilitates the use of auction-based sales techniques. Although auctions can be designed to function in many different ways, it is generally true that, in auctions, prices are determined more by buyer's willingness to pay than by sellers' costs of supply.</p>	<p>Some transactions still require the physical interaction of buyer and seller (or buyer and intermediary) for their successful conclusion. This happens if products are complex and thus difficult to specify, if the buyer is uncertain about what to buy or simply values the shopping experience <i>per se</i>.</p>
Integration of networks	<p>Low menu costs, combined with integration with specialised IT systems, provides the potential for real-time pricing. This facilitates wider use by sellers of yield-management systems, or by online marketplaces of dynamic pricing mechanisms.</p>	
Reducing procurement costs		
Universality of access	<p>Universal access facilitates the forming of buying groups in order to improve bargaining power and thus reduce procurement costs.</p> <p>Universal access also means that firms running procurement processes electronically can include a larger number of potential bidders.</p>	
Integration of networks	<p>By linking the corporate supply systems to electronic marketplaces, companies can reduce process costs by creating seamless order processing systems that feed input requirements straight from the factory to procurement to the marketplace.</p> <p>It may be possible to integrate procurement processes with internally automated supply-chain management (SCM) or enterprise resource planning (ERP) systems.</p>	
Reducing inventory, distribution and other costs		
Universality of access	<p>Companies can sell their over-stocked supplies on electronic marketplaces (often anonymously), thereby reducing the risk of writing off unwanted supply.</p> <p>For products delivered directly over the Internet distribution costs will fall.</p> <p>Staffing costs may fall significantly if parts of the supply chain, including the customers interface, can be automated. Operating costs relating to fixed assets may fall significantly.</p> <p>The need for a costly network of local outlets disappears.</p>	<p>Distribution costs may increase for physical products.</p> <p>The increased importance of branding may imply the need for substantial spending on advertising and marketing.</p>
High speed information flows	<p>The real time matching of supply and demand - and the development of just in time production - could substantially reduce inventory costs in some markets.</p>	
Integration of networks	<p>By interconnecting with buyer sites and procurement systems, supplier can set up just-in-time production and delivery systems, preventing the build-up of unnecessary inventory.</p>	

Implications for intermediaries

- 3.41 In paragraphs 3.15-3.16 we discussed how intermediaries facilitate the interaction of buyers and sellers where there is a need to co-ordinate the interactions of a large number of buyers and sellers, where there are high search costs on the part of the buyer, or where the intermediary could aggregate transactions in order to benefit from economies of scale or scope.
- 3.42 The characteristics of the Internet are likely to enhance the role intermediaries can play. Universal access is likely to increase the numbers of buyers and sellers that could potentially transact, there has been a huge increase in the amount of information available, and the Internet can facilitate the aggregation of transactions in order to achieve cost economies.
- 3.43 There is thus likely to be a continued role for intermediaries as e-commerce grows. In some cases, these intermediaries will carry out essentially the same role online as they have traditionally, albeit more efficiently.³¹ In addition, however, a breed of Internet-specific intermediaries have emerged.
- *Comparison-shopping engines.* These search for sites selling a specified product and retrieve product specification and price, allowing users to immediately compare offers from different sellers.³²
 - *E-malls.* These are very similar to traditional shopping malls, they bring together sellers of different products under the umbrella of a single website, often providing additional services such as product delivery and credit facilities for customers. Note that e-malls are not retailers themselves (i.e. they do not take on inventory risk).
 - *Online marketplaces.*³³ These are secure sites where trading partners can post their sales offers or procurement orders, which can be integrated with the participants' corporate supply management IT systems, and which often to incorporate dynamic pricing mechanisms, such as auctions, reverse auctions and exchanges.
- 3.44 Of these, it is online marketplaces that have generated the most excitement amongst e-commerce commentators. These marketplaces, many of which have no equivalent in the traditional world of commerce,³⁴ can take a variety of forms, depending on the relative number of sellers and buyers interacting in each commercial transaction:
- one-to-many (auctions);
 - many-to-one (vendors catalogues and reverse auctions); and
 - many-to-many (exchanges).
- 3.45 The main characteristics of these online marketplaces are summarised in Table 3 below.

³¹ Thanks to fast reliable database applications with web-based front-ends, brokers, agents and the like can now transfer many of their functions online, bringing together buyers and sellers often without any need for human intervention. A typical example of this type of intermediation is provided by online travel agents. For example, Travelocity (www.travelocity.co.uk) allows registered customers to browse its database of flights, car rental agencies and hotels, to book online and pay via secured credit card transactions.

³² Search engines and comparison-shopping engines are generally provided free of charge to end-users, therefore as such do not fit within the definition of e-commerce provided in paragraphs 2.8-2.10. It is however important to recognise their role in reducing search and selection costs for the buyer.

³³ Also known as 'e-markets', 'net markets', 'metamediaries', 'infomediaries' and a host of other creative names.

³⁴ This does not necessarily mean that these marketplaces should be considered as separate economic markets for the purposes of competition policy. Establishing whether that is the case will be a key market definition issue raised by e-commerce (see Section 4).

Table 3: Electronic market places

Type	Interaction	Pricing	Advantages	Product complexity
Auction	One-to-many	Dynamic	Seller	High
Catalogue	Many-to-one	Static	Seller	Medium
Reverse auction	Many-to-one	Dynamic	Buyer	High
Exchange	Many-to-many	Dynamic	Both	Low

- 3.46 In *one-to-many* e-markets, one seller interacts with many buyers. These markets generally take the form of auctions, and are particularly suited to products whose value is unknown or difficult to determine through conventional channels (for example, perishable goods, unique items such as patents, capital assets, excess inventory, etc.).
- 3.47 While auctions require a single seller and many buyers, it is not necessary for the seller to be a single business. Software is available allowing many businesses offering homogenous products to aggregate their supply into a single offer for auction, in the hope of attracting larger buyers and therefore commanding better conditions of sale.³⁵
- 3.48 In *many-to-one* e-markets, many sellers interact with a single buyer. Vendor catalogues are similar in spirit to e-malls. These marketplaces bring together the offer of a large number of sellers, providing buyers with a one-stop shop for their procurement needs. Since prices are predetermined, vendor catalogues are suitable to those cases where the costs from individual negotiations are higher than the cost-savings generated from dynamic pricing. In reverse auctions, a single buyer solicits bids from a multitude of sellers. As with regular auctions, the buyer need not be a single organisation, but it is becoming increasingly common (and feasible) for buyers to aggregate their demand in order to obtain lower prices and better terms of contract.³⁶
- 3.49 Finally, exchanges favour the bilateral interaction of *many buyers and many sellers*, for the trade of well-defined, commodity-like goods (e.g. stocks, energy, etc.).
- 3.50 An important factor for a successful online marketplace is liquidity (i.e. the ability to bring together a large number of buyers/sellers and generate a high volume of transactions). In a very liquid marketplace, prices are adjusted after every bid and the exchange acts as a commodity spot market. However, it is also possible for less liquid e-markets to operate on the basis of periodic (i.e. non-instantaneous) market clearing, generating greater price competition. Liquidity can have important implications for the nature of competition between rival marketplaces as each attempts to become the most liquid. Small changes in market size and liquidity can rapidly tip the balance of power; such markets are thus often described as being ‘tippy’ (see paragraphs 5.24-5.37).

Products most likely to be affected by e-commerce

- 3.51 As we noted at the start of this section, e-commerce may sometimes represent a new distribution channel for existing products, but may also create new markets (and sometimes

³⁵ The greatest benefit from auctions obviously go to the seller, since buyers bidding against each other create competitive pressures driving their margins down. However, buyers also stand to gain from auctions of perishable goods/excess inventory, since they can hope to obtain more favourable price conditions than through conventional channels. Auctions can also provide wider access to the second-hand market.

³⁶ This is one of the solutions provided, for example, by Perfect.com (www.perfect.com), the California-based application service providers of RFQ (request for quote) e-commerce software.

new products). In what follows, we build on the discussion of the previous sections to characterise the products and services most likely to benefit from e-commerce.

B2C e-commerce

- 3.52 As discussed in paragraphs 3.18-3.24, one of the most important implications of e-commerce for buyers is the potential reduction in search and selection costs. E-commerce assists search and selection when price is the most important parameter or quality can be well specified. This is particularly true of generic, commoditised or branded products.
- 3.53 Low search and selection costs (and, as a consequence, reduced switching costs) will result in fierce competition between suppliers to attract and lock-in customers. Where branded products are concerned, we would expect to see fierce price competition, whereas retail brands are likely to be more important for generic or other unbranded goods. But even for those products, price transparency and reduced search costs could lead to intense price competition.
- 3.54 Sellers who will survive to see the equilibrium (and we are currently some way from this) are those who can:
- attract customers with minimum marketing spend (probably because they have established brands);
 - hold those customers via various forms of lock-in and/or sell more to those customers by price discrimination or dynamic pricing;
 - use the cost savings they achieve to compete vigorously on price; and
 - bring genuinely new products and services to market which cannot be supplied offline.
- 3.55 Once all these points are put together we can start to see which factors are likely to facilitate or restrain the development of e-commerce in the B2C sector. These are summarised in Table 4.

Table 4: Factors which facilitate or restrain the growth of B2C e-commerce

Factors which facilitate e-commerce	Factors which restrain e-commerce
Branded products with certified quality	Complex products and services
Generic products where quality is known or unimportant	Where seeing, touching and trying products is important
Where price is important	Where quality is important but difficult to specify
Small purchases	Large purchases
Products and services where dynamic pricing is possible and valuable	Products which form part of a linked shopping trip (economies of scope of the demand-side)
Where intermediaries can help with lengthy search processes	Where consumer redress issues are important
Where the shopping experience is repetitive and uninteresting	Where real cost savings are not significant or cannot be maintained
Where convenience can be increased	Where convenience is not increased (or actually reduced)
Relatively low delivery costs (at the extreme where delivery takes place electronically)	
Where significant cost savings can be realised by retailers	

- 3.56 Most industries are characterised by factors on both sides of Table 4. However, we would expect products that more closely match the left hand side to be more likely to support e-commerce transactions.
- Products where quality can be well specified within product descriptions (e.g. computers and other high-tech equipment, books, CDs, software, etc.) or consumer products with very strong brand presence (e.g. luxury goods such as fragrances and cosmetics, branded clothing, etc.).
 - Products and services which traditionally involve high search costs and for which intermediation is not particularly strong, because say of the low value of the products (e.g. second-hand goods).
 - Products for which consumers value variety of choice and the ability to browse, and for which good website design can make the shopping experience more enjoyable, via reviews and samples (e.g. videos, toys, homeware, electronic goods), but where the tangible characteristics are less important.
 - Products which involve repeat purchases based on long shopping lists (e.g. groceries) and for which the shopping experience is essentially administrative and uninteresting.
 - Products or services which involve accessing, analysing and making suggestions with respect to a large amount of information on the basis of customer specifications (e.g. travel services, property, recruitment, etc.).
 - Products with low delivery costs relative to their value (e.g. jewellery), for which no shipping is necessary (intangible products), for which the Internet is itself a method of distribution (e.g. data, news services, research), or for which shipping would be necessary even through conventional channels (e.g. large items, gifts).
- 3.57 Recent research by Verdict suggests that online shopping in the UK in 1999 totalled some £581 million. Table 5 below that the largest part of this was spent on grocery products, although this was a small proportion of total grocery sales.
- 3.58 Our analysis would support this. Whilst the Internet can add convenience (in terms of search and selection) and can replace an administrative task with an Internet order, the customer still has to arrange for a delivery window and has to rely on the retailer (whose brand will be very important for fresh produce and own label items) to select substitute products if certain items are out of stock. The element of touch and feel is probably valued by many grocery shoppers. Moreover, the costs of distribution are still high for the retailers and they are unlikely to be making a profit on these services. Finally, the location of retailers is important for groceries and it is unclear whether the Internet yet provides the customer with more local choice.
- 3.59 As such, this B2C market may have grown mainly on the back of novelty value on the part of consumers and subsidies from retailers. This is not to say that it is not sustainable, but the distribution economics need to be improved (perhaps a first-mover advantage) before a significant proportion of grocery shopping is undertaken online.
- 3.60 Table 5 shows that significant online expenditures also took place in computer software, books and music and video, and in all of these categories such expenditures represented a fairly significant proportion of total retail sales. This is also consistent with our analysis. We would expect the volume of these purchases to grow even faster once electronic delivery is commonplace, although the value of such transactions may not rise as fast if prices start to fall.

3.61 The lowest online expenditures in Table 5 took place in clothing and footwear and in health and beauty products. Clothing and footwear are difficult products to purchase without seeing them or trying them – sizes vary, fashions are important and the decision-making process is enjoyable for many consumers. The only parts of these markets which may see significant e-commerce penetration are those where product specification is easy and lower prices can be achieved (often by shopping overseas). In almost all cases this would relate to internationally branded products such as jeans or fashion accessories. Beauty products share many of the same characteristics (fragrances are tested) although health products are slightly different. The driving factor here is probably a mixture of convenience (delivery may take too long) and retail location (particularly if close to a surgery).

Sector	Online spend (£m)	Share of retail sales	Share of online sales
Grocery	165	0.2%	28.4%
Clothing and footwear	5	0.1%	0.9%
Computer software	122	10.0%	21.0%
Electricals	18	0.2%	3.1%
Music and video	85	2.9%	14.6%
Books	106	5.2%	18.2%
Health and beauty	1	0.0%	0.2%
Other	79	0.2%	13.6%
Total	581	0.3%	100.0%

Source: Verdict on Electronic Shopping, June 2000

B2B e-commerce

3.62 Turning now to B2B transactions, it is difficult to find products that are *not* likely to be affected by e-commerce. The varieties of B2B marketplaces discussed in paragraphs 3.41-3.50 are flexible enough to accommodate trade of virtually any input of production, whether final or intermediate, manufacturing or service.

3.63 Rather, it is more useful to characterise different industries based on the *speed* with which they are likely to adopt B2B e-commerce solutions. First, there are a series of B2B markets that are more similar B2C markets in terms of economic characteristics. These are markets for low-value, one-off purchases where it is not worthwhile incurring high transaction costs. These markets (such as *ad hoc* procurement of office supplies) will tend to behave like B2C markets and can be categorised in the same way.

3.64 In traditional B2B markets, where purchases are of high value and/or frequent, it is common to see significant transaction costs of doing business. These include search and selection, product specification, contract negotiation, order submission, payment and administration and delivery confirmation.

3.65 As discussed in paragraphs 3.25-3.40, the Internet can significantly reduce these transaction costs in many B2B markets. These cost savings are largely related to the integration of different databases and information systems, which can improve operating and ordering

efficiency, reduce inventory costs and improve co-ordination between different parts of the supply chain. This is most likely to occur in the following sectors.

- Industries with long and complex supply chains (mainly manufacturing industries), where e-commerce can contribute to enhance efficiency at various stages of the supply chain.
- Industries where process costs account for a large proportion of total costs, since one of the main advantages of B2B e-commerce is the possibility of efficiency gains in terms of streamlined procurement and supply processes.
- ‘Polarised’ industries, i.e. industries with a few large players and a very large number of small players. In those industries, the large players have the incentives and the financial resources required to promote the creation of vertical trading exchanges, while the smaller players are those that stand to gain the most (in relative terms) from the establishment of e-markets).³⁷
- Industries with high penetration of IT, where transition to online transactions will be relatively easy from a technological point of view.

3.66 Recent estimates suggest there are currently more than 900 B2B marketplaces worldwide,³⁸ in sectors ranging from aerospace to agriculture, constructions, electronic components, energy, environmental services, paper, plastics, steel, telecommunications and utilities.³⁹ A number of these e-markets are little more than press releases and have not yet started trading.⁴⁰ In other cases, such as the automotive parts exchange Covisint set up by Ford, General Motors and DaimlerChrysler, trading has been delayed by regulatory concerns.

3.67 A (non-comprehensive) list of B2B e-markets is provided at Appendix 1, compiled from the B2B directory of Net Market Makers (www.nmm.com/knowledgebase/), a leading information centre on the B2B sector. It should be noted that any list of B2B e-markets is bound to become rapidly out of date, as new marketplaces are being created daily, while others are rapidly disappearing from the market in a wave of consolidation (driven to a large extent by the importance of liquidity).

³⁷ This is observed in the US car industry, defence and aerospace industry, aircraft industry, steel industry and many others.

³⁸ *You say you want a revolution. Part 1: Introducing Net Markets*. Deutsche Bank Equity Research, 28 March 2000.

³⁹ *The B2B Market Maker Book*, Merrill Lynch, 3 February 2000.

⁴⁰ It is often difficult to obtain detailed information about these electronic markets, as membership is restricted to companies operating in the sector and the applicants’ identities are carefully verified upon registration, for security reasons. The implications of refusal of access to such marketplaces for competition in the market are discussed in paragraphs 6.117-6.123.

4 MARKET DEFINITION

- 4.1 The definition of relevant markets is an important step in any competition investigation under the Competition Act 1998. It also plays a crucial role in the assessment of mergers and acquisitions under the Fair Trading Act. An introductory explanation as to how the Director General of Fair Trading will approach market definition is provided in the CA98 Guideline *Market Definition* (OFT 403).
- 4.2 Relevant markets will normally be delineated in at least two dimensions: by *product* and by *geographic area*. The boundaries in each of these dimensions can sometimes be obvious, but this is not always the case. The Director General will normally adopt a conceptual framework known as the ‘hypothetical monopolist’ or ‘SSNIP’ test in order to form a view as to how to delineate relevant markets.
- 4.3 E-commerce does not raise new issues that cannot be dealt with under the existing framework for market definition. However, it may to some extent affect the application of this framework and the results that are obtained. There are three issues raised by e-commerce.
- Whether e-commerce creates new markets for the purposes of competition policy, or whether e-commerce simply constitutes a new sales channel, which competes with traditional sales channels, and lies within the same market.
 - Whether markets may be made more narrow or widened as a result of increased scope for price discrimination, or by the various changes in search costs, switching costs and economies of scale that might be expected to obtain under e-commerce.
 - Whether geographical markets will be widened as a result of the reduced importance of geographical location for transactions between buyers and sellers.
- 4.4 Paragraphs 4.5-4.17 examine the likely impact of e-commerce on product market definition and paragraphs 4.18-4.23 discuss geographic market definition. Paragraphs 4.24-4.45 then look at the implications of e-commerce for the application of the hypothetical monopolist test of market definition.

Product market definition

- 4.5 The growth of e-commerce is likely to raise the following questions for product market definition, discussed in turn below.
- Does e-commerce create new product markets for the purposes of competition policy?
 - Would increased scope for price discrimination between customers imply narrow market definition?
 - How do changes in search costs and switching costs impact on market definition?
 - How do changing cost structures impact on market definition?

Does e-commerce create new product markets for the purposes of market definition?

- 4.6 The issue of whether traditional commerce and e-commerce lie within the same market is likely to come up in a host of cases.
- In some instances, e-commerce simply creates an additional sales channel. For example, online grocery retailing has developed as an alternative sales channel to traditional grocery retailing. For any given product, the new e-commerce channel may or may not lie within the same market as the traditional sales channel, depending on the degree of competition between the two sales channels.

- In other instances, e-commerce appears to create entirely new products and services, and thus new economic markets. For example, comparison-shopping search engines and many electronic marketplaces offer a service which was previously unavailable, usually because the costs of providing the service were prohibitively high. However, even in such circumstances, the e-commerce service may lie within a wider market. For example, in the B2B context, electronic marketplaces may compete with ‘traditional’ bilateral sales, with parties only using the e-commerce channel if it offers value for money comparable to, or better than, the traditional channel.
- 4.7 The issue of whether different sales channels lie within the same product market is not new. Conceptually and practically, this exercise is very much analogous to cases in which the competition authorities have had to determine whether mail order competes with other retail channels.⁴¹ Likewise, in the ongoing enquiry into supermarkets, the Competition Commission is considering whether large supermarkets lie within a market of their own, separate from smaller grocery stores, convenience stores or specialised food retailers.⁴²
- 4.8 To assess such questions, one must firstly examine customers’ perceptions as to the differences between online trading and traditional channels. This will entail comparing and contrasting their prices and the ancillary services provided through the various channels, for example providing the buyer with product information, helping the buyer to assess her needs, or assisting with integrating the product with other complementary products.
- 4.9 Thereafter, assessing whether e-commerce and traditional commerce represent competing channels or separate markets is largely an empirical issue, which needs to be analysed on a case-by-case basis. The analytical framework normally employed by the Director General to delineate the relevant market can largely be applied here, as discussed in paragraphs 4.24-4.45 below.

Would increased scope for price discrimination between customers imply narrow market definition?

- 4.10 As discussed in paragraphs 3.25-3.40, businesses may increase their revenue yield by charging different prices to different customers, in relation to their willingness to pay for a product or service, and there is potentially greater scope for price discrimination in e-commerce markets.
- 4.11 Price discrimination between customers may potentially result in markets being defined more narrowly.
- In the case of *second-degree* price discrimination, the fact that customers self-select amongst a variety of product offerings suggests that there may be consumers that are on the margin between different offerings, who would switch in response to a change in relative prices. If there are enough of these marginal customers, then the offerings will constrain each other’s prices and they should all be considered to lie within the same market. Whether this is in fact the case is an empirical question.
 - In the case of *third-degree* price discrimination, by contrast, customers are segmented into groups and have little potential to switch between these groups so as to alter the

⁴¹ This issue is sometimes referred to as *retail* market definition. For example, in the *Littlewoods-Freemans* proposed merger (MMC, 1997), the MMC concluded that agency mail order sales lie in a market of their own, separate from high street retailers. Issues related to retail market definition are discussed in *Competition in retailing* by London Economics, (OFT Research Paper no. 13, 1997).

⁴² A US example of how merger decisions in retailing can depend critically on retail market definition is provided by the case of *Federal Trade Commission v. Staples Inc.* (1997). The FTC blocked a merger between two of the three largest office supply superstores, having defined a distinct relevant market for these superstores, separate from other office supply retailers.

prices they receive. It will thus often be appropriate to consider each of these groups as a separate narrow market.

- The situation is more extreme still in the case of *first-degree* price discrimination, where every customer could potentially be viewed as constituting a distinct market. For practical purposes, however, such markets are often aggregated together in competition investigations, since it is easier to make meaningful comments about the relative market power of market participants by looking at their position across a variety of these very narrow markets.

4.12 It should be recognised, however, that both first-degree and third-degree price discrimination rely on a lack of arbitrage between customers. If arbitrage were simple and costless, then buyers who are offered better prices would tend to purchase on behalf of buyers who are offered less favourable prices. Actual prices would then converge, and all customers would lie within the same relevant market.

4.13 In many cases, arbitrage is not costless, but it is not impossible. Indeed, arbitrage could potentially be facilitated in e-commerce markets by the reduction in transaction costs associated with the Internet. To the extent that this acts as a constraint on the prices paid by buyers, it may lead to markets being defined more widely than one might at first consider.

How do changes in search costs and switching costs impact on market definition?

4.14 For many products and services, e-commerce may bring about a reduction in search and selection costs, facilitated to some extent by the existence of specialised search engines. As consumers are better able to evaluate and compare different products and different sellers, these products and sellers may become more substitutable. This might be expected to widen product market definition.

4.15 On the other hand, such market-widening depends on customers switching readily between products. Despite the reduction in search costs, e-commerce may in some cases result in an increase in the switching costs faced by certain buyers, as described in paragraphs 3.25-3.40. This may in turn lead to narrower product markets again, as suppliers compete to lock-in a large proportion of customers.

How do changing cost structures impact on market definition?

4.16 As discussed in paragraphs 3.25-3.40, e-commerce is likely to change companies cost structures. While different products will be affected in different ways, for a number of products e-commerce may result in cost structures where fixed costs are high relative to marginal costs.⁴³ This is most likely to be true for products where the Internet is the means of delivery as well as transaction (e.g. news services, broadcasting, information and data services). It will also be true of any site that can easily and cheaply expand its operations once the basic website design, automation of procedures and branding is in place. This compares with traditional commerce, where an increase in sales normally requires the employment of more staff and the opening of more outlets.

4.17 When this occurs, the cost structure is said to be characterised by economies of scale and scope. This may result in product markets being defined more widely.

- Firstly, economies of scope and a lack of capacity constraints should make it easier for e-commerce operators to enter new market segments relatively quickly and at low costs. That is, they should facilitate supply-side substitutability, implying a relatively wide market definition.

⁴³ Although both fixed costs and variable costs may be *lower* compared to traditional markets.

- Secondly, for a given price elasticity, a price rise by a hypothetical monopolist is less likely to be profitable the lower are its marginal costs, as the monopolist will tend to lose a larger margin on each unit of sales volume lost. Thus, if the hypothetical monopolist test were applied strictly, lower marginal costs could imply wider product markets (see paragraphs 4.30-4.35 for a full description of the hypothetical monopolist test).

Geographic market definition

- 4.18 Because the Internet enables buyers and sellers to find each other more easily, wherever they are located, e-commerce markets will tend to be wider than traditional geographic markets.⁴⁴ Credit card payment and easy-to-use ready reckoners (to calculate prices in local currencies) may further facilitate cross-border trade, as will growth in internationally recognised brands.
- 4.19 This market-widening will be especially important for B2C transactions, where buyers are relatively small and unsophisticated and might previously have bought from their local provider. Many B2B markets, by contrast, will already have been relatively wide geographically, as a result of buyers making larger purchases and being better informed about the available suppliers.⁴⁵
- 4.20 To the extent that traditional markets compete with e-commerce sales channels, these too may be widened geographically. For example, the US bookseller Barnes & Noble used to allow its stores in different locations to set prices independently for many of their titles. With the development of BarnesandNoble.com, such geographic price discrimination became unsustainable.
- 4.21 Nevertheless, in many markets, some barriers to trade across national boundaries will persist. Where products require physical delivery, even when bought over the Internet, distribution costs can act as an important barrier to international trade, especially for heavy objects or products that need specialised distribution.⁴⁶
- 4.22 Other factors that may constrain international trade include local preferences for particular sellers or brand names, consumers' fears about payment security and lack of redress, tax issues, national regulations⁴⁷ and language barriers. The importance of having local physical outlets, or local advertising, for branding an e-commerce business effectively may also limit the ability of sellers to attract overseas customers.
- 4.23 Finally, we may observe seller-imposed constraints, designed specifically to maintain separate geographic markets. For example, websites can often recognise the nationality of a customer, in which case there may be some potential for price discrimination between countries. Price differentiation by country can also be achieved by serving customers in different countries from 'local' websites (e.g. www.euro.dell.com/countries/uk for the UK, www.euro.dell.com/countries/fr for France and www.dell.com for the US). Price

⁴⁴ Indeed, given the convention of non-US sites adopting '.com' domain names, the location of sellers can even be hard to determine.

⁴⁵ The widening of geographic markets is likely to have important jurisdictional implications, calling for greater co-ordination among competition authorities in different countries. This issue goes beyond the scope of this report.

⁴⁶ By contrast, for information goods, where the Internet is also the means of distribution, delivery costs fall dramatically with e-commerce and are not dependent on the location of the seller (see paragraphs 3.18-3.40). The growth of e-commerce might therefore be expected to widen the geographic boundaries of such markets significantly.

⁴⁷ For example, a Paris court has banned French buyers from participating in online auctions, unless they use an auctioneer approved by the state and pay French VAT. (Source: *FT.com*, 3 May 2000). Also, under French law, it is illegal to exhibit or sell objects with racist overtones and a French court has recently determined that Yahoo must find a way of preventing French buyers from accessing auctions of Nazi memorabilia. (Source: *FT.com*, 24 May 2000).

discrimination between regions within a country would be harder to achieve, but would still be possible if customers are required to register their address before receiving price information.

Applying the analytical framework for market definition

- 4.24 Assessment of market delineation is essentially an empirical issue. To delineate the relevant geographic and product markets, the Director General will normally adopt an analytical framework known as the ‘hypothetical monopolist test’.⁴⁸ This approach asks whether a hypothetical monopolist of a given set of products in a given geographical area could increase its profits through a small but significant (5-10%) non-transitory increase in prices (also known as ‘SSNIP’ test).
- 4.25 The hypothetical monopolist test is applied sequentially. It is first applied to a ‘potential’ market including a relatively narrow range of products in a relatively small geographic area. If it emerges that a hypothetical monopolist of this market would be prevented from setting prices above competitive levels by buyers switching to certain products or suppliers in different geographical areas, then those substitutes are added to the potential market and the test applied again. This is known as *demand-side substitutability*.
- 4.26 Substitution can also take place by suppliers. If the prices charged by a hypothetical monopolist of a given market were to rise, undertakings that did not currently supply the product might find it profitable to start supplying it. If this can be done at sufficiently short notice, it is known as *supply-side substitutability*. This also leads to a widening of the relevant market, since competition from new suppliers would prevent the hypothetical monopolist from increasing prices.
- 4.27 Markets may also be widened as a result of a *chain of substitution* between products, so long as there are no breaks in the chain.⁴⁹
- 4.28 In applying the hypothetical monopolist test, the Director General will examine various sorts of information, depending on the nature of the case. These may include any or all of the following:
- price elasticities and marginal costs;
 - price levels and changes; and
 - the degree of switching and switching costs.
- 4.29 In this section, we discuss the implications of e-commerce for the availability of these different types of data, and for the way in which the information is analysed.

Price elasticities and marginal costs

- 4.30 Rigorous application of the hypothetical monopolist test would require information on both price elasticities and marginal costs. Estimating price elasticities involves the econometric analysis of detailed data on prices and sales, broken out by product and by geographic area. With price elasticity estimates one can calculate how much sales volume a hypothetical monopolist of the ‘test’ market would lose as a result of raising price by 5-10%. With details of marginal costs, one can then assess whether such a price rise, and the consequent loss in sales volume, would on balance be profitable. If the price rise were not profitable, then the relevant market should be widened.

⁴⁸ *Market definition in UK competition policy*, Office of Fair Trading Research Paper no. 1, February 1992.

⁴⁹ If product A is a substitute for B, and product B is a substitute for C, then products A, B, and C will be part of the same relevant market, even if product A is not found to be a *direct* substitute for C.

- 4.31 The relatively recent emergence of electronic trading means estimation of demand elasticities may be complicated *over the short term*.
- Firstly, it may be hard to collect the relevant data. As discussed in paragraphs 3.18-3.24, prices are to some extent more transparent and easier to monitor on the web. However, where different customers are given different prices, prices may be less easily observable. Moreover, in order to calculate price elasticities, detailed sales information is also required. This is less easy to observe directly and may be difficult to collect from all relevant online operations, given the large number of new entrants into e-commerce and their wide geographical dispersion (possibly located outside the geographical area over which the competition authorities preside). Certainly, such data is not yet publicly available. Marginal costs may also be hard to calculate during the initial stages of e-commerce, given that operators are still experimenting with different cost structures and sales methods.
 - Secondly, even if detailed pricing and sales data are available, there may not be sufficient historical data to allow econometric techniques to be used for estimating price elasticities. Such techniques require data on a number of relative price changes, and the associated changes in sales volumes, in order to estimate the effect of prices on sales.
 - Thirdly, the fact that e-commerce is expanding and changing rapidly means that historical data may be of limited relevance. Where market definitions can change as markets mature, then past sales data will provide an unreliable guide to current or future market definition.
- 4.32 We would expect data availability to improve *over the longer term*. Marginal costs should become easier to estimate as companies mature, while the fact that transactions are carried out electronically should facilitate the collection of price and sales data, with each party being able to put together its own sales figures relatively easily. Such sales data could include far more detailed customer information than would usually be available from traditional operators. Data on customer characteristics may be particularly useful in analysing whether price discrimination between customer groups implies that these groups constitute distinct markets. Data on customer location will be useful in assessing geographic market definition (see paragraphs 4.18-4.23).
- 4.33 Note, though, that sales and price data may not however be preserved as a matter of course. For example, eBay only keeps one month of its auction records, and thereafter the data is simply deleted. Presently, various fraud and other illegal activity performed on eBay is being investigated by federal authorities who not surprisingly would like to have more data.⁵⁰
- 4.34 For B2C sales, online operators may eventually have access to sales data from market research companies such as AC Nielsen.⁵¹ However, such companies are less likely to track B2B sales. In principle, B2B online marketplaces could provide detailed data on transactions. Indeed, this information may be far easier to collect than it would be in a traditional market characterised by a series of bilateral trading arrangements.⁵²
- 4.35 The creation of data sets suitable for rigorous econometric analysis may be further expedited by two important characteristics of e-commerce markets. Firstly, as discussed in paragraphs 3.25-3.40, menu costs (i.e. the costs of making price changes) are relatively low in electronic markets. This may be expected to lead to more frequent price changes. Secondly, greater

⁵⁰ See *In online auctions, rings of bidders* by Judith Dobrzynski, *New York Times*, 2 June 2000.

⁵¹ AC Nielsen has set up an Internet service, AC Nielsen eRatings, which it is developing quickly and hopes will become the global leader in Internet sales measurement (<http://www.eratings.com>).

⁵² For example, a tour of the VirtualChip exchange (www.virtualchip.com) revealed that the exchange collates weekly price data on chips and chipsets for a period covering at least 2 years. Members of the exchange can also enter their price and quantity forecasts over up to three months, an issue that we pick up again on in paragraphs 6.33-6.57 when discussing collusive behaviour.

price transparency, lower search costs and lower transactions costs may lead to faster reaction by buyers to such price changes. In such circumstances, price elasticities may prove easier to derive for e-commerce markets than in traditional markets where prices change relatively irregularly and buyers react more slowly.

Price levels and changes

- 4.36 In many cases, estimation of price elasticities will be cost-intensive and difficult. Relevant markets are thus often defined on the basis of a other information, such as price levels and the extent to which prices move together.
- 4.37 As discussed above, e-commerce can result in high price transparency, so that data on price levels and changes will often be easy to collect. Such price comparisons will be harder, however, if e-commerce customers receive personalised (and hidden) discounts. The treatment of delivery costs may also raise problems, as discussed further in paragraphs 5.5-5.11.
- 4.38 Evidence on price levels and changes will be particularly useful in defining markets where the nature of the product is essentially identical across two 'potential' markets. For example, in the context of e-commerce, such evidence can play a useful role in determining whether traditional and electronic commerce lie within the same market, or in determining the geographical scope of e-commerce markets.
- 4.39 However, analysis of past data on price levels and changes may be of limited use in new markets that are expanding quickly and changing rapidly. The difficulties involved in drawing strong conclusions on market definition in rapidly changing markets is demonstrated by two studies comparing prices for books and CDs sold on the Internet and through conventional channels. These show a reduction over time in the relative price of the Internet sales channel compared to traditional sales outlets:
- Bailey (1998) found that, during 1996 and 1997, prices were higher on the Internet for each product category;⁵³ whilst
 - Brynjolfsson and Smith (1999) found that, during 1988 and 1999, prices were 9-16% lower on the Internet than in conventional outlets.⁵⁴
- 4.40 With mature sales channels, the fact that prices seem to move differently in the two channels could be viewed as evidence that they are in different markets. However, these observations are also consistent with the conclusion that the two channels do compete, that changes in relative prices are due to the electronic sales channel becoming more mature, and that its customer base is becoming more representative of total customers across both channels.
- 4.41 Another complication with delineating markets on the basis of price levels and changes in e-commerce markets is that a number of products and services are provided free of charge to e-commerce customers, being financed through other sources of revenue, such as advertising.
- The online estate agent Easier.co.uk finances its operations by selling information about its customers to interested parties such as mortgage lenders and home insurance companies, rather than charging a commission to sellers as traditional estate agents do.
 - Most online newspapers, while free to readers, finance themselves from advertising revenues, while they charge for copies in the traditional environment.⁵⁵

⁵³ J. P. Bailey (1998), *Electronic Commerce: Prices and Consumer Issues for Three Products: Books, Compact Discs and Software*, Organisation for Economic Co-operation and Development, OCDE/GD (98)4.

⁵⁴ E. Brynjolfsson and M. Smith (1999), *Frictionless Commerce? A Comparison of Internet and Conventional Retailers*, working paper.

⁵⁵ For example, <http://www.the-times.com>.

- 4.42 Such unpaid transactions do not fall within the definition of e-commerce we adopted for the purposes of this study (see paragraphs 2.8-2.10). However, it is important to consider how they may affect the analysis of relevant markets for the purposes of market definition, and in particular the application of the hypothetical monopolist test. In establishing whether paper-based newspapers compete with online newspapers, for example, it would not be possible to compare the evolution of relative prices, given that online newspapers are free of charge. Nevertheless, one might expect to observe free online services competing with, and constraining the prices of, traditional services (perhaps in the market for advertising space). The Director General would therefore need to rely on alternative sources of evidence, such as customer surveys.

Switching and switching costs

- 4.43 Data on customers switching between products are often presented as evidence of products being in the same market. In the case of e-commerce, for example, we would expect to see companies presenting data on customers switching away from traditional commerce to e-commerce as evidence that the two sales channels are in the same market.
- 4.44 When analysing such switching data, it is important to recognise that switching can occur for a variety of reasons, of which price is just one. Switching should only be taken to indicate that two products are in same market if it results from changes in relative prices. In the case of the shift from traditional commerce to e-commerce, it is far from obvious that this is the case. Rather, it may simply be a shift in purchasing patterns or customer preferences, which implies little about the ability of each form of commerce to constrain the pricing decisions of the other.
- 4.45 As well as examining actual switching, analysis of the potential costs of switching can be useful in delineating markets. In e-commerce markets, where customers face large costs of switching across products, suppliers, or geographic areas, these may constitute distinct markets, as discussed in paragraphs 4.14-4.15.

Conclusions and recommendations

- 4.46 The emergence of e-commerce is unlikely to raise new conceptual issues in the context of market definition. In particular, the hypothetical monopolist framework remains an effective tool for market definition. It may, however, need to be adjusted to consider a restriction of supply by the hypothetical monopolist, rather than an increase in prices.
- 4.47 Over the short term, application of this market definition test may be complicated by the lack of reliable sales and price data and also the rapid changes that are occurring in e-commerce markets. In particular, the degree to which e-commerce services and traditional services compete is likely to change over time as buyers and sellers alter their behaviour, which will affect the appropriate delineation of the product market.
- 4.48 This will limit the relevance of using past data when analysing current (or future) market definitions. It will also limit the degree to which market participants and competition authorities can rely on precedent when assessing relevant markets.
- 4.49 Over the longer term, data may be more readily available, given that transactions are carried out electronically. These data may not however be preserved as a matter of course. The courts and government authorities might thus wish to prescribe practices for keeping electronic business records for particular types of e-commerce operation (for example, online marketplaces).
- 4.50 Within the current regulatory framework, it is not only competition authorities that need to be able to define relevant markets. Interested parties also need to define markets in order to assess in advance whether their conduct will contravene competition law. However, there may be risks associated with allowing these parties access to proprietary sales information on

other companies, for example from online marketplaces. In particular, such information transfer could potentially facilitate collusion, as discussed in paragraphs 6.33-6.57.

- 4.51 Finally, while some barriers to international trade remain, e-commerce could potentially widen geographical markets relatively dramatically, as location becomes less of an obstacle to trade between parties. This may raise important jurisdictional issues, and increase the need for cooperation between competition authorities in different countries.

5 ASSESSMENT OF MARKET POWER

- 5.1 The Competition Act 1998 introduces two prohibitions. The Chapter I prohibition relates to agreements that prevent, restrict or distort competition. The Chapter II prohibition relates to conduct by undertakings which amounts to an abuse of a dominant position.
- 5.2 The assessment of market power is a necessary exercise in applying both prohibitions.
- Under the *Chapter I prohibition*, it is necessary to show that an agreement has an ‘appreciable effect’ on competition in the UK.
 - Under the *Chapter II prohibition*, it is necessary to show ‘dominance’ before a finding can be made on abuse of dominance.
- 5.3 An introductory explanation as to how the Director General makes such an assessment is provided in the CA98 Guideline *Assessment of Market Power* (OFT 415). The guideline looks in turn at:
- *market shares*: the market position of existing competitors (Section 4 of the CA98 guideline);
 - *entry barriers*: the role of potential competitors (Section 5 of the CA98 guideline); and
 - *other factors in the assessment of market power*: buyer power and market conduct and performance (Section 6 of the CA98 guideline)
- 5.4 We do not expect e-commerce to raise new issues that cannot be dealt under the existing legal framework and guidelines. We find, however, that it may impact on the prevalence of market power. The discussion below builds on the CA98 guideline, following the same broad headings.

Market shares

- 5.5 As part of the framework for assessing market power, the Director General will – having defined the relevant market – normally examine market shares and how they have changed over time. Market shares are not always a reliable guide to market power, both for conceptual reasons and because of potential data shortcomings. Nevertheless, market power is more likely to exist if an undertaking (or group of undertakings) has a persistently *high* market share. Likewise, market power is less likely to exist if an undertaking has a persistently *low* market share.
- 5.6 Analysis of market shares will continue to be an important component of assessing market power with the growth of e-commerce, but certain characteristics of e-commerce markets may impact on the empirical analysis of market shares.
- 5.7 Over the short term, the relatively recent emergence of electronic trading means that competition authorities may face difficulties in collecting sales data (as discussed in paragraphs 4.24-4.45). This may not only diminish their ability to carry out a rigorous market definition, but it may also constrain their ability to calculate market shares for online operations.
- 5.8 During this initial period, an alternative approach to calculating market shares may be use data on ‘hits’, since these are relatively easy to track.⁵⁶ However, it should be recognised that hits will frequently provide an inaccurate picture of market shares. Firstly, sites differ greatly in terms of average revenue per hit. Indeed, it is well recognised that many websites have difficulty converting ‘hits’ to sales. Secondly, where different markets are served by a single

⁵⁶ A ‘hit’ represents one visit to a website by one user. For non-UK-specific information on hits by e-commerce outlet, see <http://www.web21.com>.

website, it may be impossible to allocate hits for that site to the particular product or geographic market under investigation.

- 5.9 Over the longer term, the availability of sales data is expected to improve (as discussed in paragraphs 4.30-4.35). However, there may not be a sufficiently long time series of data to analyse movements of market shares over time. This may complicate further the analysis of market power based on market shares. Extra care will need to be exercised, for example, in reaching conclusions about market power from high short-term market shares in rapidly expanding e-commerce markets.
- 5.10 In addition, the competition authorities may face difficulties in calculating market shares in two specific circumstances.

- *Markets which include traditional and e-commerce operators.* Where the relevant market is considered to include both e-commerce operators and traditional companies, there may be difficulties involved in making the available sales data comparable.

For example, where customers pay a charge for delivery when they buy physical products via the Internet, should these be included within the revenues of e-commerce retailers? Payment for delivery is clearly a cost that the customer pays and a revenue the retailer receives. On the other hand, the payment is often passed directly on to the delivery company, and it could be argued that the delivery component is a separate service, saving customers from having to spend time and money going to collect the goods (as they would for traditional retailers). Viewed from this perspective, the inclusion of delivery costs within the revenue shares of online retailers might seem to overstate their relative market position.

Similarly, calculating market shares may be problematic when traditional companies charge for their services while their e-commerce counterparts provide their services free of charge to customers (see paragraphs 4.36-4.42). For example, if FT.com were found to lie within the same market as traditional newspapers, would a 'hit' on the FT.com site be counted as comparable to a purchase of a traditional newspaper?

- *Markets which are narrow due to price-discrimination:* As set out in paragraphs 4.10-4.13, any increase in price discrimination amongst customers due to e-commerce may imply separate narrow markets. In this case, significant information about customers would be required in order to allocate sales to particular markets and so calculate market shares within those markets. Such information is unlikely to be collected as a matter of course by market research organisations. Likewise, if market segmentation is achieved through the provision of slightly differentiated products, it may be necessary to have detailed information on product characteristics in order to allocate sales between relevant markets. Again, such information may not be collected on an ongoing basis.

- 5.11 Finally, the ability of competition authorities to collect data on market shares may be affected by the increased international trade that is likely to result from the growth of e-commerce. As described in paragraphs 4.18-4.23, the reduced need for a local presence means that e-commerce is likely to be characterised by increased cross-border sales. Since many of these sales are small, distributed electronically, or intangible (i.e. services), the authorities may find it difficult to track such cross-border sales and, consequently, to calculate market shares within a particular geographical area. For example, in order to calculate domestic market shares, a competition authority will require data not only on what proportion of domestic firms' sales were made to customers in this country, but also on sales to this country by foreign suppliers.

Entry barriers

- 5.12 High market shares increase the likelihood of market power, but they do not necessarily mean that it exists. In the presence of rapid innovation or market growth, or in the absence of significant barriers to entry⁵⁷ or expansion, high market shares need not confer market power.
- 5.13 In the case of e-commerce, there are a variety of reasons why one might expect to observe lower barriers to entry than for traditional commerce.
- The costs of setting up a retail (B2C) website are relatively low compared with the costs of setting up a network of local stores (see paragraphs 3.25-3.40).
 - Consumer search and selection costs are relatively low, partly due to the use of comparison-shopping search engines (see paragraphs 3.18-3.24).
 - Transaction costs are expected to be low, partly due to automated systems and the growth of online marketplaces. These could potentially enable smaller buyers and sellers to enter the market than was possible where sales were carried out under longer bilateral deals (see paragraphs 3.41-3.50).
 - E-commerce markets are innovative and expanding rapidly.
- 5.14 A view that barriers to entry are low for e-commerce might appear to be supported by the fact that one can observe many potential entrants into e-commerce, mainly private start-ups operating with seed capital or venture capital backing.
- 5.15 On the other hand, many of these operators are relatively small scale and high risk, while certain characteristics of e-commerce (and the behaviour it may facilitate) may have the effect of increasing barriers to entry relative to traditional commerce. As set out in the CA98 guideline, sources of barriers to entry can be classified under a number of headings: absolute advantages; strategic advantages; and exclusionary behaviour. The discussion in this section focuses on the first two, with exclusionary behaviour considered in Section 6

Absolute advantages

- 5.16 The CA98 guideline identifies three examples of absolute advantages: regulation, essential facilities, and intellectual property rights (IPRs). The first of these is unlikely to play a major role in barring entry to e-commerce markets, but the other two could potentially have this effect.

Essential facilities

- 5.17 In some cases, entry to a market will require access to an 'essential facility'. An essential facility is defined as an asset or facility to which access is indispensable in order for an operator to compete in the market, and which would be impossible or extremely difficult to replicate.
- 5.18 In the case of e-commerce, refusal of access to online marketplaces may well act as a barrier to entry of this sort (see paragraphs 5.24-5.37). It should, however, be recognised that – unlike an essential facility such as a port, which may suffer from congestion – online marketplaces are unlikely to face capacity constraints. Indeed, the costs of adding further participants to a marketplace will tend to be low. This may mean that refusal to supply access is less capable of being justified objectively. Refusal of access to an essential facility, a possible abuse of a dominant position, is discussed further in paragraphs 6.117-6.123.

⁵⁷ In extreme cases, where potential entrants can enter a market very quickly and at little cost, these entrants are described as 'supply substitutes' and are considered to be part of the relevant market (see paragraphs 4.24-4.45).

- 5.19 The legal criteria for defining an operation as an ‘essential facility’ are relatively strict.⁵⁸ However, from an economic standpoint, access to facilities can act as an absolute barrier to entry even if these criteria are not met. Access to portals may provide an important example in the case of e-commerce. As set out in paragraphs 4.14-4.15, links from ‘portals’ can help bringing customers to a given e-commerce site and in encouraging trust in that site. This is particularly true at the B2C level, where (at least initially) customers are relatively unsophisticated and uninformed about the various e-commerce sites available. As such, fair and non-discriminatory access to portals may be crucial to the success of e-commerce companies in certain B2C markets, and again refusal to supply cannot be justified on the basis of congestion.⁵⁹

Intellectual property rights and copyright

- 5.20 E-commerce is likely to be characterised by significant levels of innovation, at least over its initial years, and the Internet has until recently been a patent-free zone, in which good ideas travelled freely.
- 5.21 Over the last year, however, the Internet has been characterised by more patenting of innovations and a variety of attempts to protect copyright.⁶⁰ For example, patent law has enabled Amazon.com to stop its competitors from using its ‘one-click’ technology, which involves storing customer information for rapid re-use later, and allowed Priceline.com to prevent its competitors from employing the technique of ‘reverse auctioning’, where consumers set the price of goods they want to buy.⁶¹
- 5.22 Intellectual property rights (IPRs) are protected by patents and copyrights in order to encourage innovation over the long term. However, IPRs may provide an incumbent with an absolute cost or quality advantage that may act as a significant barrier to entry over the shorter term.⁶² As such, there is clearly an economic trade-off between protection of IPRs and promotion of short-run competition, and this trade-off would properly take into account the costs and benefits of the innovation involved.
- 5.23 Moreover, in e-commerce markets, the raising of short-term entry barriers may have long-term implications, given that the markets are expanding rapidly and could potentially be characterised by first-mover advantages (see paragraphs 5.24-5.37 below).⁶³ Indeed, it is possible that the exploitation of patents and copyrights could provide a way for companies to leverage a dominant position either from one market to another or from the present into the future. Such leverage would be an abuse of a dominant position, and is discussed further in Section 6

⁵⁸ In order to plead the existence of abuse, the refusal of access to a facility must be likely to eliminate *all* competition in the market on the part of the person requiring access, and the refusal must be incapable of objective justification (see Case C-7/79 *Oscar Bronner v Mediaprint and others* [1998]).

⁵⁹ This is similar to the issue of access to electronic programming guides (EPGs) in pay-TV. In the UK, OFTEL/ITC regulates access to the Sky EPG.

⁶⁰ See *Who owns the knowledge economy?*, The Economist, 8 April 2000.

⁶¹ See *Government monopoly grants offer chance to patent cyberspace*, Ft.com, 30 Mar 2000.

⁶² For a detailed discussion of the treatment of IPRs under the Competition Act, see the CA98 Guideline *Intellectual Property Rights* (OFT 418).

⁶³ For example, there has been much debate concerning the extent to which open standards – as opposed to proprietary standards – should be preserved on the Internet. This debate may become more heated given the recent move by Sun Microsystems to start charging vendors for using Java, its proprietary programming language which has become an Internet standard. (*Java: Can Sun control the flood?* by Charles Babcock, Inter@ctive Week, June 5, 2000, <http://www.zdnet.com/intweek/>(<http://www.zdnet.com/intweek/>)).

Strategic advantages

5.24 The second source of entry barriers arises when an undertaking gains a strategic advantage from being in the market first (hence the name ‘first-mover’ advantages).

5.25 In this section, we consider the implications of e-commerce for three important sources of first-mover advantage (as discussed in the CA98 guideline):

- sunk costs of entry;
- network effects; and
- access to finance.

Sunk costs of entry

5.26 Entry into an e-commerce market generally involves two main types of sunk costs.

- *Physical set-up costs.* These relate to the physical setting up of the website and associated logistics (such as warehousing, distribution, payment processing systems).
- *Costs of establishing customer loyalty.* These relate to attracting customers to the site, building trust in the site, and generally establishing a brand name and customer base.

5.27 In many areas, the *physical set-up costs* (some of which may be sunk) associated with setting up an e-commerce operation will be low relative to traditional commerce (see paragraphs 3.25-3.40). A potentially successful retail website would cost substantially less than developing a nationwide network of local stores. Likewise, the costs of setting up an electronic exchange or an Internet-based supply chain management system are now relatively low, whereas they were previously prohibitively expensive in many markets.

5.28 Moreover, many of these fixed costs need not be sunk. The degree to which this occurs depends on the sophistication and design of the site, the services it offers, and the products it sells.⁶⁴ However, in most cases a large proportion of the logistics can be contracted out to third parties, which will greatly reduce the physical set-up costs sunk in the business.

5.29 By contrast, the *sales development costs* of developing a strong brand and loyal customer base will be crucial to the success of e-commerce operations in a world of low search and switching costs (see paragraphs 3.18-3.24).⁶⁵ The sunk costs of establishing a credible and appealing brand name can thus act as a barrier to entry, although traditional players with established brands may always be potential entrants. Other methods of winning repeat sales, such as ‘one-click’ technology and the use of information on customers to make tailored offers, may have a similar effect.

5.30 In the B2B arena, expenditure on advertising and marketing may be somewhat less important as a barrier to entry, especially for vertical supply relationships where customers tend to be somewhat more sophisticated and knowledgeable about available suppliers than retail consumers. However, in developing their business, e-commerce B2B operations have other methods of tying in their customers.

5.31 An important factor here will be the degree to which Internet transactions are integrated with companies’ own supply chain management systems. As described in paragraphs 3.25-3.40, there are significant benefits to be gained from such integration. However, this will act as a

⁶⁴ For example, an important factor will be the extent to which the software is tailored specifically for that website, or simply picked ‘off-the-shelf’. There are currently several brands of ‘shopping cart’ software available, and likewise a number of suppliers of software for setting up online marketplaces. The three recognised market leaders in software for online marketplaces are Ariba, Commerce One and i2.

⁶⁵ This is especially true in the B2C world. As set out in Section 3 this customer loyalty is known as ‘neural real estate’. (See *Understanding digital markets: review and assessment* by Smith, Bailey and Brynjolfsson (1999), <http://ecommerce.mit.edu/papers/ude>.)

barrier to entry if firms are tied into particular supply relationships, for example due to the use of proprietary rather than open standards, with significant sunk costs needing to be incurred if they are to move to an alternative supplier.

Network effects

- 5.32 Online marketplaces are characterised by ‘network effects’, which occur where a system becomes more useful to its users, the more users it has. In such markets, the strong players become stronger and the weak weaker as consumers refine their search for the technology that will ultimately prevail. Such markets are called ‘tippy’, meaning they can tip in favour of one particular firm.
- 5.33 Online marketplaces are likely to be ‘tippy’ mainly for liquidity reasons. The most important factor in the success of online marketplaces will be their ability to generate a high volume of transactions. The value of a marketplace to its participants increases with the number of participants and the throughput of products on the market. For example, no buyer will wish to buy from a marketplace in which just one or two sellers are represented if it can move to a marketplace in which it can choose between, and play off, many sellers. Likewise, most sellers will wish to sell in the marketplace with the most buyers. Therefore, liquidity can act as another source of barrier to entry.
- 5.34 Whether this leads to just one or multiple exchanges will depend, amongst other things, on how much liquidity there is in the market and on the importance of this liquidity. Liquidity is analogous to scale of operation, and just as there is a minimum efficient scale there will be some amount of liquidity that is sufficient for buyers and sellers. In many situations there will not be enough liquidity to support multiple exchanges. Liquidity will tend to be most valuable for products with a limited shelf-life (due to perishability or obsolescence), products that are transacted in relatively small volumes, or products which are relatively differentiated.
- 5.35 For such products, markets may be ‘tippy’. If so, it is likely that there will eventually be just one or two online marketplaces and high barriers to entry into the provision of an alternative.⁶⁶ This market structure may be particularly entrenched where market participants are tied into the marketplace via proprietary supply chain management systems.⁶⁷ Note, though, that this market structure may deliver benefits to market participants that could not be realised in a less concentrated market structure, which in turn means that structural break-up will not necessarily be an appropriate response to dominance over online marketplaces.

Access to finance

- 5.36 Entry, and particularly large-scale entry, needs to be financed. This can act as a barrier to entry where new entrants lack the same access to finance as incumbents due to a lack of experience and track record.
- 5.37 Access to finance may currently be becoming an issue for Internet start-ups, given the reduced expectations of the market for this sector. This is likely to hit pure-play e-commerce operators harder than mix-play operators who have established expertise and a track record in traditional commerce.

⁶⁶ Forrester Research has recently predicted that there will be as many as 1,000 e-markets across Europe by 2002, but that those who fail to reach critical mass quickly will be merged, acquired, or go out of business, leaving only 50 players standing by 2005.

⁶⁷ This entrenchment of market position can be contrasted with the situation in software markets, where network effects will not necessarily give rise to significant barriers to entry. Even though one generation of software may be characterised by network effects, the market is a dynamic one and the network effects will not be sufficient to ensure that a monopolist of one generation of software will also control the next generation. (See Schmalensee (2000), *Antitrust issues in Schumpeterian industries*, AEA Papers and Proceedings, Vol. 90, No. 2).

Other factors in the assessment of market power

Buyer power

- 5.38 Buyer power can play an important role in limiting an undertaking's ability to raise prices above competitive levels, thereby limiting its market power. Establishing buyer power is largely similar to the establishment of market power on the supply side. It requires that the buyer should be large in relation to the relevant market, well informed about alternative sources of supply, and that the buyer could readily switch from one supplier to another.
- 5.39 E-commerce might be expected to increase businesses' buyer power for a number of reasons, as discussed in paragraphs 3.25-3.40. Firstly, it facilitates searching by buyers, and thus increases the credibility of threats to switch suppliers. Secondly, it facilitates the creation of buying clubs, whereby purchasers combine their buying needs in order to increase their total buying power with suppliers. Thirdly, buyers may be able to design auctions (and specifically reverse auctions) to their own advantage.
- 5.40 The issue of buyer power is discussed further in paragraphs 6.26-6.28, where we analyse the circumstances when the exploitation of buyer power may be abusive.

Conduct and performance

- 5.41 In some cases, an undertaking's market power can be inferred from an observation of conduct and performance in the market, both by itself and others. For example, it might be reasonable to infer that an undertaking possesses market power from evidence that it persistently earned an 'excessive' rate of profit. There are, however, a number of difficulties involved in assessing 'supranormal' profitability in e-commerce markets, as set out in paragraphs 6.8-6.32. Moreover, as recognised in the CA98 guideline, high prices or profits alone are not sufficient to prove market power.
- 5.42 Past information on entry and exit, and evidence of aborted plans to enter, can also provide information about barriers to entry. However, in new markets such as e-commerce, such information will provide little useful information. E-commerce markets currently appear to be characterised, if anything, by over-entry, and there is much uncertainty about how the market will develop. As such, one would expect to see many companies exiting the market over time, or aborting plans to enter, on the basis of competitive disadvantage. Such conduct cannot be viewed as demonstrating barriers.

Barriers to expansion

- 5.43 Barriers to expansion are not discussed in the CA98 guideline, but can be important in determining market power, since they affect the intensity of competition between players already *within* the relevant market. Where existing undertakings face low barriers to expansion, the market can be highly competitive even where concentration and barriers to entry are high, since even a relatively small competitor can have a significant impact in constraining the behaviour of larger players.
- 5.44 Whilst high fixed costs relative to low marginal costs can act as a barrier to entry, they also imply low barriers to expansion. They may thus conducive to vigorous competition.⁶⁸ On the other hand, if sellers successfully manage to increase customer switching costs, they will act in opposite direction.

Conclusions and recommendations

- 5.45 Many of the characteristics of e-commerce and associated patterns of behaviour, described in Section 3 will tend to lower barriers to entry into both B2C and B2B e-commerce, reducing

⁶⁸ At least in the absence of collusion. See paragraphs 6.41-6.49.

the potential for players to secure and exploit market power. These include, for example, the rapid expansion of the market, lower search and selection costs on the buyer side, lower transactions costs, and the reduced need for physical assets for many businesses.

- 5.46 There are, though, certain characteristics of e-commerce that may tend to raise barriers to entry in e-commerce services. The most important of these are the following.
- *Sunk costs of establishing customer loyalty.* In the absence of a local customer base and physical sales outlets, and in the presence of potentially low buyer switching costs, reputation, branding and customer loyalty will become increasingly important, especially at the B2C level where customers are relatively small and unsophisticated. This may create significant first-mover advantages, and act as a barrier to later entrants.
 - *'Tippy' markets.* Online marketplaces, particularly prevalent in B2B e-commerce, may be 'tippy' and thus tend towards being natural monopolies, with a second potential entrant facing large barriers to entry. These barriers will be particularly high in markets where liquidity is important and exacerbated where market participants are tied into the market via proprietary supply chain management systems.

- 5.47 There are a variety of ways in which these first-mover advantages can be reduced.
- *Sunk costs of establishing customer loyalty.* The ability of sellers to provide tailored offerings to long-term customers, based on information they have gained about these customers, could be reduced if customers were able to 'port' their own database entries from site to site.⁶⁹ At the same time, the importance of brand name for winning customer trust can to some extent be reduced by effective consumer protection legislation, or by other companies playing a quality assurance role.⁷⁰
 - *'Tippy' markets.* The tippiness of online marketplaces will be strongly affected by the ability of market participants to monitor different marketplaces and to switch easily between them. For example, in the C2C auction environment, *biddersedge.com* monitors a number of online auction houses on behalf of its users, allowing buyers to search the prices prevalent in different marketplaces before deciding which marketplaces to join for that particular transaction. This reduces the comparative advantage held by the larger auction houses (such as *eBay.com*) over smaller competitors and may help prevent the market tipping. Such intermediaries could potentially have a similar effect in B2B markets.

In order to carry out such a function, the intermediary will require access to the price information of all auction houses. However, this information is arguably proprietary and, in the US, *eBay.com* has successfully challenged the rights of *biddersedge.com* to use its proprietary price information. Such a ruling might be expected to serve to increase tippiness and market power.

- 5.48 Even where first mover advantages persist, they need not imply market power. High barriers to entry for e-commerce operators will not confer market power on incumbents if e-commerce operators compete in a wide product market that includes traditional commerce, and if barriers to entry into the traditional service are low. Likewise, even if the relevant market includes e-commerce operators only, high barriers relating to branding for 'pure-play' e-commerce operators (i.e. companies without any traditional market position) need not imply market power, so long as there are sufficient mix-play operators (such as *Tesco online*) that are willing to leverage their existing brand name into an e-commerce context.

⁶⁹ Proposals such as the Platform for Privacy Preference (<http://www.w3.org/P3P>) would facilitate such portability.

⁷⁰ For example, credit card issuers could provide insurance against products not being delivered, or being delivered in a damaged state.

- 5.49 Increased buyer power will also tend to limit the extent to which high market shares and barriers to entry will confer market power. As discussed in paragraphs 3.25-3.40, e-commerce might be expected to increase buyer power through enabling wider outsourcing of products, the creation of buying groups, and through market design.
- 5.50 On the other hand, where first-mover advantages do confer market power, they may be of particular concern in rapidly expanding e-commerce markets, since they will tend to result in current market power being maintained into the future, rather than being transient as might be expected within such dynamic markets. The exploitation of patents and copyrights can provide another way for companies to leverage a dominant position either from one market to another or from the present into the future.

6 INDIVIDUAL AGREEMENTS AND CONDUCT

- 6.1 As previously set out, the Competition Act 1998 introduces two prohibitions. The Chapter I prohibition relates to *agreements* that prevent, restrict or distort competition. The Chapter II prohibition relates to *conduct* by undertakings which amounts to an abuse of a dominant position. Assessing whether either prohibition has been infringed will involve examining the economic impact of the agreement or conduct under investigation.
- 6.2 An introductory explanation on how the Director General makes such an assessment are provided in the CA98 guideline *Assessment of Individual Agreements and Conduct* (OFT 414). The discussion in this section builds on the CA98 guideline.
- 6.3 In our view, e-commerce will not result in new forms of anti-competitive behaviour, nor will it raise any new issues that cannot be dealt with under the existing competition law framework. Indeed, many of the characteristics of e-commerce described in Section 3 might be expected to increase competition. For example, competition will tend to be more vigorous when search costs, menu costs, and transactions costs are low.
- 6.4 On the other hand, some characteristics of e-commerce may encourage or facilitate certain types of anti-competitive conduct, or affect the ability of competition authorities to monitor such behaviour. In this section, we discuss the implications of e-commerce for a variety of forms of anti-competitive agreements and conduct, including *excessive pricing, collusion, price discrimination, predation, vertical restraints, and refusal to supply/essential facilities, and actions in related markets.*
- 6.5 A number of these areas will require careful monitoring, while there are other areas where detailed application of the rules may require some adjustment, or where further research may be useful. Our key conclusions and recommendations on each are set out at the end of the relevant section.
- 6.6 As a general point, when investigating anti-competitive behaviour in e-commerce markets, the competition authorities will need to evaluate the pros and cons of intervention with great care. On the one hand, where there are likely to be first-mover advantages, anti-competitive behaviour over the short-term can deliver significant long-term effects. Any delayed reaction to foreclosure by competition authorities could therefore have substantial and prolonged implications. On the other hand, the area of e-commerce is highly innovative, and developing very quickly. Premature intervention by competition authorities could in some cases inhibit innovation and the development of new markets.
- 6.7 One potential approach to this problem might be to apply competition law with a light hand for the present, but to raise awareness of the large fines and risk of structural break-up that might occur at a later date if competition law is found to have been breached. However, threats of future penalties could equally well inhibit the development of markets unless the competition authorities provide explicit and detailed guidelines about the types of agreement and behaviour that may be found abusive *ex post*. Moreover, where a market exhibits strong network externalities (which may be the case for online marketplaces), structural break-up will not necessarily be an appropriate response, since it will reduce the value of that market to its participants.

Excessive prices

- 6.8 The charging of excessive selling prices (or conversely the extraction of excessively low buying prices) by a dominant undertaking may be an infringement of the Chapter II prohibition. Where two or more undertakings in a market collude to charge excessive selling prices (or extract excessively low buying prices), this may be prohibited as a concerted practice under the Chapter I prohibition or as an abuse of joint dominance under the Chapter II prohibition.

- 6.9 This section looks at the potential implications of e-commerce for excessive pricing, for the empirical assessment of excessive pricing, and for the extraction of excessively low buying prices. Collusion is discussed separately in paragraphs 6.33-6.57.

Excessive pricing in e-commerce markets

- 6.10 Over the short term, excessive pricing is unlikely to be a major issue for e-commerce companies. Few e-commerce operations are currently making any profits, let alone excessive profits. Over the longer term, however, excessive pricing may become a serious concern for those e-commerce companies that develop dominant positions in their relevant markets. For example, one might expect to find excessive pricing in ‘tippy’ markets, such as online marketplaces or in markets where reputation and branding act as significant barriers to entry (see paragraphs 5.24-5.37).
- 6.11 In addition, the emergence of e-commerce is likely to increase the number of excessive pricing cases related to *market design* and *intellectual property rights* (IPRs).

Market design and excessive pricing

- 6.12 As discussed in paragraphs 5.16-5.23, B2B e-commerce has been characterised by a dramatic growth of online marketplaces incorporating dynamic pricing mechanisms, such as exchanges and auctions. These exchanges and auctions can be designed in many different ways and there is a large and growing literature on how market design can affect market outcomes.⁷¹ In particular, it may be possible to design the exchange or auction process such that it either favours a dominant supplier or can be effectively manipulated by a dominant supplier. The design of the marketplace may therefore itself increase the profits obtainable by a dominant firm, and thus increase the likelihood of excessive pricing.

Impact of IPRs on excessive prices

- 6.13 As described in paragraphs 5.16-5.23, e-commerce often involves significant levels of innovation and has recently been characterised by much patenting of innovations and attempts to protect copyright. The allocation and protection of IPRs can provide high profits over the short term. While holders of IPRs do not have immunity to competition law, these profits will not be considered abusive so long as they provide a fair return on the costs and risks of innovation, acting as a spur to innovation.
- 6.14 Nevertheless, with the growth of e-commerce competition authorities may expect an increase in the number of excessive pricing cases relating to IPRs. In e-commerce markets, there has been some concern that the protection awarded to IPRs is excessive. Fuzzy patents have recently been issued in the US for Internet business methods such as ‘group buying’, ‘matching professionals with those seeking advice’, ‘one-click shopping’ and ‘reverse auctions’, while copyright law is generally exploited to protect a variety of software applications.
- 6.15 These innovations do not require significant upfront investments in R&D, they are often little more than ideas, and are thus unlikely to justify supra-normal profits for the patent holder over a prolonged period. Moreover, many are key inputs into the development of e-commerce sites. The ability to restrict supply of such IPRs, or to charge excessive prices for them, may therefore have significant detrimental effects on competition in e-commerce markets. In the absence of changes to intellectual property and copyright law, we might therefore expect to observe more cases of excessive pricing relating to IPRs than has traditionally been the case.

⁷¹ For a good introductory survey of this literature, see Klemperer (1999), *Auction theory: a guide to the literature*, Journal of Economic Surveys, Vol. 13(3), pps. 227-286.

Empirical assessment of excessive pricing

- 6.16 E-commerce may raise difficulties for the empirical assessment of excessive pricing. An undertaking's prices in a particular market can be regarded as excessive if the undertaking is able persistently to sustain higher profits than it could expect to earn in a competitive market ('supra-normal' profits). In order to assess excessive pricing, it is thus necessary to carry out a profitability analysis for the firm within the relevant market where it is dominant.
- 6.17 However, prices that confer high profits over the short term will not always amount to an abuse. Ebbs and flows of demand and supply may lead to transitory profits, for example if an undertaking has a temporary advantage over its competitors. As a result, an assessment of excessive prices will generally involve a net present value (NPV) calculation of expected lifetime profitability, rather than simply a snapshot of profitability in any one year. This approach involves considering the undertaking's current cash-flow position in the context of its historic cash-flow investments and expected future cash-flows.
- 6.18 E-commerce businesses have a number of characteristics that may create difficulties for a lifetime profitability analysis of this sort.
- 6.19 *Uncertainty of future profits.* Many e-commerce undertakings will make large upfront and sunk investments over the initial years of developing the markets (and their own positions within these markets), with the expectation of future profits. Assessing overall lifetime profitability will thus require forecasts of future profitability. These may be difficult to estimate with accuracy, as reflected in the highly volatile stock valuations of these companies.
- 6.20 The current volatility in the shares of 'dotcom' companies may also make it difficult to calculate the cost of capital faced by e-commerce undertakings.⁷² In particular, using standard approaches to estimate cost of capital, such as the Capital Asset Pricing Model (CAPM), is likely to be problematic since it will be impossible to derive reliable estimates of equity betas (an essential input into the CAPM).
- 6.21 *Sunk investments in intangible assets.* Many of the sunk investments mentioned above relate to intangible assets such as the design of the website infrastructure, advertising and marketing, building links with, and loyalty from, buyers and sellers, and human capital. Because of accounting conventions, such investments are generally considered as current expenses, rather than capital expenses, which are amortised over time. As such, they create accounting losses over the short term.⁷³
- 6.22 The accounting treatment of sunk investments will not necessarily affect NPV calculations, since these are based on cash flows rather than figures from profit and loss accounts. However, it will sometimes be appropriate to write off investments in intangible assets, just as can be done for tangible assets. For example, if a company makes losses in developing a market that it need not have incurred, and which a new entrant would not have to incur, it may be appropriate to write off these losses when calculating lifetime profits. While it is often relatively straightforward to determine how much to write off in the case of tangible assets, this will usually be much harder for intangible assets.
- 6.23 *Risk of failure.* Given the risks associated with developing e-commerce markets, any NPV analysis of lifetime profitability will need to take account of the fact that the undertaking would initially have faced a significant *ex ante* risk of failure. The *ex post* profitability

⁷² Any assessment of supra-normal profits will require an assessment of the cost of capital faced by the undertaking in question.

⁷³ Note that this increases the accounting losses made during the investment period. In the US, AOL has recently been fined \$3.5 million by the SEC for capitalising its advertising costs, rather than treating them as expenses. This in turn artificially inflated its profits, which may have given a distorted picture to both investors and consumers at a time when many e-commerce firms were losing money. (Source: *SEC Fines AOL, Scrutinizes Net Firms*, Ecommerce Times, 18 May 2000, <http://www.ecommercetimes.com>).

position of any undertaking under investigation for excessive pricing will inherently be that of a successful operator in the market. Failing to take account of the risk this operator faced initially will tend to overstate the expected NPV of its profitability on entering the market. While a number of approaches have been suggested for adjusting calculations to take account of prior risk,⁷⁴ none is free of difficulties.

- 6.24 The high risks involved in setting up e-commerce operations also mean that few pure-play e-commerce operations have any debt financing, relying instead on risk capital (venture capital, private equity and public equity). Risk capital can be associated with significant principal-agent problems and accordingly complex contracts and interactions between financiers and entrepreneurs. This can again make it hard to estimate the true cost of capital faced by e-commerce undertakings.
- 6.25 *Economies of scope across markets.* To calculate the NPV of profits in a given market, the costs and revenues of the undertaking will need to be allocated to the particular market in question. As discussed above (see paragraphs 4.16-4.17), e-commerce may potentially enhance economies of scale and scope. Where an undertaking has costs that are joint across markets (i.e. there are economies of scope), it is difficult to attribute these costs to any individual market. Furthermore, firms that are active both in e-commerce markets and in their traditional equivalents may have joint costs across both. Likewise, as set out in paragraphs 4.5-4.17, any growth in price discrimination could potentially be viewed as creating a series of relatively narrow markets, across which an undertaking's fixed costs may well be joint. In such cases, the difficulty of attributing joint costs to a given market may hinder the assessment of profitability within that market.⁷⁵ This issue is discussed further in paragraphs 6.58-6.71.

Impact of e-commerce on the extraction of low buying prices

- 6.26 When market power rests with buyers rather than suppliers, the former may be able to extract excessively low buying prices. The CA98 guidelines on the Competition Act 1998 provide little guidance on the assessment of excessively low buying prices. This reflects the current lack of EC case law in this area. This issue has, however, been looked at in previous complex monopoly investigations under the Fair Trading Act.
- 6.27 Competition cases relating to buyer (or 'monopsony') power may become more prevalent with the growth of e-commerce. As set out in paragraphs 3.25-3.40, Internet technology can increase businesses' buyer power through the facilitation of searching and switching supplier, the creation of buying clubs, and the design of online marketplaces (and specifically reverse auctions).
- 6.28 When assessing such arrangements, it should be recognised that buyer power may in some cases have beneficial implications for end-customers. In particular, if there is sufficient competition between buyers when selling to their own customers, then these customers should benefit from the behaviour in the form of lower prices.⁷⁶

Excessive prices: conclusions and recommendations

- 6.29 The fact that few online operations are currently making any profits is perhaps the most well known aspect of e-commerce. Over the longer term, however, the possible 'first-mover'

⁷⁴ See for example *The Assessment of Profitability by Competition Authorities* by Graham and Steele (OFT Research Paper 10, 1997).

⁷⁵ Sectoral regulators have sometimes introduced a methodology to attribute costs (and revenues), usually based on some form of activity-based allocation. However, this approach is not economically meaningful in cases where costs are truly incurred jointly.

⁷⁶ For an economic analysis of buyer power, see *The Welfare Consequences of the Exercise of Buyer Power* by Dobson, Waterson and Chu (OFT Research Paper 16, 1998).

advantages held by some existing online marketplaces may place them in a relatively entrenched market position and confer upon them significant market power.

- 6.30 The emergence of e-commerce is likely to increase the number of competition cases alleging:
- excessive pricing resulting from distortions to *market design*;
 - excessive returns to *intellectual property rights*; or
 - excessively *low* prices achieved through *buying power*.
- 6.31 While there has been a recent OFT research paper on the third of these issues, there may be a role for further analysis of the competition implications of different forms of market design (see further in paragraphs 6.54-6.57) and some revision of intellectual property laws. With respect to the latter, the US Patent and Trademark Office has responded to criticism over the role of patents in cyberspace by saying it will overhaul its procedures for granting 'business method' patents.⁷⁷
- 6.32 In addition, certain characteristics of e-commerce businesses, such as the uncertainty of future profits, high risk of failure and high sunk investments in intangible assets, may create difficulties for the *empirical assessment* of excessive pricing or profitability. Further research into these issues may be valuable.

Collusion

- 6.33 Excessive prices may also result from implicit or explicit agreements between companies to restrict supply and raise prices in the market, to secure supra-normal profits. In this section, we discuss the implications of e-commerce both for the likelihood of collusion and for the policing of collusion. Important characteristics of e-commerce in this respect include factors that facilitate communication between competitors and factors that increase transparency in the market, but we also discuss a number of other factors.
- 6.34 One of the most widely held competition concerns relating to e-commerce is that it may facilitate such collusive behaviour. Much of the recent discussion of this issue has focussed on the development of B2B online marketplaces that are co-owned by a number of significant market participants.⁷⁸ However, many of the same issues also apply to independent trading exchanges (ITEs), which are not owned by market participants, and to joint Internet sales ventures by traditional competitors. More generally, there are a number of characteristics of e-commerce that might be expected to facilitate collusion, even in the absence of joint ventures and online marketplaces.

Factors facilitating communication between competitors

- 6.35 Communication between competitors will often be required in order to reach consensus on a collusive strategy. Secret meetings, designed with this in mind, have traditionally been characterised as occurring in 'smoke-filled rooms'. In most cases where the European Commission has successfully established collusion, it has to a large extent based its conclusions on diary entries and written notes from such meetings.

⁷⁷ *Government monopoly grants offer chance to patent cyberspace*, Ft.com, 30 Mar 2000.

⁷⁸ For example, in the US, investigations are underway by the Justice Department to determine whether a planned travel website backed by five major airlines is anti-competitive. T2, as it will be known until they decide on an official name, is being designed by Boston Consulting Group, and will offer consumers online flight reservations on over thirty participating American and foreign carriers (Source: *USAToday.com*, 18/5/00). At the same time, the Federal Trade Commission is investigating Covisint, the carmakers' marketplace, established by Ford, General Motors and DaimlerChrysler. Its enquiries have already delayed the exchange's launch from mid-year to the end of this year. (*Fair exchange in cyberspace* by Richard Wolffe, Nikki Tait and Christopher Bowe, FT.com, June 4 2000).

- 6.36 There are three market innovations associated with e-commerce that may facilitate communication between competitors, and make such communication harder to police.

Online marketplaces co-owned by market participants

- 6.37 Where online marketplaces are co-owned by market participants, these participants will naturally communicate about the running of the exchange. Indeed, even an informal conversation between board members about price levels can potentially communicate a collusive strategy.⁷⁹
- 6.38 Moreover, where an online marketplace is owned jointly by a number of the main suppliers in a market, collusion may simply take a different form than it might have done traditionally. For example, collusion may be achieved by designing the dynamic pricing mechanism so as to favour the owners over other market participants. Alternatively, where the marketplace is owned by a number of sellers, collusive profits might be collected in the form of fees charged to buyers for using the marketplace.⁸⁰ In all of these cases, collusion may be formal or tacit.

Joint Internet sales ventures

- 6.39 In some markets, companies that compete in their core (traditional) markets have formed joint ventures to sell on the Internet.⁸¹ Such joint ventures have tended to be justified on the basis that e-commerce sales account for only a very small share of the total market. However, unless the joint venture is run entirely independently of its parents, it could potentially act as a natural vehicle for co-ordination across the market, including their traditional businesses.

Chat rooms

- 6.40 There is some concern that ‘chat rooms’ may become the 21st century equivalent of smoke-filled rooms.⁸² Many of the online marketplaces include chat rooms in which market participants can ‘get together’ for discussion, without any need to meet up in person and thus without any need for the diary entries, travel arrangements or records of phone calls, that often facilitate detection of such meetings. While some of these chat rooms are public, and thus would be relatively easy to monitor, others may be private, and reserved for particular market participants. They could even be carried out via an ‘Extranet’, rather than the Internet, for improved secrecy. Such chat rooms would be very hard to monitor, and the information would be easy to delete entirely from the chat room server (if saved in the first place).

Factors increasing transparency in the market

- 6.41 It is in the nature of collusion that each colluding party would prefer to cheat on the collusive agreement, so long as it could do this individually and without detection or punishment by its competitors. Sustainable collusion therefore requires repeated interaction, the ability to detect cheating, and the potential for fast and effective punishment in the face of cheating.

⁷⁹ For this reason, at Metalsite – the online steel exchange owned by a number of large industry participants – an antitrust lawyer attends board meetings and supervises the discussion. (*Fair exchange in cyberspace* by Richard Wolffe, Nikki Tait and Christopher Bowe, FT.com, June 4 2000).

⁸⁰ Likewise, where an online marketplace is owned by a set of buyers, monopsony prices may be achieved indirectly through fees charged to sellers for using the marketplace.

⁸¹ For example, T2 is an online reservation system created by all the major airlines in the US. (*European airlines may fly Internet travel agency*, Ft.com, June 26 2000).

⁸² A ‘chat room’ is an online forum within which a number of participants can communicate in real time.

- 6.42 Price transparency can play an important role in supporting collusion, since it enables competitors both to co-ordinate their prices and to observe cheating on prices more readily.⁸³ Indeed, increased price transparency may facilitate ‘tacit’ collusion, whereby competitors adjust to each others’ behaviour without any form of explicit agreement. Non-price information may also be useful in co-ordinating supply decisions. For example, knowledge of input prices may be useful in determining whether price reductions by competitors are related to cost changes or due to cheating. Knowledge of input volumes can provide important information on competitors’ expected production levels (and thus sales). Similarly, monitoring purchases of production equipment could provide information on competitors’ capacity.
- 6.43 There are a number of characteristics of e-commerce that may have a significant impact on transparency in the market.

The role of online marketplaces

- 6.44 Where all of the sales made in a particular market are transacted via a single online marketplace, the marketplace will have perfect information on sales made between market participants. Where the online marketplace is co-owned by a number of market participants, there is a risk that detailed transaction information of this sort could pass from the marketplace to the participants, unless strict rules are put in place to ensure confidentiality of data.
- 6.45 Even if competitors cannot gain direct access to detailed transaction information, the marketplace will be in a uniquely good position to put together summary market statistics of key information. In some cases, such information will not be anti-competitive, but in other cases it could be, especially if it is current and relatively disaggregated. Competition authorities may be required to determine what sorts of statistics may and may not be published.
- 6.46 Where online marketplaces do not provide price and sales data to market participants directly, the fact that all sales on such marketplaces are made electronically may mean that they are relatively public and easy to monitor.⁸⁴ Indeed, compared with the secret bilateral negotiations between buyers and sellers that have previously characterised many B2B markets, this ability to monitor sales may imply a dramatic increase in transparency.

Lower search costs

- 6.47 As described in paragraphs 3.18-3.24, the Internet is likely to bring about low search costs and high price transparency. When competitors simply publish their prices on the Internet, it is possible to design search engines that will monitor prices across different websites, and this will be further facilitated by the growth of protocols such as XML. Such price transparency may facilitate collusion.

Integration with internal IT systems

- 6.48 The ability to check competitors’ prices electronically may enable this information to be integrated with firms’ own price-setting systems so as to achieve automated, and perhaps fairly sophisticated, price leadership (i.e. with one player effectively setting prices for the whole industry) and automated punishment strategies.
- 6.49 Finally, it is usually true that if competitors are able to monitor prices readily, then so should competition authorities. Thus, increased price transparency may potentially also facilitate the detection of collusion. This will, however, only be the case if competition authorities are able

⁸³ For an economic analysis of collusion and information exchange, see Vives and Kühn (1995), *Information exchanges among firms and their impact on competition*.

⁸⁴ Although the degree to which it is possible to observe who paid or received what price will depend on how much anonymity/privacy is accorded to the participants in the marketplace.

to develop search engine software that carries out such monitoring activity or gain access to online marketplaces.⁸⁵

Other factors facilitating collusion

6.50 There are a number of other factors facilitating collusion. The most important of these are discussed below.

Market concentration and high barriers to entry

6.51 As set out in paragraphs 5.12-5.37, some e-commerce markets (particularly e-markets where liquidity is important) might be expected to be characterised by high barriers to entry and few competitors worldwide. Such market conditions may to be highly conducive to collusion.

Low menu costs

6.52 The enforcement of collusion is normally easier, the more quickly and effectively parties to the agreement can punish cheating firms by cutting prices. This will be facilitated if the costs of making price changes (i.e. menu costs) are relatively low. As described in paragraphs 3.17-3.50, menu costs might be expected to be lower in electronic markets, comprised primarily of the cost of making a single price change in a central database.

Affiliations

6.53 It will sometimes be possible for a subset of firms in a market to collude, despite the existence of low barriers to entry and a competitive fringe. This will be easier if most customer switching is between players within the collusive group, rather than to fringe participants. Affiliations (or links) between colluding websites could potentially facilitate such a situation. Customers could be persuaded that they are shopping around effectively, whereas in fact they are only shopping around amongst collaborating firms.

Collusion: conclusions and recommendation

6.54 Internet technology could potentially offer an ideal micro-climate for collusion, due to increased communication and transparency in the market, as well as the potential for more frequent market interactions. In particular, collusion concerns may arise with respect to market design and ownership within both online marketplaces and joint Internet sales ventures.

6.55 Three aspects of collusion are likely to create the highest uncertainty for businesses and may thus warrant further investigation.

- *Information sharing.* There are many benefits to interested parties from accessing market data. As such, it would be inappropriate for a competition authority to prevent information sharing unless it raised a serious risk of collusion. A better approach may be to provide guidance to businesses on the degree and type of information that may be shared. Such guidance might take into account the fact that the provision of *historical* sales data can have less impact on the potential for collusion than the sharing of *current* sales data.
- *Market design.* The way in which online marketplaces are designed, and their ownership structure, can have important implications for the ability of participants to

⁸⁵ In many cases, access to online marketplaces is restricted to industry players (this is particularly true of 'vertical' hubs). Information provided upon registration is checked and access can be denied on security grounds.

collude. This is also an area in which further research would be worthwhile, given the rapid emergence of electronic marketplaces in a number of different industries.⁸⁶

- *Horizontal agreements.* More generally, guidance may be useful on what forms of horizontal agreements between competitors will generally be permitted, and a detailed description of how collusion will be assessed.

6.56 In order to improve the monitoring of collusion, it might also be useful for competition authorities to provide guidance as to the long-term storage of electronic data. They might also wish to develop their own market-monitoring search engine software, which might be used to track prices, sales and conversations in chat rooms, with the aim of detecting evidence of collusive behaviour.

6.57 Finally, the competition authorities need to be aware of some of these issues when imposing remedies on parties which relate to making prices publicly available on the Internet, even when the investigation relates to ‘traditional’ markets. This type of remedy is currently being considered by the Competition Commission following its inquiry into supermarkets.⁸⁷

Price discrimination and undue preference

6.58 As described in paragraphs 3.17-3.50 certain characteristics of e-commerce can be expected to facilitate price discrimination.⁸⁸ This need not have adverse economic effects. Price discrimination may indeed have *efficiency benefits*, for example if it leads to more sales than could otherwise be achieved, or if it provides a more efficient way of recovering fixed costs in industries where such costs are high relative to marginal costs. Indeed, the efficiency justification for price discrimination will tend to be strong in e-commerce markets, given that they are often characterised by large fixed costs relative to the marginal costs of supply (see paragraphs 3.17-3.50).

6.59 Nonetheless, despite these efficiency benefits, price discrimination can contravene competition policy. Firstly, price discrimination may significantly reduce competition.

- The ability of a firm to price discriminate may encourage *predatory pricing* (see paragraphs 6.72-6.84). Firms can in fact target price cuts to a subset of customers, financing those price cuts by raising the prices charged to another set of customers.
- By reducing the margins of certain downstream players, price discrimination may limit the ability of these players to compete effectively in the downstream market, and may even induce their exit from the market. That is, price discrimination may have *effects on downstream competition*. This is especially likely to occur where a company that is dominant upstream is also a competitor in the downstream market. The company can show ‘undue preference’ to its own downstream arm by selling to it on more favourable terms than are available to third-party competitors.

6.60 Secondly, price discrimination can also be *exploitative* (i.e. it can facilitate excessive pricing). In particular, price discrimination may allow dominant firms to extract more of their customers’ willingness to pay than was previously possible. This in turn raises the likelihood that dominant firms will be found to have supra-normal profits.

⁸⁶ An introduction to the implications of auction design for collusion is provided in Klemperer (2000), *What really matters in auction design*, draft discussion paper, (<http://www.nuff.ox.ac.uk/economics/people/klemperer.htm>).

⁸⁷ See the Competition Commission’s Remedy Statement in this case, which can be found at www.mmc.gov.uk/10-00.htm.

⁸⁸ Price discrimination can also be achieved through providing selective discounts to customers. Discounts are treated under a separate heading in the CA98 guideline. However, as discounting is just a special form of price discrimination, we do not discuss discounts separately.

Implications of e-commerce for price discrimination

- 6.61 One might expect to see a growth in the number of competition cases related to price discrimination as e-commerce develops. The technology associated with e-commerce provides increased potential for price discrimination. Large economies of scale also provide high incentives to engage in such behaviour.
- 6.62 *Effects on downstream competition* may be of particular concern in e-commerce markets, specifically for online marketplaces. Where an online marketplace is owned by a set of major market participants, it may have an incentive to distort competition in favour of these market participants by supplying third-party competitors only on unattractive terms. The impact of this on competition will depend on the importance of access to this marketplace in order for an operator to compete effectively in the relevant market.
- 6.63 Similar behaviour may potentially occur in the market for designing B2B e-commerce marketplaces. Suppose that a player buys an e-commerce platform from, say, Ariba and then finds that Ariba has formed a competing platform with another player in the same market. In this case, Ariba could potentially apply more favourable conditions to the marketplace it is integrated with than to the competing one, thus squeezing the margins of this competitor and perhaps reducing its viability.⁸⁹

Implications of e-commerce for assessing price discrimination

- 6.64 E-commerce has two characteristics that may raise difficulties for assessing whether price discrimination is the result of predatory pricing or excessive pricing.
- 6.65 *Large numbers of narrow markets.* Reviewing a large number of narrow markets can be time-consuming and difficult. For practical purposes, such markets are often aggregated together in competition investigations, since it is easier to make meaningful comments about the relative market power of market participants by looking at their position across a variety of these very narrow markets. However, this raises the issue of which markets may appropriately be placed together in such an investigation.
- 6.66 *Economies of scope.* Assessment of predatory pricing and excessive pricing involves comparing prices with costs within a given market. Where price discrimination implies relatively narrow relevant markets, it is likely that a large proportion of the fixed costs of supply will be joint across these different markets (i.e. there are economies of scope). It will be generally difficult to attribute such costs (and revenues) to any particular market. This may in turn make it impossible to assess whether a firm is serving that market at an incremental loss, or at a supra-normal profit, without looking at its behaviour more widely.
- 6.67 This issue may well arise in assessing price discrimination between e-commerce markets and their traditional equivalents. A traditional retailer might endeavour to leverage its position into online markets by setting sufficiently low prices on its Internet site that pure e-retailers are unable to compete effectively. If, however, most of this retailer's costs are joint across the two businesses, such that the incremental costs of running the website are low, then it may be hard to determine conclusively that the retailer is behaving predatorily, as opposed to engaging in non-strategic competitive behaviour.

Other forms of discrimination

- 6.68 Finally, the wide use of detailed customer databases gives online retailers the potential to carry out non-price discrimination. This can again have efficiency benefits; many consumers appreciate the personalised offers that greet them when they make repeat visits to certain

⁸⁹ This may be especially distortive given the tippy nature of markets for online marketplaces. Note that such terms need not just include price terms, but also other factors such as technical support, or disclosing information about product updates/improvements at different times to the two players.

websites. However, there is growing concern about the use of customer-specific information to rank customers, and resulting ‘weblining’, whereby companies are able to mark out some types of customers as being unattractive. The company may then choose to offer only a restricted set of products to these customers, to provide them with low customer service, or even to refuse to supply them entirely.

- 6.69 This practice can affect for both individual and business customers. In the former case, the only competition concern raised is whether such behaviour can be considered exploitative if carried out by a dominant firm (although there may also be consumer protection issues). Where business customers are affected, by contrast, ‘weblining’ can impact on competition directly, especially where the business customer is refused supply. Of particular concern in this regard is the fact that any customer profiling is necessarily imperfect and could be susceptible to ‘dirty tricks’. Specifically, firms may be able to disadvantage their competitors by feeding erroneous information about them into the customer profiling system.

Price discrimination: conclusions and recommendations

- 6.70 With the growth of e-commerce, we might expect to observe more competition cases involving price discrimination, both:
- *in the B2C arena* - where price discrimination will be facilitated by the increased use of customer databases to tailor offerings and by increased ‘versioning’; and
 - *in the B2B arena* - where price discrimination will be facilitated by the increased use of dynamic pricing mechanisms, and where price discrimination by online marketplaces may have significant effects on downstream competition.
- 6.71 The existing competition framework and tools would appear largely sufficient to deal with these various issues. There may, however, be benefits to be gained from preventing companies from sharing sensitive information about customers’ shopping habits and giving customers rights to greater access to the information held about them in suppliers’ databases. This might allow customers to make more sophisticated and informed choices between suppliers and would also reduce problems associated with ‘weblining’.

Predation

- 6.72 While there are many forms of predation, a common definition applies:

‘Predation is the strategic behaviour where an undertaking deliberately incurs short term losses in order to eliminate a competitor so as to be able to charge excessive prices in the future.’ (CA98 guidelines, paragraph 4.1).

- 6.73 In order test for predation,⁹⁰ it is important to establish evidence on three issues.
- Whether the undertaking is making incremental losses over the short term (i.e. whether the alleged behaviour results lower profits, or greater losses, than the undertaking would achieve otherwise).
 - Whether this is *intended* to alter the behaviour (specifically, decisions on entry, exit, or sunk investments) of its actual or potential competitors.
 - Whether, it will be feasible for the undertaking to recoup its short-term losses via supra-normal profits in the long-term.
- 6.74 Many e-commerce players are currently incurring (short-term) losses. Investors in e-commerce operations have been willing to finance these losses because they expect profits to

⁹⁰ See, for example, *Predatory Behaviour in UK Competition Policy* by Myers (OFT Research Paper 5, 1994).

be achieved over the longer term, as weaker players drop out of the market and the survivors gain stronger market positions.

- 6.75 The behaviour of many current e-commerce companies would thus appear to satisfy all of the key steps of a predation test. As such, one might expect the competition authorities to receive a number of complaints relating to predation, especially from traditional operations, but also from smaller e-commerce companies.

Applying the predation test to e-commerce

- 6.76 It may, however, be inappropriate to apply the usual predation test in this situation, due to certain characteristics of e-commerce discussed below.

Sunk investments in intangible assets

- 6.77 As set out in paragraphs 6.8-6.32, one could interpret a large proportion of the initial losses being incurred by e-commerce companies as investments in intangible assets, such as brand name, customer loyalty, relationships with suppliers and human capital. In addition, many independent online marketplaces are apparently investing in 'buying' the business of certain large players, often at a relatively high cost, in order to reach a minimum level of liquidity and to compete to be the preferred marketplace in that market.⁹¹

- 6.78 If such intangible assets were to be capitalised, in a similar way to physical assets, and then amortised over time in line with the revenue streams they generate, then this would reduce, or may eliminate entirely, the apparent upfront losses being made by e-commerce companies.

Economies of scale

- 6.79 The economies of scale of many e-commerce operations may make it difficult to assess what the optimal pricing structure would be, and thus to determine whether the undertaking is deviating from profit-maximisation (i.e. making 'incremental' losses). More generally, in order to establish whether incremental losses are being incurred, it is necessary to understand a company's cost structure. During the initial stages of e-commerce, costs may not be fully known, sometimes even to the players themselves who are still 'experimenting' with a variety of different strategies.

Uncertainty of future profits

- 6.80 Given the large uncertainties associated with the future of e-commerce (as reflected in their dramatic fluctuations in share price), there are likely to be significant difficulties involved in assessing the ability of the alleged predators to alter market structure and recoup losses in the long run.

Predation: conclusion and recommendations

- 6.81 It can often be difficult to distinguish predatory behaviour from vigorous competition, and this problem may well arise in e-commerce markets. Many e-commerce players are currently incurring short-term losses, with the expectation of profits over the longer term, as weaker players drop out of the market and the survivors gain stronger market positions.
- 6.82 As such, their behaviour might appear to satisfy all of the key steps of a predation test. The applicability of the usual predation test may, however, be compromised in this situation, due to the importance of sunk investments in intangible assets, economies of scale and uncertainty of future profits.

⁹¹ For a discussion of the role of liquidity in the success of online marketplaces, see paragraphs 5.24-5.37.

- 6.83 A further question raised by this discussion of predation is whether - from an economic standpoint - players need to be dominant in order to act predatorily. Under the legal framework of the Chapter II prohibition, an undertaking must be dominant in some market in order to be found guilty of predatory pricing (although the predation need not occur in the market within which the undertaking is dominant). This requirement to demonstrate dominance assumes that firms cannot create dominance through predatory strategies if they were not previously dominant in any market.
- 6.84 This assumption may hold in established markets, but need not be true in rapidly changing markets. While few e-commerce companies are likely to be found dominant today, it seems possible that predatory behaviour by such companies could create dominance over the long-term. In new areas such as e-commerce, an alternative pre-condition for a finding of abuse might therefore be more appropriate, such as the ability to *create* dominance in a given market.

Vertical restraints

- 6.85 Vertical restraints are provisions made between undertakings operating at different levels in the supply chain. There are several types of vertical restraint, including resale price restrictions, selective and exclusive distribution, exclusive dealing, tying, full-line forcing and quantity forcing.
- 6.86 In many cases, these restraints will not be prohibited.
- Vertical restraints will generally only have anti-competitive implications if market power is present at one or both stages in the supply chain, or if there is a network of similar agreements across a group of undertakings that collectively possess market power.
 - At the same time, vertical restraints can have substantial efficiency benefits, by aligning interests between retailers, between manufacturers, or both, on issues such as marketing of brand or provision of high quality service and product range. They can also play a vital role in limiting risk where either party makes sunk investments in the supply relationship.
- 6.87 As stated in the CA98 guidelines,⁹² competition law recognises the potential benefits of vertical restraints, and these will generally be weighed up against any anti-competitive effect. In this section, we consider how the characteristics of e-commerce are likely to impact on the nature of vertical restraint, their *competition effects* and their *efficiency benefits*.

Impact of e-commerce on the nature of vertical restraints

- 6.88 Vertical restraints are made between independent parties at different points in a supply chain. The extent to which vertical restraints are used may thus be affected by any changes to the nature and number of independent parties that make up each supply chain.
- 6.89 E-commerce is likely to affect the supply chain in three relevant ways.

Integration between parties that were previously separate

- 6.90 Under traditional commerce, the costs of maintaining a network of retail outlets, and the attractiveness of having a relatively wide range of products within each outlet, may have deterred manufacturers from retailing their own products. The reduced search costs associated with the Internet mean that customers can more easily be served from a single

⁹² Vertical restraints are discussed in the general CA98 guideline on *Assessment of Individual Agreements and Conduct* (OFT 414) and also the specific CA98 guideline on *Vertical Agreements and restraints* (OFT 419).

website and there may be less need for that site to offer wide range of products. Thus, in an online environment, more manufacturers may opt to retail their own products.

The creation of new intermediaries

- 6.91 As discussed in Section 3, the Internet has given rise to a variety of new intermediaries, such as portals and online marketplaces, which may sign restrictive vertical agreements with online buyers and sellers.

Increased power of downstream players

- 6.92 Much of the literature on vertical restraints emphasises the ability of suppliers to impose restraints on powerless retailers. Over the last 50 years, such a view of retailers has become increasingly inappropriate. The growth of e-commerce may further strengthen the market position of downstream buyers relative to suppliers. Firstly, lower search and switching costs will increase the credibility of buyers' threats to switch supplier, and thus increase their bargaining power. Secondly, buying clubs and careful market design may also improve their buying power. Thirdly, the widening of geographic retail markets may facilitate the development of global retailers. These will tend to have far greater bargaining power with suppliers than traditional local or national retailers.

Competition effects of vertical restraints

- 6.93 The main potential anti-competitive effects of vertical restraints are *market foreclosure and raising of rivals' costs, competition dampening, and facilitation of collusion*. We consider the likely impact of e-commerce on each of these in turn.

Market foreclosure and raising rivals' costs

- 6.94 Vertical restraints can foreclose markets if they make it more difficult or costly for downstream competitors to gain access to the inputs or products they require (downstream foreclosure), or for upstream competitors to gain access to customers (upstream foreclosure).

- 6.95 In the case of e-commerce, market foreclosure may take several forms.

- Online retailers may demand that their suppliers make them their exclusive online distributor, limiting the ability of new retail entrants to compete.
- Traditional suppliers may refuse to supply online retailers, reserving this niche for themselves.
- Online marketplaces may sign exclusive dealing arrangements with the larger buyers or sellers in a given market, restricting the development of competing e-markets.
- In some markets, portals may play an important role as gateways to consumers. If a given operator can sign up a number of major portals with exclusive dealing arrangements, this will raise the costs faced by alternative operators in attracting customers.

- 6.96 The adverse effects of foreclosing behaviour may be further enhanced by the following factors.

- *'First mover' advantages*. Short-term exclusionary behaviour in the initial stages of e-commerce may have significant long-term effects on market structure. As discussed in paragraphs 5.12-5.37, many e-commerce markets are likely to exhibit large first-mover advantages, which may act as significant barriers to entry to later market entrants.
- *Widening of geographic markets*. As described in paragraphs 4.18-4.32, e-commerce may lead to wider geographic markets. Vertical restraints such as exclusive distribution and exclusive dealing could therefore have severe implications for the total number of online competitors worldwide, compared with their impact on the number of traditional

competitors.⁹³ This may in turn have an impact on the number of competitors in the traditional market. As customers become increasingly able to switch to the Internet in the absence of a local distributor, the number of local distributors may be reduced.

6.97 On the other hand, e-commerce operators may face lower costs of providing product variety than their traditional counterparts, as discussed in paragraphs 3.25-3.40. This may reduce the potential anti-competitive effects of full-line forcing.

Competition dampening

6.98 Vertical restraints can also dampen competition, both upstream and downstream. This can be done by increasing the degree of differentiation between competitors, or by directly limiting active competition between competitors.

6.99 In particular, exclusive dealing can increase differentiation and dampen competition between upstream suppliers. When retailers are differentiated (e.g. by location), then competition between manufacturers will tend to be more intense if their products are sold through a single retailer than if each supplies to a different retailer. Thus exclusive dealing (which prevents a distributor from carrying the goods of more than one competing supplier) can reduce upstream inter-brand competition.

6.100 Such behaviour depends for its success on the degree of differentiation between retailers, which is likely to be affected by e-commerce.

- *Reduced importance of geographical location.* In traditional markets, the principal differentiating factor between retailers is geographic location. However, this will tend to be far less important in e-commerce markets. As such, one might expect the competition dampening effects of exclusive dealing to be reduced.
- *Greater importance of 'neural real estate'.* On the other hand, in the absence of a local customer base retailers will endeavour to find alternative ways of differentiating themselves and developing a loyal customer base (or 'neural real estate'). This may increase the scope for dampening upstream competition.

Facilitation of collusion

6.101 Resale price maintenance (RPM), whereby suppliers fix (absolute or minimum) downstream retail prices will tend to eliminate price competition between retailers and may facilitate collusion amongst suppliers. As such, RPM will normally be found to breach the Chapter I prohibition and will be unlikely to benefit from an exemption.

6.102 While not explicitly prohibited, other forms of resale price restriction, such as recommended resale price, can sometimes act as implicit RPM, in particular if retailers fear refusal of supply if they price below the recommended price. This concern could potentially increase with e-commerce. The difficulties inherent in monitoring retail prices have traditionally made it difficult for suppliers to impose implicit RPM of this sort. Where e-commerce involves increased price transparency, the risk of such behaviour could increase, since suppliers will be able to monitor the retail prices being charged for its products cheaply and easily.

6.103 An alternative form of resale price restriction that may emerge with e-commerce is refusal by suppliers to allow retailers to sell their product in particular ways, such as via auction, that reduce the retailer's direct control over out-turn retail prices. Such a restriction could again be viewed as a way of achieving implicit RPM and so facilitating collusion.

⁹³ For example, car manufacturers who previously had a separate exclusive distributor for each local area in the UK might now require just one exclusive online distributor for the UK. For other products, there could potentially be just one exclusive online distributor for the whole of Europe or the whole world.

Efficiency benefits of vertical restraints

- 6.104 In traditional markets, vertical restraints serve a number of purposes.
- *Aligning incentives of suppliers and retailers.* This can involve protecting relationship-specific investments from *ex post* opportunistic ‘hold-up’ behaviour, or encouraging sales-promoting behaviour.
 - *Overcoming inefficiencies arising from competition between retailers.* Vertical restraints may be required to prevent ‘free-riding’ between retailers and to ensure that retailers provide a high quality shopping environment, customer service, and a wide product range, or to control the number and location of retailers so as to achieve efficient distribution.
 - *Overcoming inefficiencies arising from ‘free-riding’ by rival manufacturers.* Vertical restraints may be put in place to encourage suppliers to provide retailers with services, such as training, information or equipment, or to align their brand name with the retailer, if this could potentially also benefit other suppliers.

- 6.105 The risk of opportunistic hold-up behaviour, the risk of free-riding between retailers, and the risk for suppliers of aligning their brand name with the retailer are likely to be affected by e-commerce.

The risk of opportunistic hold-up behaviour

- 6.106 In the early days of e-commerce, particularly in the B2B environment, parties may work together to build new markets. This may require significant relationship-specific sunk investments. For example, buyers and sellers wishing to integrate their IT systems with an online marketplace may need to invest in systems which will then lock them into this marketplace.
- 6.107 In such circumstances, there is a real risk that these investments may be expropriated *ex post* by one or the other party. For example, once the investment has been made and the parties are tied in, the online marketplace could potentially raise the prices it charges for its services, such that the parties do not make the expected return on which they based their decision to invest. In such cases, the parties may wish to protect their investments by putting in place long-term vertical agreements.
- 6.108 While hold-up only occurs where the investments are relationship-specific, online retailers may also face it when setting up their websites, to the extent that they are dependent for their success on carrying the brands of particular suppliers.

The risk of free-riding between retailers

- 6.109 Where e-commerce constitutes a new retail channel, competing with traditional retailing, there are risks of free-riding between the two types of retailer.
- 6.110 This free-riding can work in two directions, depending on the type of product being traded. On the one hand, customers may gather the required information from online sellers, where information is more easily accessible, and then purchase the products from traditional outlets, in order to acquire the product immediately. On the other, customers may prefer to verify the quality of the product in person, and then buy it from an e-seller, often at a lower price.
- 6.111 In order to avoid such free-riding problems, suppliers may set up selective distribution systems. Such systems will usually be allowed under competition law, so long as distributors are chosen purely on the basis of *objective qualitative criteria*. There are, however, inherent qualitative differences in retailer characteristics between e-commerce and traditional markets, and it may be difficult for a supplier to apply objective qualitative criteria for selective distribution across both forms of distribution.

- *Shopping environment.* The nature of shopping environment for online retailers is very different from that for traditional retailers. The most important difference is that customers cannot directly verify the products. More generally the quality and ambience of the shopping experience is hard to compare across these two different forms of distribution.⁹⁴
- *Customer service.* Online retailers do not generally have sales assistants providing direct customer service. However, the information and automated services (including search facilities) available online mean that in some ways service is better than would be provided by a traditional sales assistant. At the same time, speed of delivery and treatment of returns will tend to be far more important in the case of online retailers than for their traditional counterparts.
- *Product range.* The fact that online retailers do not have physical high street presence, and can centralise their stocks in a particular centre, means that it is far easier and less costly to stock a wide product range.⁹⁵ As a result, the range of products available at certain online retailers (such as Amazon.com) is greater than any traditional retailer can offer in-store. On the other hand, the reduction in search costs on the Internet, combined with the growth of specialised shopping search engines (such as www.shopsmart.com), mean that retailers may be able to compete effectively with a relatively small range of products.

6.112 With the growth of e-commerce, we would expect the OFT to receive complaints:

- *from traditional retailers:* complaining that e-commerce retailers are supplied even though they do not satisfy the qualitative criteria applied for traditional retailers; and
- *from e-commerce retailers:* complaining that the qualitative criteria employed by suppliers have been used as an excuse for not supplying them with product.

The risk for suppliers of aligning their brand name with a retailer

6.113 Many e-commerce operations are new, and customers know little about them. In lack of direct customer interaction, brand name becomes an important certifier of quality. As such, a supplier may be able to improve customer trust and awareness of a particular retailer, simply by supplying that retailer and so aligning its brand name with that retailer. A similar effect may be achieved between e-commerce operators through the use of ‘affiliations’.

6.114 Suppliers may be less willing to align their brand name in this way, however, if other suppliers will then benefit from the improved awareness and trust in the e-commerce operator. In such circumstances, restraints such as exclusive dealing may be used to encourage such alignment.

Vertical restraints: conclusions and recommendations

6.115 E-commerce may change the prevalence and nature of vertical restraints. This is because the characteristics of the Internet may result in more integration by suppliers into retailing their own products, the development of new intermediaries, increased buyer power for downstream firms, wider geographic markets, and increased ability for suppliers to monitor directly the behaviour of their retailers.

6.116 Such changes, and their implications, can all be assessed under the current competition policy framework. However, there are two key issues raised by vertical restraints within e-commerce.

⁹⁴ This problem is not new to e-commerce however. Similar issues arise when comparing high-street retailing with mail order catalogues and telephone shopping.

⁹⁵ This may also mean that full line forcing (under vertical restraints) may be less likely to lead to foreclosure issues when e-commerce is a significant proportion of sales in the market.

- *Implications of 'first mover' advantages.* Short-term foreclosure, achieved through exclusive vertical agreements, can deliver significant long-term effects if first mover' advantages are important.
- *Evaluation of selective distribution systems.* The most common competition complaint in the e-commerce area currently relates to e-commerce operators being refused supply of products, when they are readily available to distributors in traditional sales channels. Under EC competition law, selective distribution would usually be exempted from Article 81 so long as the criteria adopted for choosing distributors are objective and qualitative, and there is no restriction placed upon passive sales by distributors within the system to other distributors' customers. By contrast, restrictions on active sales are considered acceptable.⁹⁶

Differences between e-commerce and traditional commerce raise difficulties for applying the same qualitative criteria to both traditional and e-commerce retailers. In addition, it is far from clear how one would distinguish an 'active' from a 'passive' sale in the context of e-commerce. The conditions employed for assessing selective distribution may therefore require refinement as e-commerce develops as a sales channel.

- *Implications of the 'hold up' problem.* One might expect 'hold-up' problems to be used frequently in e-commerce markets as a justification for vertical restraints. In evaluating such problems, however, the competition authorities must take care to assess the degree to which the investment *needed* to be relationship-specific. For example, if investments made in 'proprietary' software could equally have been made in 'open' systems that did not lock-in participants by the same degree, then the 'hold up' problem might have been avoided. In such cases, it might perhaps be considered a poor justification for vertical restraints.

Refusal to supply access to essential facilities

- 6.117 As described in paragraphs 5.16-5.23, entry to a market will sometimes require access to an 'essential facility'. In order to plead the existence of abuse, the refusal of access to a facility must be likely to eliminate *all* possibilities competition in the market on the part of the person requiring access, and the refusal must lack an objective justification.
- 6.118 Access to essential facilities is most likely to arise in the case of the physical infrastructure supporting e-commerce, discussion of which goes beyond the scope of the study.⁹⁷
- 6.119 Online marketplaces, however, may also act as an essential facility of this sort. Online marketplaces may be 'tippy' and thus tend towards being natural monopolies, with a second potential entrant facing large barriers to entry. In a market where e-commerce replaces traditional commerce as the predominant method of transacting, access to the incumbent online marketplace may become indispensable for buyers and sellers attempting to operate in that market. Any limitation on access to the online marketplace could thus act as an absolute barrier to entry in the market.
- 6.120 In particular, where an online marketplace is owned by a number of the major buyers or sellers in a market, there is a risk of third-party buyers or sellers being denied access to the market, or alternatively being given access only on such bad terms that they are unable to compete effectively. Such refusal to provide access might foreclose these third parties from the market, and so enhance the market power of the incumbent players. Whether this occurs

⁹⁶ Active sales occur where a supplier makes an active attempt to sell into the exclusive territory or to an exclusive customer group reserved to the supplier or allocated by the supplier to another buyer. (Commission Regulation (EC) No 2790/1999, Article 4).

⁹⁷ Infrastructure issues are covered in *Competition in e-commerce: a joint OFTEL and OFT study*, draft consultation document, March 2000.

in practice will depend on the ability of excluded third parties to create an alternative online marketplace. In markets where liquidity is important, this course of action may be very costly or impossible, in which case foreclosure may well result.

- 6.121 Refusal to supply access to facilities can foreclose entry, or raise rivals' costs, even where the case does not fulfil the strict criteria set out in the case of *Oscar Bronner v Mediaprint and others* [1998].
- *Access to software design.* An incumbent seller could potentially reduce the attractiveness of its competitors by denying access to its software design. For example, Amazon.com is currently engaged in a patent infringement case with BarnesandNoble.com for its 'one-click' software. If successful, Amazon may be able to preclude its competitors from using this feature, which could in turn limit their ability to compete. In order to assess this issue, competition authorities would need to examine the importance of role played by this feature in attracting and retaining customers.
 - *Access to price information.* The growth of e-commerce has facilitated the development of 'comparison-shopping' search engines, which search a variety of sites in order to find their users the best available deal. In order to provide this service, these search engines require access to price information from a variety of sites, and a lack of access to such information could compromise their ability to offer a worthwhile and viable service and make the markets more tippy, as discussed in paragraphs 5.24-5.37.⁹⁸
 - *Access to portals.* As discussed in paragraphs 5.16-5.23, links from portals (and also from affiliations) can play an important role in bringing customers to a given e-commerce site and in encouraging trust in that site. Fair and non-discriminatory access to portals may thus play an important role in the success of e-commerce companies in certain B2C markets. In order to assess the competitive implications of refusal to supply access to portals, competition authorities would need to examine how important a role links from portals played in delivering business.

Access to essential facilities: conclusions and recommendations

- 6.122 The conditions that must be met for a finding of abuse in essential facilities cases, as set out in the case of *Oscar Bronner v Mediaprint and others* [1998], are very strict and are unlikely to be met in many cases.
- 6.123 Refusal to supply access to an essential facility will often have important implications on competition in e-commerce markets, especially during the initial phases of e-commerce, where short-run foreclosure effects can have long-term implications (see paragraphs 6.93-6.103 above). As such, there may be a role for a more stringent treatment of these cases than is suggested by EC precedent.

Actions in related markets

- 6.124 Finally, an undertaking that has a dominant position in one market will sometimes be able to exploit that position to strengthen its position in a related market. In particular, this can be done by 'tying' or 'bundling' the product over which the undertaking has market power together with a product over which it does not.
- 6.125 The most likely example of such behaviour in e-commerce markets relates to B2B online marketplaces. As well as providing basic transaction services, these marketplaces often offer a variety of value-added services, such as the provision of market information and news, chat rooms, risk-management services, quality certification, insurance, consultancy and the provision of back-office systems. Many of these related markets do not exhibit natural

⁹⁸ In the US, a lawsuit between eBay.com and biddersedge.com, the world's number one auction portal, has recently taken place over precisely this issue.

barriers to entry, and thus should be competitive. However, there is a risk that online marketplaces could potentially leverage market power into these related markets.

APPENDIX

Table 6: B2B e-markets worldwide

Advertising	Spark Online, Inc.	www.spark.com
	Immerce.com changed to Adflight.com	www.immerce.com
	Adknowledge, Inc.	www.adknowledge.com
	BuyMedia, Inc.	www.buymedia.com/home.shtml
	imediapoint.com	www.imediapoint.com
Automotive	AUTOVIA Corporation	www.RapidAutoNet.com
	Go Media	www.acar.net
	Carstation.com Inc.	www.carstation.com
	TireDex.com	www.tiredex.com
	Business to Business Commerce Network	www.bbcn.com
	Autodaq	www.autodaq.com
	Dega.com, Inc.	www.dega.com
	Internet Systems Technology	www.fleetweb.co.uk
	Netvender, Inc.	www.autopartsbin.com
	Autotradecentre	www.autotradecentre.com
	PartsNet	www.partsnet.com
Aviation	Partsbase.com	www.partsbase.com
	Inventory Locator Service, Inc.	www.ilsmart.com/
Business Services	HippoDirect	www.hippodirect.com/index.html
	Benelytics Inc.	www.benelytics.com
	OzeCorp	www.ozetrain.com
	NoWonder. Inc.	www.nowonder.com/nowonder.jsp
	Noosh.com	www.noosh.com
	Hot Dispatch, Inc.	www.hotdispatch.com
	Printshark.com	www.printshark.com
	Rowe.Com	www.rowe.com
Chemicals	VerticalNet, Inc.	www.chemicalonline.com
	fob.com	www.fobchemicals.com
	CheMatch	www.chematch.com
	e-Chemicals Inc.	www.e-chemicals.com
	i2i-industry to industry, Inc.	www.i2i.com/tour/index.cfm
	PlasticsPlatform	www.plasticsplatform.com
	SciQuest.com	www.labdeals.com
Conference Planning	Chemdex Corps	www.chemdex.com
	Plansoft Corporation	www.plansoft.com
Construction	EventSource.com	www.eventsource.com
	BidCom	www.bidcom.com
	Cephren	www.bluelineonline.com
	buzzsaw.com	www.buzzsaw.com
	redladder.com	www.redladder.com
	Collaborative Structures	www.costructures.com/home.htm
	Ironmall, Inc.(JV: uBid, Cahners)	www.ironmall.com
	Constructware	www.constructware.com
	eBricks (Cephron/ Blueline Online)	www.ebricks.com
	EqualFooting.com	www.equalfooting.com
	Estimation, Inc	www.estimation.com
Education	TrainingNet, Inc.	www.trainingnet.com

Table 6: B2B e-markets worldwide

	Edupoint.com	www.edupoint.com
	KC Multimedia & Design Group, Inc.	www.knowledgeuniverse.com
	Cynaptec, Inc.	www.fuelstopmarket.com
	Epylon.com Corporation	www.epylon.com
Electronics and Computer	GlobalSpec.com Inc.	www.globalspec.com
	supplybase	www.supplybase.com
	System 1 Software, Inc.	www.System1.com
	TradeOut.com	www.tradeout.com
	Need2Buy	www.need2buy.com
	Avnet, Inc.	www.avnet.com
	IdentityWEB	www.identityweb.com
	ChipCentre	www.chipcentre.com
	OnSale.com	www.onsale.com
	NECX	www.necx.com
Energy	VerticalNet, Inc.	www.electricnet.com
	Fuelspot.com	www.fuelstopmarket.com
	i2i-industry to industry, Inc.	www.i2i.com/tour/index.cfm
	Continental Power Exchange	www.cplex.com
	Energy Exchange	www.enex.com
	NGX	www.ngx.com
	OilOnline	www.oilonline.com
	Automated Power Exchange	www.energy-exchange.com
	Sagemaker	www.sagemaker.com
Food & Agriculture	(@griculture Online)	www.agriculture.com
	US Resteraunt Exchange	www.usresterauntexchange.com
	Agribuys	www.agribuys.com
	Seafood Exchange	www.seafoodexchange.com
	Growzone Inc.	www.greenbuyer.com
	BuyProduce.com	www.buyproduce.com
	Farms.com	www.cattleofferings.com
	ecFood.com	www.ecfood.com
	eBenX	www.ebenx.com
	MedPool	www.medpool.com
	Net32	www.net32.com
	PhaseForward, Inc.	www.phaseforward.com
	Dexpo	www.dexpo.com
	Nonstop Solutions	www.nonstop.com
	Optical Auctions	www.opticalauctions.com
Metal Products	Smart Metal	www.smartmetal.com
	Steel Express	www.steelexpress.com
	MetalShopper	www.metalsshopper.com
	MetalSite LP	www.metalsite.net
	Spot Metals Online, Inc.	www.spotmetal.com/index.html
	Steel Spider	www.steelspider.com/Welcome.asp
	e-STEEL Corporation	www.esteel.com/
Office Supplies	SupplyPro, Inc.	www.supplypro.com/public/index.html
Small Business Services	Skills Village, Inc.	www.skillsvillage.com
	Spot Data	www.spotdata.com
	BusinessHere.comLLC	www.businesshere.com

Table 6: B2B e-markets worldwide

	BuyerZone.com, Inc.	www.byerszone.com
	httprint	www.printshark.com
	Digital Work	www.digitalwork.com
	Oze Print	www.ozeprint.com
	Onvia.com, Inc.	www.onvia.com
	BizBuyer.com	www.bizbuyer.com
	BizQuest.com	www.bizquest.com
Telecommunications	TelecomXchange	www.simplexity.com
	VerticalNet, Inc.	www.digitalbroadcasting.com
	Demandline	www.demandline.com
	Arbinet, Inc.	www.agcn.com
	InterXion	www.interxion.com
	Asia Capacity Exchange	www.ace-asia.com
	RateXchange	www.rateexchange.com
	Band X	www.band-x.com
Transportation	Vitran, Inc.	www.smartship.com
	The Aviation Hub	www.theaviationhub.com
	iShip	www.iship.com
	eTransport	www.estransport.com
	MAREX	www.marex.com
	NetFreight	www.netfreight.com
	GoLogistics	www.gologistics.com
Travel	VerticalNet, Inc.	www.e-hospitaliy.com
	BizTravel.com	www.biztravel.com
	GetThere.com	www.getthere.com
	Paragon Publishing Ltd	www.asia-hotels.com