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Publishers Caught in the Web?
Strategies, performance and public policy
General Framework

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Preface

Nowadays publishers face many challenges. New technological possibilities change their role. Whether or not they will be 'Caught in the Web' is the topic of this research. This study provides the General Framework and summarizes the main conclusions from three case studies: 'Magazine Publishing - A Quiet Life?' (CPB Working Paper 120), 'Tackling the Journal Crisis' (CPB Working Paper 121) and 'Copyright Protection: not more but different' (CPB Working Paper 122). The General Framework contains a description of the characteristics and business strategies in the information economy, and more importantly, it offers a new framework for assessing market performance.

It is no coincidence that this study on electronic publishing is also available as CPB's first electronic publication. CPB is eager to exploit new possibilities of disseminating its research output. The entire study is available from:

http://www.cpb.nl/nl/pub/pubs/werkdoc_119/

'Publishers Caught in the Web? - the hardcopy version' was conducted by Marcel Canoy and Paul de Bijl. Efforts to improve the study by numerous CPB colleagues (including the IT wizards Arie ten Cate, Wiebe Poppe and Erwin Zijleman) and the members of the steering committee are highly appreciated. Co-financing by the Ministry of Economic Affairs is kindly acknowledged. Special thanks are due to all interviewees and external experts.

Henk Don

Director, CPB Netherlands Bureau for Economic Policy Analysis

At the outer edge still stand the techno-visionaries, declaiming prophecies that are one part heroic forecast and three parts science fiction. These true believers argue that the information-technology revolution goes not just wide but unfathomably deep - that thanks to IT, nothing humans do will ever be the same.(...) Abolishing the sad old laws of economics was but an afternoon's work for the new paradigm.

The Economist

This study analyses the role of publishers in the digital age. The analysis runs as follows: identify characteristics of the market, confront that with the trend towards electronic publishing, see how that change the strategies and role of publishers, assess market performance and identify the role of the government in such an environment. The study consists of a general framework, three case studies (on scientific journals, consumer magazines and copyrights) and a concluding part.

The general framework first introduces a method of assessing market performance. Then business strategies follow from the specific characteristics of information goods.

1. Introduction

The rapid emergence of new information and communication technologies (ICT) during the 1980s and 1990s has led a long line of observers to point to - what they call - the 'drastic' changes in society that are expected to result from the broad acceptance of innovations such as the PC and the Internet. Numerous studies have been published that speculate about the impact of the new possibilities offered by ICT (McKnight and Bailey, 1997). A common observation in this literature is that ICT leads to a structural break in the way firms conduct business. The new rules guiding business decisions has been described by some authors as the 'new economy', the 'network economy' or the 'information economy'.

This study focuses on publishers, who play a central role in markets for information goods. The study follows the following line of reasoning: Publishers' markets have certain characteristics that set them apart from other markets. Taken together, the characteristics form *latent market failures* on a given market. The pervasive trend towards electronic publishing influences the market failures. Given the institutional framework, firms use various business strategies to cope with the latent market failures.

Firms can be unsuccessful or successful: the latent market failures do become manifest or not. If market failures become manifest, no efficient outcomes emerge, e.g. there is underproduction, lack of innovation or prices are too high. The role of the government follows from the market failures. Sometimes antitrust or competition policy might be

called for. In other cases, a reconsideration of the institutional framework or other governmental actions seem more appropriate.

The study is organized as follows: in the general framework we discuss the background of the above line of reasoning in general terms. After that we set up case studies on copyrights, scientific journals and consumer magazines. In a concluding part we pick up the lessons of the case studies and try to find out what they teach us about publishers and the role of the government.

The organization of this general framework is as follows. Section 2 discusses the core of the study: how to assess market performance. Section 3 defines information goods and provides a history in a nutshell. Section 4 identifies the specific characteristics of information goods. The implications for business strategies are discussed in Section 5. Section 6 suggests possible policy issues. Section 7 gives a concise overview of the case studies.

2. Assessing market performance

The core of this general framework (and the case studies that follow), lies in the assessment of market performance. Publishers are often active in markets that are not strongly regulated. Information good characteristics do create latent market failures, but firms are often able to solve these failures themselves, i.e. without the need for heavy-weight regulation. In order to assess whether or not firms indeed successfully solve market failures, we need a tool to assess market performance. This section provides such a tool.

2.1 Market definition

Before one can analyse market power or market performance, one must specify what the market is, that is, one must delineate the "relevant market." The purpose of this section is to stimulate discussion on sensible *economic* definitions of market power, relevant markets, and performance.

Geroski (1998) discusses three well-known ways to define a market:

- trading markets;
- antitrust markets (perhaps best known simply as "market definition" among economists and lawyers);

- strategic markets (by managers often denoted as "business definition."¹).

A trading market, a classical economic concept that can be traced back to Cournot, is defined as the set of individuals facing the same net price for a product, that is, the area where the "law of one price" holds (Marshall, 1920). This notion is not helpful to define markets for competition policy purposes. An antitrust market is the more practical notion which is used in antitrust law, competition policy and regulation. Since markets are more and more getting "connected" (see section 2.4), a straightforward use of this notion has become problematic. Finally, the business definition perhaps deserves to be considered as the most applied concept of a market, since it is the description used by those who create and operate in markets. We will see later that this notion will provide helpful input to define the "relevant market."

This section first discusses the commonly used definitions of relevant market and market power (section 2.2), it then identifies some problems with the standard definitions (section 2.3), and, finally, it offers a framework that can help dealing with those problems (section 2.4).

2.2 Current practice

This section discusses the current practice of market definition and market power.

2.2.1 The existing notion of market definition

It is important to stress that defining relevant markets has never been a quantitative or exact discipline; one will always have to rely on elements of judgement. Therefore, market definition is not a mechanical process but a concept used to identify and define the boundaries of competition between firms, and within which one can organize observed facts about competition. The European Commission uses a concept of relevant market that is established by the combination of the relevant product markets and relevant geographic markets. These are defined as follows (Articles 85 and 86 of the EC Treaty; see European Commission, 1997):

- *Relevant product market*

¹We will stick to the use of "market definition" and "business definition."

"A relevant product market comprises all those products and/or services which are regarded as interchangeable or substitutable by the consumer, by reason of the products' characteristics, their prices and their intended use." ²

- *Relevant geographic market*

The relevant geographic market comprises the area in which the undertakings concerned are involved in the supply and demand of products or services, in which the conditions of competition are sufficiently homogeneous and which can be distinguished from neighboring areas because the conditions of competition are appreciably different in those areas."

In short, the relevant product market comprises all products and services that are viewed by consumers as similar or equivalent because of their properties, price and purpose. The relevant geographic market is the territory comprising the firms that impose competitive constraints on each other.

Another way to think conceptually about the relevant market is by using the Anglo-Saxon tradition of asking the following question: if a supplier increases its price to a level above the competitive price, would consumers still buy from that supplier (such an increase may be small, as long as it is significant and non-transitory)? If enough consumers switch to substitutes, the price increase is not profitable, which makes these substitutes belong to the relevant market. This process is repeated until a supplier could profitably maintain a price increase, and no further substitutes can be added. The process has to be carried out by looking at product substitutes to obtain the relevant product market, and at suppliers in neighboring areas to obtain the relevant geographical market.³

²There are a number of practical approximations that can be used to check on market power if no proper information on degrees of substitutability and cross elasticities is available. To judge whether a publisher can exercise market power a useful proxy is to look at ads prices. The higher the ads prices, ceteris paribus, the more likely the publisher exercises market power. In individual cases more of these proxies can be used (for an application on TV programs, see Temple Lang, 1997, p20).

³ One can see that this approach strongly resembles the EC's notion of market definition. In the UK, the Office of Fair Trading has published guidelines on market definition (Office of Fair Trading, 1998). In the US, the U.S. Department of Justice and the Federal Trade Commission have jointly promulgated principles for defining markets in the *Horizontal Merger Guidelines* (US Department of Justice and Federal Trade Commission, 1997).

2.2.2 Market power

When the market has been defined, the next step is to discuss market power and possible abuse of market power. There is nothing wrong with the definition of market power used by most competition authorities:⁴

A firm has market power if it can, to a significant extent, act independently of competitors, entrants, suppliers or customers.

A firm can act independently if it has the ability to (for instance) increase its price, reduce product quality, or restrict customer choice, without losing sales. In a competitive market such actions are typically followed by consumers switching to competitors, which weakens firms' incentives to do so.

When assessing market performance one must distinguish existence of market power from abuse of market power. While the former is often a prerequisite for commercial activities and therefore potentially welfare enhancing, the latter is harmful for other market parties and for welfare.

Market shares of the firms are often used as a first indicator of the existence of market power.⁵ Typically, a large market share is the green light for further investigation, while a small market share has the opposite effect (the idea here is that antitrust problems are unlikely to arise). While market shares can be a reasonable rule of thumb in a number of cases, we will argue (i) that it sometimes fails; (ii) that it fails more often in information markets; (iii) that a better method exists.

Whether market shares are large or small depends on the way the market is defined. Market shares can be a useful indicator of the presence (or absence) of market power, especially in antitrust *merger* analysis, according to the common understanding that has emerged (White, 1999). However, White argues that this is different for *monopolization*

⁴ See e.g. the Dutch Competition Act, Chapter 1, Article 1(i).

⁵ See e.g. explanatory remarks by the Dutch Competition Authority NMa on the Competition Act (<http://www.nma-org.nl/zoek/dudm.html#4>). Another example is the Dutch Telecommunications Act, Article 6.4, which specifies that operators with a market share larger than 25% will be "designated with significant market power" while reserving the right to deviate from this rule if special circumstances apply. The Independent Post and Telecommunications Authority Opta has used this criterion to designate two mobile operators as firms with substantial market power while claiming that there were no special circumstances that justified deviation an exception from the rule (Opta Connecties, October 1999, nr. 8, and January 2000, nr. 1).

cases, where the presence of competitors may either be a *result* of the exercise of market power, or an indicator of the *absence* of a dominant position. It follows that market shares – either large or small – are neither necessary nor sufficient to justify claims about the presence or absence of market power. This is especially true in information markets, as we will see later on.

Because antitrust authorities do not want to miss out on relevant cases, they usually start out with a "small" relevant market, i.e. one in which market shares of individual firms are likely to be relatively large. They then wait for responses by market parties who will claim that this or that submarket should be part of the relevant market. This reduces their market share. Such time and resources consuming hassling and squabbling is standard practice.

2.2.3 Business definition: the market defined by managers

Firms' managers and corporate strategists may find the notion of market definition irrelevant for business purposes. Unless their firm is under scrutiny by antitrust authorities, they may not even be aware of it. Still, many firms exert a lot of effort to formulate a mission statement or to define market boundaries and opportunities. In the strategy and marketing literature, and in the practice of formulating a competitive strategy, markets are usually defined by applying the concept of business definition, which consists of formulating answers to three questions (Abell, 1980):

- Who are the firm's customers?
- What are their needs?
- How (by what technology) can the firm respond to these needs?

Defining a firm's business according to these questions is in practice often the starting point for strategic planning, and also determines which suppliers are regarded as (potential) competitors. A firm's competitive strategy (in the sense of e.g. Porter, 1980), in turn, is the point of departure for marketing and other strategic decisions.

So in general it is not the antitrust market definition, but the business definition which determines decisions on entry, prices, quality, advertising, distribution, and so on.⁶ These are also the decision variables through which competition takes place and market power is exercised. Without knowing a firm's business definition and competitive strategy, it is virtually impossible to assess whether certain tactics are standard business

⁶ See also section 6.1.

practice or aim at abusing a dominant position. Regulatory and antitrust practice do take firms' incentives into account.

To understand the importance of a business definition, one has to realize that major strategic initiatives and innovations (and hence the creation of markets) are often preceded by identifying new customer groups, customer needs, or technologies, or a combination of these elements. In the 1980s, a researcher at 3M used an inferior adhesive – one that doesn't stick – to create yellow book markers known as Post-it. As the story goes, the person who invented this adhesive in 1968 did not know what to do with it. Convincing 3M's management of a viable market niche proved to be quite hard.

However, ultimately this invention proved to be very successful in catering to office workers need to memorize brief remarks. This example demonstrates the importance of the three elements of a business definition for a firm's strategy. Only when 3M recognized that the new technology did address a real need, it could start to identify its potential customers and create a market.⁷

2.3 Problems with the traditional notions of market definition and market power

With the notions of market definition and market power in mind, and acknowledging the importance of the way managers define markets, we can make the following observations:

- Since the way in which managers and corporate strategists define markets can be very different from the antitrust market definition, it is easy to misunderstand the intentions behind a firm's actions, and hence the potential consequences. Moreover, a firm's business definition may be much less straightforward, but at the same time much more important, in information markets than in other sectors. Therefore, the risks of misunderstanding the intentions behind and the potential consequences of a firm's actions are high.
- There is no exclusive, single, or clear determinant of market power. Moreover, using market shares as the main ingredient to determining market power, is questionable in general, and highly questionable in the information economy.

Consider the market for Internet access. From the beginning, Internet service providers (ISPs) have charged subscription fees and usage prices for Internet access. Now many

⁷3M (1998).

new entrants offer free access. In the traditional practice a narrow market definition has been used, focusing solely on the need for Internet access by consumers.

Free access aims at generating a large base of customers as well as detailed data about their preferences and buying behavior (which can be drawn from their net-surfing behavior). Having a large customer base, as well as knowing these customers intimately, makes ISPs attractive for advertisers. One can therefore see that the business definitions of these new players are extended to include advertisers as customers, while advanced Internet and database technologies enable them to serve advertisers well. This makes ISPs fearsome opponents of, for instance, publishers of newspapers, who depend, to a large extent, on revenues from advertising.

The main lesson is: free Internet access is easily misunderstood if the relevant market is defined as the market for Internet access. By knowing the business definition of a new ISP, one understands that its intention is to compete on the advertising market. For a recent 'real-world' illustration see Box 1.2. below.

As will be discussed in section 5, strategies that are anti-competitive in other markets, may not be harmful in an information market. If price competition is fierce and it is difficult to recoup fixed costs in alternative ways, granting a firm limited monopoly power may be needed to make a market viable. This will typically happen in the form of intellectual property rights, such as patents and copyrights. Hence, if one uses the antitrust notion in information markets, one needs to complement it with other notions.

Having said that, in the daily antitrust practice business strategies are always taken very seriously. Yet, it does not happen in sufficiently systematic way (cf White 1999) and it still leans too much on market shares. Therefore, we will suggest an alternative approach.

2.4 The pivotal market and the relevant market cluster

The common way to define the relevant market can be problematic in a multi-market setting. We will therefore propose a broader way to define the relevant market, starting from the idea of clustering related market ("connected markets").

2.4.1 Connected markets

In what follows, we still need the notion of a market as given by the commonly used antitrust definition, which combines the notions of substitutability for the products/services market and similar competitive conditions for the geographic market. Because behavior on other than the market such defined can be vital to understanding performance on that market, we introduce the notion of connected markets.

We will say that markets are connected if the following two conditions are satisfied:

(1) A link of any of the following types exists between the markets:⁸

- **supply-side links**, for instance:
 - shared use of resources by the firm, economies of scale and scope;
 - information about the operating costs in one market is helpful to enter another market;
- **demand-side links**, for instance:
 - a firm sells complementary goods, such as hardware and software ("horizontally related" markets);
 - a firm sells substitutes ("horizontally related" markets);
- **mixed links** are links that imply both the supply side and the demand side, for instance:
 - a firm builds a customer base in one market and sells information about these customers as a product in another market;
 - a firm builds a reputation or brand name in one market, which alleviates problems of asymmetric information for consumers in another market (the brand name is a shared resource);
 - a firm sells unrelated goods to a single customer base (the customer base is a shared resource);
- **vertical links**, i.e. markets that are related within the supply chain (e.g. a single firm is active in upstream and downstream markets).

Above list of links are examples. There may be other types of links, although these links capture the most important ones.

⁸ Van Wegberg (1993) distinguishes horizontally related markets, where goods are complements or substitutes, and vertically related markets, where goods flow from upstream markets to downstream markets. He defines "joined markets" by the presence of shared resources on the supply side and the impossibility of arbitrage between the markets by consumers.

(2) The link is "inherently real" from the viewpoint of the firm's business definition, that is, the link is rooted in the firm's business operations or in the market's demand side.

Without the second condition almost all markets are connected, so that it would not be possible to define the market in a sensible way.

2.4.2 The pivotal market and the relevant market cluster

Suppose one wants to assess market performance on a certain market, implying that the market under scrutiny is the *pivot* from which connected markets can be analyzed. Typically, the pivotal coincides with the 'small' relevant market, discussed in 2.2.2 above. Consider all connected markets that affect the possibilities for entry in that pivotal market. The relevant market cluster is the set of markets that is obtained by adding all connected markets that affect the possibilities for entry on the pivotal market. It implies that a connected market is *not* part of the relevant market cluster if it does not influence entry in the pivotal market.

Notice that because of requirement (2) of the previous section, markets are not necessarily connected if the following situations occur:

- a firm cross-subsidizes between markets (this is a special case of a "deep pocket" situation," where financial resources are used by an incumbent to practice predatory pricing);
- a firm meets the same opponent in several completely unrelated markets (this is an example of multi-market contact) and coordinates pricing tactics among these markets (in order to facilitate tacit collusion).

In both situations, high prices can be sustainable, but the heart of potential anti-trust problems lies in entry barriers. A firm that cross-subsidizes (anti-competitively) raises entry barriers, while tacit collusion cannot be sustainable either without entry barriers (see below). The following box, based on Font Galarza (1999), discusses a recent application of competition rules by the European Commission, and illustrates the importance of the notion of connected and pivotal markets.

The pivotal market for digital interactive television services

In September 1999, the European Commission allowed the creation of a joint venture Open (earlier known as BiB, British Interactive Broadcasting Ltd). Its parent companies are BSkyB Ltd, BT Holdings Limited, Midland Bank plc and Matsushita Electric Europe Ltd. Open aims at providing digital interactive TV services to consumers in the UK, that is, to put in place infrastructure and services to allow firms to interact with consumers. Examples of services to consumers are banking, shopping, travel booking, and entertainment. The plan includes subsidizing digital set top boxes that consumers have to buy in order to use such services.

A major concern of the Commission was the fact that BT and BSkyB have significant market power in the related – read: connected – markets for customer access infrastructure, technical services for pay-TV and interactive services, pay-TV, and wholesale supply of pay-TV content. BT's and BSkyB's resources and experience in these markets may turn Open into a powerful incumbent that is able to deter entry (see next paragraph). Thus the pivotal market is the market for digital interactive TV services. The relevant market cluster includes this market and the connected markets mentioned above.

In principle, Open could raise entry barriers in the pivotal market by restricting access to bottleneck facilities (set top boxes and BT's customer access network) or by restricting the supply of content (charging high prices for BSkyB's films and sport channels). However, the Commission imposed conditions to ensure that BT faces competition from cable networks, that third parties have access to Open's set top boxes and BSkyB's pay-TV content, and that set top boxes can be developed by other companies as well. These measures should facilitate entry in the pivotal market by firms that are not active in one or more of the connected markets in the relevant market cluster.

2.4.3 Market performance and entry barriers

Market power can be shown, also within the European Community law, by a variety of different kinds of evidence.⁹ Our starting point is very much in line with notions used by the NMa and the EC, and adds to it a systematic way to analyze market power, and, related to that, market performance. As suggested by various authors (e.g. White 1999), such a systematic way does not exist yet.

⁹ See e.g. Temple Lang (1997).

Market performance is simply a term that summarizes efficiency notions (allocative, dynamic, productive). A market is said to underperform if efficient outcomes are not realized. Market power is one potential reason for underperformance. Roughly speaking, in absence of (serious) other market failures, underperformance is caused by lack of competition, either through anti-competitive behavior or institutional reasons.

Hence, the framework suggested here analyses competition on an appropriately defined market. If underperformance is detected, it analyses the reasons why. Implicit here is therefore the understanding that the markets under considerations are not subject to *serious* market failures (i.e. that require government production or heavy-weight regulation). The reason is that in presence of such serious market failures there no longer exists a positive correlation between performance and intensity of competition (competition can lower efficiency under these circumstances). This implies that one should always check first whether it is expected that intensified competition indeed yields more efficient outcomes.

The question still is: what is an appropriate indication that markets underperform? There are a number of possible manifestations of underperformance, e.g. a large market share, high prices, bad quality, bad service, or congestion. It is not clear in which situation which of these manifestations occur. Also, when they occur there is not necessarily a problem. For instance, a large market share can simply reflect fixed cost in technology and high prices can have a temporary nature. Even the absence of any of these manifestations is no reassurance: problems can become manifest in the future. Therefore, they do not provide a useful indicator of performance.

All above-mentioned manifestations have in common that they disappear if entry barriers are sufficiently small, or put differently, competition is sufficiently intense. Firms cannot sustain high prices, bad quality etc. if competitors or entrants can steal their business. Potential entry (not necessarily entry as such) discipline market players if entry barriers are low enough.

If markets underperform and still (potentially) efficient firms find it unattractive to enter, improvements can be realized by making sure entry barriers are lowered somehow. It is *always possible* to state intensity of competition in terms of entry barriers. In complicated cases with multi-market behavior such an approach is likely to produce most benefits, since it enables a systematic approach to the analysis of competition and market performance.

Assessing market performance then implies taking four steps:

- Identify the market on which performance needs to be analyzed (*the pivotal market*).

- Define the relevant market cluster, using the pivotal market as a starting point.
- Assess market performance by analyzing competition on the pivotal market. Check how behavior on the relevant market cluster can raise entry barriers on the pivotal market.
- Identify possible improvements in performance, i.e. ways to lower entry barriers or eliminate incentives to raise entry barriers.

Steps (1) and (2) have been discussed above. How can we assess market performance on the pivotal market (step 3)? A forward looking analysis zooms on entry barriers on the pivotal market. Entry barriers can exist due to technology (think of natural monopolies). If, however, entry barriers are higher than driven by technology, there is scope for improvements of market performance.

Notice that this approach circumvents the use of market share as a first signal for further investigation. Identification of the pivotal market and the relevant market cluster does not depend on market shares. Notice also that the haggling between antitrust authorities and market parties on the exact definition of the relevant market, as discussed in section 2.2.2, will be over.

A tool that can be helpful to analyze market performance in the past is the competition indicator developed in Boone (1999). The basic idea of the indicator is (i) to identify a (pivotal) market; (ii) acquire firm (or plant) level data on costs and revenues; (iii) verify over time if efficiency differences between firms are translated in shifts in relative performance of firms. If the latter is not the case, apparently competition was not sufficiently intense, or equivalently, entry barriers were high, since (efficient) entrants or competitors did not steal business from inefficient firms.

The indicator, complemented by qualitative information such as the level of product variety, customer satisfaction, quality of service and so on, teaches us how competition has evolved over time. If the total picture points in the direction that performance can be improved, the analysis of entry barriers then point in the direction in which it can be improved.

Step (4) then identifies possibilities for improvement. If there appears to be an antitrust problem then the Competition Authorities can improve performance. If entry barriers are raised because of the institutional environment, then this environment might be reconsidered.

In short: to understand market performance, we have to understand what firms do, why they do it and what they think. If possible bad performances are identified, the next step is to find out why and what can be done about it.

3. Information goods, definition and history in a nutshell

This section defines information goods and provides a history in a nutshell.

A number of authors have provided definitions of the term *information good*. Phetig (1988, p. 463), for example, defines an information good as ‘a set of information pieces which is well-defined in its contents, its quantity and its specific presentation.’ For the purposes of this study, we follow Shapiro and Varian (1999, p.3) and define the term ‘information goods’ broadly as anything that can be digitized - encoded as a stream of bits. Examples of information goods include books, movies, software programs, Web pages, song lyrics, television programs, newspaper columns, and so on.

For analytical reasons, it is important to distinguish between the *content* of an information good, the *information carrier* or *original* and a specific *copy* of the information good. Koboldt (1995, p. 132 - 133) mentions Verdi’s Rigoletto as an example to illustrate these concepts:

- the content: Verdi’s Rigoletto, the music;
- the information carrier or original: the material that carries the recording of Rigoletto (e.g. magnetic tape);
- the specific copy: a specific record or CD of Rigoletto.

Koboldt (1995) notes that the dissemination of content (Verdi’s Rigoletto) requires a combination of an information carrier (the magnetic tape) with a copy (the record or CD). Another example is a Web page: every time you ‘open’ a Web page a copy of the content is produced on your screen.

In this study, we will refer to the producer of the content of an information good as the *author* while the producer of the information carrier and the copies is referred to as the *publisher*. In general, a publisher plays two basic roles: (i) he can use its network for distribution of information goods; (ii) he filters the quality, i.e. he uses his skills to select what he wants to publish and henceforth uses reputation to solve information problems for the customers. Depending on the type of information good one or the other roles can be dominant. In the publishing of CD’s or books the filter function is dominant, whereas the network role is dominant when the filter is already done by others, e.g. scientific journals.

To put current developments and strategies in perspective, we briefly discuss the history of the market for information goods.¹⁰

Information goods have evolved from goods that had to be instantly consumed (because storage was not possible) to the current digitized version, that can (in principle) be sent simultaneously, costlessly and in no time whatsoever to anyone in the world. In between, a number of developments made that radical change a gradual process. The role of publishers changed with virtually each development. Table 1 summarizes the developments, their consequences, and the changed role of publishers.

The earlier developments facilitated the dissemination of information, either because the costs of reproduction dropped (mechanized paper) or the customer base enlarged (papyrus, lingua franca). The role of publishers as intermediaries between authors and customers became relevant when these developments led to a critical mass of customers and cost level of reproduction, such that publishing became a commercially worthwhile operation.

The invention of the printing press has led to a considerable reduction in cost. Still, compared to current standards, the price of books remained high. The limited number of literates (theologians, legal experts, medics, other scholars, magistrates and merchants) supported only relatively small editions of books.

In the 17th century, the Netherlands printed more books than all other countries together. In the first centuries after the invention of the printing press, the authors of the works did not receive a remuneration from the printer-merchant. However, the author did sometimes receive money from the emperor or statesman to which he had dedicated the book. This dedication also secured a certain type of copyright protection. The emperor or statesman secured the copyright in the area over which he had sovereignty.

¹⁰This paragraph is mostly based on information in Van den Brink (1987), who provides a comprehensive description of the history of the market for information goods, with an emphasis on the publishing industry in the Netherlands.

Table 1.1 Developments in the publishing 'industry' and its consequences

developments	consequences	role of publisher
script	enables copy	none
papyrus	enables transport	none
Latin as a common language	increases scale	none
printed press	reduces costs	introduction of publishers
literacy	increases scale	same
daily newspapers	introduces advertisement	same
advanced printing techniques	reduces costs	publisher produces both copy and original
economic growth, education and leisure	increases scale	publisher specializes in original, copy to separate printer, cross-media publishing
digitalization	makes copying virtually costless makes transportation trivial enables multi-market behavior	varies wildly, future uncertain

Besides the largely scholarly and educational books in Latin, in the 17th century a new type of information carrier presented itself through the introduction of periodicals, aimed at the new class of merchants. Scientific and non-scientific journals were published and news periodicals were introduced in the market. The input and output of information benefitted from the new transport services. The distinctive feature of the printer-publisher-merchant is the building of a network of trade relations, especially on nodes of trade routes in the general sense. Printer-publishers started to sell books by other publishers as well and a new group of publishers appeared that started the production of periodicals.

The book was still the central information good in the 19th century in the printed media. The book had become the communication tool of science. In 1815 the "Vereeniging tot Bevordering van de Belangen des Boekhandels" (Dutch Association for the Promotion of the Interests of the Book Trade) is founded in the Netherlands by a number of

publisher-book merchants to install disincentives for reproduction and to improve general conditions in the industry. Around 1850 the first specialized publishers appear on the market. The publishers did not directly sell to the public but used other publishers (the so-called 'closed house publishers').

The main breakthrough in the 19th century is caused by the newspapers (published between two and five times a week). This period sees the massive introduction of advertisements in the newspaper, first introduced in 1625 and in most cases of a registration nature. The number of readers of a typical newspaper in 1869 is still rather limited, partly because of the newspaper tax stamp, which increased the price by tens of percentages.

By far the largest part of the readers shared the publication with other readers. In most cases, the price of a newspaper depended on the time between publication and the reception of the newspaper by the customer. Between 1870 and 1900 the adoption of the web press created an important new breakthrough in the publishing industry. Aided by a strong growth of the population and economic growth, a newspaper could reach an edition of 50.000 a day around the turn of the century. In 1877 the NRC newspaper started to publish an evening edition besides the already existing morning edition, for the same subscription price. As such, it is the first event of controlled circulation.

The first half of the twentieth century saw the (mass) introduction of a number of new media such as the movies and records. According to van den Brink (1987), the market for information goods was still characterized by separate markets for the old (books, newspapers) media and the new (movies, record) media; there was no substitution between the goods in the sub-markets.

A number of new technological inventions and faster adoption changed the nature of the publishing industry in the second part of the 20th century. Amongst those are the adoption of new typesetting and printing techniques adopted on a large scale from the 1960s on in the newspaper industry and originally developed in the book and pamphlet publishing industry.

The adoption of a new photo composition technique led to an initial reduction in typesetting time of 700 percent, since computers could perform justification and hyphenation in a fraction of time needed by the original typesetting machine operators.

The development of easily accessible word processors and desk top publishing (DTP) programs in the 1980s and 1990s led to vertical disintegration of the traditional publishing industry. The so-called pre-press activities such as typesetting (and sometimes lay-out) were no longer performed by the printing industry, but rather by the

authors or by publishers. According to Ministry of Economic Affairs (1995, p. 34), book and magazine publishers disposed of their printing facilities in many cases (an exception is the newspaper publishing industry which typically owns and operates its own printing facilities).

Publishers have become more and more information intermediaries, that transform content into a variety of copies and no longer the traditional printer-publishers. At the same time, the larger publishing firms diversified increasingly into multimedia activities and various forms of electronic publishing¹¹, combining such diverse information goods as e.g. music, video images and reference material. In many cases, they continued to offer the traditional 'paper' products but they use the same content to produce electronic versions of the product that are more than ever tailor-made to the demands of the customer.

The main added value of the publishing industry has shifted from the (physical) production of copies to a role as intermediary in the market for information. Publishers compete for content with other publishers and then compete for the consumers to buy their content. The front- and back-office strategies are quite different from each other. The Internet and data storage and transmission possibilities make the traditional publisher a specimen that is endangered with extinction. New technology enables authors and customers to simply bypass the publisher. Instead of perceiving it as a danger, the publishers try hard to make the technology an opportunity, thereby using their distribution and marketing skills.

Concluding, adoption of new technologies in the publishing industry is not something new. New technologies (the use of parchment, the various improvements in the printing and distribution process) enabled publishers to enter new markets by providing copies at a lower price. In the presence of network effects this has reinforced the spread of information goods to new markets. New technology has also enabled publishers to operate in a more flexible way; publishers have tried to add additional value to their production by offering a variety of products based on the same content and combining various contents into a single product.¹²

¹¹These activities have also attracted a number of other firms outside of the traditional publishing industry, such as software companies and broadcasting firms (e.g. Holland Media Group).

¹²The use of new technology in the publishing market also poses new challenges and opportunities for the enforcement of copyright legislation. We will not discuss this (important) issue at this moment, but refer to the case study on copyrights.

In this respect, the use of ICT can be seen as just a new phase in the evolution of the publishing industry, lowering the marginal cost of producing copies, and - perhaps more important - lowering the transaction cost of combining content into one product and producing various versions of the product.

4. Characteristics of information goods markets

Markets for information goods have a number of characteristics which distinguish them from markets for other goods and services. These characteristics determine market behavior. Hence we identify the characteristics first.

- In general, the production of the original is very costly while the production of specific copies is cheap. In economic terms, the publishing industry experiences *high fixed costs and low marginal costs*. This specific cost structure has a number of implications for business strategies.
- Information goods are *non-rival goods*; information, once produced, can often be used by an additional consumer without additional cost. The same does not hold for specific copies of the work; these are generally *private (or at the most semi-public) goods*. The non-rivalry character of the information goods combined with the rivalry character of copies introduces the possibility to supply additional copies. In other words, owners of copies can act as publishers by reproducing their own copy and therefore can compete with the publisher. This has implications for the pricing strategy of the publisher and the copyright regime.
- Information goods contain the possibility that content is sponsored by *advertising*. Banners on Internet sites are an example of this phenomenon. Content (C) can be sponsored by advertisement (A), so that instead of just C, businesses sell a compound product consisting of both A and C, where A pays C, the revenues of A are related to market share, but the content for consumers of C decrease with rising proportion of A. An implication of the combination of content and advertising is that the traditional relationship between prices and market concentration no longer holds (Weigand and Lehmann, 1999). Not all information goods use this possibility (novels), but virtually all information goods have the possibility to do so.
- Information products are often *experience goods*. The value of an information good is only discovered after it has been consumed. As a result of this, publishers use browsing strategies, enabling consumers to observe part of the content of the information good before the purchase. Reputation is very important in markets for information goods (Shapiro, 1996).

- While traditional information goods such as books and newspapers are essentially goods with one-way information delivery without the use of (separable) *hardware* to deliver the information - the information goods are the combined hardware and software - the information provided through a number of new information goods cannot be accessed unless a certain type of hardware is used. An example is listening to a CD using a CD-player or watching a video movie using a VCR.¹³
- Some information goods markets exhibit *network effects*, described by Liebowitz and Margolis (1994) as the circumstance in which the net value of an action is affected by the number of agents taking equivalent actions. The size of the market affects the utility experienced by the individual consumer. A typical example is the value of subscribing to a telephone service, for which the value of the subscription depends on the number of people you can call. Software is an example of an information good where network effects are important. The market share of a particular word processing program will affect its value to the individual consumer. A possible implication of network effects is that expectations of consumers about the market share or size of the information good in the future matter.^{14, 15}

These characteristics of information goods have strong implications for the business strategies employed by the players in these markets. The technology available to publishers and the cost involved with producing the original, making copies and distributing the copies are important parameters in this respect. In the digital era, the characteristics 'hardware/software' and 'network effects' become more important. Both the presence of hardware and network effects make that firms (and consumers) will have to take account of the adoption of new technology, the choice of standards, and the

¹³ If hardware is interpreted in a broad sense, many more information goods have software/hardware features, eg. credit cards (the card is the hardware, merchant acceptance the software), durable equipment and repair services (the equipment is the hardware, the repair the software, see Katz and Shapiro 1994).

¹⁴ Network externalities are network effects where there exist unexploited gains from trade regarding network participation and are sources of market failure (see section 7 below), Liebowitz and Margolis (1994).

¹⁵ Katz and Shapiro (1985) make a distinction between direct and indirect network externalities. Direct network externalities are defined as those generated through a direct physical effect of the number of purchasers on the quality of the product, as in the telephone service example. Indirect network externalities are defined as externalities that involve instances that lack a direct physical effect, such as the availability of complementary products for software or post-purchase service for durable goods.

compatibility between their product and that of (the) competitor(s), while deciding upon their strategies.

The characteristics form a set of latent market failures. If firms are not successful in coping with the challenges that are created by the characteristics, or if institutional barriers prevent them to do so, the market failures will become manifest.

An illustration of the business strategies is given in Box 1.1 in the form of a parable, inspired by Carl Shapiro¹⁶.

The story of ZipSearch

Imagine yourself being a wizzo with entrepreneurial ambitions, and you have this great idea of improving upon the leading software USearch for searching the files of libraries. You hire the necessary programmers and after a while there it is: ZipSearch, everything you always wanted in search engines. Obviously, you have made certain that ZipSearch is compatible with the hardware of USearch, although it ripped your heart out that you could not use the FancySearch options to its full extent because of silly old-fashioned mainframe features. You've made switching by consumers of USearch to ZipSearch as easy as possible and offer rock-bottom prices to a number of influential libraries. You are ready for the invasion of ZipSearch.

Unfortunately not much happens. There are a few front-running libraries that buy your program, but most stick to USearch, despite obvious quality differences and all your efforts.

Are librarians either conservative or irrational? Not necessarily so. A characteristic of network industries is that they tend to exhibit high switching costs. Remember having switched from MS-DOS to MS-Windows? Did you like switching at that time? In general, new programs in this type of markets have to outrageously outperform the old ones to take over the market. The reason is that consumers are locked-in by the old product because of high switching costs.

Suppose ZipSearch is indeed such a mega-blaster and the people working at Zip Ltd. are skillful and professional. Are you ready for take-over of the industry? Not necessarily so. You have not reckoned with the cunning tactics employed by USearch. After noticing that the front-running libraries start using your product, USearch offers cheap upgrades of its program that include some of the features of ZipSearch. The firm

¹⁶ See Shapiro (1996).

employs 'come back home'-offers to consumers that have switched, and spread rumors over the Internet that ZipSearch contains mysterious bugs. They also withhold key information on USearch making the compatibility something of a drag. After they threaten to sue you for breaching their patent, you think it is time to give a call to the Competition Authority.

Suppose now that the Competition Authority is sympathetic with your case and you win after all. ZipSearch finally becomes the standard and you immediately observe the juicy rewards from having an installed customer base. Can you rest on your laurels? Well, you might, but not for long, because HyperSearch is already being developed by another firm. You'd better work hard on ZipSearch version 2.0 and offer upgrades up-front to your installed base, meanwhile extending the network and offering auxiliary services and versions. Otherwise the hungry companies are out there to get you. Tactics that you detested when USearch used them now become tempting. You even consider taking over 'Hyper Ltd' just in case. Would that raise anti-trust problems?

5. Business strategies in the information economy

In the information economy market characteristics form a set of latent market failures. Given the institutional setting on a market, business strategies determine how successful firm are in coping with these latent market failures. If firms are successful, the government can simply rely on competition policy. So it is important to know what firms can do. Hence this section discusses business strategies.

5.1 Introduction

The decrease in the marginal cost of producing copies and different versions has been one of the major trends affecting the information goods industry over time. It is probably fair to say that the life cycle of the average information good has also decreased. Businesses have therefore to make up for their investment in content in less time than before (although the profits arising from the production might be higher than ever). A number of specific strategies to achieve this (versioning, differential pricing and rights management) are described in more detail below.

Recall that publishers are defined as producers of the information carrier and the copies. So 'publisher' is broadly defined and includes all players in the market except from the authors (the producers of content) and the consumers.

This rest of this section has a layered structure. The strategies in section 5.2 hold for (almost) all information goods. The information goods of section 5.3 contain network

effects (but the strategies of section 5.2 still hold). Section 5.4 then adds a winner-takes-it-all feature to the network effects, which triggers new strategies.

5.2 General strategies: making up for investments

The following strategies hold for most publishers, i.e. for most information goods markets. Given the dynamic nature of the market for information goods and the high fixed-low marginal cost feature, simple mark-up pricing is often not wise in the information economy. What can publishers do to make up for their investments? A number of strategies are listed below:

- versioning
Versioning refers to producers making different versions of an information good which they sell at different prices. Think e.g. of software to search the Internet, which can have a free downloadable version and a not-for-free ‘business’ or ‘premium’ version. The point of versioning is to get consumers to sort themselves into different groups according to their willingness-to-pay (Varian, 1997). Versioning is one of the main ways of making up for an investment, because it constitutes a way of extracting parts of the consumer surplus. In some cases, it also allows consumers to buy the product that they would not have been able to buy under uniform pricing. The decrease in the cost of making copies and of the cost of producing and distributing different versions of a product in the digital market place makes this an attractive strategy.

Versioning can be done along many dimensions. Think of delay, speed, image resolution, features, and many others. A typical example of versioning in information goods markets is the joint publishing of an electronic and a hard copy of the same content. In the former case, search and cross-reference functions can be added (as in the electronic version of this manuscript). A special case of versioning is bundling, where several products are sold in a package.

- personalized and group pricing
Unlike versioning, which basically offers a product line, personalized pricing offers separate prices to each person. Similarly, group pricing offers separate prices to separate groups. The Internet enables firms to make special offers depending on behavior and characteristics of individuals. When there is insufficient information on individuals but groups are identifiable, group pricing enables firms to differentiate people according to their willingness to pay. Again, the decrease in cost of production and distribution makes this a feasible strategy.

- **managing copyrights**
The ease of copying once an original is published, makes copyright protection an indispensable tool to reward innovation and investments in the information economy. In the digital economy copying is cheaper and the speed of distribution is higher. This poses new challenges to copyrights management. There exists a trade-off between protection and creating mass. Copying and speedy distribution can help creating mass. If combined with versioning, the advantages of allowing for free copies can easily outweigh the associated losses.
- **mix content/advertisement**
Publishers can decide how much advertisement they allow and at what price. An interesting feature is that the attractiveness of ads depend on the scale (and on the profile of consumers), scale depends on the price of content, the price of content depends on ads etc. This explains why some content (e.g. on Internet) is so cheap. Why are other types of content, e.g. journals and newspapers, not cheaper then? Because the market of advertisement has its bounds too, and different forms of content are competing on the same advertisement market. Given the complex nature of this 'across markets' market, it is dangerous to rely too much on advertisement revenues, since a collapse of this market can not easily be made up by increasing the price for content. Ads are particularly attractive when content is published on a periodic basis (newspaper, Internet pages). The ads/content feature amplifies some of the business strategies. It is easier to version, because the differences in willingness to pay segment the market and make the profile of customers more precise. Ads make it easier to give away free samples or to reveal parts as well (see section 5.3 below)

5.3 Strategies when network effects and hardware are present: creating mass

In cases where markets for information goods have hardware - software features, and/or network externalities are present, a number of other strategies become relevant (which does not imply that above-mentioned strategies become irrelevant). When the publishing firm is the only firm adopting a new standard and there are network effects, the market share of this new standard will depend on the expectations of consumers regarding the product. If there are two or more competing standards and there are network effects, it is even more important to attract consumers to your product in an early stage (see the ZipSearch parable). In other words, firms have to create mass. A few examples of strategies that firms use to attract consumers in the first place are given below.

- give away free samples
An obvious and often used way of creating demand network externalities is to give away free samples of a product. In particular in an environment where competition looks like a race, frontrunner advantages can be substantial. Many software firms or electronic publishers give their customers a free probe.
- reveal parts
Revealing parts is a bit intermediate between versioning and giving away samples. The idea is to give consumers an appetizer, e.g. an executive summary of a book. One rationale of revealing parts is that information goods are often experience goods (see Section 2 above). An appetizer then gives consumers better information what the good is all about.
- cooperation on compatibility
Sometimes it is too costly or risky to create ones own standard. Alternatively (e.g. when there is no standard available yet), it can be better for all producers (and consumers for that matter) to agree upon a common standard, in particular because waging a standards battle (see below) can be very expensive. As we saw in our parable, entrants often have to make their products compatible (even at the expense of efficiency) to lower switching costs for the consumers.
- takeover and mergers (vertical integration)
A quick way to create a (firm or brand-based) customer base is to take-over a firm or merge with one, e.g. as recently occurred when VNU took over Nielsen Media Research. Takeovers and mergers in the information economy are not essentially different from other markets, but scale and network economies make it a frequently used strategy.

Other strategies that can be used to create mass by influencing the expectation of consumers are offering a binding commitment to customers about the future price of the product, renting hardware in stead of selling it, and making sunk investments and communicating those to the consumers.

5.4 Strategies related to a standards war: the winner takes it all

As discussed above, markets that have hardware-software features and possibly experience network externalities, are often characterized by one dominant standard after a 'standards war'. One might say that the two or more producers in a standards war are fighting for the reward of an effective monopoly after tipping has occurred. Apart from the strategies used to create mass, producers will be using the following strategies.

- tying
Tying can be seen as a special form of bundling in which seemingly unrelated products are offered in a package. Apart from similar rationales that applied to the strategies mentioned above, a separate reason for tying is to extend brand loyalty, as Microsoft showed a number of occasions.
- recognizing customers lock-ins
Customers can become locked in a brand when their costs of switching to a competing brand are too high. Creating high switching costs for a sufficiently high number of customers can be the key to becoming the winner of the race. This can refer to lock-ins for a product but also for a brand (Microsoft comes to mind again) and the choices firms make with respect to the compatibility of their product with other product. Conversely, lowering switching costs of the customers of competitors is another way of recognizing opportunities of lock-ins. When purchasing an information good, say some software, a customer should not only assess the price and quality of the good, but also the future possibilities of lock-in.
- influencing expectations of consumers
As we mentioned above, the expectations of consumers are important determinants of market success in markets for information goods. Firms might therefore use a variety of strategies to influence these expectations by spreading rumors about the product of the competitor(s), advertising campaigns, and so on. If a sufficient number of customers believe that some product will become the future standard, network effects make the launching of such a product much easier.

The winner-takes-it-all aspect can distort the allocation, with too much production during competition phase and too few once the winner is being established.

Summarizing, in the information economy firms have to be creative. All kinds of strategies are needed to make up for (large) fixed costs, exploit network effects, and deal with standardization problems.

6. Policy issues

The characteristics of the information markets form a set of latent market failures. If firms are not successful in coping with the challenges that are created by the characteristics, or if institutional barriers prevent them to do so, the market failures will become manifest and governments may step in. This study provides a tool to analyze whether or not firms are successful in coping with latent market failures of the information economy. Apart from solving latent market failures there are two other reasons for government interference, namely competition policy and 'classical' government roles.

6.1 Latent market failures become manifest

There are quite a number of ways in which firms fail to solve the latent market failures. Specific policy options follow from assessing market behavior in individual cases along the lines suggested in section 2 above. This section highlights three ways in which governments can step in:

- *Copyrights.* Information goods with lots of electronic opportunities (Music) or network effects (software) might have a softer copyright regime than traditional information goods (books). A rigorous copyright regime leads to underutilization, while a soft regime leads to underproduction. In each case the government must try to assess how successful firms are in solving for the trade-off themselves. Copyright serves as a fallback option if they do not.
- When markets underperform because institutional choices (not behavior) prevent them from performing better, obviously these *institutional choices might be reconsidered.*
- Lack of excludability sometimes leads to a tendency towards the middle. Countervailing this *tendency towards lowest-common denominator content* can be a reason for governments to step in. Notice that, contrary to common belief, this does not necessarily have anything to do with equity or redistribution considerations (protecting unsuccessful painters). Market failures in the information economy (the lack of excludability and rivalry) are not always successfully countervailed by market solutions. They can even be aggravated by entry barrier raising activities. It is still possible that there are redistribution considerations. If politicians want to protect certain groups, they should do it. These considerations should be made explicit, because solving the above market failure is important *irrespective of political preferences*, whereas redistribution considerations have to be weighed against other considerations.

6.2 Competition policy

Firms can be 'too' successful in solving the latent market failures and become dominant players with a possibility that competition policy has to step in. Three forms of competition policy are mentioned:

- **Regulation**
Direct regulation is often needed and applied in cases where there is an essential facility, such as access to the network of the incumbent telephone operator. Prices or other terms of access are then set or scrutinized by the regulator. Direct regulation is also applied in areas where entry takes place but scarce capacity is in the governments possession (ether frequencies).
- **Anti-trust policy**
The bulk of policy issues fall under the heading of anti-trust. Many issues that we will be discussing in the case studies are potentially anti-trust in nature. The framework of section 2 serves as a tool to assess whether or not there is indeed need for competition policy to step in. The framework showed, among other things, that a requirement for successful antitrust policy in the information economy is that it is economically based and forward-looking.
- **Transparency**
Transparency can occur because market players use their market power by making the market less transparent. Intransparent markets can relax price competition. Customers buy expensive products because search costs are too high to find out cheaper ones. It can be a government task to scrutinize the market for intermediaries or to enhance information gathering, e.g. by supporting consumer organizations.

6.3 'Classical' government interference

Policy issues are called 'classical' if they are not necessarily typical for the information economy. We mention:

- **Protecting the weak**
A number of measures are taken to protect the weak with respect to access. Think of free Internet use in libraries, cheaper rates of libraries and other services to lower income groups, measures aimed at immigrants etc. We will not discuss these type of measure in this study.

An example that is more interesting from an economist point of view is the vertical price agreements that are allowed in the books and newspaper markets. The

questions raised above become relevant: Is there an equity issue? (maybe, maybe not) Does current policy reach its goal? (yes) Are there more efficient instruments? (possibly yes, needs to be analyzed) Another example is Universal Service Obligation. In telecoms and television operators have the obligation to serve every consumer at the same terms. Again, the above question can be raised.

- **Paternalism**
Paternalism is a nice word for ‘the government knows better than the people what is good for them’. Protection from porn and drugs can be called paternalism. Mandatory savings for pensions is another one. Economists deal with efficiency but usually leave equity to politicians. Economists do not have tools to determine whether or not some equity consideration makes sense or not. There are three other issues that can be discussed though. (i) Is there an equity issue? (ii) Does current policy reaches its goals in terms of equity? (iii) Are there more efficient policy instruments that can reach the same goal? In the information goods markets there are many policies that are related to culture that fall into this category. The government assumes that consumers are not prepared to pay the full price of cultural events (e.g. opera) and, therefore, subsidizes culture.
- **Public goods and externalities**
External effects is another area whether government action is often called for. We mention three examples.
- **Knowledge diffusion**
Producing information with private money exhibits positive externalities, but the maximal diffusion there conflicts with incentives to produce content. The same does not apply to publicly financed content. To exploit the positive externalities the government has to make sure that the content is spread as much as possible. This may even point to strong benefits when the government is creating information. To a certain extent this holds true (e.g. scientific work, some policy advise). More often than not, there are a lot of problems that arise when governments finance information goods. To mention a few: think of efficiency (which information is good enough to spread?), political economy (governments can use the information goods as a cash cow), tax distortions, moral hazard (if the information is free, demand will be inefficiently high).
- **Congestion**
Should there be a role for the government in dealing with congestion on the Internet (nicknamed the World Wide Wait)? Congestion problems are unlikely to diminish in the near future (annual doubling of users, flat fees for usage, rationing system of the Internet). Clearly, there are a lot of (worldwide) coordination problems that need

to be solved before congestion can be tackled effectively. Some of them do not involve government actions (innovation); other may do so (implementation of pricing policies that deal with congestion). One can think of giving users a price/time option. Priority is then given a price, so that negative externalities will diminish (for details, see Choi, Stahl and Whinston, 1998).

- Network infrastructure

The government's role in starting up the Internet shows that positive externalities (by creating mass) can sometimes prevent private parties to invest in socially beneficial infrastructure. In this sense information infrastructure is similar to roads and bridges. Again, one needs to be careful. The fact that the market fails (e.g. because there are coordination failures) does not mean that governments should finance the whole infrastructure. There are a lot of reasons (associated with government failure) that make such financing not needed and wanted (see e.g. Shapiro and Varian, 1997).

Concluding

The general framework took the following steps: (i) provide a method for assessing market performance; (ii) define characteristics of the information goods market and observe that these characteristics lead to latent market failures (iii) define possible business strategies; (iv) identify the role of the government. The next step is to apply this framework on the three case studies Scientific Publishers, Commercial Magazines and Copyrights.

7. Conclusion

Will publishers be caught in the Web? It depends. On the markets for e.g. Scientific Journals and Music, electronic possibilities create a real threat of disintermediation. Markets such as Consumer Magazines are less affected by electronic publishing opportunities. This study discusses market performance by publishers in the digital age. For policy-makers, the key to stimulate market performance is a flexible copyright regime, as well as a forward-looking competition policy.

7.1 Introduction

This study provided the framework to analyze publishers' markets. In three parallel documents, working papers 120,21 and 122, this framework was implemented. This conclusion reports the overall results of the research.

Technological possibilities change the way markets operate in the information economy. This study analyzed the changing role of publishers, first in general terms (in the

General Framework), then in three case studies (on Scientific Journals, Consumer Magazines and Copyrights). This final chapter draws some general conclusions.

This chapter is organized as follows: it starts by briefly summarizing the main conclusions from the case studies. It proceeds (section 2) by showing the central line of reasoning in the case studies. It then discusses the different steps that were made in the case studies (sections 3 to 6). It concludes (section 7) with public policy issues.

Tackling the journal crisis

There is a crisis in scientific publishing. The crisis leads to a reduced access to scientific knowledge, caused by rising prices for journals and limited library budgets. The journal crisis is a logical result of the current set-up of the market. Publishers who obtain copyrights on high-quality papers (their most important input) are able to charge high prices, since papers are not interchangeable like jars of peanut butter. Recent changes in ICT enable a reform of this market setup. If the government wants to fundamentally tackle the journal crisis it could target policy at the limitation of access: publishers' copyrights on scientific papers. When copyrights are made ineffective by placing them in the hands of an independent institute, and authors pay publishers with money instead of copyrights, a competitive system of scientific publishing and free access to scientific papers can result.

Copyrights protection: not more but different

The falling marginal costs of copying and the improving quality of copies has led the industry to call for additional copyright legislation and enforcement. The claim for increased protection is not as valid as it appears.

First, in many markets for information goods competition between originals and copies is virtually non-existent, or publishers can internalize part of the surplus created by copies. Second, in markets that experience network effects, both publishers and consumers might benefit from copying. Finally, publishers can use the decrease in costs to engage in (digital) business strategies such as giving away free samples, versioning and selling complementary products.

The case for increased protection is further undermined by the fact that information goods industries often use market solutions, such as contractual agreements, and technological devices, to protect their content. The challenge for policy-makers is to design a modern, flexible copyright regime that balances the interests of publishers and consumers. A general extension of protection does not seem to achieve this goal.

Magazine publishing - a quiet life ?

Consumer magazines cater to two disjoint consumer groups: content is sold to readers and advertising space is sold to advertisers. The empirical analysis of the Dutch market for consumer magazines confirms the hypothesis that magazines with a higher circulation are sold at lower cover prices, while ad-rates tend to be higher for these magazines.

The structure of the publishers' market can be characterized as oligopolistic. The general picture of virtual absence of entry of new publishers, fairly stable market shares of established magazines, and indications of higher than average profit margins, all point at a lack of intense competition. Potential new publishers face at least two major entry barriers: difficult access to both the advertising market and the distribution channels. Policy makers who want to improve the performance on this market, are challenged to find ways of lowering these entry barriers.

So policy can enhance market performance by focusing on an appropriate copyright regime and on lowering entry barriers. The remainder of this chapter discusses how we have come to these conclusions.

7.2 Line of reasoning

The study uses the following line of reasoning. Characteristics of information goods markets set these markets apart from their counterparts in the 'old economy'. So the analysis starts by spelling out these characteristics (*section 3*). This study is forward looking and discusses therefore a pervasive trend, the one towards electronic publishing (*section 4*). Firms deal with latent market failures that arise as a result of the characteristics by employing in various business strategies (*section 5*). The institutional framework together with the success of these strategies determine market performance (*section 6*). In what ways are entry barriers raised or are firms able to raise barriers in the future? In what other ways do publisher markets fail? In which way are entry barriers caused by the institutional setting? The answers to these questions lie at the heart of public policy (*section 7*).

7.3 Characteristics of markets for information goods

There is nothing ‘new’ about the characteristics of markets for information goods. What set them apart from ‘old’ markets is the combination of a set of characteristics. Taken together, a set of characteristics leads to *latent market failures*, i.e. failures that become manifest when no further actions by market parties or government is undertaken. Different information goods markets combine different characteristics, so that in each case careful analysis is needed to identify the latent market failures.

Characteristics of information goods

Observation: The way markets of information goods operate is determined by characteristics such as (i) high fixed costs - low marginal costs (ii) network effects (iii) non-rivalry (iv) possibility of combining content with ads.

Question: In what sense do these characteristics influence market outcomes?

Answer: They lead to latent market failures. Without appropriate business strategies and, possibly, public policy, the failures become manifest, and lead to e.g. underproduction of content, underutilization of goods, a tendency towards a lowest common denominator content, customer lock-ins or lack of innovation.

Let us follow the case studies and identify the characteristics.

Scientific Journals

- Production costs of journals are characterized by *high fixed costs* to produce the original and *low marginal costs* to produce and distribute copies.
- Reputation is the name of the game in scientific journal land. It is used to signal the quality of individual papers. The variety in reputation results in a hierarchy of journals. Reputation is something that has to be built over time. The building of a reputation is characterized by *path dependence* (history matters) and *network effects* (reputation depends on the ability to position a journal in the center of a communication network: there is a clear correlation between perceived journal prestige and ‘network congruence’ - the extent to which journals cite other journals in proportion to the number of times they are themselves cited by those journals).

Consumer magazines

- Magazines are *experience goods*. The value of the good is only discovered after it is consumed, implying that there is an incentive for publishers to invest in brand loyalty. Many magazines try to achieve this by giving discounts to subscribers and offering complementary products.
- Consumer magazines are *non-rival goods*. After the magazine has been read by one consumer, it can be read by another consumer without additional costs. This non-rival character is recognized in the Netherlands by the popularity of the so-called "leesportefeuille" (portfolio).
- Producing an original often involves *high fixed costs* resulting from investing in and maintaining cost-intensive printing facilities, editorial staff, distribution channels etc. "First-copy" costs can therefore be expected to be high but may decrease rapidly as circulation increases. By contrast, the *marginal cost* of production, that is the costs of producing copies from the original, and the marginal cost of distributing the magazine to downstream suppliers or readers are relatively *low*.
- Content of consumer magazines is subsidized by *advertising*. A key decision of publishers is to determine the optimal content-ads mix and associated prices.

Copyrights

- The *high fixed cost, low marginal cost* nature of the production process and the non-rival character of many information goods, create a possible problem of underproduction where the publisher is not able to recoup its initial investment. Copyrights are installed to solve this problem.
- In markets that experience *network effects*, a decrease in costs of copying (or an increase in the share of illegal copies) might actually benefit publishers and society as a whole, reducing the need for strong copyright protection.

The next section discusses how these characteristics are influenced by the trend towards electronic publishing.

7.4 Towards electronic publishing

This section discusses how the pervasive trend towards electronic publishing affects the characteristics mentioned above.

Towards electronic publishing

Observation: A pervasive trend in the publishing industry is electronic publishing.

Question: What are the consequences of electronic publishing for characteristics of information goods markets?

Answer: Marginal costs further decrease, threat of disintermediation, stronger network effects, better quality of copies, increased possibilities of distribution and bundling.

Electronic publishing is a development that can completely change the way publishers operate. Electronic distribution makes traditional copyright protection harder to maintain, alternative means of distribution easier, searching in data bases much quicker, and it creates lots of possibilities for tailor-made products and prices. Even information markets that are likely to stay traditional for a while (consumer magazines), will be influenced by electronic possibilities, e.g. because the players active on that market are also active on the Web (e.g. VNU) and ads revenues threaten to be eroded by electronic competitors.

Since information goods can be digitized by definition, they can in principle also be electronically distributed. Often this requires the presence of consumer hardware (PC or TV). The wide penetration of hardware, the development of Internet and enhanced technological possibilities, imply that technological bottlenecks for the distribution of most information goods are gone or will be gone soon (think of electronic journals, distribution of CD's by Internet, electronic encyclopedia's etc). Again, we follow the case studies.

Scientific journals

- Electronic publishing substantially reduces the costs of production and distribution of copies. The costs of producing the content and the original of the article do not change that much. The costs of software and hardware needed to produce the first issue of an electronic journal and, alike, the first electronic journal in a portfolio of journals still remain high.
- An issue of a journal is a bundle of papers with a certain reputation. Electronic publishing change the way papers are bundled. E-print archives already grant priority claims and disseminate scholarly research following the personal preferences of individual readers. An alternative performer of the task of quality assessment has not been observed to date, but that may change.
- New technology can restrict the nature of a subscription from perpetual ownership to temporary rights of access. Without further legal and technological conditions, traditional restrictions on shared use, which used to link a subscription to a specified group of potential readers, disappear. Still, if the industry is able to exclude readers who do not pay for their products, the opportunities for price discrimination are considerable.

Copyrights

The impact of the trend towards electronic publishing on copyrights depends which type of information good is at stake. In general, electronic possibilities create a trend toward disintermediation. Entry to the market is easier than before. Artists and authors can choose to publish their content through the Internet to keep maximum control over their products.

- For *music* the availability of digital copying techniques such as MP3 has made it possible to download music from the Internet. MP3 is easy to use and allows consumers to choose beyond the album format; they can pick any song they like and download it. Another challenge to the music publishing industry is the wide availability of re-writeable CD-ROMS that also can store music files. CD-R's can be bought for a few guilders and can store a lot of music.
- On the market for *books*, the main impact of new digital technology has been the reduction in pre-press costs - authors can now hand in digital text or data files which can be easily manipulated - and new services become available as well. The amazon.com's of this world provide search options for the customer, inform the customer of new books on topics of their interest, reward frequent customers with vouchers, and so on. Initiatives to distribute books in digital form have so far not been very successful.
- The market for *software* has been strongly affected by the decrease in the cost of copying. Piracy of software is estimated by the Software Information Industry Association (SIIA, 1999) to be around \$11 billion in 1998 for business application software around the world.

Consumer magazines

The trend towards electronic publishing is not particularly visible in consumer magazines. The Internet is used as a medium for supplementary services, not as a (potential) substitute for the hard-cover sales. One further observation can be made here: consumer magazines is a fairly saturated market. It faces a threat from electronic publishing because advertisers may (to a certain extent) move away from consumer magazines.

General picture

For *publishers* there is a big need to reorganize their business. Copyrights are harder to maintain, disintermediation threatens, value added should come from other sources (see above) and strategies that exploit new possibilities need to be developed. Failing to respond swiftly can imply that traditional publishers become virtually obsolete.

Authors will depend less on publishers to distribute and advertise their work. This may provide an extra incentive for publishers to prove to authors where their value added lies, which in turn should make the electronic publishers markets more competitive.

The good news for *consumers* is that the intrinsic quality of electronic publications is often higher: it is faster, searching is much easier, and individual tailor-made products are much easier to realize. 'New economy' protagonists (e.g. DeLong and Froomkin, 1999) point at the complexity of the goods and potential for customer lock-ins, but fail to mention countervailing powers. Once new technology is established as being common, the market, the consumers, the competition authorities and lobby organizations can provide countervailing powers, that can dampen adverse effects on transparency.

The next section discusses how publishers can deal with the changed characteristics of information goods markets.

7.5 Business strategies

This section discusses how publishers how publishers can deal with the changed characteristics of information goods markets, and how they can exploit opportunities that arise from network effects.

Business strategies

Observation: Today publishers (and authors) face a more complex world than before, leading to a shift in the ways markets operate and fail. This leads to a different role of publishers in the information economy.

Question: Will publishers be successful in the electronic world or will they be caught in the Web?

Answer: It depends on their business strategies and the institutional framework. Publishers who fail to use business strategies to cope with shifts in market operation will have a hard time.

Let us see how firms handle these issues in the three case studies.

Scientific journals

- The dominant business strategy is investing in reputation. Reputation secures a firm position on the input market, i.e. an abundant supply of high quality research papers. Reputation can also last for a long time (top journals are usually journals with a long history) and, there are distinct first-mover advantages (the first journal in a new field is likely to become the leading journal).
- A common strategy that helps exploiting scale economies is price discrimination. If firms charge customers according to willingness to pay, they can serve more customers, without having to lower their (average) price. Since arbitrage is difficult, such a strategy is logical and common.

Consumer Magazines

- Unlike scientific journals, consumer magazines are less characterized by network effects. Therefore, there is less scope for network related economies of scale. The first-mover advantages associated with cornering a certain niche are relevant here as well.
- Consumer magazines strongly depend on the link between content and ads. Publishers therefore use ads to make up for their fixed costs. A strategy associated with ads is to offer multi-item package deals for advertisers. A key decision for publishers is to design an optimal ads/content pricing strategy.

Copyrights

- Publishers cope with the danger of underproduction by exploiting opportunities created by decreased costs of copying and distribution. (i) By giving away free samples potential customers can experience (part of) the information good, so that publishers are able to advertise their products through media such as the Internet in a much more efficient way, reaching a wider audience and creating demand for the hard copy product; (ii) By selling a version for "dummies", a "light" version, a "family" version and a "luxurious pro" version of their product, publishers can price discriminate; (iii) by selling complementary products mass is more easily created.
- The **music** industry and their copyright collectives use new techniques to detect illegal copying over the Internet. The industry is also trying to develop new business strategies that take advantage of the new technologies. One of these strategies is to develop a safety standard that protects MP3 files (and files in other formats) from being illegally copied. Another is to develop digital rights management systems that allow them to securely distribute and track files as they are transmitted over the Internet. The most likely new role of music publishers will be to reduce search costs by offering a complete catalogue of music files on the Internet and to use their expertise of the market to develop new talents.
- Because of the underlying characteristics of software, software publishers have turned away from the traditional copyright protection system (such as licenses and

technological devices) towards alternative means of protecting their rights. After buying the software, users agree to a contractual relation with the software publishers by opening the package in which the software is wrapped or by clicking a button with "I agree" (the so-called "wrap" and "click" licenses). An alternative way of rights management is to use technological devices such as periodically renewable passwords, digital watermarks and devices that only allow a limited number of copies for personal use. The latter option depends less on the enforcement of the system. However, experience shows that technological devices for the protection of software are often the subject of "hacking".

The software publishing industry is an excellent example of how the new business strategies can be used: giving away free content and samples, versioning, selling complementary products are all used in this market.

After identifying characteristics, impact of electronic publishing and business strategies, the next section now turns to market performance.

7.6 Market performance

Before discussing market performance in the case studies, we first unfold our methodology of assessing market performance. Markets perform well if inefficient players lose (part of their) business and are replaced by efficient or innovative ones. Such a replacement (or shift) will only take place if entry barriers are sufficiently low. Hence entry barriers lie at the heart of competition. It does not mean that markets can only perform well if there is a lot of entry. If incumbents are efficient, there is no need for entry. So it is not entry as such that determines performance but entry *barriers*. If efficiency is rewarded by high profits or high market shares, both incumbents and potential entrants have proper incentives to invest. If incumbents manage to shield their position by raising entry barriers, however, incentives to invest are weakened.

Market performance

Observation: Business strategies and the trend towards electronic publishing changes the way the publishers market operates. It can lead to a boost in market performance, but also to a raise in entry barriers.

Question: What determines market performance of the publishers' markets?

Answer: The existence of entry barriers and possibilities to raise them.

One of the aims of the study was to determine how the publishers' markets perform, and to explain why (they perform good/bad). The literature turned out to be insufficiently clear on how to do this. Our method of assessing market performance implies taking four steps:

- Identify the market on which performance needs to be analyzed (*the pivotal market*) *Step 1*.
- Identify connected markets (defined as markets on which behavior influences entry barriers on the pivotal market). The pivotal market and its connected markets together form the relevant market cluster. *Step 2*.
- Assess market performance by analyzing competition on the pivotal market. Check how behavior on the relevant market cluster can raise entry barriers on the pivotal market *Step 3*.
- Identify possible improvements in performance, i.e. ways to lower entry barriers or eliminate incentives to raise entry barriers *Step 4*.

Step 1 identifies the market on which performance is analyzed. In the information economy this market is very likely to be linked in various ways to other markets, e.g., an ads market or a distribution market.

An analysis of market performance checks behavior on all these markets (the relevant market cluster), as far as relevant for the pivotal market. How can we then assess market performance on the pivotal market (step 3)? A forward looking analysis zooms on entry barriers on the pivotal market. Entry barriers can exist due to technology (think of natural monopolies). If, however, entry barriers are higher than driven by technology, there is scope for improvements of market performance. The improvements can be realized by scrutinizing behavior of market parties (antitrust policy), but quite often improvements can be realized by taking away entry barriers created by the institutional framework.

One of the benefits of this study is that the above framework can also be used for future studies on information markets (or indeed any market).

Consumer Magazines

It turned out that the ads market is more competitive than the readership market. So assume we want to assess market performance on the readership market for e.g. gossip. This identifies the market for gossip as the *pivotal* market (step 1). The main players on this market are VNU, de Telegraaf and Audax.

Connected markets (step 2) are other markets where VNU, De Telegraaf and Audax meet. A market that is connected from demand links is e.g. glossies. Another connected market is the ads market. Publishers such as VNU or Audax can offer package deals to

firms, that can influence entry barriers, since publishers who are not active on other markets are less able to offer similar packages. The final connected market is the market for distribution channels, the control of which has the potential to raise entry barriers on the readership markets, as the NMa case against Audax showed. This sums up the *relevant market cluster*.

The third step involves checking *market performance* over time on the pivotal market. Sophisticated analysis requires firm level cost data, so we have to rely on some general indicators, e.g. (i) Entry has been absent (the last five years). Sometimes new magazines appear, but they are usually from incumbent publishers. (ii) Profitability has been reasonably high. (iii) Relative market shares changed over time, but not spectacularly so.

These indicators do not prove anything, but they all point at weakish competition. Ads and cover prices varied substantially, yet little entry and shifts in shares seemed to have resulted.

The fourth step is taken if performance is disappointing. The check on behavior or institutional reasons that have raised *entry barriers* on the pivotal market (or: will raise barriers in the future), does not point at institutional barriers. Entry barriers are raised by: (i) package deals on the ads market; (ii) predatory entry of niches in connected markets, which scares off future entrants; (iii) multi-market contact on several connected markets; (iv) control of distribution channels.

Scientific Journals

In academic publishing the market for journals in a discipline, say economics, is considered as the *pivotal market*. The market for a specific journal is connected with markets for other journals in the same discipline. Indeed, economies of scale and scope are abundant. Thus, we assess market performance by studying the market for a set of journals in the economic discipline (step 1).

The pivotal market is *connected* to two other markets. First, it is connected with the market for scientific papers, in which authors trade their papers in exchange for the assessment of the quality of the paper and the establishment of a priority claim. Entry on the market for journals is deterred as soon as an academic publisher seizes market power in the connected market for papers. The publisher can cream off the best papers since authors do not want anything else than to see their papers published in that prestigious journal. Publishers have exclusive ownership of the journal because of their copyright on the title. An entering journal is almost by definition left with lower-quality papers, which will lock the new journal into a low reputation path. Second, the pivotal

market is connected to the library access market, i.e. the place where researchers and students can have access to a selected set of journals.

Hence, *the relevant market cluster* encloses the markets for scientific papers and scientific journals. Other elements of this cluster are the markets for library access, editorial and referee services (step 2).

To check *market performance* over time on the pivotal market, we gathered some general indicators. There are a few dominant players in the field with ever rising market shares. Profitability has been relatively high. Prices are reported to have risen with 10 per cent annually. To increase their surplus, for-profit publishers discriminate between library and individual subscriptions. Price increases can be directly related to mergers of publishers. The prolonged and still increasing dominance of a few academic publishers points at relatively weak competition (step 3).

We identified several strategies that publishers actually pursue to raise *barriers to entry* on the pivotal market (step 4). In traditional publishing, publishers have created monopoly positions by making their journals must-haves. In electronic publishing, tying of journals into large portfolios, consortium agreements, informational advantages with regard to the preferences of individual readers and libraries, and standard setting are additional ways to enhance barriers to entry. Furthermore, the two connected markets - the market for scientific papers and the market for library access - do not keep publishers in check. On the market for papers, authors primarily value the journal's established reputation and have no incentive to care about bad performance of the market for journals.

One of the ways in which incentives on the market for scientific journals can be improved is by (radically) changing the copyright regime. The government can retain the copyright on publicly funded work. Authors buy services like editorial advice, quality assessments, impact assessments from 'assessment firms' in competitive markets. They store their work, including the assessment, in a freely accessible electronic archive. Readers have free access to the electronic archive to search for assessed works. They can buy services like selection of papers according to subject, quality, etc. from 'virtual libraries'. As a result, diffusion of scientific knowledge is improved and the barriers to entry to the distinctive markets of the cluster are lowered, fostering innovation and competition.

7.7 Policy issues and options

The general picture is one of limited government intervention. The information economy is characterized by lots of latent market failures. Yet, there are many ways in which firms can solve these failures themselves, possibly helped by antitrust or light-weight regulation. A competition policy that focuses on reducing entry barriers seems a good way of letting markets do what they are good in: innovating and satisfying ever growing consumer desires. This study provided a tool to analyze markets in a systematic way. Such a tool can help competition policy to be forward looking and economically based.

There are a number of other issues that might call for government actions:

- *Copyrights*. The lesson here is that the optimal copyright regime does not exist: it depends on the type of information good. Publishers have a lot to lose in a world where the marginal cost of copying declines and the quality of copies approaches that of originals. On the other hand, the decrease in reproduction and distribution costs offers them lots of opportunities. It enables them to engage in a whole variety of new business strategies. Simply increasing the efforts to enforce copyright law does not do justice to the new role of the publisher in the electronic era, and may be suboptimal given that it is costly for consumers. So information goods with lots of electronic opportunities (Music) or network effects (software) might have a lighter copyright regime than traditional information goods (books): the firms largely sort it out themselves, with copyright serving as a fallback option.
- When governments fund *public goods*, such as fundamental research, it is preferable that the incentives of all actors is in line with the public goods nature of the good. To achieve this, output on these markets should be freely available to everybody. In the example of scientific publishers it implies that journals are free (scientific research is a public good), but quality assessments, as well as searching and distribution facilities is priced.
- The *transparency* concern seems to be of a temporary nature, yet it does not mean it is not there. The government's role lies in requiring standards concerning disclosure of information. In addition, the competition authority might zoom in on transparency in individual cases.
- Lack of excludability sometimes leads to a tendency towards the middle. Countervailing this *tendency towards lowest-common denominator content* can be a reason for governments to step in. Notice that, contrary to common belief, this does not necessarily have anything to do with equity or redistribution considerations

(protecting unsuccessful painters). Market failures in the information economy (the lack of excludability and rivalry) are not always successfully countervailed by market solutions. If politicians want to protect certain groups, they should do it. These considerations should be made explicit though, because solving the above market failure is important *irrespective of political preferences*, whereas redistribution considerations have to be weighed against other considerations.

- Information goods that are not depending on language are often global markets. It does not imply that there is no scope for national policy. The case study on scientific publishers show that there might be scope for taking the initiative in *international coordination*.
- When markets underperform because institutional choices (not behavior) prevent them from performing better, obviously these *institutional choices might be* reconsidered. An example was the case study on scientific journals in which commercial publishers cannot be blamed from simply maximizing profits, given the fact that input from authors and editors is for free and copyrights are handed over for free as well.

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Abstract

The study 'Publishers Caught in the Web?' analyzes the role of publishers in the digital age. The study consists of a General Framework, three case studies (on consumer magazines, scientific journals and copyrights) and a concluding part. The General Framework and the conclusions are collected in this Working Paper.

The General Framework uses the following line of reasoning: (i) publishing markets are markets for information goods; (ii) markets for information goods have certain characteristics that cause latent market failures; (iii) the developments in electronic publishing increase the possibility of market failure; (iv) publishers have various strategies at their disposal to make sure that latent market failures do not arise; (v) aided by the developed theory of *relevant market clusters* it is possible to determine how publishers perform, and more in particular, how high the entry barriers are that are in place or can be put in place; (vi) the government can determine whether actions are necessary to fight anti-competitive behaviour, or to lower entry barriers that are caused by the institutional environment.

The three other Working Papers in this series are three case studies where the General Framework is applied. The concluding section of this Working Paper (section 7) the three case studies summarizes the three case studies and draws general conclusions.