

## Chapter 22: Government Policies

**“Just because you're using a computer doesn't mean you don't have to follow the law.”**

Professor Michael Froomkin, University of Miami Law School, quoted in “Building fences, one by one”, by Patricia Jacobus, Staff Writer, CNET News.com, April 19, 2001, 4:00 a.m. PT, [news.cnet.com/news/0-1005-201-5589627-1.html](http://news.cnet.com/news/0-1005-201-5589627-1.html).

### Prologue

In the same article, Professor Froomkin serves up another quotable quote, dismissing the notion of the Internet as an unregulated medium as “cyberpunk dreams that rules are bad.” The question of how to regulate the Internet remains a problematic one, despite what many see as artificial distinctions between the online and physical worlds. Even if one agrees that traditional rules and regulations should carry over to cyberspace, as just another medium for disseminating and exchanging information, the power of digitization is leading to government policies in many spheres being re-examined.

Pornographic and hate materials are two examples of contentious issues for what should be permitted on the Internet. Gambling is another activity which generates mixed opinions in society, and which is potentially unleashed on the Internet. The death of distance has all kinds of potential impacts beyond making it easier to work and play without getting up from in front of the computer. Deciding who can tax whom when location is almost irrelevant will be one of the questions that governments wrestle with.

Governments will have to decide how individual rights to privacy can be protected in a world where information can be swept up and processed automatically and stealthily. They will have to decide how to assign and regulate intellectual property rights in a world where information and knowledge are the main sources of value in the economy. They will have to decide how to regulate all kinds of financial activity on the Web, even to the extent of the creation of digital money, which could undermine a government's monopoly powers over a nation's money supply. Laws have to apply to cyberspace, but they have to deal with a world where the costs and benefits of doing certain things are dramatically changed. This chapter is about how government policies may need to adapt to the digital economy.

## 22.1 Introduction

The focus of this book has been on the private economy, the interaction of firms and households and how it changes with the ability to store, process and communicate vast quantities of digital information. Yet this transformation is not taking place in an institutional and legal vacuum. Governments set the rules within which firms, households and markets operate. The daily operations of governments are changing in many of the same ways that are affecting the rest of the economy: electronic forms, informational web sites, interaction with constituents, and so on. The purpose of this chapter, however, is not to go over these changes in the government sector. Instead, we examine some dimensions of how the government's management of the economy changes as economic activity moves online.

In the next section, we review issues of patents and copyrights from the perspective of the government. We discuss how government objectives in shaping patent policy might be formulated, and suggest that a general, consistent re-evaluation of patent policy may be better than trying to limit one particular class of patents, such as software-based business-method patents. In the case of copyrights, we review recent legal measures designed to adapt copyright protection for an age of easy, almost limitless distribution of digital content. We note that the balance between protection of copyright holders' rights and enjoying the benefits of easier use that the Internet makes possible is still to be struck.

Section 22.3 examines privacy issues. What personal information can be collected, shared or revealed, and under what circumstances, is still being sorted out in the legislative arena. This section picks up some of the themes that were introduced in Chapters 14 and 15, where we discussed how businesses might use information about customers to refine their pricing strategies as well as to customize their products and services. Privacy issues include these commercial uses, as well as broader concerns about what kinds of information is made publicly available online.

In Section 22.4, we discuss how governments may be faced with loss of tax revenues due to the mobility and "location-independence" of those who are taxed. In particular, online commerce may have a negative impact on the ability of state governments in the US to collect sales tax revenues. While the immediate impacts are likely to be limited and manageable, in the long run, some type of coordinated solution will have to be devised.

The next two sections review government policy with respect to antitrust and a wide range of regulatory issues, namely, social issues such as the control of pornographic and hate materials and of gambling, issues surrounding the provision of financial services online, and the management and promotion of the telecoms infrastructure that makes the Internet possible at all. In the case of antitrust and of telecom regulation, the basic economic principles of competition and the workings of markets are unchanged. There are possible differences in emphasis because of the increased importance of innovation, of network effects, and of complementarities in production. However, the broad contours of antitrust law and its application do not require modification. In the case of most kinds

of regulation, the conceptual issues are also unchanged. The additional problems arise in managing the greatly increased flows of information, where dissemination of “bad” information increases along with the spread of “good” information.

Finally, in Section 22.6, we briefly consider a very different area of the impact of e-commerce and digitization. The creation of private, digital currencies raises some issues of management of the monetary sector, which is crucial for a well-functioning economy. Without stable monetary management, inflation may damage this functioning. Economic analysis suggests that digital currencies, while requiring adaptations in the conduct of monetary policy, do not raise serious problems for macroeconomic management.

## **22.2 Intellectual Property Rights**

E-commerce is one expression of the information economy, where information and knowledge play an increasingly important role in the creation and trading of goods and services, as well as an economic good itself. The importance of property rights with respect to information and knowledge is greatly enhanced by the need to fulfill these multiple roles. We have provided an overview of intellectual property (IP) laws in Chapter 3, and discussed how firms can best manage IP rights (IPRs) in Chapter 17. The challenge for governments is to update the design and enforcement of IP laws in ways that keep up with the consequences of information technology in general, and digitization of content in particular. While firms seek to maximize their profits, governments must balance the interests of firms with those of consumers.

**Patents** We have discussed some of the consequences and problems of software patents in Chapters 3 and 17. While the essence of patent law, to protect useful and nonobvious innovations, has been unchanged, the explosion in the use of software to control various physical processes has raised issues with respect to the scope of patent law. Problems have been caused by the inability of the US PTO to keep up with the growth of software patents, and the general difficulty of evaluating software patents, since an enormous amount of variety is possible in writing software to automate various business-related tasks.

One problem with software patents has been their breadth, with general concepts such as “one-click shopping” and “reverse auctions” being patented. However, this issue of patent breadth has been a more general one, and a recent court ruling outside the realm of software may make it harder for firms to make sweeping patent claims. In the case that led to the ruling, a company called Festo filed a patent infringement suit against another company, Shoketsu, alleging that the latter violated Festo’s patents for a rodless cylinder used in robotic arms on an assembly line. Shoketsu had made some minor changes to the Festo product. In November 2000, a federal appeals court panel ruled against Festo. In doing so, the court appeared to significantly narrow the scope of patents. Until the court’s ruling, a legal principle known as the “doctrine of equivalents,” that allowed inventors to claim rights to ideas beyond the scope of their patents. Under this doctrine, any product that performed a function equivalent to that of the patented product could be found to

infringe the patent. While the decision is being appealed to the Supreme Court, if it stands, it will force firms to be more careful in their patent claims, to prevent competitors from inventing around patents.

Putting a greater burden on firms filing patents to fill all the holes may favor larger firms that have more resources. However, even spending an extra hundred thousand dollars on a patent claim is worth it if there are millions at stake. Does narrowing the scope of patents, or making broad patents costlier to file help or hurt society at large? If it makes imitation easier, this may redirect resources from innovation to imitation, as the relative payoffs to the two activities change. On the other hand, if it prevents preemptive patenting, or allows innovations to diffuse more quickly, narrowing patent protection may be beneficial.

#### **Illustration Box** **US Patenting Facts and Figures**

- The legal basis for US patent law is in the country's constitution, ratified in 1789.
- The first US Patent Act was passed in 1790, and allowed any two of the Secretary of State, the Secretary of War and the Attorney General to grant patents for terms of up to fourteen years for inventions.
- Beginning in 1793, periodic revisions of US patent law occurred, with the US Patent Office being founded in 1836.
- The US PTO currently receives about \$1.1 billion annually in fees, and spends over \$900 million to process applications.
- The applications backlog is growing, and is expected to reach 32 months by 2005
- In 2000, patent filings grew by 12 percent, and trademark applications by 40 percent.
- There are estimated to be over 1,200,000 patents that are unexpired and enforceable.

Sources: [news.cnet.com/news/0-1003-200-2115440.html](http://news.cnet.com/news/0-1003-200-2115440.html), [www.ladas.com/USPatentHistory.html](http://www.ladas.com/USPatentHistory.html)

Narrowing the effective scope of patents that are awarded is one remedy to the perceived problem of proliferating software patents. Another solution, which has been suggested by Jeff Bezos, CEO of Amazon.com, is to offer “business method” software patents shorter protection – as little as three to five years. The problem with such a proposal is the difficulty of clearly classifying such patents. How will it be decided whether an innovation receives protection for as little as five or as many as 20 years?

Innovators will have a strong incentive to frame their patents to qualify for longer protection. Rather than this kind of dual system, a consistent, across-the-board re-evaluation of the scope and length of patent protection is probably a better policy.

The kinds of tradeoffs that are involved in shaping patent protection can be outlined simply as follows. While a patent is in force, it generates some economic rents,  $R$ , for the patent holder. These rents depend positively on the length,  $T$ , and scope (or breadth),  $S$ , of the patent. At the same time, there may be some allocational efficiency losses,  $L$ , from the patent being enforced, in particular, if it leads to some monopolization (Figure 4.24). It is conceivable that a patented innovation is used only as an input in a competitive product market, in which case there are no allocational efficiency losses (Figure 4.25). Finally, there may be benefits from the innovation that are not captured by the patent holder,  $B$ . These benefits may be lower the longer and broader the patent. Hence, the net gain from the patent is  $G(T, S) = R(T, S) - L(T, S) + B(T, S)$ . We would expect this net gain to be greatest when there is no patent, since the innovation will be used most widely in such a case.

However, there is another factor to consider. The absence of patents would mean that a firm has no incentive to invest in innovation. For example, the firm may care about  $p(I)R(T, S) - I$ , where  $I$  is its investment in innovation, and  $p(I)$  is its probability of success with investment  $I$ . Hence the firm will choose its investment  $I^*(T, S)$ , which would be zero if there were no patent protection. The government therefore must choose patent protection, as captured in the values of  $T$  and  $S$ , to make the net expected social gain,  $p(I^*(T, S))G(T, S) - I^*(T, S)$ , as large as possible. While this stylized model does not solve the problem of actual policy-making and enforcement, it illustrates the general issues involved.

**Copyrights** The greatly lowered cost of large-scale reproduction and distribution that has resulted from digitization has posed an enormous challenge to the interpretation and enforcement of copyright law. Some of these issues, as well as the basics of copyright law, have been discussed in Chapters 3, 17 and 19. A significant overhaul of US copyright law came in 1998, with the signing into law of the Digital Millennium Copyright Act (DMCA). This act contained several provisions with quite different purposes. Some of the provisions were technicalities designed to bring US law into conformity with World Intellectual Property Organization (WIPO) treaties. Others were more substantive, including implementation of treaty obligations to provide effective protection against circumvention of technological measures used by copyright owners to protect their works against unauthorized access or copying. This includes banning devices that are primarily designed to circumvent technological measures to prevent unauthorized access and that have no significant legitimate commercial uses.<sup>1</sup> However, the law was written to still permit copying for fair use. Another provision of the DMCA protects the integrity of electronic copyright management information. This protection is

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<sup>1</sup> Some noncommercial uses such as encryption research, archiving, privacy protection, and security testing were also given exemptions.

likely to be increasingly important as copyright holders for music and books employ digital rights management technologies more widely.

In addition to extending copyright protection more explicitly to the digital realm, the 1998 act also recognized that some kinds of copying are unavoidable if the Internet is to function at all, and that intermediaries for digital information should not be liable for infringement. Therefore, the DMCA provides for limitations on the liability of online service providers (including institutions of higher education when they play that role) for transitory communications, system caching, information location tools, and storage of information on systems or networks at the direction of users. This protection was one of the components of Napster's unsuccessful defense of its music file swapping service, as discussed in Chapter 19. Other kinds of temporary copying specifically for computer repair or maintenance were also permitted somewhat more broadly than in previous copyright legislation.

A final aspect of the DMCA that is relevant here involved an extension of the 1995 Digital Performance Rights Act to webcasting. Webcasting is therefore subject to statutory licensing requirements that previously covered only subscription-based digital (but non-Internet) transmissions.

While the DMCA was initially viewed as a neutral piece of legislation, designed to bring copyright law into the Internet age, and even promote online distribution of content by clarifying the law, its impact has sometimes been viewed as negative. This is because corporate copyright holders have used some provisions of the law to stifle what might normally be considered free expression. The most striking example of this came recently when some corporate consortia successfully prevented presentation of an academic paper by threatening a lawsuit under the anti-circumvention provisions of the DMCA.

The conflict originated in a public challenge issued by the Secure Digital Music Initiative (SDMI), a consortium of music-industry companies, in September 2000. The SDMI is working to develop technologies that allow music publishers to control what consumers can do with recorded music that they buy. The SDMI challenge involved six data-encoding technologies, four of which involved "watermarking". This term refers to modifications made to an audio file, to encode copyright control information without perceptible change in how the file sounds. Ideally, removing a watermark would damage the sound quality, preventing unauthorized copying. A group of researchers was able to remove the watermarks in all four challenges without detectable sound degradation. When the researchers planned to present their paper at a conference, however, the SDMI foundation, the RIAA, and Verance Corporation (one of the watermark technology's inventors) threatened a lawsuit (appealing to trade secrets protection as well as the DMCA). The authors decided not present. Nevertheless, their paper found its way to the Internet, illustrating the power of the medium to subvert threats to free expression.

Ultimately, laws set initial positions from which enforcement and bargaining will determine how gains are shared. Much of the economic framework used to discuss

patents can be applied in abstract terms to copyright issues. Broader or more stringent copyright protection increases the benefits of content that are captured by content producers or distributors who are copyright holders, and encourages content production, but it reduces the benefits of consumers of such material. It is impossible to strike a perfect balance, but successive legislative changes may bring outcomes closer to at least a generally acceptable balance. Currently, as corporate copyright holders seek to use the DMCA to their advantage, consortia of scholarly, library and consumer groups such as the Digital Future Coalition ([www.dfc.org](http://www.dfc.org)) are active on the other side. They are trying to use the impact review provisions of the DMCA to push for amendments that soften the act's potentially chilling impacts on the use of copyrighted material. This legal seesaw will continue to play out for some time to come, as laws try to keep pace with technological advances.

One area where copyrights and patents differ is in the importance of intermediaries in commercially distributing copyrighted material. Without music companies and publishers, the creators of content would traditionally have had a difficult time profiting from their creations. Digital distribution and management of copyrighted materials may change the role of intermediaries from being marketing and sales organizations to being technological enablers. Those who own the technologies of copyright protection in cyberspace will then receive economic rents, rather than owners of brand names or physical assets such as chains of stores. Whatever the legal developments, this replacement of physical intermediation and infrastructure with their digital successors is quite likely for all information goods – one aspect of the transformation of atoms to bits.

### **22.3 Privacy**

We earlier discussed privacy issues in Chapter 14, in the context of price discrimination. Information about consumers allows firms to increase profits through various kinds of price discrimination. At the same time, some consumer information can help firms to tailor their products more effectively to consumer preferences. Privacy concerns often center around how the information is collected – do consumers realize that their behavior online is being tracked, or that cookie files are being deposited on their computers? Further issues arise with respect to who else may properly see the information collected. I may not mind Amazon.com tracking my buying habits in order to serve me better, but I may not want it to sell that information to other firms. A related issue is the use of such information for mass marketing emails, commonly known as “spam”. Employees, too, may find that their electronic communications and Internet browsing from work can be monitored by employers with great precision and intrusiveness. Finally, there are all kinds of information that various public agencies collect. Often such agencies are required to make that information available in response to requests from members of the public. However, making that information available online makes access much easier and broader than other forms of availability, with possible negative consequences.

The US legislative branch is actively considering Internet privacy legislation, after a report from the Federal Trade Commission in mid-2000 indicated that self-regulation (discussed in Chapter 14) was not working uniformly, with some websites proving resistant to privacy concerns. A likely major stumbling block for legislative agreement is the simple issue of whether businesses should be required to explicitly get consumers to “opt-in” to allow their personal data to be used beyond the specific transaction or relationship, or whether the burden should be on consumers to explicitly “opt-out”. Businesses have naturally favored the latter approach, which gives them much more leeway. Business-supported groups have tried to argue that privacy legislation would be inordinately costly, and also that consumers do not care enough for it to be worthwhile. On the other side are groups such as the American Civil Liberties Union and Consumers Union that want stronger safeguards against data-collection practices that do not involve explicit consent.

Given the conflicting pressures, it seems unlikely that any meaningful Internet privacy legislation will be passed any time soon. This will leave US online privacy laws some way behind those of the European Union, which protect consumer privacy more stringently. Meanwhile, the issue will continue to remain alive, because possible inappropriate access and use of information will always be the flip side of the coin in a world where large quantities of information have become so freely available.

### **Illustration Box A Privacy Framework**

The debate over Internet privacy is a broad one, but it can be boiled down to four central tenets:

**Notice.** There is general agreement that Web sites should inform visitors in a clear way how their information will be used, and an increasing number of sites are posting such privacy policies.

**Choice.** This is where the opt-in vs. opt-out debate is raging, whether the choice to have personal information accessible falls first with the Web site or with the consumer.

**Access.** This is a concern of privacy advocates, who fear that Web sites will permit access to information contained in their sites only if visitors surrender their privacy rights.

**Preemption.** This is desired mostly by the Internet industry, which argues that if federal legislation must happen, it should at least preempt action by states to prevent multiple privacy standards from being in effect.

Source: “Congress responds to concerns, but conflict could delay action” by Patrick Ross, Staff Writer, CNET News.com, February 23, 2001, 4:00 a.m. PT.



Examples of specific areas of concern abound, going well beyond the issue of unwanted intrusions such as spam. Health care information is a particularly sensitive area, since it is not only extremely personal, but can have significant impacts on insurance availability and rates: the US has still not come to grips with laws to protect the security and privacy of health care information. Privacy issues arise in all sorts of business interactions, affecting suppliers, investors and partners, as well as consumers. While businesses may have a clear sense of who should know what in such cases, implementing this while operating online can be much trickier than in the traditional world of physical, non-electronic exchange of information. Some kinds of information, such as court records, have always been accessible to the public, but putting them online may make it harder to screen information that could cause harm. One judge, for example, suggested the example where online posting of traffic citations might allow the spouse of a domestic violence victim to easily discover the person's new address. Different situations will require different kinds of balance, and various implications will have to be thought out carefully in any privacy legislation. Meanwhile, a general framework for considering the issues seems to be evolving (see Illustration Box).

## **22.4 Taxation**

Taxation (or its absence) matters for US e-commerce in two main areas. First, there are currently no taxes on Internet access. Second, sales taxes on online sales are collected in a very limited way. While businesses and consumers are happy to avoid paying taxes, state governments, in particular, are worried that the growth of e-commerce will significantly reduce their receipts from sales taxes, which are their major revenue source. There is an ongoing debate in the US Congress on how to meet the concerns of the state governments, without stifling e-commerce. A longer-term issue with respect to taxation is the difficulty that governments will face in collecting all kinds of taxes, including income taxes, when location matters less and less, and individuals and firms can more and more exist and operate outside of the jurisdictions of taxing authorities. We briefly discuss each of these issues in turn.

**Internet Access Taxes** The US currently has a moratorium on Internet access taxes. This distinguishes the Internet from traditional telecommunications media – if you look at your telephone bill, you will probably see more than one tax on the telephone services you use. The US moratorium was introduced in 1998, and lasts through October 2001. The motivation for the tax break was largely to allow the Internet to develop more rapidly. It was also prompted by related concerns that the new communications medium, in which web servers can be located in many different tax jurisdictions, and data can travel many possible routes, needed to be protected from potential multiple taxation. Several proposals for extending the current tax break, or even making it permanent, are being considered.

From a pure economic viewpoint, Internet access is no different from other kinds of telecommunications access. In fact, there are significant overlaps in infrastructure. The traditional telecom backbones are used to carry Internet data as well as telephone conversations. In the last mile, TV cables can be used to provide broadband Internet

connections as well as TV programming (with some additional switching and routing equipment investments). Even if the infrastructure were not shared, Internet access as a service like other telecom access can be taxed on the same principles – raising a given revenue with minimal distortion of resource allocation. As the Internet matures, the general guidelines for taxation will dominate current concerns about promoting the development of the Internet. Having said this, we should note that economist Austan Goolsbee has calculated that Internet access taxes could significantly delay the diffusion of broadband access in small-sized markets, resulting in welfare losses much greater than the tax revenue generated.

One other issue that may affect future decisions to tax Internet access is the question of equity. While 58% of US households had home Internet access by early 2001, this penetration was skewed toward higher-income households, the so-called “digital divide”. If Internet access is considered a social “necessity” as much as the telephone, then the objective of making it affordable for as many households as possible will be aided by not taxing it. On the other hand, this policy is not aimed very well – for example, giving price breaks to low income households (as in the case of “lifeline” telephone service) would be better targeted.

**Sales Taxes** In the US, sales taxes are levied only by state and local governments, with the latter piggybacking with surcharges on statewide sales tax rates. Sales tax rates vary quite a bit across different states, with some states having no sales taxes (e.g., Alaska, Delaware, and Oregon) while California, Mississippi and Rhode Island are at the upper end, with rates of 7%. Many states exempt food from sales taxes, as one way of easing the tax burden on poorer families that spend proportionately more of their budgets on food. On the other hand, gasoline, alcohol and tobacco products bear special taxes that are much higher than sales taxes.

The chief restriction on sales taxes in the US comes from the Interstate Commerce Clause of the US Constitution. This provision prohibits all restraints on interstate trade, and was interpreted by the courts to mean that interstate sales cannot be taxed. Consumers are familiar with this benefit in the case of mail order catalog sales. As long as the seller does not have a physical presence in the buyer’s state, the transaction is not subject to sales tax. To the extent that the Internet has the potential to greatly increase the number of transactions in which the buyer and seller are in different states, state governments are concerned about the erosion of a major source of their revenues. The impact so far has been minimal, as the proportion of total retail sales that are conducted online remains much less than even the 5-6% that catalog sales account for. Austan Goolsbee has estimated some of the present and projected impacts of the growth of e-commerce. These are shown in Table 22.1. Note that some of the growth of e-commerce that leads to the projected sales tax losses will come at the expense of catalog sales. Furthermore, the tax loss projected for 2004 will still be less than 3% of total sales tax revenue.

Online sales have been something of a legal gray area for sales taxes, even though the analogy with mail order catalog sales is quite close. For example, while most

companies that conduct business in California collect sales taxes from state residents, a few do not. Brick-and-mortar companies such as booksellers Barnes and Noble or Borders, which have stores in California and would therefore be required to collect sales taxes on online book sales to California residents, have avoided this by creating online-only subsidiaries. Of course such firms can argue that they are only seeking to level the playing field with Internet-only retailers such as Amazon.com, which are not be required to collect sales taxes except in states where they have a physical presence (Washington, in the case of Amazon).

**Table 22.1: US Sales Tax Losses**

<b>Category and Year</b>	<b>Estimated/Projected Loss</b>
Out-of-state catalog sales, 1999	\$6 billion
Online sales, 1999	\$600 million
Online sales, 2004	\$7 billion

Source: Austan Goolsbee, *Journal of Economic Perspectives*, Winter 2001.

The major problem in applying sales taxes consistently to online transactions is deciding who has jurisdiction, that is, which governments are entitled to tax. Traditionally, this has been determined by the physical location of the buyer and whether the seller has a physical presence in the same location, but these become hard to pin down in online transactions. The physical presence of the seller may be (almost) nowhere, or in as many places where it has servers that store and transmit digital data. What is needed, therefore, is some agreement among state and local governments on how tax jurisdictions will be determined in order to impose sales taxes in cyberspace. This will need to be complemented with some coordination of information, and perhaps even some harmonization of tax rates and bases across jurisdictions.

**Tax Havens** A bigger problem than loss of sales tax revenues is likely to be the mobility of tax bases. Major sources of tax revenue in many countries are personal and corporate income taxes. The tax bases in these cases are the individuals and corporations that are liable for these taxes. The Internet may have more profound effects on these tax sources than on everyday consumer transactions. Since a large proportion of income tax revenues come from a relatively small number of individuals, anything that makes it harder to tax them may have a dramatic impact on tax revenues.

We have discussed in previous chapters how the Internet makes it possible to relocate economic activities, to reorganize firms, and to conduct many kinds of financial transactions purely electronically. The possible implication is not only lower costs and greater efficiency, but also greater ease in conducting transactions that escape the net of

the tax collector in any jurisdiction that collects substantial taxes. There are enough tax havens in the world, and they can increase in importance as electronic communications and transactions make them more practical bases for economic operations.

## 22.5 Antitrust

US antitrust law is designed to prevent monopolization of industries, as well as anticompetitive practices such as price fixing (see Illustration Box). The question we discuss in this section is whether the “new economy” requires modifications in the government’s enforcement of antitrust policy, or even a change in the antitrust laws themselves. There are three key areas in which the proponents of a modified approach to antitrust make their points. First, there is the argument that antitrust enforcement must take account of the impacts on future innovation. After all, patents are meant to provide firms with rewards from exploiting temporary monopolies on innovations.

### Illustration Box US Antitrust Laws

#### **Sherman Act (1890)**

- Prohibits contracts, combinations or conspiracies, such as price fixing, in restraint of trade. Implicit as well as explicit collusion can be illegal.
- Makes it illegal to monopolize a market, or to try to do so.
- Enforced by US Department of Justice.

#### **Clayton Act (1914)**

- Refines the Sherman act.
- Makes it illegal to prevent customers from dealing with your competitors.
- Makes predatory pricing, designed to drive competitors out of business, unlawful.
- Prohibits mergers that create a monopoly or significantly reduce competition.

#### **Federal Trade Commission Act (1914, amended several times)**

- Prohibits deceptive advertising and labeling, exclusionary agreements with retailers that shut out competitors, etc.
- Created the FTC, responsible for its enforcement.

#### **Robinson-Patman Act (1936)**

- Amends Clayton Act
- Prohibits price discrimination that harms competitors or reduces competition.

Source: *Microeconomics*, 5<sup>th</sup> edition, Robert S. Pindyck and Daniel L. Rubinfeld, Prentice Hall, 2001.

The second argument is that network externalities and the economies of scale associated with information goods make monopolies more likely or more natural, and hence they must be tolerated – otherwise there will be no market or unnecessarily high costs. The third argument is that complementarities in information goods require firms to

cooperate in ways that might seem collusive by more traditional measures. We will assess each of these arguments in this section, suggesting that they may not pose significant challenges to antitrust law enforcement. We also suggest that many traditional anticompetitive practices fall, in any case, outside the scope of these arguments.

**Innovation** Patents can be for innovations in products or in production processes. A process patent leaves the patent holder open to competition. Competitors may have higher costs, either because they do not have access to the innovation, or because they have to pay licensing fees for using it (see Figure 4.25 and the discussion accompanying it). This may give the innovator an advantage over time, if it is able to use its economic rents from the patent to keep innovating ahead of its competitors. However, as long as the innovation does not create economies of scale that are not available to competitors, it should not lead to monopolization or market power for the innovator.

Product innovation creates some market power, because the new product does not have perfect substitutes. The extent of the innovation will determine the degree of substitutability, and of market power: the better is the new product, the greater the market power of the innovator. As long as some alternatives exist, however, the innovator cannot dominate the market as a pure monopolist. It earns economic rents on its innovation, but not necessarily monopoly profits.

In the case of both process and product innovation, therefore, the patent holder's temporary monopoly on an idea does not necessarily, or even typically, translate into a monopoly in the market in which the innovator sells. Intuitively, this is why hundreds of thousands of patents can be issued without each one leading to an antitrust action by the government. The increased importance of technological innovation, and of patenting, certainly makes these variables more important in a firm's business strategy (as discussed in Chapter 17), but it does not, by itself, imply that antitrust law has to change. Firms can profitably innovate, using patent law, without having to run afoul of antitrust law. The argument that antitrust enforcement is somehow inimical to incentives for innovation (as appeared to be suggested by Microsoft in defending itself against the antitrust suit brought by the government in 1998) seems to be specious. In fact, it might be argued that the pressure of competition provides a greater incentive to innovate (to avoid being put at a disadvantage vis-à-vis competitors) than the prospect of economic rents.

**Network Effects** Network effects are demand-side economies of scale, which can interact with the usual cost-side economies of scale to promote market dominance. If information goods are subject to both kinds of economies of scale, one might have to be resigned to more case of "natural" monopoly, driven purely by the structural characteristics of the market, rather than any illegal behavior. This situation can be combined with the case of innovation, to make the following argument. Innovation in information goods necessarily leads to market dominance. Hence using antitrust law against dominant firms will adversely affect innovation. The way in which antitrust law is applied must therefore be modified. This argument implicitly assumes that antitrust enforcement will harm innovation. As was discussed earlier, this need not be true. Economic rents may still be high enough to encourage innovation. Furthermore,

competition for innovations may be a sufficient incentive. Finally, even if there is some cost to antitrust enforcement in terms of forgone or delayed innovation, it must be balanced against the gains to buyers from control of monopoly. It is true that regulation of a “natural” monopoly is an alternative to antitrust enforcement – regulators can control prices and conduct on an ongoing basis rather than trying to keep the market competitive – but this is likely to be a cumbersome solution, subject to its own difficulties.

We can examine these issues in the context of the Microsoft case again. While Microsoft has not claimed that it is naturally a dominant firm, others have made this argument, based on the network externalities associated with operating systems and applications such as the productivity tools that make up Microsoft Office. As we have argued in Chapter 16, the key driving forces here have been lack of compatibility across brands and, even more so, Microsoft’s control of distribution channels enforced through restrictive contracts and pricing agreements that favored Microsoft’s bundled products. These are “old-fashioned” anticompetitive devices, which the government won judgment against in an earlier antitrust suit, but with no penalties on Microsoft, merely the agreement to stop such practices. Our conclusion is that one should be skeptical about network effects and innovation as a joint argument against antitrust law and enforcement. If anything, enforcement has been too weak, allowing Microsoft to amass a cash hoard that is larger than the total market valuation of some of its competitors.

**Complementarities** As we have discussed in Chapter 11, technology goods have to work in systems, and are characterized by strong complementarities. This often requires firms to collaborate in research and development, as well as in production and installation. The scale of investment required for some innovations may also require cooperative efforts by firms. One might ask if these examples amount to collusive behavior. The answer, in general, is “no”. As long as single firms, or firms acting together, do not engage in behavior that reduces competition or harms competitors, there is not violation of antitrust laws. What is needed is not a reform of the laws, but simply enforcement by government officials who understand technology well enough to sort out different kinds of cooperative behavior among technology-oriented firms.

Our overall conclusion is that the economics behind antitrust laws has not changed, and the laws are flexible enough to allow for enforcement in admittedly more complex circumstances. The kinds of issues that are most important in e-commerce involve traditional cases of leveraging monopoly power to harm competitors, and they can and should be tackled with existing weapons. False advertising, price-fixing, and exclusionary agreements are no different online than in traditional markets, and can be dealt with under existing laws. One positive development has been the willingness of different states, which have their own antitrust laws and enforcement machinery, to act in a coordinated fashion with each other as well as with the federal government in pursuing antitrust violations.

## 22.6 Regulation

Laws to manage privacy issues and antitrust laws can both be considered as major examples of regulation by the government of private economic activity. They are not the only ones. There are specialized regulations for different sectors of the economy, such as financial services and telecommunications. There are also regulations meant to protect certain groups, or to control certain types of activity. For example, pornography and hate materials are controlled, and gambling is a heavily regulated activity. All these forms of regulation are affected by the Internet. Much of the problem is simply in the freedom with which information can be disseminated and shared on the Internet. In the case of telecoms, regulatory issues are centered on the technological changes that digitization has introduced, making more effective competition possible. We outline some of the issues in these different areas of regulation.

**Pornography and Hate** While sex sites have been among the first, most popular and most profitable practitioners of e-commerce, they have not become mainstream. Yahoo!, for example, backed off a plan to sell “adult entertainment” material from third-party sellers, because it feared damage to its reputation. Auctioneer eBay has also moved to control the sales of pornographic materials on its site. While selling such material to adults has become socially acceptable up to a point, the sale of pornographic material involving children as subjects or targets is clearly illegal. The US government has attempted to make sure that these prohibitions are maintained online, and has twice attempted to pass legislation specifically for this purpose. Surprisingly, perhaps it has come up against strong opposition from free speech advocates, who fear that such laws can be used more broadly to stifle free expression.

In 1997, the US Supreme Court struck down major portions of the Communications Decency Act, which would have made it a felony to deliver “indecent” content to minors over the World Wide Web. The US Congress tried again in 1998, with the Child Online Protection Act. This law was also challenged by groups such as the American Civil Liberties Union, and the appeals court blocked its application. In May 2001, the Supreme Court agreed to hear the case, and the matter remains open. The problem has largely been one of writing a law that has teeth, but does not prevent expression that might have legitimate artistic or utilitarian motives. The latest law to be passed in the US was included in the government’s 2000 budget bill. It requires schools and libraries receiving federal funds to filter out some Web images. It, too is being challenged by civil liberties groups and others.

Materials that promote racist hate groups have also come under fire. Yahoo!, eBay and other sellers have all had to deal with the challenge of deciding where to draw the line in terms of what can and cannot be sold. While large online portals or intermediaries may value their reputations and have large enough revenues so that they will themselves choose not to sell such materials, this is no guarantee that such items will not find their way on to the Web in other ways. This is the downside of the Internet’s openness and relatively level playing field. Interestingly, the US government has been less active in this area, while European governments, for example, have actively tried to prevent Nazi memorabilia from being displayed on the Web.

**Gambling** Gambling is severely restricted or totally prohibited in most states of the US, with only Nevada permitting it totally freely. In fact, while the US Department of Justice ruled that Internet gambling is illegal, Nevada legislators have voted to permit casinos to expand their operations to cyberspace. The market is certainly there. Offshore companies collected an estimated \$1.5 billion in revenues from Internet gambling in 2000, from over a thousand gaming sites, and the figure is expected to keep growing.

### **Illustration Box Wireless Gambling**

One panelist at the Cellular Telecommunications and Internet Association (CTIA) industry trade show in March 2001 was Richard Ekstrand of Rural Cellular, a provider with 600,000 customers in 14 states, and \$356 million in revenue in 2000. Rural Cellular is hurting from dropping cell phone rates and hopes to make up for it with new services.

*The report continues:*

Because of their small size, Rural Cellular and other smaller carriers "can be more creative, more aggressive," with their content offerings, he said.

Ekstrand said he hasn't been approached by content providers to offer gambling, but he is expecting the day to come.

"Frankly, I don't see what's wrong with it," he said. "It's real. People are going to demand it. By making it available, are you encouraging people to do it? No. You still have a choice."

#### **The lesser of two evils**

Ekstrand is facing his own choices, too. Given the option between offering porn, which is growing in popularity on the wireless Web, or gambling, he'd choose gambling. It seems the more socially acceptable of the vices.

"It's easier to deal with gambling than porn materials," he said. "It's kind of like the argument between marijuana and alcohol. One is illegal. The other is not. One is more socially acceptable. The other is not."

Source: Gambling fever spreads to cell phones, by Ben Charny,, special to CNET News.com, March 22, 2001, 10:50 a.m. PT, <http://news.cnet.com/news/0-1004-200-5221295.html>.

In contrast, California is working on legislation that would make those of its residents who gamble online, as well as the companies that offer them the option, subject to criminal penalties. One way that the state may be able to enforce such laws is through credit card companies, which have been successfully sued on at least two occasions by gamblers who have tried to repudiate their losses by blaming the card issuers. The argument that the companies illegally loaned them money for gambling seems to have worked.



The US federal government is also considering ways to ban online betting, from introducing explicit legislation banning it, to prohibiting banks from dealing with online gambling companies. Not everyone thinks that gambling is bad, however. In fact, most states have their own lotteries, and one of the concerns about online gambling is that it competes with those lotteries. The American Gaming Association lobbies on behalf of the industry, something that does not happen with pornography. Economic pressures, combined with a lower social stigma, are likely to keep Internet gambling alive (see Illustration Box).

**Financial Services** The Securities and Exchange Commission (SEC) has to deal with a new set of issues in regulating financial services on the Internet. In Chapter 3, we described the mundane, but important issue of deciding in what form and under what conditions communications required by regulations, such as stock trade confirmations, could take place over the Internet. In May 2001, the SEC has mulled over whether it needs to regulate financial portals such as Yahoo! Finance and Motley Fool, because they not only provide information, but also provide hyperlinks to broker-dealers. This becomes a concern when portals are paid by brokerages every time a customer directed from the portal opens an account and executes trades. In the SEC's terminology, this is "transaction-based compensation," and crosses the line into broker-dealer territory. Predictably, the response from financial portals was extremely negative, as regulation would be costly and cumbersome for them. The SEC backed down from what was probably a trial balloon, but it has made its concern clear to the industry.

The emergence of financial portals represents a significant institutional innovation as a result of the Internet. Other SEC regulatory concerns are more traditional ones, made harder by the ease with which information spreads in cyberspace. Rules on the disclosure of information and rules on stock manipulation using false or misleading reports have both been tested. In one famous case, the shares of data-storage equipment maker Emulex plunged after a former employee planted a bogus press release online (claiming, ironically, that the company was under SEC investigation). One consolation for regulators is that tracking down the perpetrators of such frauds has been aided by the ability of the Internet to yield up information to investigators. In another case, a teenager was caught after he made large profits by bombarding stock bulletin boards with fake messages hyping certain stocks that were thus inflated and then sold by the teen. Such cases are nothing new: the Internet just makes them easier to perpetrate, and increases the cost of monitoring.

**Telecoms** The regulatory issues with respect to telecoms are closer to the drivers of antitrust law than to issues of what are appropriate information flows or actions online. As we discussed in Chapter 2, the physical infrastructure that underlies the Internet is partly shared with the older infrastructure that carried telephone conversations. Wires, cables and switching equipment are all being upgraded as technological change proceeds rapidly. Wireless services have added another ingredient to the mix. The transition that began over two decades ago, from a situation where there was a nationwide regulated

monopolist, to one where there is a stew of different companies and technologies, is not complete.

The US Telecom Act of 1996 began the process of moving regulation into the modern era. Some regulation is still needed because parts of the network are still potential monopolies. Local telephone companies – the so-called Baby Bells – in particular, have maintained their strongholds. Regulations to allow interconnection to parts of the Baby Bell networks by competing carriers have not really enabled the latter to gain significant market shares. While protecting their traditional markets in voice communications, the Baby Bells have been lobbying for the ability to compete more freely in markets for data communications, that is, the underpinnings of the Internet. US legislators in 2001 were mulling options, in terms of what to change from the 1996 act that began deregulation, and what to preserve. The outcome of this process will probably determine who gets a shot at some of the largest potential profits of the Internet age.

## **22.7 Monetary Policy**

One of the main exclusive roles of government in a modern economy is as the sole issuer of money in the form of notes and coins. While banks and other financial institutions may create money on top of this base, the government's ability to control this base allows it to control the money supply of the nation, and lubricate the economy appropriately. Money acts as a convenient medium of exchange, unit of account and store of value, and together these roles give it this lubricating function. Governments have often failed to use their power over the money supply wisely; printing so much money (for financing wars or simply wasteful expenditures) that inflation shoots out of control and destroys the value of money. At other times, they have done better: Alan Greenspan has acquired almost the status of a demigod as the US's chief manager of money in his position as Chairman of the Federal Reserve Board. The "Fed" is the nation's central bank, delegated this job by the government.

Banks create money by making loans against the deposits that they take in. At any one time, a bank does not have enough notes and coins to cover all its deposits. It can get away with this because only a small fraction of deposits are likely to be withdrawn at any one time. The nation's central bank, as the manager of the nation's money supply, controls the amount of money that banks can create through various regulatory methods. One of these regulatory powers allows it to require private banks to hold a minimum fraction of their deposits in the form of reserves with the central bank. The Fed can also affect interest rates and place other limits on banks. Together, these powers allow it to affect the money supply, and thereby make sure that inflation does not get out of hand (and possibly also to keep the economy humming).

Where does digital currency fit into this mix? Digital currency is not that different from bank deposits, in that it is an electronic record of a general financial claim. A different analogy is to a traveler's check, which is not linked to any particular bank account. Even traveler's checks have information that identifies the holder. The special property of cash is that it is anonymous. The kind of digital currency that is the closest

analogue to bank notes achieves this anonymity through cryptographic methods, such as were briefly described in Chapter 2. The institutional difference, however, from traditional bank notes, is that the country's central bank has a monopoly on printing them, whereas digital currencies can potentially be issued by private financial institutions. In concrete terms, digital currency can reside on individuals' hard drives or other digital storage media. One important example of the latter is so-called "smart cards" which store electronic balances that can be spent and run down, acting as an electronic wallet or purse. While all digital currency can be transmitted over the Internet when the storage device is suitably connected to the network, smart cards also allow digital currency to be transported physically in a pocket, or a traditional wallet or purse (see Illustration Box).

### **Illustration Box Visa Cash Cards**

#### **Visa Cash**

Visa Cash is a new way to pay for everyday necessities without having to carry around a pocket full of change. This fast, easy, convenient method of payment can be used for small purchases such as a cup of coffee, newspaper, pay phones, cinema tickets, parking machines or public transportation. Visa Cash is a chip-based card and can be used in the real world or on the Internet.

There are two main types of Visa Cash cards: Disposable and Reloadable.

Disposable cards are loaded with a pre-determined value. These cards typically come in denominations of local currency, such as US \$10. When the value of the card is used, the card is discarded and a new card may be purchased.

Reloadable cards come without a predefined value. Cash value is reloaded onto the card at specialized terminals and Automated Teller Machines (ATMs). When the value is used up, you can load the card again.

In either case, Visa Cash cards are convenient and fast. You'll always have exact change - no more fumbling with coins or crumpled bills.

Source: <http://www.visa.com/pd/cash/main.html>

Why would a bank or other institution issue you with digital currency? If you were willing to pay for the convenience of not carrying around physical currency, that would be an obvious incentive. But even if you pay \$10 in cash for a cash card that allows you to spend \$10, the bank benefits. It gets your cash, and in that sense you are giving the bank an interest free loan. The bank can use that cash to boost its reserves, and to lend more money, relaxing the restrictions placed on it by the central bank. This takes

us to how the issuing of digital currency affects monetary policy.<sup>2</sup> What really matters is how the central bank counts digital currency in its calculations. This also relates to the similarities and differences between a debit card and a smart cash card. Both represent digital access to cash, or to payment ability. However, the former is tied to a bank account, while a cash card is not. The holder of a debit card substitutes bank deposits for holding central bank notes. The bank is restricted in its lending against bank deposits, because of reserve requirements. On the other hand, the holder of a cash card substitutes the electronic record on the card (digital cash) for holding paper money. The bank's receipt is not counted as deposit, and the bank has more freedom on what it can do.

It looks like the bank is getting something for nothing, but it is actually providing the digital currency user with convenience. In fact, this is what the central bank does with its paper money. The paper money in circulation actually represents an interest free loan to the government, what is known as "seigniorage". By allowing digital currency, the government is allowing private institutions to share in this bounty. Why should it? As long as it does not impair the ability of the central bank to control the money supply (and hence keep inflation tamed), allowing private moneys may not be a problem. There have been many periods in history where private banks did issue private paper money, and these were not all disasters by any means.

What about the fact that private digital currency allows a greater expansion of the money supply? As long as the central bank can track digital currency issuance, it can still manage the money supply. It can adjust the issuance of paper money, for example, or it can require some reserves to be held against digital currency – making them more like bank deposits, and removing the difference between debit cards and cash cards for policy purposes. The remaining problems are of a different nature than macroeconomic management of the money supply. If digital currency becomes widespread, legal authorities will face greater challenges in tracking illegal activities such as drug running or tax evasion. These are already looming as major global problems.

## 22.8 Conclusion

The government faces two broad challenges in adapting its role to the new economy. A major issue is the extent to which it can continue to manage economic activity in its traditional spheres as the authority with the sole powers of taxation and currency creation, and the enforcer of the rules of competition. In some cases, the government will have to adapt its policy instruments, perhaps emphasizing different sources of tax revenue, or changing the way it manages the money supply. In other cases, digitization may allow governments to refine their own methods by gathering and using information more effectively. Competition policy has to take account of the increased importance of information, and some impacts of the nature of information as an economic good on market structures. The flood of information provides the second broad challenge

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<sup>2</sup> For more on this topic, see the articles at [http://www.firstmonday.dk/issues/issue2\\_7/berentsen/](http://www.firstmonday.dk/issues/issue2_7/berentsen/), <http://www.cato.org/pubs/books/money/money2.htm>, and <http://www.cato.org/pubs/books/money/money1.htm>

for government, since information can be harmful and deceptive as well as beneficial and accurate. Governments have tried to manage these problems well before the modern era, and the Internet chiefly magnifies old issues, or gives them new twists, rather than creating brand new problems. Gambling, pornography and financial scams have been around for thousands of years: the Internet is just another vehicle for their expression.

### **Summary**

- A general, consistent re-evaluation of patent policy may be better than trying to limit one particular class of patents, such as software-based business-method patents.
- In the case of copyrights, recent legal measures designed to adapt copyright protection for digital content seek to balance protection of copyright holders' rights with those of content users.
- Privacy issues on the Internet are also still being debated: what personal information can be collected, shared or revealed, and under what circumstances, is still being sorted out in the legislative arena.
- Online commerce may have a negative impact on the ability of state governments in the US to collect sales tax revenues. While the immediate impacts are likely to be limited and manageable, in the long run, some type of coordinated solution may be required.
- In the case of antitrust and of telecom regulation, the basic economic principles of competition and the workings of markets are unchanged, with possible differences in emphasis because of the increased importance of innovation, of network effects, and of complementarities in production.
- For a wide range of social regulation issues, such as the control of pornographic and hate materials and of gambling, and for the regulation of financial services online, the conceptual issues are also unchanged. Additional problems arise in managing the greatly increased flows of information, where "bad" information increases along with the "good".
- Economic analysis suggests that digital currencies, while requiring adaptations in the conduct of monetary policy, do not raise serious problems for macroeconomic management.

### **Questions**

1. Is the government's job of managing the economy harder because of the Internet, or is it easier?
2. Does the Internet promote competition or hinder it? What does this mean for government competition policy (antitrust and economic regulation)?
3. It is sometimes said that technology is neutral, it is what people do with it that matters. How does the Internet illustrate this saying?