The Law and Economics of Digital Taxation: Challenges to Traditional Tax Laws and Principles

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1. INTRODUCTION

This article discusses the tax implications of information economics, the economic discipline that studies how information goods behave in a market economy. The analysis suggests that the increase in Internet-related economic activity, along with the development and sale of digital goods and services, requires a re-evaluation of many traditional tax laws and principles. Holding on to these traditional principles, it is argued, will in the long run lead to adverse outcomes for governments, including revenue losses resulting from the inability to effectively charge and collect taxes on digital economic activity and market distortions resulting from the non-neutral tax treatment of digital economic activity vis-à-vis traditional economic activity. These observations are consistent with the insights in much of the literature on the taxation of e-commerce.

The article first sets out the general principles of information economics which drive the analysis in subsequent parts of the article. Information goods are any goods and services that can be converted into digital form. Information goods often involve high fixed costs of production along with (almost) zero marginal costs of reproduction and distribution. The article next discusses how these characteristics of information goods present challenges to governments which continue to rely on traditional tax laws and principles that emphasize control over (a) geographic space, (b) character of income, and (c) tangible goods and rights relating to them. Finally, the article considers the tax policy implications of the previous analysis and concludes that, in the long term, certain tax principles will need to be significantly altered to address these challenges. The tax policy goal that calls for the neutral tax treatment of comprehensive forms of economic activity also suggests that the tax rules governing traditional economic activity may similarly need to be reformed as the digital economy becomes an increasingly larger part of overall economic activity.


2. THE NATURE OF A DIGITAL ECONOMY

2.1. What are information goods?

Information economics is the study of the behaviour of information goods in a market economy. Information goods are any goods or services that can be provided in a digital format, including all digital e-commerce goods or services (e.g. network security software, a digital music file or the online version of the Wall Street Journal). Traditional goods and services can become information goods through the process of digitization which converts text, sound, visual images, etc. into a numerical format (ones and zeros) that is then stored as a collection of bits and bytes.

While not apparently addressed in the literature on information economics, information goods could also include digital goods that produce income. For example, the computer code within a server that displays a web page, automatically takes orders, processes payment and distributes a digital product to consumers could be considered such an income-producing information good. This can only occur to the extent that the income produced by information goods falls within the definition of income set out by tax laws. As discussed below, recent tax reform efforts accept that information goods (e.g. commercial web sites stored on a computer server) can produce income for international tax law purposes despite the absence of a human intermediary. For the sake of clarity, this article at times distinguishes between information goods and income-producing information goods.

2.2. How information goods behave

2.2.1. Easily manipulated

Information goods are highly malleable in that they can be modified, edited, transformed, altered or copied without great difficulty. The ability to manipulate many information goods is related to recent developments in information technologies which enable this manipulation. Bits and bytes can be rearranged with the push of a computer button.

For example, a traditional printed textbook such as a law casebook, once published, cannot be altered without incurring significant expenses. Textbook authors typically must resort to an entirely new edition and publication process to make any required changes (alternatively, an author can publish a printed supplement). The situation is very different with a digital casebook that is downloaded from a publisher’s web site directly into a law student’s computer or hand-held device. The digital casebook could be updated with greater ease by inserting the appropriate text without the necessity of going through the entire publication process again. Additional functionality could be built into a digital casebook, such as links to cases or materials cited, automated updating via a web site, or sales of only a portion of the materials at a reduced price to a focused seminar course.

As subsequently discussed, the distinction between the sale of a good or the provision of a service can be blurred due to the ease with which information goods can be charged to suit a particular commercial purpose. Further, information goods can be modified to perform services previously provided through the supply of tangible goods, which complicates matters when, for example, a sales tax system does not apply to services.

2.2.2. Behaviour within a networked environment

Information goods generally operate under the following two principles in a networked environment such as the Internet. First, the cost of producing an information good can be quite high and involve the deployment of significant resources, including capital and labour. Second, once created, the reproduction of an information good and any subsequent distribution over a network involve marginal costs that approach zero. This occurs because computers and networks can copy bits and bytes and then transmit the resulting digital goods and services via a networked distribution system in an almost costless manner.

An example is the production and sale of a song created by a professional musician. The initial production of the song may entail significant fixed costs, including the labour spent writing/composing and revising the song and accompanying music, the use of recording studio equipment and professional back-up musicians, and the various edits and revisions until the final product has been created. After the initial production, the song can be converted into a compressed digital file, such as an MP3 file. The marginal cost of replicating and distributing the MP3 file is almost zero. The firm will not incur additional costs to reproduce and distribute the song to consumers anywhere in the world, provided they have access to the Internet. The Internet facilitates remote sales by, at times, removing the necessity for traditional commercial intermediaries (e.g. foreign branches) which were customarily relied upon for cross-border transactions.

A similar process occurs for income-producing information goods – for example, the development of business-to-business procurement software that enhances the ability of a business to link up with its suppliers so that the supply of raw materials arrives closer to the time desired by the manufacturer (hence lowering the inventory carrying costs). The initial production of the procurement software may entail significant human and capital resources, but once the software has been coded, the resulting computer code can be transmitted via the Internet to a server located in another country to perform its automated functions. The software continues to add value to the supply chain without the need for additional capital or labour inputs.

3. Information goods include all digital goods that can potentially be digitized and goods such as CD-ROMs that are sold by traditional retailers. This article focuses on information goods that are bought, sold or exchanged via the Internet.
4. A sound example is a sound quantized into a very small file (about one twentieth the size of the original file) while preserving the original quality when it is played. See whatam.com.
3. CHALLENGES TO TRADITIONAL TAX RULES

This part discusses the challenges to traditional tax laws and principles which emphasize control over geographic space, characterization of different types of income, and the taxation of tangible goods and related rights, while ignoring intangible goods and services.

3.1. Rules that emphasize control over geographic space

Tax rules and principles were often historically designed to govern economic activity that dealt with the production and sale of tangible manufactured goods. For cross-border transactions, rules were developed to assign tax jurisdiction to a specific geographic space (i.e., within a country or subnational government). In order to determine which sovereign should enjoy the primary right to tax cross-border activities, tax rules ask questions such as: "Where does the transaction take place?", "Where is the company based?", "Where does the income arise?", or "Where are the customers located?" In the context of income taxation, relief from double taxation is then given in order to ensure that one set of economic activity is taxed only once.

Over time, tax rules have been modified to take into account the rise of the service sector and the increase in cross-border transactions dealing with "traditional" intangible goods such as patents, trademarks and copyrights. Commentators have noted the difficulties associated with determining the geographic connection between producers of these traditional intangible goods and consumers of the rights associated with the goods.2 The difficulties in determining the appropriate tax jurisdiction for income tax or consumption tax purposes become more severe with respect to information goods and income-producing information goods as a result of the global reach of the Internet and the fact that reproduction and distribution costs approach zero. An emphasis on controlling geographic space through tax rules makes less sense with respect to economic activity that takes place in the more ethereal world of cyberspace.

3.1.1. Income taxes

Jurisdictional issues are important in federal and international tax systems because income is assigned to a specific jurisdiction through a specified method. For example, for many countries, income is generally employed in the context of US state and Canadian provincial corporate income taxes. Net income is determined for the operations taking place within a country, and this income is then divided among different states (or provinces) according to a formula through weighted factors, such as assets used, salaries paid or sales generated within the borders of a state (or province).

With respect to international income taxation, countries often enter into bilateral tax treaties to govern the tax treatment of cross-border transactions. There are over 1,500 such treaties in existence today. A treaty is used, in part, to identify the threshold of economic activity necessary to permit a country to tax the cross-border profits associated with a non-resident's economic activity within the country's borders. Under traditional principles, this threshold is evidenced by the existence of a permanent establishment, a term defined in each tax treaty (see e.g., Art. 5 of the OECD Model Tax Convention).

The treaty partners typically agree that they will not tax cross-border profits unless the profits can be attributed to a permanent establishment within their borders. A traditional permanent establishment is something that is fixed in a geographic and temporal sense, such as a factory or store. In other words, a permanent establishment is generally a fixed place of business through which business is conducted.

The traditional concept of permanent establishment is tied, in part, to the notion that multinational companies would not bother to incur significant marginal costs in a foreign market (such as through the use of a retail sales outlet) unless the companies anticipated significant sales in the foreign market. The traditional permanent establishment hence acts as evidence that more than de minimis economic activity is taking place in the source country and this country should be entitled to tax the profits attributable to the permanent establishment. The traditional concept of permanent establishment may be less relevant when the marginal costs of many sales functions approach zero, as occurs in the context of the sale of many information goods.

Nevertheless, recent international reform efforts have added computer servers (i.e., computers that are networked to the Internet) to the permanent establishment category in circumstances where the server performs integral functions associated with an international e-commerce transaction.3 Profit attribution can take place even if no human intermediary is involved in the cross-border transaction. For example, a server that is owned or leased by a non-resident company and displays a country's website for which, in turn, advertises goods, takes orders and transmits information goods to the end consumer will now constitute a permanent establishment under the OECD Model.

In other words, the income produced by a computer code stored within a server can be attributed to the server and taxed by the jurisdiction where the server is located. The main deficiency of this approach is that a computer server need not have any geographic connection with its income-producing activities, and taxpayers will take advantage of this fact to shift income to low or nil-tax jurisdictions.4 As a result, the server/permanent establishment will not generally allocate tax juris-

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tions were adopted by the OECD in February 2001 and were included in the draft update of the OECD Model and Commentary of 2 October 2001. Courts in the OECD Member countries look to the Commentary for the appropriate interpretation of provisions of tax treaties.
3. For discussion, see "Transforming the Internet", supra note 1, at 1177-1200. See also Cornerfield, Art 1., "Should We Really Tax Profits from Computer Servers?", 21. Tax Notes International 2407 (2009).
establishment concept focuses attention on the software functions performed within the server in order to determine whether the requisite threshold of activities has been surpassed so that the server can be said to perform integral aspects of the cross-border transaction. The income-producing functions are hence allocated according to software functions, which can be shifted to anywhere in the world. This shifting entails certain transaction costs (e.g. lease payments for a server and maintenance and modification of the computer code within the server), but these costs may be low. In any event, multinational companies have an incentive to shift the location of their income-producing activities if they can potentially generate significant tax savings.

Example 2: Producer of traditional tangible goods

This example involves Company A, a Japanese automobile manufacturer based in Tokyo, that contracts out the manufacture of auto components to a firm based in Mexico and a firm based in Malaysia. The components are ultimately transported to Company A’s manufacturing facilities in Japan for final assembly and sale to automobile dealers throughout the world. Company A is represented via an extranet (i.e. a network within the Internet that has been extended to select business partners and customers and secured against general public access) to its suppliers and customers in order to enhance efficiencies surrounding the timing of the delivery of the auto components (e.g. Company A wants its suppliers to supply the engine according to “just in time” for the final assembly of the automobile’s engine). The payment for each component is made through the use of electronic agents; in other words, the payment for each component occurs automatically via the extranet through the workings of the software code.

Finally, the same extranet extends to the dealers that order cars from Company A, and the orders are similarly handled in an automated fashion by electronic agents. Company A may be able to lower its overall tax burden by setting up a global sales and distribution centre in a low or nil-tax jurisdiction and then shifting the income attributable to its global sales to this centre. Company A can set up a foreign corporation to own its computer servers to defer tax liability and can additionally hire employees to maintain or service the server in the foreign country. Under traditional tax principles, the profit attributable to the corporation or the permanent establishment


9. Recent legal reform efforts in many countries generally accept that “software agents” (i.e. software programs) can create legally binding contracts. See e.g. Uniform Computer Law Conference of Canada, Uniform Electronic Commerce Act (1999).

10. The cross-border transactions would have to be structured to circumvent Japan’s anti-contract rules for “specified foreign subsidiaries.” For discussion, see Matsui, Toshiba, National Report on Japan on Subject 3: Taxation of income derived from electronic commerce, Cahiers de droit fiscal international.
ment should be identical (because the permanent establishment is treated as a fictional separate legal entity under transfer pricing rules). But Company A may still try to use the existence of the corporation and its employees to bolster its argument that the profit should be attributed to the country where the server is based.

The order of a new car from Company A by a dealer, along with the request for certain customized components (e.g., power locks), the negotiation of the price for the supply, and the completion of the order can now all be accomplished through the use of electronic agents based on the automated functioning of the computer code. Company A can maneuver the software code within the server so that the payment for the auto components from its suppliers will continue to be a deductible expense in Japan. Further, Company A can ensure that foreign-based servers perform integral aspects of the cross-border sales and distribution function to Company A’s dealers so that at least a portion of the income can be attributable to the low or nil-tax jurisdiction.

The computer code within Company A’s foreign-based servers can accomplish other overhead functions related to the global sale of Company A’s products, including accounting, finance, and intellectual property rights management. For example, the foreign-based servers can process Company A’s payroll or maintain ownership rights to the intellectual property produced by Company A in order to potentially isolate the income produced by the property in the foreign corporation. Shifting the ostensible location for the production of value-adding overhead functions for tax purposes raises serious equity and efficiency concerns which, as discussed below, might be addressed through the development of economic presence tests that do not focus on the need for a physical presence in foreign markets.

Research and development (R&D)

The fact that the marginal costs of producing and transmitting information goods approach zero complicates other aspects of tax policy as intangible assets and R&D activities gain relatively greater importance in high-technology-oriented economies. Countries generally grant a current deduction (or tax credit) for R&D activities in order to promote or attract such activities, which are thought to produce indirect economic benefits (e.g., innovation is passed on to other areas of the economy). For example, a recent comparative study suggests that countries offer more favourable tax treatment to intangible capital in comparison to physical capital and that marginal effective tax rates are lowest for investments in short-lived R&D projects.12

Tax rules that give a break to R&D activities may make sense with respect to traditional forms of economic activity which produce tangible goods. There are many points along the production chain that add value for this activity: the profits produced by the supply of raw materials, the manufacture of products and the final distribution and sale can all be taxed by the appropriate tax jurisdiction.

On the other hand, the bulk of the value added for producing information goods or income-producing information goods often takes place at the R&D stage. Accordingly, governments may need to reform their income tax systems to capture this value added by amortizing the development costs over the expected useful life of the information good. But governments are unlikely to implement such reforms if they feel that the reforms will drive research activities to tax jurisdictions offering a more favourable treatment. Or governments may feel that this approach is administratively infeasible because of the difficulties associated with, for example, determining the appropriate useful lives of unique information goods.

The current tax regime tends to offer an incentive to shift income offshore once an information goods has been developed in a relatively high-tax area, such as the United States or Canada. The development costs are deducted in the high-tax country, lowering taxable profits there (assuming other sources of income exist), after which the income-producing computer code is shifted to a relatively low-tax jurisdiction. Existing tax rules often thrive to inhibit these types of shifting, but creative tax planning strategies such as cost-sharing and offshore licensing arrangements may be used to circumvent rules that impose a "roll" on the transfer of intangible assets to a foreign country.13

Current deductions for capital inputs create longer lasting taxable profits in the year of the deduction.14 In subsequent years, taxable profits should increase as the deductions are no longer available. The loss to the fisc is the tax saved by the firm through the immediate expensing of inputs that would otherwise be allocated over the sales of the goods or services produced by the firm. The fact that information goods can be reproduced and distributed to foreign markets at no cost, however, suggests that marginal international sales will not subsequently increase profits in the home countries (as long as the home country does have not a right to tax the profits as a result of deferral strategies, etc.).

Summary: Taxation of marginal profits

The analysis suggests that the marginal effective tax rates on international sales of information goods are at risk of being too low or even zero as a result of several factors.
business activity as resources are allocated away from more profitable investments (before tax) to less profitable investments (after tax). It is thought that these distortions inhibit both national and international welfare because the misallocated resources are devoted to less productive uses, hence lowering overall economic growth. Further study is required to gauge the actual welfare losses, if any, incurred by maintaining the current income tax treatment of information goods.

3.1.2. Consumption taxes

Consumption tax laws and principles often emphasize control over geographic space. For example, destination-based value-added taxes (VATs) subject goods and services to tax upon their import into a geographic area (while exports are zero-rated). In the absence of border controls, consumers could theoretically self-assess the amount of VAT owed upon import and remit this amount to the relevant tax authorities. For business-to-business transactions, self-assessment is a viable option because many businesses have the resources and incentives to avoid challenges by the tax authorities (or, in the case of VATs, businesses need to report VAT payments in order to secure VAT refunds).

Consumer self-assessment, on the other hand, is not feasible because consumers rarely comply with the obligation to self-assess and remit VATs (or sales taxes). Due to the practical difficulties associated with consumer self-assessment, the preferred alternative would involve forcing Internet retailers to charge, collect, and remit the consumption tax on cross-border sales. Current consumption tax laws frustrate this alternative.

This may be illustrated by US state and local sales and use taxes. In a series of decisions, the US Supreme Court has articulated and refined a "substantial nexus" test which effectively prevents state and local governments from imposing their sales taxes on economic activity unless the activity emanates from a physical presence within the tax...
ing state’s borders. These decisions concern mainly mail order companies whose only physical presence within their consumers’ states involved the use of the telephone system to complete customer orders and the postal system to mail catalogues and products to the end consumers. Accordingly, under the “bright line” physical presence test espoused by the Supreme Court, mail order companies that do not maintain sales offices or sales forces within the target states generally cannot be forced to collect sales taxes by state or local governments.

The requirement of a physical presence, along with federal legislative efforts prohibiting state and local governments from enacting new or discriminatory sales tax measures for e-commerce, effectively prevents state and local governments from subjecting sales of information goods to their sales taxes unless the sales emanate from a physical location within the borders of the taxing state. As a result of problems associated with taxing remote consumer sales, the US General Accounting Office forecasts revenue losses for state and local governments of between USD 1 and 1.2 billion a year by 2003.

Also relevant in this context are the implications of the traditional rules of the goods and services tax (GST or Canadian VAT) which emphasize the need for a physical presence in Canada. Foreign businesses are generally required to register for GST purposes and assess, collect and remit the GST only if (1) they maintain a “permanent establishment” in Canada or (2) they carry on business in Canada. The permanent establishment requirement is analogous to the permanent establishment clause found in tax treaties. The test of carrying on business in Canada focuses on two predominant factors: (a) the place where the contract is made and (b) the place where the operations from which profits arise take place. A foreign supplier can ensure that the contract is made outside Canada through the use of “clickwrap agreements” (i.e., an online contract where the web site visitor “clicks” on “I agree” to be bound by all of the contract’s provisions) that specify the choice of forum. These agreements have been upheld by the courts in Canada.

Further, foreign suppliers without a physical presence in Canada are generally not subject to income tax in Canada as a result of the previously discussed permanent establishment requirement in Canada’s tax treaties. The bottom line is that foreign companies do not generally have to register for GST purposes and act as a collection agent for the Canadian government. The current GST rules mandate consumer self-assessment of GST payments on cross-border goods and services, but these rules are almost invariably ignored by consumers. Tangible cross-border goods, on the other hand, are often subject to GST by customs agents when the goods cross the Canadian border, circumventing the problems associated with consumer self-assessment.

The following example sets out the implications of the traditional GST rules that emphasize the use of physical tests for cross-border transactions. CANCO is a Canadian company that sells CAD 100 million in information goods (e.g., software products) to Canadian consumers. As a Canadian company, CANCO must register for GST purposes and charge GST at a rate of 7% on the sales of its information goods via the Internet. Canadian consumers are charged an additional 7% for the products, and the Canadian tax authorities collect CAD 7 million.

On the other hand, a US-based software company – USCO – that sells USD 100 million in information goods to Canadian consumers via a commercial web site is generally not subject to GST collection obligations. Accordingly, CANCO is at a competitive disadvantage in comparison to USCO because CANCO incurs compliance costs to collect GST and must charge an additional 7% on the sale of its products. In addition, the Canadian government loses out on the potential tax revenues from USCO’s sales in Canada.

In the long run, consumption tax rules that prohibit the extension of tax jurisdiction to remote sellers of information goods may not be tenable as a result of pressure from a number of factors, including:
- the need for a level playing field – local businesses that are subject to collection obligations and must charge consumption taxes suffer a competitive disadvantage when they compete with businesses located outside the state of consumption;
- the need for neutral tax treatment of information goods vis-à-vis traditional goods – welfare-reducing market distortions are created as firms shift the ostensible physical location where information goods are sold to low or nil-tax consumption jurisdictions; and
- revenue losses to the jurisdiction of consumption.

3.2. Rules that emphasize control over the character of income

3.2.1. International income characterization rules

In addition to the geographic rules that source income to taxing jurisdictions, there is a series of rules that allocate taxing jurisdiction and taxing method depending on the character of the income produced by a cross-border transaction. In fact, determining the character of income is the first step in analyzing the appropriate tax treatment of a
cross-border transaction. For international income tax purposes, characterization rules are important in the context of tax treaties as well as domestic laws for situations not covered by a tax treaty. The analysis here focuses on characterization issues in a tax treaty context.

Tax treaties provide for different tax treatment for different types of income. For example, normal business profits are sourced (in the absence of a permanent establishment in a foreign market) to the country in which the income-producing business is based. A US-based online company that generates business profits abroad is taxed exclusively under US tax laws, and tax is levied on the net income generated by the economic activity. Royalty income, on the other hand, is generally sourced to the country in which the intellectual property (IP) was used (e.g. the country in which the consumer of the intellectual property is resident). Further, some tax treaties stipulate that a gross withholding tax (not a tax on net income) may be imposed on the royalty payment.

While these classification principles often bear little relationship to economic reality, the classification rules have formed part of the traditional international tax norms and have been relatively straightforward to administer from a government perspective. Traditional economic activity was slotted into the appropriate classification, and profits or gross receipts (and corresponding tax revenues) were allocated to the appropriate tax sovereign.

The digital world raises a number of problems. As discussed, computers and networks enable a high degree of manipulation of information goods, including the ability to access, store, copy, alter or sort information goods. Information goods transactions often make it difficult to determine whether the transfer of a product has occurred, whether services have been performed, or whether an intangible product has been licensed. The problem is that information goods often blur the lines among different categories of income.

As a result of these difficulties, the OECD recently proposed a series of new rules to govern the tax treaty characterization of income derived from the sale of e-commerce goods and services. The OECD approach creates 28 categories involving potential e-commerce transactions to assist tax authorities and taxpayers in determining the appropriate income characterization for international e-commerce transactions.

These new rules can be analyzed by considering a hypothetical online digital movie retailer, Movies4U.com, based in Palo Alto, California, and its dealings with a customer who resides in England. If the English customer accesses the web site of the online retailer and pays USD 5 for an MPEG file (a compressed digital video file), which she downloads into her personal video recorder (e.g. a PVR like TiVo), the transaction is classified as generating business profits which are sourced to the United States under the OECD's new approach.

The situation can become more complicated due to the highly malleable nature of information goods. The Palo Alto company could structure the transaction so that the English customer is given only limited rights to copy and play the digital movie (e.g. the MPEG file could be encrypted to ensure that only one personal copy can be made, or a sample file is sent that can be played only twice in order to encourage a purchase of a DVD). In other words, the customer has arguably been granted a licence to use copyrighted material, perhaps resulting in characterizing the transaction as giving rise to royalty income.

The OECD's approach, however, emphasizes a "substance over form" test that looks at the overall economic substance of the transaction, i.e. what is the customer really receiving as consideration for her payment? Assuming that the English customer has essentially the same rights under the licensing arrangement (e.g. she cannot transfer copies for commercial purposes) as she does if she downloads the digital product without any restrictions, the new rules would source the business profits to the United States, a sensible enough approach because functionally equivalent transactions should call for the same tax treatment.

The nature of information goods, however, presents even more opportunities for potentially complex business models. If, for example, the English customer pays a subscription fee to rent a "storage locker" (i.e. space on the hard drive of a data server) from Movies4U.com to store her videos and stream the videos to her home computer, the OECD's approach looks to different factors to see whether rental income has been generated or whether service income has been created. As long as a customer maintains physical possession or control over the computer equipment, a service contract (instead of a rental contract) likely results for characterization purposes.

Another variation is that Movies4U.com's web site permits the English customer to compile and edit her own video selection via the company's web site and download selected videos. Or perhaps the English customer is permitted to download her edited videos into her PVR and trade the resulting product with other Internet users through peer-to-peer networking (under the Napster file-sharing model). Should this transaction be characterized as the payment for a product or for services rendered? The OECD Treaty Characterization Report envisions the provision of services by a web site only where the customer does not receive a final product. The approach would appear to characterize the payment as business income if the interaction with the web site was incidental to the acquisition of the music.

Finally, if the English customer pays a monthly subscription fee (and sometimes an additional one-time fee for premium new videos) to Movies4U.com and engages in all of the previously listed activities each month, how should the resulting income be characterized? Subscription fees for downloading products are generally treated as business profits instead of royalties, but the envisioned web site arguably provides a service resulting in business profits generated by services, which calls for a different set of rules.

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In theory, the tax authorities or the taxpayer might have to disenchant all aspects of his individual transactions and classify each element, a task that may ultimately prove administratively infeasible for even the most resourceful tax authorities. Alternatively, the tax authorities could try to characterize the transaction as resulting in one type of income if the other parts of the transaction are "of an ancillary and largely unimportant character." In reality, the tax authorities are likely to squabble over the appropriate characterization, potentially leading to international double taxation and the lowering of national and global welfare.

As cross-border commercial digital flows become more commonplace, one can likely expect to see transactions of increasing complexity and diversity. Tax rules that seek to slot cross-border information good transactions into specified boxes may prove increasingly cumbersome to enforce.

3.2.2. Income characterization and anti-avoidance rules

Many governments have anti-deferral rules (often referred to as "controlled foreign corporation" or CFC rules) in their tax laws which are designed to prevent companies based in their jurisdiction from inappropriately diverting income streams to foreign jurisdictions. In 2000, the US Treasury Department issued a report that discusses the potential reform efforts directed at these anti-deferral rules. The report focuses in part on the challenges presented by commercial activities taking place over the Internet.

In US tax law, the Subpart F (CFC) anti-avoidance rules mandate different tax treatment depending on the characterization of income, such as personal holding company income, personal property sales income, services income, and shipping income. The Treasury report notes that it is sometimes unclear what the appropriate characterization should be for digital products and services. The Subpart F rules, however, impose a predominant character rule when different value-adding activities (e.g., sales of goods or services) create income and the different activities cannot be separated from each other. In "unusual circumstances" where the portion of income cannot be separately determined, the transaction is to be classified pursuant to the "predominant character of the arrangement." Further, income is to be characterized "in accordance with substance of the transaction, and not in accordance with designation applied by the parties to the transaction." These provisions can be used to attack artificial arrangements set up by taxpayers to dodge the anti-avoidance rules.

Anti-avoidance rules typically try to restrict the division of profits to low or nil-tax jurisdictions if the profits are produced artificially from activities that have little or no relationship to the value-adding activities that generated the profits. The acceptance by the United States (and other OECD Member countries) that servers constitute permanent establishments in some circumstances suggests that a computer code, in and of itself, can generate taxable profits that are analogous to profits generated by active business operations. Thus, it may be difficult for tax authorities to argue that these types of profits warrant taxation on an accrual basis.

These problems may be illustrated by a US-based company that sells digital music to consumers throughout the world. The company could maintain its database of music CDs in a tax haven and convert the music to digital format (i.e., MP3 format) when a consumer places a new order. The company may be able to argue that the digital music is being "manufactured" in the server because the computer significantly transforms the music into a different form. The Subpart F rules do not apply to CFCs that manufacture goods. These types of arguments may be more difficult to refute to the extent that tax authorities view income produced by computer code as generating active business income.

3.3. Rules that emphasize control over tangible goods

3.3.1. Narrow tax base

Tax rules have historically emphasized the taxation of transactions that involve tangible goods or the taxation of income derived from the economic activity associated with tangible goods (e.g., royalties from the sale of traditional books). This historical emphasis is exemplified by subfederal sales tax systems in the United States and Canada. With minor exceptions, the Canadian provinces and the US states apply their sales taxes to goods, but not services. Further, intangible goods are often exempted from sales taxation. Additional problems arise when taxable and non-taxable services or intangible goods are bundled together and sold for one price. In contrast, VATs generally apply to the consumption of most tangible and intangible goods and services.

A narrow definition of "tax base" creates problems for the desired neutral tax treatment of traditional economic activity vis-à-vis activity involving information goods. Sales taxes levied only on tangible goods offer an incentive to firms to structure their activities to provide services and/or intangible goods. In addition, the "level playing field" problem persists as vendors of tangible goods must charge, collect and remit sales taxes, while vendors of services and/or intangible goods are let off the sales tax hook. As discussed, it is unfair, for tax reasons alone, to place traditional vendors at a competitive disadvantage in comparison to other similarly situated businesses.

28. The Subpart F rules target "foreign company base income," which is income derived from foreign business operations that do not have any real connection to the economic activity that produced the income. Manufacturing income derived by a CFC generally does not constitute foreign company base income.
29. For example, taxable telecommunications services are sometimes bundled with non-taxable Internet access services.
3.3.2. Information goods and non-rival consumption

Information goods are considered to be non-rival in consumption, unlike most tangible goods. In the case of the sale of a traditional rivalrous good, such as a printed book, if a consumer purchases a particular copy of a book, no one else is able to buy that particular book. In contrast, the sale of a digital book does not constrain the potential consumption of the book due to the ability to costlessly reproduce a digital book. A digital book is hence non-rival in consumption.

What are the tax implications of the fact that information goods are non-rival goods? From a tax theory perspective, consumption is normally equated with using up economic resources. But non-rival resources do not actually get used up in any real sense if they can be replaced without cost. Still, this does not appear to pose any problems outside of theory because consumption tax systems generally tax only the purchase of goods and services in the market rather than actual consumption.

The way that firms price non-rival information goods may present new tax policy challenges. Information economists assert that the non-rival nature of information goods changes, at least to a certain extent, the way that firms should price their goods and services. The potentially near costless and infinite reproduction and supply of an information good abolish the supply-side resource constraints that help to determine an appropriate equilibrium price. As a result, it is thought that firms should more appropriately base the price on the utility of the information good to a specific consumer.

To some extent, firms appear to engage in selective pricing with their information goods. A digital product can be priced higher for commercial actors and lower for individual consumers. For example, a CD catalogue of telephone numbers, which took millions of dollars to create, can be sold to telemarketing firms at a high price because they value the catalogue for commercial exploitation, such as using the product for direct marketing purposes. The same CD catalogue can be sold at a reduced price to individual consumers who value the catalogue for its consumer applications, e.g. looking up a friend’s telephone number. In fact, a court has noted that this type of price discrimination leads to an efficient outcome because it makes goods and services more readily available to consumers.

What happens when the price of an information good drops to zero? Under economic theory, firms should set the price of most goods at the marginal cost of production. Assuming a firm cannot differentiate its product (e.g. bundle the information good with a value-adding service), then, it has been noted, price competition should eventually lead to a price of zero for many information goods. Firms can generate a return on information goods through indirect means, such as advertising. In these circumstances, the jurisdiction of consumption loses out on consumption tax revenues (which are applied as a percentage of the sales price), although the residence jurisdiction of the online vendor may increase revenues by imposing its own income tax on the profits generated by, for example, advertising revenues. In order to replace the lost consumption tax revenues, the jurisdiction of consumption could levy a special excise tax on computer equipment that enables the import of information goods to the jurisdiction of consumption. Countries such as the United States and Canada are following a similar path by imposing tariffs on, among other things, computer devices that permit unauthorized copying or trading in copyrighted works. These tariffs generate royalty payments to compensate authors for unauthorized infringement, but operate in many ways like VATs or sales taxes.

In other words, countries may wish to impose, for example, a special excise tax on computer networking equipment to make up for the difficulties associated with taxing transactions involving information goods. The taxation of computer devices or other aspects of the information good infrastructure, however, could lead to market distortions as non-digital infrastructure remains untaxed (e.g. the delivery of a book from a warehouse to a home) and may promote greater incoherence in tax policy.

4. POLICY IMPLICATIONS

The main goals of a tax system are to collect revenues to finance public expenditures and to promote desired social policy objectives (e.g., high taxes on cigarette consumption to discourage smoking). Tax scholars use criteria such as efficiency and equity to evaluate the appropriateness of a particular tax policy choice. Efficiency concerns include the desired neutral tax treatment of comprehensive forms of economic activity to avoid welfare-reducing market distortions, ease of tax administration to promote tax collection, and low compliance costs for businesses to ensure that economic activity is not unduly discouraged. Equity concerns generally involve considerations such as fairness among similarly situated individuals (horizontal equity) and fairness among individuals in different economic circumstances (vertical equity).

31. For discussion on rival versus non-rival goods, see Maguire, Richard. “Fiscal Functions of the Public Sector,” in Defining the Role of Government: Economic Perspectives on the State, Quaile’s University School of Policy Studies, 1994, at 1, 3 noting that private goods are normally rival in consumption whereas public goods are non-rival in consumption.


34. These facts are taken from a case that upheld "shrink-wrap" agreements under the general principles of contract law. See ProCD v. Zeidenberg, 80 F.3d 1461 (7th Cir. 1996).

35. Id., noting that consumer surplus is increased under differential pricing.


37. In the United States, legislation was passed under which manufacturers and importers of “digital audio recording devices” must generally pay a royalty of 25% on the sale of any of these devices. The revenue collected through the royalty is then sent to the Copyright Office and then to the Treasury Department, after which they are allocated to the copyright owners. 17 U.S.C.A. § 1101(a) (West Supp. 2005). The sale of a “digital audio recording medium” means a royalty of 25%. 35 U.S.C. § 1101(a).

In 1998, Congress amended its copyright laws to permit the copying of music for personal use and created a regime to compensate authors for the copying. Copyright Act, R.S.C. 1985, Chap. C.42, as amended, § 19.48. Manufacturers and importers of “blank audio recording media” pay a levy when they sell such media. Organizations that administer the rights of copyright holders must file proposed tariffs with the Copyright Board. See Copyright Act (Canada), § 83.
Although there are many different perspectives on this issue, a good tax system is one that matches the benefits received with the costs of the system, providing the greatest utility to everyone. To determine the desired amount of public services they wish to see funded, the analysis below tracks efficiency and equity concerns associated with the taxation of information goods. The purpose of this discussion is to offer a framework for considering tax policy concerns rather than to provide concrete solutions.

4.1. Tax base issues

4.1.1. Consumption versus income

As previously discussed, a business income tax system that focuses on the location of production for information goods is deficient from an efficiency perspective partly because income from the production of information goods can be shifted in an almost costless manner. Furthermore, the ability to deduct R&D costs and shift income-producing information goods to low-tax jurisdictions may lead to decreased effective tax rates on income generated by information goods industries, as a potential solution to the erosion of the business income tax base would be to focus income taxation of the less mobile factors of production such as labor, although this raises serious equity concerns and may lead to a more regressive tax system.

From an efficiency perspective, the non-neutral tax treatment of traditional industries vis-à-vis information good industries creates market distortions as the wedge for new investments in information good industries is reduced, hence increasing the after-tax return on these investments. Resources may be allocated to information good industries for tax reasons and not out of economically sound rationales, leading to an inefficient allocation of resources that, for tax reasons, will be directed away from more productive uses.

From an equity perspective, reduced income taxes on information good industries raise a level playing field concern as traditional businesses find themselves at a tax disadvantage in comparison to information good industries. It is unfair to place some businesses at a disadvantage as a result of tax rules in comparison to other similarly situated businesses.

Alternatively, governments could choose to increase consumption taxes on information good industries in order to circumvent problems associated with business income taxation. From an equity perspective, consumption taxes are generally thought to be more regressive in comparison to income taxes as the former often do not take into consideration individual or household circumstances. For example, transactional consumption taxes, such as VATs or sales taxes, are applied as a percentage of consumption and do not take into account the economic well-being of the purchaser. Personal consumption taxes with progressive rates (e.g., a cash-flow or savings-extend individual income tax) do take into account matters such as a family’s economic status, although commentators continue to suspect that these taxes may ultimately make the tax system more regressive.

From an efficiency perspective, enforcement of VATs or sales taxes on business-to-business transactions involving information goods can be achieved without great difficulty as businesses have reporting incentives that help to ensure compliance. Self-assessment of consumption tax liability in the business-to-consumer context is, as discussed, not an efficient solution as consumers rarely comply with the obligation to assess and remit their consumption taxes. Further, there are various administrative problems associated with the enforcement of transactional consumption-tax systems with respect to sales of information goods over the Internet to private consumers. These problems include the inability to identify the geographic location of consumption and the inability to enforce collection obligations on remote Internet retailers. As discussed below, technological solutions that automatically track, assess and remit taxes may help to alleviate some of these concerns.

Policy-makers may obviously prefer to implement a less efficient result due to the potentially regressive or potentially unacceptable aspects of emphasizing one tax system over another. For example, US state governments are unlikely to jettison their sales tax systems in favor of raising state individual income tax rates despite the problems associated with their sales tax systems and information good transactions involving consumers and remote vendors.

The analysis in this article suggests additional implications for the taxation of traditional economic activity. Economic activity associated with information goods currently constitutes a small percentage of the overall economy, but this may change in the long run. Governments may hence have to consider changing tax rules and principles for both digital and traditional economic activity to the extent that these efficiency and equity concerns are aggravated.

4.1.2. Comprehensive definition

A comprehensive definition of income or consumption is often espoused as a tax policy goal in order to reduce market distortions, complexity and inequity. With respect to income taxation, classification rules that sort transactions into categories depending on the nature of the underlying transaction may not be appropriate for the tax treatment of information goods and income-producing information goods. Industries dealing with information goods may be unable to structure their transactions so that their profits fall outside of the source rules relating to the income tax base.

With respect to consumption taxes, a broader definition of the tax base is similarly necessary in order to inhibit distortions and tax avoidance strategies. Sales of tangible and intangible goods as well as services should attract the same tax burden. Hence a VAT, which taxes most goods
and services, is preferable to a sales tax that taxes only goods.

4.2. Inter-jurisdictional issues

In order to address the jurisdictional challenges touched on in the previous two parts, federal and subfederal governments may need to reform their tax systems to use economic threshold tests based on sales in the location of consumption. To achieve this result, a greater degree of base harmonization and simplification is likely required.

4.2.1. Movement toward economic presence tests

As a result of the difficulties associated with emphasizing control over geographic space in the context of the virtual world of cyberspace along with the ease of accomplishing remote sales, economic presence tests may need to be developed to tax sales and other economic activity in a consumption jurisdiction despite the absence of a physical presence.40

For consumption tax purposes, economic presence tests can stipulate the collection obligations for sales over a particular threshold, as under the proposed approach of the European Union.41 For example, State A would be able to require a vendor located in State B to charge, withhold and remit sales taxes unless the vendor exceeds USD 100,000 or more in sales to consumers residing in State A. Threshold tests may be necessary to: (a) eliminate business compliance costs for de minimis sales within a foreign jurisdiction and (b) reduce the administrative costs of tax enforcement relating to de minimis sales.

Similarly, for income tax purposes, the source state should be able to impose its income tax on the profits generated by sales within its jurisdiction if the sales exceed a specified threshold despite the absence of a physical presence.42 For example, tax authorities could create a tax treaty fiction that employed either a qualitative (i.e. facts and circumstances) test or a quantitative test (e.g. gross sales over USD 1 million) to determine whether a permanent establishment exists in the source country. Further, a net income tax could also be imposed through the use of global formulary apportionment (with the destination of sales as the factor).43 Alternatively, a gross withholding tax could be imposed on the payment for above-threshold sales as a proxy for the source-state income tax owed.44

All of these suggested approaches are at least theoretically defensible, but none of these views has attracted international support from tax authorities apart perhaps from sympathetic views from the developing world, such as the World Bank, tax authorities. The main argument against using withholding taxes is that they are often levied on unprofitable activities, hence punishing or distorting cross-border trade and investment. Moreover, the OECD has led a worldwide trend toward reducing withholding taxes to stimulate more international investment and trade. These views have been at least partly supported by many OECD national tax authorities. Others suggest that, in theoretical concerns aside, withholding taxes work well in practice and represent the best way for tax authorities with few resources to protect their tax base from the erosion that results from cross-border transactions.

Formulary taxation is often touted as the most realistic alternative to the transactional arm's-length regime which, it is argued, does not fit well into a world of increased economic trade and investment where multinational firm activity is highly integrated. The current transfer pricing regime, it is argued, fails to address this reality by attempting to fictitiously separate integrated elements of a firm's activities into separate components. Despite its potential merits, formulary taxation is probably politically infeasible as many governments and international organizations have come out against formulary taxation in recent years, including the OECD, the WTO, and the United States Treasury Department. These views spring largely from concerns of fiscal sovereignty because nations would be bound to formulate tax rules determined at the supranational level, although some attack formulary taxation on technical grounds—i.e. the proposed system will be inefficient, increase enforcement and compliance costs, and continue to permit income-shifting strategies.

Information goods and income-producing information goods are potentially incredibly mobile factors of production, suggesting that countries might compete for these resources by offering tax preferences. Economic presence tests would also discourage "harmful" inter-jurisdictional tax competition by reducing the incentive for governments to offer tax preferences to the location of production for information goods industries.45 For income tax purposes, an economic presence test that assigns tax jurisdiction to the location of consumption would reduce the incentive to compete for income based on the location of production.

For consumption tax purposes, an economic presence test removes the incentives to try to shift sales locations outside the jurisdiction of final consumption. For example, US retailers sometimes engage in "entity isolation" strategies by forming a separate corporation for remote retailing in

40. But see U.S. Department of the Treasury, Selected Tax Policy Implications of Global Electronic Commerce (1996), Part 7.1.5 (indicating that, as a result of the difficulties associated with applying source concepts in a cross-border, a greater reliance on residence-based taxation may be appropriate).
43. See Li, supra note 10. See also "Balancing National Incentives", supra note 1, at 172-185, 194-205.
44. For discussion, see Dreyberg, Richard, "Electronic Commerce and International Tax Sharing", 46 Tax Notes International 5013 (1999).
45. Recent international efforts have attempted to distinguish between efficiency-enhancing tax competition (i.e. competition of the sort described under Tiebout public choice theory) and welfare-reducing tax competition (e.g. the beggar-thy-neighbor approach where jurisdictions grant discriminatory tax preferences to foreign businesses). See e.g. OECD, Harmful Tax Competition: An Emerging Global Issue (Paris: OECD, 1998), For commentary, see Lazonick, Alan, "Tax Competition and Investment Incentives", 2 Int'l Tax Journal 63 (1997).
order to argue that the new corporation is operationally independent from its corporate affiliate. US courts have generally respected the doctrine of corporate separateness and have held that it is unconstitutional to require a corporate affiliate that does not maintain a physical presence in a state to collect sales taxes simply because the affiliate’s parent company maintains a physical presence in the taxing state.  

An economic presence test that permits the jurisdiction of consumption to tax sales above a particular threshold would defeat these types of tax planning strategies.

A switch to economic presence tests for income tax purposes may have additional implications for the ongoing debate on whether international tax policy should encourage capital-import or export neutrality. Under the capital-export neutrality approach, countries should tax their residents on a worldwide basis (i.e. the residence-based approach) in order to promote neutral tax treatment of investments abroad by their residents and other investments within those countries. Under this view, a domestic investor should be subject to the same domestic tax burden on his investments no matter where they are located. Under the capital-import neutrality approach, countries should tax only income that arises within their geographic jurisdiction (as occurs under the territorial or source-based approach) in order to promote neutral tax treatment of investments abroad by their residents and other investments within those countries. Under this view, a domestic investor should be subject to domestic taxation on investments at home and foreign taxation on investments abroad, which also permits domestic industries to be more “competitive” with more leniently taxed foreign companies.

In other words, capital-export neutrality promotes a level playing field for domestic and foreign businesses, whereas capital-import neutrality promotes neutral tax treatment of investors with investments in different countries. The consensus appears to be that capital-export neutrality best promotes national and international welfare because investors face the same tax burden regardless of the location of their investment.

A switch to economic presence tests and the increased source-based taxation arguably sets the world on the path toward a greater emphasis on capital-import neutrality. In reality, however, even the staunchest supporters of worldwide taxation permit deferral on earnings of foreign corporations so that it remains unclear whether any country actually pursues the goal of capital-export neutrality with any degree of effectiveness. It is probably more realistic to say that different aspects of the tax system of most countries currently promote both capital-export neutrality and capital-import neutrality so that a switch to economic presence tests may not significantly alter the current system.

4.2.2. Harmonization and simplification of tax bases

Tax systems may need to become more similar in nature in order to reduce the risk of non-taxation or double taxation on cross-border transactions involving information goods. For international income tax purposes, territorial tax systems may need to adopt the worldwide approach in order to discourage income-shifting activities. Further, countries that currently tax business profits under the worldwide approach may need to reform their anti-avoidance rules (e.g. CFC rules) and technology-transfer rules in order to inhibit shifting.

The pressure to harmonize may be strongest in the consumption tax area, partly due to the need to impose collection obligations on companies located outside the taxing state’s jurisdiction. Harmonization likely entails simplification as jurisdictions struggle to find common ground. For example, there are over 7,000 state and local tax jurisdictions in the United States, and it is necessary to adopt a common simplified approach in order to reduce the complexities associated with complying with differentiations of tax bases as well as different tax rates. For these reasons, in the United States, the Streamlined Sales Tax Project advocates a common definition of the sales tax base for all subfederal governments along with reporting requirements providing that taxpayers need only file with the state government to satisfy local reporting obligations.

4.2.3. Reduction in tax sovereignty

The development of economic presence tests as well as the harmonization of tax bases might have serious tax sovereignty consequences. Tax sovereignty will be reduced if governments permit foreign governments to impose their VAT collection obligations on companies located outside the taxing state. Entirely new legal institutions, such as international consumption tax treaties, may be necessary to support economic presence tests for VATs. For income tax purposes, tax authorities would need to be authorized to audit non-resident companies that do not maintain a physical presence in the tax authorities’ jurisdiction.

Harmonization and simplification also reduce the flexibility of governments to pursue their own distinct reform efforts in order to promote revenue-raising or socio-economic measures through their tax systems. Problems that result from inter-jurisdictional concerns may call for greater centralized controls over reform efforts at the expense of control from the bottom. But top-down control may be unacceptable to governments that prefer to determine their own fiscal destinies. Thus, an immediate switch to economic presence tests may not be called for in the current international environment, rather, a gradual


49. At the time of writing, it appears that the European Union will seek voluntary compliance with its VAT directive that drives it to require non-EU companies to act as collection agents by July 2003.

approach to resolving these solutions may be the more appropriate path to reform.51

4.3. Note on technological solutions

As discussed, information economics recognizes the important role that information technology infrastructures play in determining how information goods behave in a market economy. By acting as the distribution system for information goods and income-producing information goods, the Internet has created a number of challenges to traditional tax principles: technological developments, not necessarily sound tax policy, may play a greater role in driving tax reform efforts.52

Information technology developments may increasingly frustrate the ability of tax authorities to assess and collect taxes. To the extent these developments defeat important tax policy objectives, it may become necessary for governments to seek greater control over the development and evolution of this infrastructure. Tax authorities may need to promote the use of Internet technologies to protect these objectives. For example, technological solutions could: (a) identify the location where the purchaser of an information good resides, (b) automatically charge, assess and remit taxes on information good transactions to decrease compliance costs, and (c) employ online exfiltration to enhance information exchange among subfederal and federal tax authorities.53

Tax authorities should tread warily through cyberspace, however. The Internet can be analogized with a "digital biosphere", a forum characterized by internal diversity where both commercial and non-commercial activities overlap in an environment of rapid technological evolution.54 Relevant in this respect is the deployment of automated online tax collection systems.55 From an equity perspective, an automated collection system may harm emerging cyberspace values, including transactional privacy and anonymity. From an efficiency perspective, myriad different technological solutions from subfederal or federal governments throughout the world might interfere with the efficient working of the network, inhibit data flows and possibly discourage e-commerce.

5. CONCLUSION

The taxation of information goods raises a number of tax policy concerns, partly as a result of the near costless reproduction and distribution of these goods. Business income taxation suffers from the difficulties of identifying and taxing marginal incomes associated with the sale or production of information goods. Consumption taxation suffers from the difficulties surrounding the enforcement of sales taxes and VATs on remote online sales to consumers. Economic presence tests that replace physical presence tests, along with tax base harmonization and simplification, may assist in imposing taxes on economic activity involving information goods. Tax sovereignty would be a likely casualty of this process.

The analysis in this article has raised additional implications for the tax treatment of traditional economic activity. To the extent that the current non-neutral tax treatment of traditional economic activity vis-à-vis activity involving information goods encourages market distortions, revenue losses and an uneven competitive playing field, tax authorities may conceivably need to subject all economic activity to the same treatment as the one advocated for information goods. This scenario may play out if the digital economy becomes a significant part of overall economic activity.

51. See e.g., Bird, Richard M., "Commentary, A View From the North", 49 Tax Law Review 745 (1994) (arguing that an incremental approach to resolving complex international tax problems is often the only realistic alternative).
53. For discussion, see "Transforming the Internet", supra note 1, at 1221-1263.
55. The Strasbourg Sales Tax Project has sponsored a pilot project among four states to explore the use of these technologies. Id. at 397-400.