

Taxation of Information and the Data Revolution

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ABSTRACT: Existing and universal income tax rules are inherently incompatible with an economy in which information-based transactions play a significant role. This Article contends that income taxation is incapable of taxing information effectively. It goes on to argue that this incapability currently necessitates reform, and it offers three viable paths to such reform: consumption taxation, data taxes, and formulary taxation. The Article concludes that formulary taxation is currently the most desirable and plausible path to effective reform, owing to its promise to best stabilize and maintain the legitimacy of the international tax regime.

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INTRODUCTION

One cannot escape the data revolution; it surrounds us wherever we turn. Advancements in collection, collation, and analysis of information are fundamentally altering our world. They are also changing us: Marshall McLuhan, over half a century ago, observed that humans had been transforming from food-gatherers into information-gatherers,¹ an observation that seems almost trivial today, when Big Data takes over many aspects of everyday lives, from the workplace to our healthcare options and social lives.² They change the economy, leading *The Economist* to declare that data is the “new oil,” the world’s

1. See MARSHALL MCLUHAN, UNDERSTANDING MEDIA: THE EXTENSIONS OF MAN 138–39 (1964).

2. For the origins of the term, see, for example, Steve Lohr, *The Origins of ‘Big Data’: An Etymological Detective Story*, N.Y. TIMES (Feb. 1, 2013, 9:10 AM), <https://archive.nytimes.com/bits.blogs.nytimes.com/2013/02/01/the-origins-of-big-data-an-etymological-detective-story> (on file with the *Iowa Law Review*). For its use and application in all walks of life, see, for example, VIKTOR MAYER-SCHÖNBERGER & KENNETH CUKIER, BIG DATA: A REVOLUTION THAT WILL TRANSFORM HOW WE LIVE, WORK, AND THINK 12–18 (2013); BERNARD MARR, BIG DATA 9 (Wiley 1st ed. 2015); and SETH STEPHENS-DAVIDOWITZ, EVERYBODY LIES: BIG DATA, NEW DATA, AND WHAT THE INTERNET CAN TELL US ABOUT WHO WE REALLY ARE 41–50 (Dey Street Books 2017).

most valuable resource.³ They even change society, as observed by Shoshana Zuboff, who argued that we are moving from traditional market capitalism to what she calls surveillance capitalism.⁴ Katharina Pistor somewhat similarly queried whether data now not only alters but presents an alternative to markets (and the law) as a means of governance over contemporary society.⁵

These dramatic, fast-paced changes make demands on the law. One may argue that they challenge the role of law in society, as did Lawrence Lessig, arguing that now “Code is Law.”⁶ Legal scholarship is beginning to explore the implications of the data revolution and the related field of artificial intelligence on the law and existing legal regimes, yet many of these implications are still unknown or unsettled.⁷ Tax scholarship has yet to join this discourse.⁸

3. See, e.g., ECONOMIST, *The World’s Most Valuable Resource Is No Longer Oil, But Data* (May 6, 2017), <https://www.economist.com/leaders/2017/05/06/the-worlds-most-valuable-resource-is-no-longer-oil-but-data> (on file with the *Iowa Law Review*). The phrase is popularly attributed to a 2006 statement by British Mathematician Clive Humby (the precise source is in debate). See, e.g., Nisha Talagala, *Data as the New Oil Is Not Enough: Four Principles for Avoiding Data Fires*, FORBES (Mar. 22, 2022, 5:48 PM), <https://www.forbes.com/sites/nishatalagala/2022/03/02/data-as-the-new-oil-is-not-enough-four-principles-for-avoiding-data-fires> (on file with the *Iowa Law Review*).

4. See generally SHOSHANA ZUBOFF, *THE AGE OF SURVEILLANCE CAPITALISM* (Public Affairs 2019).

5. See generally Katharina Pistor, *Rule by Data: The End of Markets?*, 83 L. & CONTEMP. PROBS. 101 (2020).

6. LAWRENCE LESSIG, *CODE AND OTHER LAWS OF CYBERSPACE* 3–8 (1999).

7. See generally ANNE WELLS BRANSCOMB, *WHO OWNS INFORMATION? FROM PRIVACY TO PUBLIC ACCESS* (1994) (analyzing the private law status of various types of data that people may perceive as private information); J.H. Reichman & Jonathan A. Franklin, *Privately Legislated Intellectual Property Rights: Reconciling Freedom of Contract with Public Good Uses of Information*, 147 U. PA. L. REV. 875 (1999) (proposing doctrinal limits on private rights in information goods); Daniel J. Solove, *Conceptualizing Privacy*, 90 CALIF. L. REV. 1087 (2002) (calling for a pluralistic rather than a unitary conceptualization of privacy rights); Paul M. Schwartz, *Property, Privacy, and Personal Data*, 117 HARV. L. REV. 2056 (2004) (proposing to regulate the use of personal information with a property-like regime); Vera Bergelson, *It’s Personal but Is It Mine? Toward Property Rights in Personal Information*, 37 U.C. DAVIS L. REV. 379 (2003) (distinguishing between personal and other information); Steven H. Hazel, *Personal Data as Property*, 70 SYRACUSE L. REV. 1055 (2020) (arguing that a cost benefit analysis supports granting property rights to personal information); Ignacio Cofone, *Beyond Data Ownership*, 43 CARDOZO L. REV. 501 (2021) (using a law and economics framework to oppose data ownership models); Aziz Z. Huq, *Who Owns Our Data?*, BOS. REV. (Oct. 25, 2021), <https://www.bostonreview.net/articles/who-owns-our-data> [<https://perma.cc/L7K5-2MEC>] (calling for a model of ownership that would recognize collective interests in what is colloquially considered as private information). Huq further elaborated on this idea in Aziz Z. Huq, *The Public Trust in Data*, 110 GEO. L.J. 333, 381–83 (2021). A similar approach was promoted also by Pistor, *supra* note 5, at 118–22.

8. With few notable exceptions. See generally Adam B. Thimmesch, *Transacting in Data: Tax, Privacy, and the New Economy*, 94 DENV. U. L. REV. 145 (2016) (analyzing the exchange of personal information for free services, such as social media or entertainment services, under the current United States tax rules, and concluding that they probably should be taxable and that the tax preference they enjoy by not being taxed has undesirable policy implications that should and could be remedied); Omri Marian, *Taxing Data*, 47 BYU L. REV. 511 (2022) (arguing for taxation of data flows based on the importance of data to the global economy and the inappropriate market power accumulated by the data giants). Beyond scholarship, states have also struggled to legislate or regulate the ascent of information. See, e.g., GARY D. SPRAGUE, *GENERAL REPORT: BIG DATA AND TAX – DOMESTIC AND INTERNATIONAL TAXATION OF DATA DRIVEN BUSINESS* 15 (2022) (on file with the *Iowa Law Review*) (summarizing a comparative study conducted by the most authoritative international tax organization of thirty-seven country reports on the taxation of Big Data).

This Article wishes to begin filling this gap. The Article argues that the existing income tax laws that comprise the international tax regime are incapable of effectively taxing information. It further concludes that this incapability presently requires reform and offers feasible paths to such reform.

The existing and universal income tax rules are inherently incompatible with an economy in which transactions involving information play a major role. Taxation of income requires preclassification by private law, yet private law is still struggling to provide a useful consensus over fundamental determinations, such as who owns information.⁹ The tax community chose to ignore this void and, for the most part, let questions related to the taxation of information be absorbed into an ongoing struggle of tax law to apply its norms to transactions involving intangibles more generally. These norms, designed over a century ago for a brick-and-mortar economy, struggled to adapt to a global market that increasingly relied on intangibles.¹⁰ Information, being an intangible, was simply enfolded into these other challenges without much thought about its unique properties.¹¹ Alas, the thought process behind this conceptualization was intuitive rather than based on rigorous analysis, resulting in an unexplained disparate treatment of transactions involving information.

To demonstrate the problem that information poses to current tax law, consider the case of corporation ABC. ABC is broadcasting free radio programming to the citizens of country S (S for source) in their native language that is not spoken in country R (R for residence), under the laws of which corporation ABC is organized and within which jurisdiction all of corporation ABC's activities take place. Corporation ABC generates its income from information it collects from its listeners and advertisements it sells, online and via phone calls, to advertisers located and operating in country S. None of its content relates in any way to country R, but all its physical activities take place in country R.

This scenario illustrates the classic problem of taxing remote business, a problem that has been augmented by the ascent of the digital economy. The

9. See, e.g., sources cited *supra* note 7.

10. The international tax regime follows norms that have largely evolved from tax treaties, all of which are closely fashioned after a single model. The architecture and most of the core norms of this model, known as the OECD Model Tax Convention, originates in work done by the League of Nations in the 1920s and 1930s. See, e.g., Reuven S. Avi-Yonah, *Commentary*, 53 TAX L. REV. 167, 167–70 (2000) (arguing for the existence of an international tax regime and elaborating on its origins).

11. See, e.g., OECD/G20 BASE EROSION AND PROFIT SHIFTING PROJECT, ADDRESSING THE TAX CHALLENGES OF THE DIGITAL ECONOMY 122–26 (2015), https://read.oecd-ilibrary.org/taxation/addressing-the-tax-challenges-of-the-digital-economy-action-1-2015-final-report_9789264241046-en#page1 [<https://perma.cc/QW4S-GJLQ>] (addressing the challenges that the digital economy presents to the international tax regime); OECD, SECRETARIAT PROPOSAL FOR A “UNIFIED APPROACH” UNDER PILLAR ONE 3–5 (2019), <https://web.archive.oecd.org/2019-10-10/532365-public-consultation-document-secretariat-proposal-unified-approach-pillar-one.pdf> [<https://perma.cc/F9C4-SXBD>] (proposing the current model promoted for universal adoption based on what the OECD calls the “user participation” model); Johannes Becker & Joachim Englisch, *Taxing Where Value Is Created: What’s ‘User Involvement’ Got to Do with It?*, 47 INTERTAX 161, 161 (2019) (criticizing the OECD proposal yet similarly not distinguishing the difficulty of taxing information from the more general challenge of taxing the digital economy).

above-described circumstances are ubiquitous and touch essentially everybody's lives. Anytime one calls or contacts via the internet technical support, for example, that support is provided remotely, often outside the jurisdiction of the customer (out of state or abroad),¹² and essentially always without information as to the exact location of the service provider. This is not a new problem for tax law. The facts above are similar to the 1940s United States *Piedras Negras* case,¹³ where the court ruled that the United States could not tax a foreign corporation (e.g., radio stations) that had no physical presence in the United States. *Piedras Negras* involved neighboring states (Mexico and the United States), but with the advent of the internet the same issues arise in many more and exceedingly complex circumstances. The radio station taxpayer in *Piedras Negras* could now have easily been a resident of the Netherlands, for example, or of the Cayman Islands. Such location (and residence) presents taxpayers with opportunities to dramatically reduce their taxes.¹⁴ This outcome was not acceptable for the United States in *Piedras Negras*¹⁵ and is even less acceptable for states such as country S today.¹⁶ The unique opportunities for unacceptable tax planning that the data revolution provides to multinational enterprises support this Article's argument that international tax reform is presently required.

Profit shifting, as this type of tax planning is known at the present, is not new either, but globalization and the internet made it an acute problem for policymakers, especially in the aftermath of the *global financial crisis* of 2008.¹⁷ Public outrage over the low effective tax rates paid by multinational enterprises eventually triggered an international effort led by the Organization for

12. Remote services naturally became more ubiquitous in the times of the COVID-19 pandemic, which complicates the picture even further. This example is kept simple, however, to demonstrate that the challenge of remote services to tax law is fundamental rather than temporal.

13. See *Comm'r v. Piedras Negras Broad. Co.*, 127 F.2d 260, 260-61 (5th Cir. 1942).

14. Kiyoshi Nakayama & Victoria Perry, *Residence-Based Taxation: A History and Current Issues*, in *CORPORATE INCOME TAXES UNDER PRESSURE: WHY REFORM IS NEEDED AND HOW IT COULD BE DESIGNED* 107-14 (Ruud de Mooij, Alexander Klemm & Victoria Perry eds., 2021) (reviewing the origins and justifications of residence-based taxation and its current challenges).

15. It was the Internal Revenue Service Commissioner who sued the taxpayer in that case, to no avail. The later enactment of a special source rule for international communication did not improve the situation since it still required an office or other fixed place of business within the United States (which the *Piedras Negras* company did not have) for taxation. See 26 U.S.C. § 863(e) (2018).

16. This was the impetus for the Base Erosion and Profit Shifting ("BEPS") project and the post-BEPS ongoing work on a multilateral solution for the challenges presented to international taxation by the digital economy. See, e.g., OECD, ACTION PLAN ON BASE EROSION AND PROFITS SHIFTING 7-11 (2013), <https://www.oecd-ilibrary.org/docserver/9789264202719-en.pdf> [<https://perma.cc/QZ48-SMZM>] (alerting states that the ascent of the digital economy challenges the stability of the international tax regime); *Action 1 Tax Challenges Arising from Digitalisation*, OECD, <https://www.oecd.org/tax/beps/beps-actions/action1> [<https://perma.cc/LMD3-B7YL>].

17. Due to the universal concerns and inability to generate revenue. See, e.g., IMF, *Fiscal Implications of the Global Economic and Financial Crisis*, IMF Staff Position Note, at 3-4 (June 9, 2009), <https://www.imf.org/external/pubs/ft/spn/2009/spn0913.pdf> [<https://perma.cc/2VUA-73ZV>]; see also, Yariv Brauner, *What the BEPS?*, 16 FLA. TAX REV. 55, 56-61 (2014) (critically reviewing the background and performance of the OECD during the initial stages of the BEPS project).

Economic Co-operation and Development (“OECD”) to counter profit shifting by, *inter alia*, permitting states to tax foreigners regardless of their physical presence within a jurisdiction.¹⁸ The requirement of significant physical presence as a preliminary condition for tax jurisdiction has been fundamental to the international tax regime throughout its existence.¹⁹ It has however been critiqued even prior to the internet age.²⁰ A dissent in *Piedras Negras*, for instance, supported disposing of the requirement some seventy years ago,²¹ and a 2018 U.S. Supreme Court decision, in the *Wayfair* case, essentially reached the same conclusion in the context of state sales taxes.²² In 2021, 134 states have reached an agreement to reform some of the rules of the international tax regime, including a limited softening of the physical presence requirement for tax jurisdiction.²³ The 2021 agreement preserves to a large extent the existing international income tax rule, ignoring the unique challenge presented by information and the data revolution. This omission (among others) dooms the agreement to failure and wastes the unique political will for international tax reform. Heading this agreement with the aim of not wasting the rare window of opportunity for an effective international tax reform is another reason for this Article’s advocacy for immediate reconsideration of the international tax rules in view of the ascent of information in the global economy.

18. Initially, the tax planning schemes of the largest technology corporations such as Apple, Microsoft, Facebook, and Google were exposed. *See, e.g.*, Charles Duhigg & David Kocieniewski, *How Apple Sidesteps Billions in Taxes*, N.Y. TIMES (Apr. 28, 2012), <https://www.nytimes.com/2012/04/29/business/apples-tax-strategy-aims-at-low-tax-states-and-nations.html> (on file with the *Iowa Law Review*); Jesse Drucker, *Google Revenues Sheltered in No-Tax Bermuda Soar to \$10 Billion*, WASH. POST (Dec. 11, 2012, 6:16 PM), https://www.washingtonpost.com/business/economy/google-revenues-sheltered-in-no-tax-bermuda-soar-to-10-billion/2012/12/11/oe533bf0-43d7-11e2-9648-a2c323a991d6_story.html (on file with the *Iowa Law Review*); Richard Waters, *Microsoft’s Foreign Tax Planning Under Scrutiny*, FIN. TIMES (June 6, 2011), <https://www.ft.com/content/0880cd54-90a1-11e0-9531-00144feab49a> (on file with the *Iowa Law Review*). Soon thereafter, however, it became clear that the phenomenon is more widespread. *See generally* Edward D. Kleinbard, Special Report, *Through a Latte, Darkly: Starbucks’s Stateless Income Planning*, TAX NOTES, June 2013, at 1515 (demonstrating that not only high-tech multinationals have been engaged in aggressive tax planning of the sort that led to the public discontent with the international tax regime).

19. Articulated as the requirement for a permanent establishment (“PE”) in most jurisdictions, a term and concept transplanted from tax treaties. *See* OECD, MODEL TAX CONVENTION ON INCOME & ON CAP. art. 5 (2017).

20. *See*, for example, the seminal book on the concept, aptly named to convey the critical message: ARVID AAGE SKAAR, PERMANENT ESTABLISHMENT: EROSION OF A TAX TREATY PRINCIPLE 4–5 (Wolters Kluwer 2d. ed. 2020).

21. *See* *Comm’r v. Piedras Negras Broad. Co.*, 127 F.2d 260, 261–62 (5th Cir. 1942) (McCord, J. dissenting).

22. *See* *South Dakota v. Wayfair, Inc.*, 138 S. Ct. 2080, 2097–99 (2018).

23. *See* OECD/G20 BASE EROSION AND PROFIT SHIFTING PROJECT, STATEMENT ON A TWO-PILLAR SOLUTION TO ADDRESS THE TAX CHALLENGES ARISING FROM THE DIGITALISATION OF THE ECONOMY 1 (2021) (on file with the *Iowa Law Review*). The so-called agreement however provides a very limited scope for taxation without physical presence in a jurisdiction, and therefore does not come close to addressing the concerns of many jurisdictions over their inability to tax the digital economy. For critique of the presentation of the above statement as an “agreement,” *see*, for example, Yariv Brauner, *Serenity Now! The (Not So) Inclusive Framework and the Multilateral Instrument*, 25 FLA. TAX REV. 489, 500–02 (2022).

Apart from its questionable legitimacy, the 2022 agreement has a critical failure that further demonstrates the necessity of tax reform. The entire post-BEPS work justifies taxation without physical presence with the construct that in the digital economy users (the consumers of digital goods or services) actively participate in the generation of income and by that provide the hook for their (the users') states of residence to tax the digital giants.²⁴ The prototypical example for this construct is Google searches, where users receive free search services in exchange for access to personal information (hereinafter: "the fundamental barter transaction"). Put this way, however, this exchange should be viewed as a taxable barter transaction, yet essentially no state taxes it.²⁵ The Article argues that the omission to tax is a good illustration for its argument that income taxes not only won't but also can't tax these transactions, leaving the foundations of international taxation highly vulnerable.²⁶

The contribution of this Article goes however beyond international taxation. The increasing importance of information in the economy challenges also domestic tax law, especially the universally important income tax. Part I substantiates the argument that income taxes are inherently incapable of taxing information. It demonstrates that fundamental devices of income taxation, such as classification and valuation, cannot be applied due to the unique properties of information. Part II follows with a more detailed explanation of the argument that an urgent international tax reform is required due to the ascent of information and the data revolution. Part III subsequently argues that reform is not only necessary but also possible, presenting three paths to reform and analyzing their advantages and shortcomings. The conclusion follows with an assessment that among the discussed paths to reform formulary taxation is at the present superior.

I. THE CURRENT RULES ARE INCAPABLE OF TAXING INFORMATION

This Part substantiates this Article's argument that the current international income tax rules are incapable of taxing information. Demonstrating that data transactions are insufficiently taxed may seem simple in our post-BEPS world where, almost a decade after the launch of the project, the under-taxation of the data giants continues to occupy the top of the agenda of tax policymakers.²⁷ Yet, a careful analysis of these transactions demonstrates that the failure to effectively tax them goes beyond the politics of tax base division among states. For the most part it stems from unique properties of information that have been overlooked in tax scholarship to date. This Part therefore begins with an abstract analysis of the application of income taxation to transactions involving information, and only then adds the implications of

24. In the language of the OECD that is the "user participation" model. See OECD, SECRETARIAT PROPOSAL FOR A "UNIFIED APPROACH" UNDER PILLAR ONE, *supra* note 11, at 3, 5.

25. For a U.S. analysis of the tax consequences of the fundamental barter transaction, see Thimmesch, *supra* note 8, at 163–68.

26. For a similar conclusion based on a recent authoritative comparative study, see SPRAGUE, *supra* note 8, at 16.

27. See, e.g., OECD/G20 BASE EROSION AND PROFIT SHIFTING PROJECT, *supra* note 11, at 24.

crossing borders. It demonstrates that the failures of the income tax in this context are inherent in several different stages of the analysis and therefore should not be viewed as merely international or domestic problems.

A. FUNDAMENTAL CHALLENGES

Income tax analysis follows a strict pattern and requires preliminary information (no pun intended) to take place. First, the subject of taxation must be identified. Once identified, one can determine whether it is considered income or not. If it is, it must be measured (to a dollar value). Then, the item of income needs to be classified (since different rules apply to different types of income) and (in cross-border situations) sourced to one or more jurisdictions. Only then the relevant taxing and compliance rules apply to determine the tax consequences of earning the income item. This Section demonstrates the unique difficulties of applying each of these steps to information.

1. The Subject of Taxation

Income taxes are levied . . . well, on income, and not all receipts are considered income. Therefore, income taxation requires a rather clear identification of the *thing* one wishes to tax. In the case of information, it is difficult to pinpoint the subject of such taxation.²⁸ This difficulty implicates two technical issues: realization, which is a condition for the designation of earnings as income for tax purposes, and classification, which is also a condition for taxation since the income tax rules apply differently to different types of income. First, without clear identification, it is impossible to determine what income was realized. Second, even when realization could be determined, information transfers are difficult to classify.

i. What Exactly Do We Want to Tax?

To illustrate the most immediate difficulty, consider a data giant that sells, for example, a digitized, compiled profile of potential consumers in town Z to a vendor in that town. The consideration it receives in exchange should be taxed as income, and indeed it is usually taxed by the corporate income tax without a detailed analysis of the exchange, of what exactly is sold. Is it the raw information about the citizens of the town? Is it the connections made among the raw pieces of information? Is it the digitization or encoding (services) done by the data giant? Is it the analysis of the above in the context of the vendor's business? Is it the analysis against a background of Big Data insights constantly refined by the data giant? For the simple application of the corporate tax rate to income earned by the corporation the answer may not matter,²⁹ yet the income tax rules require classification for a variety of purposes, including

28. For a similar approach, see, for example, SPRAGUE, *supra* note 8, at 29 (summarizing a comparative study of Big Data taxation, and documenting a similar methodology).

29. For example, in the United States, the corporate income tax rate schedule is singular at the present, but in the past and in other states, it is possible that different rates may apply to different types of income, most notably lower rates may apply to gains like they are also at the present for individual taxpayers also in the United States. 26 U.S.C. § 1(h)(1).

the allowance of deductions for the payer and, in some cases, the application of tax incentives that are quite common in the technology field. Identification and classification are also crucial in the ubiquitous cross-border circumstances, as explained in a later Section.³⁰ In the absence of relevant legal guidance, tax practitioners use analogies to best classify these transactions. What “best” means in this context may be debatable, especially considering the concern that data giants find it uniquely easy to minimize their tax paying to the chagrin of world tax authorities.

Even clearer is the need for a precise articulation of what is the subject of taxation when one considers the barter between Google and its search engine users. This transaction is universally ignored for tax purposes even though barter transactions are otherwise taxable under the income tax. What makes the information exchanged in the *base transaction* exempt from taxation? The easy answer is that it would be impossible to tax, or not administrable in the common policy language; one may even attempt to apply an existing tax law exemption to justify nontaxation, yet it is transparent that these would be merely *post-factum* rationalizations for the inability to classify common transactions in information.

Classification of transactions involving information is inherently difficult. A comprehensive review of information theory is beyond the scope of this Article, of course, yet some insight from the scholarship at the basis of computer science may help one understand that this difficulty is inherent.³¹ First, one must acknowledge the difference between what may be described as the raw information and its meaning. For most of us, for example, a transcript of the binary code of whatever encoded (computer) content would mean little at best. Once manipulated, the same information becomes obviously more valuable. Only some of us, however, may be willing to pay for the raw encoded information. Some firms, mainly the data giants, collect every piece of information possible (hence *Big Data*), perhaps the epitome of raw information, while many others don't, likely due to the not insignificant costs involved in a decision to do so.³²

The format of information exchanged is also important. Information is often coded, written, printed, or otherwise reduced to paper or another medium in a manner that could more easily be used by others.³³ Information could be a list of customers of a luxury car dealer. That list could be sold for profit, generating income for the dealer. The list may be transferred on paper, by mail, email, or even orally, perhaps embellished with colorful additional descriptions of choice by the dealer herself. It may be sold to other luxury car

30. See *infra* Section I.B.2.

31. See generally JAMES GLEICK, *THE INFORMATION: A HISTORY, A THEORY, A FLOOD* (2011) (providing a recent accessible review of information theory and its origin).

32. See, e.g., Timothy Morey, Theodore “Theo” Forbath & Allison Schoop, *Customer Data: Designing for Transparency and Trust*, HARV. BUS. REV., May 2015 (discussing the costs and potential benefits of collecting customer data).

33. Shapiro and Varian define information as anything that could be digitized, yet for the purposes of this Article the definition may be somewhat expanded to anything capable of being coded. See CARL SHAPIRO & HAL R. VARIAN, *INFORMATION RULES* 3 (1999).

dealers, nonluxury car dealers, vendors of other luxury goods, banks, and other establishments that may see value in the information the list contains. Sales of customer lists are regularly taxed by the income tax, typically treated as sales or exchanges of intangible assets.³⁴ But, what are the buyers paying for? The names and addresses? The compilation services (of the raw information)? The encoding service? These are all potentially valuable yet typically treated as bundled to avoid answering what is required by the income tax law.

ii. Semantics

Beyond the conceptual and substantive difficulties of identifying and classifying transactions in information, information also presents a semantic problem that exacerbates these difficulties. Information is a general term, yet for the most part, it is presented as “data” in the marketplace. The Oxford Dictionary defines data as “facts or information, especially when examined and used to find out things or to make decisions” or “information that is stored by a computer.”³⁵ A useful way to define data would be to dedicate the term to (computer) encoded information, yet such definition would not fully align with the colloquial use of the term.³⁶ This semantic issue is meaningful for at least three reasons: first, it adds confusion to the already existing identification of transaction problems noted above; second, it would directly impact any attempt to provide a ring-fenced solution to information or data transactions or to standalone data taxes; and it necessarily impacts (distorts) any incentives created by whatever tax treatment is enforced by governments that is consequently deemed to be non-neutral.

Another term related to information and data is knowledge, which alludes to somehow useful information that one possesses. Some knowledge may be based on study, experience, or both. It may be transferred as such in exchange for money or other property, and any profit from such exchange should be income to the provider of the knowledge. Income tax law sometimes portrays knowledge transfers as transfers of know-how, such as in the case of an expert technician who can teach others how to efficiently fix old and rare machinery, for example.³⁷ Could this exchange be distinguished from other

34. See, e.g., *Audell Petroleum Corp. v. N.Y. State Tax Comm'n*, 506 N.E.2d 533, 534-35 (N.Y. 1987) (discussing the uncertain classification of sold customers lists for New York State sales tax purposes).

35. See *Data*, OXFORD LEARNER'S DICTIONARY, <https://www.oxfordlearnersdictionaries.com/us/definition/english/data> [http://perma.cc/38TK-R954].

36. Note, for example, the contrast between the Oxford dictionary and Shapiro and Varian's definition. See SHAPIRO & VARIAN, *supra* note 33, at 3.

37. See, e.g., Treas. Reg. § 1.861-18(e) (1998) (this U.S. “software regulation” provides guidance on the classification of income generated by software transactions). Note that the regulation does not provide detailed guidance on the distinction, for example, between the transfer of know-how and the provision of services, which the taxpayer is to distinguish based on all facts and circumstances. See *id.* § 1.861-18(d). The example provided in Treas. Reg. § 1.861-18(h)(16) is particularly useless, providing no indicator for a test for know-how provision beyond the facts that the parties contracted to do so. *Id.* § 1.861-18(h)(16).

exchanges of information that do not depend on personal expertise? One could argue for that contention when the taxpayer simply conveys to the customers to, for instance, “click button A or B and the C or D,” yet such conveyance may start to look much more analogous to differently taxed services when, for instance, the taxpayer spends a long time with the customers in multistep back-and-forth conversations. How would that be different from typical computer customer support services one receives?

The most basic definition of information is something that reduces uncertainty.³⁸ Such description however is common to different types of information that may be treated differently for tax purposes. For instance, to distinguish information from know-how one may think of the information that is typically independent from a specific person. For example, the abovementioned technician may convey her knowledge of how to fix certain machinery to person A, and person A then may record it as information that she may later exchange with others.³⁹ Some information may be purchased from others and transferred to others as is, yet for the most part information is nonexcludable.⁴⁰ The same information may also be sold or exchanged as a dataset, which at the present should be in some encoded format easily transferred to and read by other computers and organized in a traditional manner in or for a database.

Finally, the discussion of information must also account for the relationship between the information and the medium or format of communication. Usually, when one thinks of data, she does not think about the medium for its transportation but rather about the information itself, yet it is not difficult to realize that digitized and organized information is different (and for our purposes has a different value) from the bare information transmitted orally or even when it is merely reduced to paper.⁴¹ Information increasingly looks like an independent entity from whatever medium is used to communicate it. In the age of the *cloud* and *Big Data*, there is little reason to consider specific movements of information itself and no reason to be concerned about the media carrying it, whatever it means. As already mentioned, these semantic difficulties exacerbate the difficulty of classifying transactions in information under income taxes.

38. See, e.g., URS BIRCHLER & MONIKA BÜTLER, INFORMATION ECONOMICS 16 (2007).

39. Potentially *for free*. A quick search of the internet demonstrates the exploding number of articles and videos devoted to self-help procedures related to almost anything one can imagine.

40. BIRCHLER & BÜTLER, *supra* note 38, at 16. Note that for tax law purposes, the information transferred may therefore have (cost) basis, unlike personal knowledge.

41. Tax law would typically treat the bundle as a single item transferred, which seemingly simplifies the analysis, yet not in all cases. This is an issue common to all intangibles, yet it is more acute with information that in most, if not all cases, has a larger value than the means of its communication. For example, treating a multi-million-dollar dataset transferred on a disc that could be bought for less than one dollar, as bundled with the disc and hence, akin to the sale of a computer game or any other tangible property, evidently makes no sense.

iii. Has Anything Relevant Been Transferred? Information and Markets

Another difficulty that information presents for income tax law is that its transfers do not easily fit into the realization requirement that is a precondition of income generation. Income tax realization is almost always a consequence of market transactions.⁴² Economic goods require therefore commodification to be able to produce income. Information is an economic good in the sense that it can have cost and value; people are often willing to pay for it.⁴³ But it is a unique economic good different in many ways from other more typical commodities, and therefore difficult to pin down for realization purposes.⁴⁴ Viewed as “a reduction of uncertainty,”⁴⁵ one may conclude that it should be easily translated into economic value. This is particularly intuitive when encoded information, in the form of datasets, for example, is transferred. Yet, certain properties of information make it often difficult to commodify. It is particularly difficult to analyze because in some cases one could argue that it could be so and as such easily sold on the market and generate realized income.

One property of information that makes it difficult to commodify is that it is not often simple to quantify information. In a manner, this argument is similar to the identification difficulties discussed in prior Sections yet in the context of markets the difficulty is more specific.⁴⁶ Information theory has reduced information to bits of “zeros” and “ones,” which may be useful in some contexts (distinguishing the signal from its meaning),⁴⁷ but often is irrelevant for a meaningful quantification of information for market valuation purposes. The fact that a database consists of X gigabytes is completely meaningless for realization purposes. This property of information also makes it difficult to value, which is a separate concern of income taxation discussed in a following Section.⁴⁸

A related property of information that makes it difficult to commodify is its uncertain status under private law. This property is discussed in more detail in the following Section, yet this Section notes that it is also relevant to the

42. “Almost always” because some situations require quantification in nonmarket circumstances, yet the common tax laws still rely in these situations on market pricing. The most notable examples are transfer pricing (transactions between related parties “priced” based on “comparable market transactions”) and mark-to-market taxation (taxation without realization, but directly based on market prices). *See, e.g.*, Treas. Reg. § 1.482-1 (as amended in 2003) (the transfer pricing regulation prescribing arm’s length pricing based on comparable transactions); 26 U.S.C. § 475 (election opportunities for dealers in securities and commodities to be taxed on a mark-to-market, or market pricing, basis).

43. *See, e.g.*, Kenneth J. Arrow, *The Economics of Information: An Exposition*, 23 *EMPIRICA* 119, 119 (1996).

44. *Id.*

45. *See, e.g.*, BIRCHLER & BÜTLER, *supra* note 38, at 16.

46. *See, e.g.*, Arrow, *supra* note 43, at 120 (“[T]here is no general way of defining units for information.”).

47. Or, for example, for excise tax purposes if one wishes to tax volumes of data flows. *See* discussion *infra* Section III.B.

48. *See infra* Section I.A.2.

difficulty to commodify information.⁴⁹ Market realization requires a transaction recognized under private law, and since private law is not ready to encode information as property its status is often uncertain. Moreover, it is typically uncertain what part of transferred information is eligible for transfer in a market transaction (because, perhaps, some of the transferred information is protected by privacy or other laws or because it does not belong to the transferor), and therefore identifying the scope of realization is often tricky.⁵⁰

Tax law to date treats information like all other intangibles, ignoring its uniqueness.⁵¹ Information is intangible, but treating it in the same manner as other intangibles (a controversial unified category itself)⁵² masks, for instance, the magnitude of its scalability that dwarfs most if not all other intangibles. Anyone can realize, from personal experience, how difficult it is on the one hand to monopolize a piece of information and on the other hand the virtual indefinite opportunities to use any information. This is especially true in the age of *Big Data*. Such scalability makes information very difficult to commodify, and in many cases simply incompatible with the market (price) system.⁵³

Finally, some information has strong properties of public goods or even common goods, which complicates a market analysis of transactions in information. In these cases, market realization is impossible. This feature of information makes it not only difficult to analyze pursuant to normal income tax methodology but also raises concerns about the wisdom of a tax policy that applies in such a manner as further discussed in a later Section.⁵⁴

49. See *infra* Section I.A.1; see also, e.g., Arrow, *supra* note 43, at 125–27.

50. For further discussion see *infra* Section I.A.1.

51. See *supra* note 11 and accompanying text.

52. There are several problems with a unified treatment of all intangibles for income tax purposes, all of which stem from the different properties of different types of intangibles. The analogy that income tax law makes between intangibles and tangible property to apply the traditional norms (designed for the latter) to the “new” economy in which the former are becoming increasingly important exacerbates these problems. See, e.g., Yariv Brauner, *Value in the Eye of the Beholder: The Valuation of Intangibles for Transfer Pricing Purposes*, 28 VA. TAX REV. 79, 85–92, 134–42 (2008) (demonstrating that traditional valuation techniques that may be useful for the purposes of tangible property valuation are incompatible with the unique properties of intangibles, and that they are differently distortive in cases of different intangibles, *inter alia* due to the potential to commodify such intangibles).

53. Of course, this and other unique properties of information as an intangible impact also affect its valuation for income tax purposes as further discussed *infra* in Section I.A.2. See also, e.g., Arrow, *supra* note 43, at 120–21.

54. The point is not only that information has properties of public goods in the economic sense, as noted *infra* in Section I.A.1, but also that it might be desirable to view information as a public or common good more widely. These concepts are often confused. See, e.g., Waheed Hussain, *The Common Good*, in THE STANFORD ENCYCLOPEDIA OF PHILOSOPHY (Edward N. Zalta ed., 2018), <https://plato.stanford.edu/archives/spr2018/entries/common-good> [<https://perma.cc/gBZ8-CDA9>]. But both inform the choice of a desirable policy in the same direction. The following Section demonstrates the technical and practical difficulties of granting people property rights in *their* personal information. One may argue that such a move may be undesirable in the first place since information, like air surrounds us all and is created or discovered by the common effort or existence of us all. Making the moral or policy argument for this view is beyond the scope of this Article, yet note that for tax purposes, this view would likely result in all income related to information transferred be limited to services involving information (collection, collation,

iv. Has Anything Relevant Been Transferred? Information Under Private Law

Income tax law usually depends on private law determinations of rights and obligations for both realization and classification.⁵⁵ It would be superfluous, and likely confusing, for tax law to have separate definitions for what constitutes ownership, sales, etc. The uncertain status of information under private law⁵⁶ exacerbates therefore the difficulty of identifying and classifying transactions in information for tax law purposes.

Katharina Pistor has recently exposed the centrality of the encoding of property rights in law to society and its development.⁵⁷ The data revolution reinforces her claims and promises to have at least as much impact on the future of humankind as the constitutive past events that Pistor explores in the historical part of *The Code of Capital*.⁵⁸ Information, however, is unique. Thinking about it as merely a *thing* that will eventually be coded as property does not capture its potential impact on society. Pistor herself realizes that in a more recent article, questioning whether data will become so powerful as to change society, and even replace, rather than use, the law and markets as a

analysis, and so forth) not to the information transfers themselves. This conclusion may seem similar to the data as labor construct discussed *infra* in Section I.A.1, but it differs from it. Unlike that construct, it does not view “google searches,” for instance, as services performed in favor of Google. Viewing information as common or public goods may be a better policy perspective, yet note that it does not remedy the failure of the income tax to effectively tax information, as demonstrated in the analysis of the data as labor construct, *infra* Section I.A.1. For the policy argument in favor of viewing information as a public good see, for example, Guy Rolnik, “*Information is a Public Good*,” PROMARKET (June 30, 2017), <https://www.promarket.org/2017/06/30/information-public-good> [<https://perma.cc/87FH-EVTT>]. See also UNESCO, WORLD PRESS FREEDOM DAY 2021: INFORMATION AS A PUBLIC GOOD 7 (2021), https://en.unesco.org/sites/default/files/wpfd_2021_concept_note_en.pdf (on file with the *Iowa Law Review*) (citing UNESCO, *Message from Joseph Stiglitz – IPDC 40 years*, YOUTUBE (Nov. 24, 2020), <https://www.youtube.com/watch?v=gzAoEVKrdUE> [<https://perma.cc/7M3E-EMR8>]).

55. Private law consequences are always the starting point in a tax analysis. In some cases, however, often due to concerns about abusive tax planning, tax law deviates from private law for its purposes only. For example, 26 U.S.C. § 871(a)(1)(D) provides that contingent sales of certain intangibles will be taxed in a similar manner to the licensing of the same intangibles (regardless of the private law characterization of such transactions).

56. See, e.g., Lothar Determann, *No One Owns Data*, 70 HASTINGS L.J. 1, 11 (2018) (“[T]here is no known ‘data property statute’ in any country.”); Thomas Hoeren, *Big Data and the Ownership in Data: Recent Developments in Europe*, 36 EUR. INTEL. PROP. REV. 751, 751–53 (2014) (detailing a European, civil law analysis of the uncertain case of ownership in information). The anecdotal case of electricity usage information demonstrates the confusion of private law in the face of this problem. In Texas, information collected from smart meters is owned by the individual customer, who must authorize the data’s distribution to retail electric providers. TEX. UTIL. CODE ANN. § 39.107(b) (West 2023). The Federal Smart Metering Law of 2005 provides that the utility company is the primary data possessor but must give access to customers and third parties. 16 U.S.C. § 2621(d)(19)(A). Other States have been completely silent on the issue. See, e.g., Heather Payne, *Sharing Negawatts: Property Law, Electricity Data, and Facilitating the Energy Sharing Economy*, 123 PENN ST. L. REV. 355, 378 n.118 (2019).

57. See generally KATHARINA PISTOR, *THE CODE OF CAPITAL: HOW THE LAW CREATES WEALTH AND INEQUALITY* (Princeton Univ. Press 2019).

58. Pistor’s analysis is primarily historical, devoting only a small part of the book to the ascent of information and other intangibles. *Id.* at 95–98.

means of governance over society.⁵⁹ Her query resembles Lawrence Lessig's claim from two decades ago that "Code is Law."⁶⁰ Whether one believes in this premonition or in the less dramatic view that data is "the new oil,"⁶¹ or not, no one can ignore the tremendous riches that the data giants reap and the corresponding power they possess and often use to influence all our lives.⁶²

The law has responded to the ascent of information in various manners. For the most part, however, such response had been ad hoc and failed to adapt to the unique properties of information. The focus has been on privacy matters on the one hand and the preservation of intellectual property rights (i.e., the power of the data giants over all others). What seems like a balancing act at a first glance is hardly one, since the limitations imposed by privacy laws are minimal at best and the power of the data giants does not depend solely on the law or the state, but rather is inherent in their control over *Big Data*.⁶³

At a first glance privacy laws seem to be quite powerful, often using terms such as *ownership* in the context of people and their *personal information*;⁶⁴ a number of U.S. states have passed legislation providing remedies for those whose data has been compromised.⁶⁵ An amalgamation of tort remedies is retained, beyond federal and common law right of action, by the persons being described by the data.⁶⁶ There are also contract mechanisms that allow one to protect data by limiting another's rights to it.⁶⁷ Even criminal law has been used to limit rights to data.⁶⁸ Yet, despite the diverse assortment of legal mechanisms used to protect data, these privacy law mechanisms do not code property rights in data and cannot be viewed as if they do, even for tax law purposes only.

Health information is universally better and more consistently protected than other personal information. Even in states with strong protection of personal data, though, protection (or exclusion) does not maketh ownership.⁶⁹

59. See Pistor, *supra* note 5, at 101 ("This Article explores data as a source and, in their processed variant, as a means of governance that will likely replace both markets and the law.")

60. LESSIG, *supra* note 6, at 3.

61. See, e.g., ECONOMIST, *supra* note 3.

62. See generally DIGITAL DOMINANCE: THE POWER OF GOOGLE, AMAZON, FACEBOOK, AND APPLE (Martin Moore & Damian Tambini eds., 2018) (compiling essays about the impact of data giants on the economy, society, and politics); Maurice E. Stucke, *Here Are All the Reasons It's a Bad Idea to Let a Few Tech Companies Monopolize Our Data*, HARV. BUS. REV. (Mar. 27, 2018), <https://hbr.org/2018/03/here-are-all-the-reasons-its-a-bad-idea-to-let-a-few-tech-companies-monopolize-our-data> [<https://perma.cc/3UDZ-L3K6>] (lamenting the market power accumulated by the data giants).

63. For a similar analysis see Pistor, *supra* note 5, at 114–18.

64. See, e.g., Illinois Personal Information Protection Act § 10(b), 815 ILL. COMP. STAT. 530/5 (2024).

65. See, e.g., Alex Pearce, *Time for a National Privacy Law?*, 38 DEL. LAW., Spring 2020, at 6, 6–7.

66. See *id.* at 8–9.

67. Although these are most typically exercised to strengthen the control of larger corporations over the information they transact to others.

68. See 18 U.S.C. § 798.

69. New Hampshire law does specifically say that patients *own* their records, but the meaning of *own* is called into question by legislative history indicating the law was passed over concerns from patients who could not access their medical records. See *Relative to Medical Records: Hearing*

Strict consent requirements, even if they weren't mainly provisory due to the lack of alternatives for patients, do not change the situation, since they merely provide exclusion rights and do not amount to monetary transactions to which taxation applies.

On the other side of the spectrum, intellectual property law provides legal protection to intangibles by encoding some of them as such. It does so for intangibles that could contain, organize, process, or even produce data, but it does not protect the information itself. This is not accidental, since it perfectly aligns with the interests of the data giants,⁷⁰ yet not only politics drive this lack of protection. As is mentioned throughout this Article, information is a unique intangible that is not only difficult to identify but also does not need legal protection to be valuable.⁷¹ The general property law policy concerns discussed below also apply to intellectual property law protection of information.

A quick review of intellectual property doctrine demonstrates that information does not fit well in the doctrine. Copyrights represent property rights in expression and grant authors exclusive rights in their expressive works as an incentive to create and publish.⁷² Copyright allows the author a monopoly over fixed manifestations of expression for both the public good and that of the author.⁷³ Copyright protection is exceptionally broad and requires only a modicum of creativity, but ideas, concepts, facts, and common elements are excluded from protection.⁷⁴ Facts are also not considered "expression," as they lack the originality required for protection⁷⁵ and are also

on H.B. 511 *Before the S. Comm. on Health, Hum. Servs. & Elderly Servs.*, 1989 Leg., Session 2 (N.H. 1989) (on file with the *Iowa Law Review*). Case law on the statute has indeed held that the law does not create any new rights of privacy than would be enjoyed in its absence. *State v. Davis*, 12 A.3d 1271, 1276 (N.H. 2010). As a general rule, laws on healthcare records provide patients with rights of access and edification, but custodians own whatever instrumentality that provides the data. This is also the law in Canada. See *McInerney v. MacDonald*, [1992] S.C.R. 138, 151–55 (Can.) (holding that a patient does not own their personal medical information, but the custodian owns physical copies of the record).

70. See, e.g., Pistor, *supra* note 5, at 107.

[D]ata controllers have lobbied states to protect the data they have harvested and placed on some physical device against hacking, or theft, and more recently have championed the tightening of trade secrecy law, including the addition of criminal sanctions for breach. However, Big Tech has stopped short of claiming full-throttled property rights protection from the state. Not only do tech companies not need this kind of support because they have technological means at their disposal to govern access to the data they have amassed, but they have also benefited from the ambiguity that has surrounded data ownership as they have moved to enclose and extract data from billions of individuals.

Id.

71. See, e.g., *id.* at 105–08.

72. *TD Bank N.A. v. Hill*, 928 F.3d 259, 281 (3d Cir. 2019).

73. *Penguin Random House LLC v. Colting*, 270 F. Supp. 3d 736, 753 (S.D.N.Y. 2017) (citing U.S. Const. art. 1, § 8, cl. 8).

74. See 17 U.S.C. § 102(b); see also *Skidmore ex rel. Randy Craig Wolfe Tr. v. Led Zeppelin*, 952 F.3d 1051, 1069 (9th Cir. 2020).

75. *Enchant Christmas Light Maze & Mkt. Ltd. v. Glowco, LLC*, 958 F.3d 532, 537 (6th Cir. 2020).

considered part of the public domain.⁷⁶ The same rule applies to data, its form or mode of expression can be protected (such as an arrangement or composition of facts), but the underlying data remains the “property of all.”⁷⁷ Like copyrights, patent protection is given broad scope and intended to include anything made by people.⁷⁸ But discoveries of natural phenomena are not protected.⁷⁹ Under this reasoning, diagnostic claims have been held unpatentable.⁸⁰ Not only is data itself unpatentable, but data processes concerning collection, analysis, and display are considered too abstract of an idea to fall under patent protection.⁸¹ Scientific truths or mathematical expressions thereof are not patentable, so they may only aid in the novel and useful creation of a humanmade invention.⁸² Trademark protection does not protect ideas but only their “concrete expression.”⁸³ Trade secrets doctrine resembles the granting of property rights over data, but it provides a civil remedy based on misappropriation and unfair competition, not property ownership.⁸⁴ Under some circumstances, data can be protected if a significant amount of time, effort, and expense was required for development of the data.⁸⁵ However, its applicability to personal information is tenuous, as the value of trade secrets is based on confidentiality, not the information itself.⁸⁶ In conclusion, intellectual property law cannot provide the transactional basis for taxation of information transfers.

Income tax laws must rely therefore on traditional property law for the private law basis it requires for taxation. But, as already mentioned, despite some vociferous support of the grant of property rights in personal information, legal systems around the world hesitate to make that step. The core question: “who owns information?” is not new.⁸⁷ Personal information is particularly elusive in this sense. Do we *own* our names, addresses? Telephone numbers, social security numbers, and other identifiers that have become so valuable in

76. TERESA SCASSA, *Data Ownership* 6–7 (Ottawa Fac. L., Working Paper, Paper No. 2018-26, 2018), https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3251542 [<https://perma.cc/Z6LF-PPS4>].

77. See *Triangle Publ'ns, Inc. v. Sports Eye, Inc.*, 415 F. Supp. 682, 685 (E.D. Pa. 1976).

78. *Diamond v. Chakrabarty*, 447 U.S. 303, 308–09 (1980).

79. *Alice Corp. Ltd. v. CLS Bank Int'l*, 573 U.S. 208, 216–17 (2014).

80. See *Cleveland Clinic Found. v. True Health Diagnostics LLC*, 859 F.3d 1352, 1361–62 (Fed. Cir. 2017).

81. *Elec. Power Grp., LLC v. Alstom S.A.*, 830 F.3d 1350, 1354 (Fed. Cir. 2016).

82. *Mackay Radio & Tel. Co. v. Radio Corp. of Am.*, 306 U.S. 86, 94 (1939).

83. See, e.g., *Jeffrey Milstein, Inc. v. Greger, Lawlor, Roth, Inc.*, 58 F.3d 27, 31–33 (2d Cir. 1995) (citing Lanham Act § 43(a), 15 U.S.C. § 1125(a)).

84. Patricia A. Meier, Note, *Looking Back and Forth: The Restatement (Third) of Unfair Competition and Potential Impact on Texas Trade Secret Law*, 4 TEX. INTEL. PROP. L.J. 415, 416 (1996).

85. *Youtie v. Macy's Retail Holding, Inc.*, 653 F. Supp. 2d 612, 621 (E.D. Pa. 2009).

86. SCASSA, *supra* note 76, at 12; see also 73 C.J.S. *Property* § 10 (2023) (explaining that property like trade secrets only has protection if the property is protected by the proprietor from “escape or disclosure”).

87. See generally BRANSCOMB, *supra* note 7 (discussing different types of information, like names, addresses, numbers, and medical history and who has access to it).

the era of Big Data? Despite the sensitivity, the answer is probably not.⁸⁸ How about our personal tastes and habits? Well, one could clearly sell information about oneself if they can find a buyer, but could they prevent its exchange by that buyer or by another person who obtained the information (e.g., a search engine), or recover the compensation for such exchange based on their property rights in such information (not based on privacy laws)? The answer to these questions is much more complicated and is probably, practically no. The right to exclude (pursuant to privacy laws) is minimal at best since we all find ourselves continuously consenting to the release of information when we need (almost always) the service that made such consent a condition for its provision.

These ownership questions are not new, but the data revolution and probably the ascent of the data giants have brought them to the forefront of the public debate. Andrew Yang, a 2020 presidential candidate even made the establishment of personal data as a property right for individuals one of his campaign goals.⁸⁹ The details of his proposal reveal two distinct elements: promotion of the right of individuals to share in the economic value generated in connection with their personal information and the protection of individuals' privacy rights. Although intellectually distinct, these two elements are not completely independent. To date, federal law has yet to recognize property rights in personal data despite various serious scholarly proposals to this effect.⁹⁰ Privacy concerns color the entire debate, yet, as mentioned there is little that the law could do in this regard.

The more difficult question regards the compensation of everybody for what one may perceive as their personal information. Traditional property law analysis is based on the economic premise that property rights granted ensure that owners both enjoy the returns and bear the costs of ownership in scarce *things*.⁹¹ But, information is not scarce in the same sense and is essentially infinitely scalable, which makes it a unique economic good difficult to commodify (as explained above).⁹² The status of information under private law requires therefore a serious policy discussion of the nature of information. At the present, it is uncertain. Data giants treat information as *res nullius* or wild animals, as explained by Pistor, *owning* it simply by capture, and preventing other treatment with their market and political power.⁹³ Such behavior corresponds well with power theories of property law.⁹⁴ Some scholars present cases for and against the grant of property rights in information following a

88. See, e.g., *id.* at 28–29.

89. See, e.g., *Regulating Technology Firms in the 21st Century*, YANG 2020 (Nov. 14, 2019), <https://2020.yang2020.com/blog/regulating-technology-firms-in-the-21st-century> [<https://perma.cc/D6ZT-AZWZ>].

90. See BRANSCOMB, *supra* note 7, at 5–7.

91. See, e.g., Harold Demsetz, *Toward a Theory of Property Rights*, 57 AM. ECON. REV. 347, 354–59 (1967).

92. For a more detailed analysis of the inapplicability of traditional property rights theory to information, see Pistor, *supra* note 5, at 106–11.

93. See, e.g., *id.* at 107.

94. See, e.g., PISTOR, *supra* note 57, at 11–12.

typical law & economics narrative, evaluating the costs and benefits of doing so.⁹⁵ The disagreement among these scholars demonstrates the weakness of such framework. Other scholars, acknowledging the difficulty of specifying property rights in information but at the same time noting the nonsensibility of completely ignoring the sense of ownership that people have in *their personal information*, propose a collective solution that would compensate the common for the use of such information.⁹⁶

For the purposes of this Article, the notable conclusion is that the ownership of data is not yet recognized as property, and the protection given to some aspects or containers of data are insufficient to determine private law ownership status for people, even in *their* personal data. The lack of such status casts doubts on both the realization and the classification of what may be potential income generated in transfers of information.

v. Further Comments on Classification of Transactions in Information

The above Sections exposed certain properties of information that make its transfer difficult to classify for tax purposes. This Section adds a few comments in response to potential arguments that purport to remedy the classification difficulty of transactions in information; it demonstrates that they cannot be successful and therefore does not change the conclusion that the income tax is incapable of effectively taxing information.

One potential argument of this kind is that the failure of private law to provide ownership rights in information may not be devastating for the income tax since tax law can grant these rights itself if it limits them for its own purposes. Tax law regularly deviates from its normal reliance on private law consequences in cases of concern over abusive tax planning and other unintended tax consequences.⁹⁷ Transactions in information are not abusive per se, yet, at least in the United States, such deviations are not strictly limited to and do not require a proof of abuse; they are often simply *the law*.⁹⁸ One such mechanism in use in the United States is the concept of tax ownership.⁹⁹ Attribution of tax ownership when legal ownership cannot be established or results in unintended tax consequences intends to denote the *true* economic

95. See generally Hazel, *supra* note 7 (supporting the granting of property rights); Cofone, *supra* note 7 (arguing against the granting of property rights).

96. See, e.g., Pistor, *supra* note 5, at 118–22; Huq, *The Public Trust in Data*, *supra* note 7, at 372–74.

97. See, e.g., PISTOR, *supra* note 57, at 129–131.

98. A discussion over the appropriate scope of deviations from private law consequences is beyond the scope of this Article.

99. See Charles I. Kingson, *The Confusion over Tax Ownership*, TAX NOTES (Oct. 15, 2001), (on file with the *Iowa Law Review*) (criticizing the confused state of the doctrine); Charles I. Kingson, *How Tax Thinks*, 37 SUFFOLK U. L. REV. 1031, 1032 (2004); Alex Raskolnikov, *Contextual Analysis of Tax Ownership*, 85 B.U. L. REV. 431, 433–34 (2005) (proposing a new contextual framework to determine tax ownership based on two distinctions: between *when* and *where* cases and between cases involving fungible and nonfungible assets).

beneficiary of a transaction and tax such beneficiary accordingly.¹⁰⁰ The concept has been developed as a judicial doctrine and used in parallel to other, primarily anti-abuse doctrines, such as *economic substance* and *business purpose*, often citing, wrongly, a case named *Frank Lyon*.¹⁰¹

The tax ownership doctrine should generally attribute ownership properties for tax purposes only to those who bear the risk and are expected to enjoy the rewards from a transacted property.¹⁰² The use of the doctrine and the above articulation are controversial,¹⁰³ but for the purposes of this Article, it suffices to note that the doctrine cannot solve the problem of taxing information. Questions of tax ownership often concern the timing and status of ownership: when is ownership vested on the taxpayer (in complex securities transactions, for example), and whether the legal owner in, for instance, a sale and leaseback transaction should indeed be considered the owner for tax purposes.¹⁰⁴ These are not particularly relevant for data taxation, since, first, the status of information as property is uncertain,¹⁰⁵ and, second, the typical tax ownership questions of *when* and *where* (using Raskolnikov's terms) are not the ones bothering us in this context.¹⁰⁶ The overarching income tax goal of clearly reflecting income¹⁰⁷ would not be served by treating people or the data giants as the owners of data; the former do not earn income in most cases and in the case of the latter the question is not to whom income should be assigned and when. The relevant players are known; the subject of income taxation is not, and the tax ownership doctrine does not solve that problem.

A more relevant legal construct that could be viewed as a solution to the difficulty of taxing information is the consideration of information as a service rather than property.¹⁰⁸ This construct is attractive since it avoids the difficult

100. See analysis in, for example, Kingson, *How Tax Thinks*, *supra* note 99, at 1035 (explaining that the divorce of ownership attribution from risk taking is the source of many problematic tax planning known as *tax shelters*).

101. *Frank Lyon Co. v. United States*, 435 U.S. 561, 583–84 (1978). For the argument that citing *Frank Lyon* in this context is wrong, see Kingson, *The Confusion over Tax Ownership*, *supra* note 99.

102. See, e.g., Kingson, *The Confusion over Tax Ownership*, *supra* note 99.

103. See, e.g., *id.* See generally David S. Miller, *Taxpayers' Ability to Avoid Tax Ownership: Current Law and Future Prospects*, 51 TAX LAW. 279 (1998) (providing a detailed account of cases involving the tax ownership doctrine and accounting for its weaknesses); see also Jasper L. Cummings, Jr., *A Tax Common Law Approach to Property Ownership*, TAX NOTES (May 27, 2013) (on file with the *Iowa Law Review*) (reviewing the application in practice of the tax ownership doctrine and concluding in favor of the traditional income tax analysis that always begins with ownership determination under private (state) law for the sake of clarity and consistency).

104. See, e.g., Raskolnikov, *supra* note 99, at 434–36; see also I.R.S. Tech. Adv. Mem. 200346007 (July 9, 2003), <https://www.irs.gov/pub/irs-wd/0346007.pdf> [<https://perma.cc/A8D7-UEY3>] (detailing the tests for deciding whether to respect the ownership transfers in sale and lease back transactions).

105. See *supra* Section I.A.1.

106. *Id.*

107. See, e.g., 26 U.S.C. § 446(a) (requiring accounting methods that clearly reflect income); 26 U.S.C. § 482 (granting the IRS authority to allocate income and deductions among taxpayers “if . . . necessary in order to prevent evasion of taxes or clearly to reflect income”).

108. See, e.g., Imanol Arrieta-Ibarra, Leonard Goff, Diego Jiménez-Hernández, Jaron Lanier & E. Glen Weyl, *Should We Treat Data as Labor? Moving Beyond “Free,”* 108 AEA PAPERS & PROC. 38,

identification problems with information by simply not taxing information itself but rather whatever people do with it. Further, it fits the views of information as a public or a common good for the same reason: The tax would be imposed on human functions and action rather than on the information itself. Finally, our tax laws currently deal with information transfers in a similar manner anyway. The data giants are taxed on the business income they produce by selling advertisement services and compiled databases or predictions based on compiled databases while the users (of Google search or social media) who only transfer information are left untaxed.¹⁰⁹

Alas, despite the intuitive appeal, viewing information as service does not solve the difficulty of taxing it under the current income tax laws. First, classifying transfers of information as service is an unsatisfactory stretch of the term. A service requires work, or an effort made by one person for the benefit of another, sometimes in creation of a *thing* for such other person. A service provider does not hold or own whatever it creates for the principal and never delivers the same *thing* to multiple customers. One may counter argue that the service provided to different customers is not the same, yet such an argument ignores the essence of the Big Data business.

Another difficulty with the service construct is that it would be strange to argue for service classification of the transaction between the corporate information (or search engine) provider, for example, and an advertiser, but deny such classification of the relationship (barter transaction?) between the final customer, A in the hypothetical used throughout this Article, and the same corporate taxpayer, X company. Some scholars indeed extended the information as service construct to the latter relationships, classifying the provision of information by users of company X (or Google) to the company as labor.¹¹⁰ This extension will prove however to be akin to opening a Pandora's box, even at the domestic level. It is sufficient to imagine the valuation difficulties of each transfer of *personal information* online to realize the futility of this idea. Moreover, the administration of the taxation of these many billions of transactions, both on the compliance and the enforcement sides, will be prohibitively costly and inefficient if not impossible. At this point, it is sufficient to conclude that this is not a solution for taxing information under the income tax.¹¹¹

Finally, the classification difficulty analyzed in this Section is not merely theoretical as was discovered by a recent comparative study, which exhibited a significant variety of approaches to the classification of Big Data-related

39–40 (2018) (calling for a construction of a market for data, arguing that the data as labor model is superior to the data as capital model); Amanda Parsons, *Tax's Digital Labor Dilemma*, 71 DUKE L.J. 1781, 1789–90 (2022) (promoting the digital laborers construct as a justification for source taxation by the states of residence of data giants' users).

109. See, e.g., Thimmesch, *supra* note 8, at 174–77.

110. See *supra* note 108.

111. The information as service construct faces additional, international tax challenges, which are discussed *supra* Section I.A.1.

transactions. This study documents the disintegration of the existing tax regime in the face of the ascent of information after years of rule convergence.¹¹²

2. The Measurement of Income

Consequent to the inability to precisely define the subject of taxation or its nature as a commodity or a service, it is often difficult and at times impossible to give it value, which is a condition for the functioning of an income tax.

i. Information as a Special Economic Good

The difficulty to put value on information is more fundamental than the inability to identify and classify the subject for valuation. Information is a special economic good.¹¹³ Put simply, information may be viewed as “a reduction of uncertainty,” a view that could translate into economic value.¹¹⁴ As such, however, almost everything that everybody does conveys information, useful and useless, hence the necessary reliance of income taxation on market transactions. Yet, markets for information are (at best) complicated.

Information has properties of public goods, which complicates a market analysis of transactions in information.¹¹⁵ Thus, as already explored, it is difficult for the law to code information as property; once information is revealed (“out there”) it is difficult to impossible to bar its further exploitation, especially when such exploitation is indefinite. Moreover, once one has the information, they cannot un-have it by transferring it to another person. Like other public goods there may be too little incentive to discover new information and bring it to market due to the ease and costlessness of free riding.¹¹⁶ At the same time, there may be over investment in information due to the need to keep one’s discovery secret (i.e., multiple firms may be discovering the same information in parallel).¹¹⁷

Perhaps the most notable property of information is its essentially indefinite scalability. Therefore, information does not normally allow for constant returns that are a condition for market pricing of goods and services.¹¹⁸ It could rather generate increasing returns, disrupting the markets.¹¹⁹ Therefore, in many cases, efficient markets cannot form and inform the income tax on the proper valuation of information transfers.¹²⁰

Finally, information transfers lend themselves to vagueness, mainly due to human behavior. In many cases transfers of facts involve a modicum of beliefs (or even misinformation and disinformation) that are very difficult and costly

112. See generally SPRAGUE, *supra* note 8.

113. See, e.g., BIRCHLER & BÜTLER, *supra* note 38, at 1.

114. *Id.* at 16.

115. See, e.g., *id.* at 3.

116. See, e.g., *id.* at 87.

117. *Id.*

118. See *id.* Arrow, *supra* note 43, at 120–21.

119. *Id.*

120. See, e.g., BIRCHLER & BÜTLER, *supra* note 38, at 56.

to isolate. Consequently, the market for information is also incomplete and uniquely vulnerable to failures that make it even harder to come up with a reliable valuation of transferred information.¹²¹

ii. Valuation of Information as an Intangible

Despite information being a special good, it is regularly sold and bought, which may raise a question about the utility of the above discussion. Indeed, when market transactions take place, the income tax does not inquire into the efficiency of these markets or the degree of rationality of the transactors; it is simply interested in the amount paid to tax it as income. This may be true in some cases, yet it is important to note that many transactions take place in nonmarket conditions (transactions between related parties), and the income tax is required to ensure their taxation in a manner similar to those that take place on the market. This is especially important in the cross-border context where prices charged determine the shares of different (and competing) states in the income.¹²² In addition, information is regularly bundled with other goods or services when transferred and the different treatment of such transactions' components may require delineation even in the case of market transactions. Valuation of information, problematic as it may be, is therefore necessary for effective income taxation.

The regularity of bundling is shared among all intangibles, and information is intangible. The current income tax practice attempts therefore to treat information in the same manner, and use the same valuation techniques that it uses for all other intangibles. This Author demonstrated elsewhere that the valuation of intangibles at the present is defective;¹²³ this Section extends the argument, demonstrating that the practice of valuation is even more defective in the case of information.

Information shares with other intangibles properties that make them unique, including scalability (or nonrivalry), inherent risk, partial excludability, network effects, and nontradability.¹²⁴ This Article argues, however, that information is sufficiently unique to justify analyzing it separately from other intangibles. In fact, packaging all intangibles in one category as the law often does, is problematic in the first place, since, for example, legally protected intangibles ("IP") are dramatically different from non-IP, and "soft" intangibles, such as workforce-in-place, that are usually impossible to transfer by themselves, are different from more easily separable and transferable intangibles such as

121. See, e.g., *id.* at 142, 227–29.

122. In the United States, safeguarding these prices is the role of the transfer pricing rules. See 26 U.S.C. § 482. Note that related party transactions are particularly important in the cross-border context since most of them take place within multilateral enterprises that are necessarily operating in multiple jurisdictions.

123. See, e.g., Brauner, *supra* note 52, at 98 (explaining that the practice of valuation is ill-fit to the needs of income taxation, and particularly when intangibles are concerned because its primary techniques, based on markets, income, and costs, are not effective in the valuation of intangibles).

124. See, e.g., BARUCH LEV, INTANGIBLES: MANAGEMENT, MEASUREMENT, AND REPORTING 21–49 (2001).

copyrights.¹²⁵ This Article argues however that even in a legal regime that treats all intangibles alike information is sufficiently unique to require distinct analysis, and most importantly it is uniquely more difficult to put a price on.

The scalability of information is, as already discussed, essentially indefinite. In this sense, it is an intangible “on steroids.” This property is the consequence of the common high fixed costs to produce intangible property (think high-tech) and low marginal costs to reproduce it.¹²⁶ Reproducing information is often costless or almost costless. Returns to scale may increase almost indefinitely since the use of most data is not limited to the context in which it was collected;¹²⁷ information about luxury car buyers, for example, may be useful not only to all other car vendors or all luxury goods vendors, but also to insurance companies, real estate investors, tourism businesses, wine merchants, and many more.¹²⁸ The uses of basic information and personal tastes of individual users of search engines (a large portion of the world’s consumer population)¹²⁹ overwhelm the different uses of traditional copyrights or patents.

Another unique property of intangibles that significantly affects their values are network effects, or their interactions with other properties, and particularly their interactions with other intangibles.¹³⁰ The value of most intangibles therefore increases the more they interact with and impact other intangibles that behave similarly. Classically, network effects lead to markets that are dominated by single player in winner-takes-all environments, or at least are providing significant advantages to first movers in such markets.¹³¹ Social networks are good examples of this property, since it is obvious that market segments tend to be dominated by single players, and that the more subscribers a program attracts the more valuable it is going to be.¹³² This property of intangibles also explains why the largest tech giants have consistently engaged in massive accumulation of patents, including patents in fields that they had not yet entered.¹³³ Information behaves in the same manner, since

125. See, e.g., Brauner, *supra* note 52, at 121–22.

126. HAL R. VARIAN, JOSEPH FARRELL & CARL SHAPIRO, *THE ECONOMICS OF INFORMATION TECHNOLOGY: AN INTRODUCTION* 5 (2004).

127. See, e.g., SHAPIRO & VARIAN, *supra* note 33, at 22–23.

128. This is not a new phenomenon limited to the age of the data revolution. The history of medicine is abundant with examples for accidental discoveries, penicillin being perhaps the most famous one. See, e.g., *How Was Penicillin Developed?*, SCI. MUSEUM (Feb. 23, 2021), <https://www.sciencemuseum.org.uk/objects-and-stories/how-was-penicillin-developed> [<https://perma.cc/4RTT-72LX>].

129. Just Google searches are estimated at approximately 1.2 trillion each year and growing. See, e.g., *Google Search Statistics*, INTERNET LIVE STAT, <https://www.internetlivestat.com/statistics/?t=y=google-search-statistics> [<https://perma.cc/7SWL-WLD8>].

130. See, e.g., LEV, *supra* note 124, at 26–31.

131. See, e.g., SHAPIRO & VARIAN, *supra* note 33, at 13–17.

132. Facebook’s (now Meta) dominance over the market despite past and present competition demonstrates this point. See, e.g., *Social Media Stats Worldwide*, STATCOUNTER: GLOBAL STAT., <https://gs.statcounter.com/social-media-stats> [<https://perma.cc/2N7M-M65M>].

133. See, e.g., *Highest Number of Patents by a Company: Everything You Need to Know*, UPCOUNSEL (Jan. 1, 2024), <https://www.upcounsel.com/highest-number-of-patents-by-a-company> [<https://perma.cc/3V2C-H5WZ>].

exponentially more insight can obviously be inferred from more information, and hence the more information accumulated the more it would be worth. Network effects are inherent, expected, almost natural in the case of information, differently from many other intangibles where they may not be obvious.¹³⁴ Compare the collection of personal information by search engine firms about their users with pharmaceutical patents. In the latter case, one could expect that some inventions and discoveries would be helpful for the making and enhancement of others, resulting in better drugs, drugs with fewer and less severe side effects and the like. But, in the case of information divulged by search engine users, it is certain that most of it will be useful for someone, and its accumulation will be useful to all vendors. This property of information may be viewed as merely quantitatively different than the network effects impacting the value of other intangibles, but this Article argues that it amounts to a qualitative difference. Big Data is big only when it is truly big; the idea behind Big Data is that it (the computing capabilities and understanding) converted the market for information from a traditional market where firms competed for scarce information to a market where information is abundant and what distinguishes firms in such a market is their capabilities to aggregate and organize the data in efficient ways, useful for others. In other words, simplistically put, the entire set of data (and potential network effects) is available and with it all the value, and firms compete only over its extraction. The famous economist Herbert Simon said that while in the past the competition was over scarce information, nowadays it is over scarce attention¹³⁵ (and that had been said prior to the ascent of social media . . .). The opportunities presented by Big Data therefore are so vast that they significantly reduce the chances of mistakes and misjudgments, risks that play a major role in any other market for intangibles. Finally, Big Data often presents the promise of value at minuscule costs when compared to other intangibles.

Partial excludability, the limited ability to prevent spillovers, also affects information like other intangibles.¹³⁶ Two features of information however make it unique among intangibles. On the one hand, the value of information is more volatile than that of other intangibles since it is so simple, quick, and costless to obtain and replicate. Moreover, much information is usable, and to some extent valuable, even in face of *better* information, unlike most intangibles (think an old drug with side effects and a new one without any). On the other hand, the sheer vastness of the information market in comparison to all other markets for intangibles erects significant barriers to entry and success and, combined with the winner-takes-all feature that obviously benefited Google, Apple, Facebook, and Amazon, mutes the impact of data spillover for these big players. This is especially true in the era of Big Data when tailoring deliverables and price differentiations further increase the hold of the data

134. VARIAN, FARRELL & SHAPIRO, *supra* note 126, at 33–37.

135. See SHAPIRO & VARIAN, *supra* note 33, at 5–6.

136. See, e.g., LEV, *supra* note 124, at 33–37, 48.

giants over everybody.¹³⁷ Moreover, as noted by Pistor, the value of information is not dependent on the law or legal protection like other intangibles.¹³⁸

Perhaps the most salient difference between information and other intangibles is the inherent risk involved in investments in the latter.¹³⁹ Investors in the discovery of intangibles depend on a unique “idea,” something that no one else thought about before. Even when one owns the idea, they are always vulnerable to a better idea emerging and dooming theirs to worthlessness. Information, and especially *Big Data*, behaves differently. The data giants did not capture the market in a single giant leap and are not vulnerable to a dramatic takeover by others in the same way that drug companies are, for instance. Therefore, this inherent risk, although it exists, is a more muted potential value detractor in the case of information when compared with other intangibles.

Another important property of intangibles is their nontradability, the lack of markets for unique intangibles.¹⁴⁰ As discussed in the prior Section, some information is traded on the market. Some tailored databases, for example, are regularly sold for what one must assume are market prices (ignore monopolistic powers for the sake of this example). Markets for information however are complex and unhelpful for valuation purposes.¹⁴¹ Note that even the market transactions in said databases are not helpful in terms of income tax valuation since these are only possible in conditions of secrecy which includes secrecy about pricing. Secret pricing is obviously unhelpful for valuation purposes since it is unavailable. Finally, coming back to the tailor-made information or predictions sold by the data giants to specific customers. These sellers are not subject to market discipline, yet even if one wished to adjust their pricing (also assuming that it is discoverable), one may find them useless for the purposes of valuation of other transactions since these are tailor-made specific products that would be difficult to compare with others.

In conclusion, information has many of the same properties that make intangibles special and difficult to value, yet the magnitude of some of these properties makes information markets behave differently from other markets for intangibles. For the most part, they are more volatile and difficult to use for valuation purposes. Note that the same conclusion goes to the other primary valuation methods. The costs of obtaining information are obviously even more disconnected from its potential income than in the case of other intangibles, while predicting the present value of income to be generated is essentially impossible in most cases for similar reasons to the uselessness of market prices for information valuation purposes.¹⁴² Consequently, valuation of information for income tax purposes is highly difficult if not impossible in many cases.

137. See VARIAN, FARRELL & SHAPIRO, *supra* note 126, at 15–25.

138. See *supra* note 70 and accompanying text.

139. See, e.g., LEV, *supra* note 124, at 37–42.

140. See, e.g., *id.* at 42–45, 47–48.

141. See *supra* Section I.A.1.iii.

142. For this Author's analysis of the weakness of these valuation methods with respect to intangibles generally, see Brauner, *supra* note 52, at 104–22.

B. INTERNATIONAL TAX CHALLENGES

The basic challenges that information presents to income taxation are augmented by those it presents in the cross-border context where such challenges are at the present most salient.

1. The Nexus Question

The requirement of nexus between a taxing jurisdiction and the income it wishes to tax stems from the *genuine link* doctrine in public international law and norms such as respect and equality among nations.¹⁴³ Traditional income taxation accepted both personal connections between taxpayers and the taxing jurisdiction (typically based today on residence) and territorial connection of the said income (typically based on source rules that connect income with a taxing jurisdiction, and in the case of business income with a requirement of physical presence in the taxing jurisdiction). Both residence and source rules have developed to be almost universal in the convergence of rules to an international tax regime.¹⁴⁴ Despite (and perhaps because of) this convergence trend, these rules have had difficulties adapting to globalization. Most notably, the ascent of the digital economy made the physical presence condition for taxing business income anachronistic.¹⁴⁵ The data revolution increased the pressure on these rules multifold even before the regime was able to adjust to simpler aspects of the digital economy.

Most notably, the physical presence requirement for taxing business income has been recognized as impractical. The requirement is still part of the law, yet there is wide agreement that it will eventually disappear. This does not mean that a territorial nexus between the income and the taxing jurisdiction will not be required. In place of physical presence, it is likely that some other proxy based on a revenue threshold or digital presence will serve that role. Such new nexus rule could fit well most of the digital economy, but it has already been proven challenging in cases where information features prominently. Strangely, recent work on the modernization of the nexus requirement sought

143. This requirement enjoyed a revived scholarly attention in recent years. See, e.g., STJEPAN GADŽO, NEXUS REQUIREMENTS FOR TAXATION OF NON-RESIDENTS' BUSINESS INCOME: A NORMATIVE EVALUATION IN THE CONTEXT OF THE GLOBAL ECONOMY 19 (2018); PETER HONGLER, JUSTICE IN INTERNATIONAL TAX LAW: A NORMATIVE REVIEW OF THE INTERNATIONAL TAX REGIME 74–86 (2019); Philip Baker, *Some Thoughts on Jurisdiction and Nexus*, in 18 CURRENT TAX TREATY ISSUES: 50TH ANNIVERSARY OF THE INTERNATIONAL TAX GROUP 441, 445–46, 452 (Guglielmo Maisto ed., 2020); PETER HONGLER, INTERNATIONAL LAW OF TAXATION 22–23 (Mark Janis, Douglas Guilfoyle, Stephan Schill, Bruno Simma & Kimberley Trapp eds., 2021); and Juliane Kokott, *Ch. 1: Public International Law and Taxation: Nexus and Territoriality*, in TAX NEXUS AND JURISDICTION IN INTERNATIONAL AND EU LAW 1, 5 (Edoardo Traversa ed., 2022).

144. See, e.g., Yariv Brauner, *An International Tax Regime in Crystallization*, 56 TAX L. REV. 259, 259–65 (2003) (documenting this convergence).

145. See, e.g., OECD/G20 BASE EROSION AND PROFIT SHIFTING PROJECT, *supra* note 11, at 137 (concluding the BEPS work on this challenge with a call for further work on a solution to this challenge).

to justify taxation of foreign taxpayers in jurisdictions where they have no physical presence based on their *users* in those jurisdictions.¹⁴⁶

To illustrate the difference between information transfers and other digital business compare Google searches and advertising sales and consultancy with an online gaming or education website. In the case of the latter, it is easy to make the analogy to an equivalent brick-and-mortar business; the users pay to play or learn much in the same way they would to a physical facility in their jurisdiction. A revenue threshold or one based on the number of users or volume/magnitude of transactions fulfill the purpose of a tax jurisdiction granting nexus.¹⁴⁷ The case of Google searches is more complex. The users do not pay for the search service and what they provide in return is amorphous and materializes into value and profits to Google only in combination with what users everywhere in the world provide and together with other services and inventions in various yet unknown jurisdictions. The OECD attempted to simplify this by justifying taxation at source based on a presumed barter transaction,¹⁴⁸ yet the barter itself, if it even exists, is not taxed; only ensuing transactions with advertisers and others are. These ensuing transactions however are not a direct consequence to the barter transactions, making the argument that a nexus is established based on these transactions highly tentative.

Note that it is not the business model of the data giants that make the nexus determination difficult but rather the nature of information, and especially big data business that is often difficult if not impossible to pin down to a jurisdiction in the form of a threshold in replacement of the physical presence requirement. This difficulty however is solvable under an income tax if the threshold architecture would be replaced with an allocation formula that would preserve the purpose of the nexus requirement (i.e., no tax jurisdiction without meaningful participation in the local economy, for example, using whatever proxies states find legitimate).¹⁴⁹

2. Sourcing Transactions in Information

Unlike the nexus threshold rule, sourcing is a technical requirement of international income tax law that faces similar challenges to the general identification, realization, and classification rules. This is not surprising since sourcing follows classification with different rules for different types of income.¹⁵⁰

146. See, e.g., OECD/G20 BASE EROSION AND PROFIT SHIFTING PROJECT, PROGRESS REPORT ON AMOUNT A OF PILLAR ONE: TWO-PILLAR SOLUTION TO THE TAX CHALLENGES OF THE DIGITALISATION OF THE ECONOMY 7 (2022) (explaining the most recent version of the solution proposed by the OECD and adopted by the Inclusive Framework, accepting taxation without physical presence, albeit only to a limited extent).

147. The Pillar One proposal adopts a revenue threshold, for example. See, e.g., *id.* at 10 (discussing “the threshold that must be met to establish a taxable nexus in a [j]urisdiction”).

148. See, e.g., OECD, SECRETARIAT PROPOSAL FOR A “UNIFIED APPROACH” UNDER PILLAR ONE, *supra* note 11, at 5–9; Becker & Englisch, *supra* note 11, at 13–14.

149. The Article elaborates on this solution in the examination of the reform path based on formulary taxation *infra* Section III.C.

150. See, e.g., 26 U.S.C. §§ 861–865 (outlining the U.S. federal income tax source rule). The sole comparative study relevant to this Article, IFA’s study of the treatment of Big Data taxation,

The difficulty to tax information presents itself most directly and saliently in the context of sourcing since this is the stage where the tax base is explicitly divided among claiming jurisdictions.¹⁵¹

The sourcing problem is however not solely a consequence of the classification problem. This Section demonstrates that the difficulty to source information-related income persists even when the classification of the relevant transactions is not particularly controversial. To realize this sourcing difficulty, one must first understand the nature of the existing source rules. The prior Section discussed the requirement of a link between an item of income and a taxing jurisdiction. The international tax regime acknowledges two primary such links based on the residence of the taxpayer and the source of the income item. The operation of this regime is essentially universal, granting primary but limited taxing rights to the source jurisdiction and residual taxing jurisdiction to the residence state. The system translates into taxing residents on their worldwide income and nonresidents only on their domestic source income. Despite the obvious importance of source in such a system, the sourcing of income is not obvious, following natural laws or simple economic bases.¹⁵² Nonetheless, the international tax regime has successfully generated over time a set of almost converged, effective source rules that enjoy universal legitimacy.¹⁵³ Some of these rules follow what may be viewed as economic logic¹⁵⁴ while others are clearly arbitrary,¹⁵⁵ yet they have been quite effective until recently.¹⁵⁶

The digital economy challenged these old economy source rules and new ones have not yet developed. Lawyers have tried their instinctive trick of

clearly concluded that classification and its sourcing consequences were the most serious difficulty faced by tax systems. See SPRAGUE, *supra* note 8, at 15.

151. See generally SPRAGUE, *supra* note 8 (providing examples for the sourcing difficulties in Big Data case studies used in the sole comparative study relevant to the subject of this Article).

152. A good demonstration for this difficulty is the recent attempt by the OECD to infuse a principle, namely “value creation” into the rules of the international tax regime, implying that income could be tracked to a jurisdiction or jurisdictions in which the value it represents had been created. This attempt has been heavily criticized by experts and in any event has no or very little implications in the practice of international tax law. See, e.g., Werner Haslechner & Marie Lamensch, *General Report on Value Creation and Taxation: Outlining the Debate*, in TAXATION AND VALUE CREATION 3, 13–20 (Werner Haslechner & Marie Lamensch eds., 2021) (providing a research project of the European Association of Tax Law Professors examining the utility of value creation as an international tax principle). For general critique of sourcing in income taxation, see generally Lawrence Lokken, *What Is This Thing Called Source?*, INT’L TAX J., May–June 2011, at 25, 25–26.

153. See Brauner, *supra* note 144, at 278–82.

154. See, e.g., REUVEN S. AVI-YONAH, INTERNATIONAL TAX AS INTERNATIONAL LAW: AN ANALYSIS OF THE INTERNATIONAL TAX REGIME 42–47 (2007).

155. See, e.g., *id.* at 44–45 (discussing royalties and delivery service controls).

156. At the present even the OECD, who has been the caretaker of the international tax regime and the source of the strongest resistance to reform, came out with proposals for new source rules in the context of the digital economy. These proposals are highly controversial, yet their content is beyond the scope of this Article; the point is that the traditional source rules no longer serve their purpose in the digitalizing economy. See generally OECD, PILLAR ONE – AMOUNT A: DRAFT MODEL RULES FOR NEXUS AND REVENUE SOURCING (2022), <https://web.archive.org/2022-02-04/623615-public-consultation-document-pillar-one-amount-a-nexus-revenue-sourcing.pdf> [https://perma.cc/732Z-NW87] (explaining the OECD’s draft model rules and revenue sourcing options).

analogizing digital transactions to traditional ones.¹⁵⁷ The strong intangible nature of the new economy doomed that attempt to failure since the old source rules depended either on a physical element or on an intuitive personal link to the income, none of which are relevant for the digital economy. They are even less relevant for the data revolution. This is the case because, as already explained, information is like an intangible “on steroids” and therefore even more difficult to pin down than, for instance, patents or copyrights. A different perspective, yet one that leads to the same end, is that information “had been there first,” and therefore by definition cannot be associated with a jurisdiction. This perspective corresponds with the view of information as a common good.¹⁵⁸

The most straightforward analogy, and hence classification, of raw data sales, for example, would be to sales of personal property, generating taxable gains. Section I.A.1 *supra* discussed the difficulty faced by private law in coding property rights in information, and the essentially global reluctance to do so. Nonetheless, one may argue that one could draw an analogy between certain data or even database sales and sales of personal property for income tax purposes. One could find support for this approach in the example of sales of customer lists physically collected by vendors of the old economy.¹⁵⁹ The universal source rule for gains from sales of personal property is formal: the residence of the seller.¹⁶⁰ To simplify the analysis, consider two types of sellers: individual users of Google Search and company X, the radio station in the example this Article uses throughout. With respect to the former multiple issues immediately arise: Can the tax system presume that information disclosed to Google during a search belongs to the user when we know for a fact that such user is not the legal owner of much of the said information? Does Google know the tax residence of every user? If not (which certainly is the case), is it justified to source gains to the state allocated the IP address of each user (which Google can easily detect, put aside VPN or other similar measures)? How much of the value of the information should be sourced as gains (assuming away the difficulty of valuation), and which amount requires a deduction of (cost) basis from the gross value realized by the taxpayer? Is it realistic to expect states to administer the tax consequences of such sourcing? Switching to company X, many of the same issues arise in addition to the fact that company X is resident in state R which has nothing to do with the information collected, all of which relates to state S consumers and state S advertisers and vendors. This rule will obviously make tax planning very easy as all data collection will find itself resident in tax havens. The case of company X also raises the question of whether the sold data should be viewed as part of the inventory of the seller, in which case a different source rule may apply.

157. See, e.g., SPRAGUE, *supra* note 8, at 16 (summarizing reports by thirty-seven country experts, the prevailing view of which supported analogizing Big Data transaction to traditional ones).

158. See *supra* note 54.

159. See, e.g., 26 U.S.C. § 1221(a)(3) (illustrating that customer lists, like other intangibles of the same kind, are considered capital assets).

160. See, e.g., 26 U.S.C. § 865(a).

The source rule for inventory is less universal than that for noninventory gains.¹⁶¹ Yet, when an inventory gain's source rule applies it would source the gains to the place of production of the goods (information), the residence of the buyer, or the place of sale. In the first case, the analysis would become essentially philosophical or simply follow the regular residence of the seller rule. The second case, the residence of the buyer, would clearly be even worse than the residence of the seller, while the third case would simply give taxpayers the choice where to source their gains. The analogy to gains from the sale of personal property is similar to a subcategory of intangible assets, often denoted as know-how, a term not dissimilar to a trade secret under IP law. For tax purposes the transfer of know-how is not different than that of other intangible assets even if at times it is referred to as a specific form of information transfer.¹⁶² U.S. law struggled with the classification of know-how transferred as it did with that of other forms of information transfers,¹⁶³ yet, in the lack of a specific taxing rule, it seems that under certain conditions transfers of know-how may generate gains,¹⁶⁴ subject to the residence of the seller source rule, and suffer from the same issues mentioned above for other sorts of sales of personal property.

A second analogy would be to royalty income, based on the construct that information is not really transferred but rather access is given to information, itself an intangible.¹⁶⁵ The most common source rule for royalties is the location where the relevant intangible is used or exploited.¹⁶⁶ Naturally, this rule is facing the most significant challenge by the digital economy, but not so much for its articulation as for its application.¹⁶⁷ An intangible (including information) is not located anywhere, and often transactions in intangibles provide for use in multiple jurisdictions and perhaps even through multiple links in the business arrangement. Furthermore, legal protection may be used by jurisdictions to

161. See Avi-Yonah, *supra* note 153, at 43–44; see also, Richard J. Vann, *International Aspects of Income Tax*, in 2 TAX L. DESIGN AND DRAFTING 718, 743–44 (Victor Thuronyi ed., 1998) (providing a comparative perspective on the sourcing of inventory and noninventory gains).

162. See, e.g., Treas. Reg. § 1.861-18(e) (defining know-how in the context of classification of software transactions).

163. See, e.g., HARSHA REDDY, U.S. INCOME PORTFOLIOS: INCOME, DEDUCTIONS, CREDITS AND COMPUTATION OF TAX, PORTFOLIO 558-3RD: INTELLECTUAL PROPERTY: EXPLOITATION AND DISPOSITION §§ II.B.6–7 (2024).

164. See, e.g., *id.* Under different circumstances such transfers may be classified as services or licenses as well.

165. See, e.g., SPRAGUE, *supra* note 8, at 16, 27–29.

166. See, e.g., 26 U.S.C. § 861(a)(4). Note that some states use a residence of licensor or a jurisdiction that protects the IP rule. See, e.g., AVI-YONAH, *supra* note 154, at 44. In both cases the rule would be too formal and in the first (residence of licensor) easy to circumvent. This is true for all intangibles but particularly for information where, first, property, including intellectual property, rights are unsettled, and second, the economic impact has nothing to do with the residence of the data giants. It is unfathomable that other states would simply agree that the source of almost all income from data transactions would be the United States where almost all data giants reside, and, realistically, these corporations would have too strong of an incentive to change their residence if this were the rule.

167. See, e.g., Charles I. Kingson, *The Source of Royalty Income*, 199 TAX NOTES 499, 499–500 (2008) (analyzing the U.S. source rule for royalty income that purports to follow IP protection against the diverse practice which does not always conform to it).

argue for monopolies over the value, which is the product of the exploitation of any intangible.¹⁶⁸ The case of information is even more complicated. Where is information used? Take the case of data-based advertising that generates much of the income of the data giants. Is it used in the states of residence of the licensor (e.g., Google or Facebook) or the licensee (the advertiser)? That may seem unjustified when the function of the advertising (exposure to potential customers) occurs, as it usually is, in many other states. How about tracking the locations where the advertising is viewed by users (assume for this purpose that all exposures are equal)? We know that the data giants can track the IP addresses of those who view the advertisements since they get paid according to such exposure, so administrability is not the problem.¹⁶⁹ The problem is that at the time a tax would be levied and a taxpayer (or a withholding tax agent) would be required to identify the source of the royalty income, namely the time of the payment for the information, there would be no way to precisely determine such locations. One could also argue that the use of the information is not in the place in which the advertising is viewed but rather where sales take place, which makes the place of viewing application of the rule problematic. Furthermore, the impact of data-based advertisement may easily extend beyond the direct viewing of targeted advertisements. Firms regularly use television, radio, and movies, for example, to advertise their products based on data collected by the data giants.¹⁷⁰ Finally, one may argue that the literal place of use of the information is where the advertisement was devised. The problem with such interpretation is that it is likely to be completely disconnected from the location of the impact of the advertisements. These are just a few illustrations of the difficulty of applying the normal royalties source rule to transfers of information. Admittedly, that source rule faces similar difficulties with other intangibles, yet it is most obviously incompatible with information transfers.

A third analogy is to personal services. Section I.A.1 *supra* discussed the appeal of an approach that focuses on the work done with information rather than the transfer of the information itself.¹⁷¹ There are many cases where this analogy may be appealing, such as the information analysis Google or Facebook provides to advertisers or focused predictions tailored by Big Data giants to corporate clients using their data analysis expertise. The essentially universal source rule for services is the location of the services.¹⁷² Even this almost obvious rule has been challenged by the ascent of the digital economy. Remote services, which do not have to be digital (think phone customer support) always involve at least two jurisdictions, namely the residences of the service provider and

168. See, e.g., ANSGAR A. SIMON, PORTFOLIO 6620-1ST: SOURCE OF INCOME RULES: DETAILED ANALYSIS ¶ V.C.1 (2024).

169. For a salient example, see Megan Graham & Jennifer Elias, *How Google's \$150 Billion Advertising Business Works*, CNBC (Oct. 13, 2021, 12:52 PM), <https://www.cnbc.com/2021/05/18/how-does-google-make-money-advertising-business-breakdown-.html> [<https://perma.cc/MKJ9-ZAKN>], which explains that Google makes most of its revenue from the described advertising model.

170. See, e.g., Jay Newell, Charles T. Salmon & Susan Chang, *The Hidden History of Product Placement*, 50 J. BROAD. & ELEC. MEDIA 575, 582–86, 588–89 (2006).

171. See also SPRAGUE, *supra* note 8, at 16, 30–33.

172. See, e.g., 26 U.S.C. § 861(a)(3).

that of their customer. As such, this scenario triggers a direct and explicit conflict between residence and source jurisdictions. It is not surprising therefore that it has not been resolved. The more powerful residence states and the OECD have been to date careful to skirt the issue and *de facto* win the debate, i.e., have the source in the residence state of the service provider based on the primary business profits rule which provides that such profits of a person resident in state R (like company X in the example used throughout this Article) will be exclusively taxed (and effectively sourced) in the residence jurisdiction unless such person has a permanent establishment in the source state (S in the abovementioned example). Since no such permanent establishment exists in such cases (the services are provided remotely) no taxing rights are given to what one expects to be considered the source jurisdiction (the location of the customer). Such interpretation is problematic for a number of reasons. First, it ignores the fact that the economic impact of the service is in the state of the customer, yet such state has no right to tax the income. Second, it is clear that the source rule for services gained support in an era when remote services were inconceivable, and any modern application of the rule must take into account the contribution of several factors to the provision of the services. In the case of information-based advertising, for example, it is intuitive that some of the work based on which one may classify the income in that category takes place in the management and research and development center(s) of the service provider, while some of it relates to the origin of the information (Google searchers, for example). The latter may be in the state of the customers or not, and likely in multiple states (hence *Big Data*). Any attempts to use a formal approach in these cases would seem unfair and detached from reality and hence illegitimate, while any attempt to follow the economic impact of these transactions is doomed to complexity that may be insurmountable, as explained *supra* in Section I.A.2.

3. Transfer Pricing

The transfer pricing rules require valuation of related party transactions under deemed market conditions to prevent multinational taxpayers to take advantage of their ability to engage in nonmarket transactions to inappropriately reduce their taxpaying.¹⁷³ The transfer pricing problem is a problem of valuation and therefore it is primarily identical to the domestic problem of putting value on information transfers discussed in Section I.A.2 *supra*. Therefore, this Section adds just a few observations unique to the international context. The incentives to engage in aggressive tax planning in the cross-border context are however much more significant than the domestic incentives as multinational enterprises may shift profits to low or no tax jurisdictions, and, as further explained in Section II.B *infra*, information provides them unique opportunities to do so. Nonetheless, at the present tax authorities have not yet directly addressed the difficulties presented by information in the context of transfer

173. See, e.g., 26 U.S.C. § 482; see also Treas. Reg. § 1.482-0 (as amended in 2015) (outlining the regulations promulgated under 26 U.S.C. § 482).

pricing.¹⁷⁴ A key difficulty that information transfers present to the existing transfer pricing rules is the uniqueness of different transactions in information. Such uniqueness makes finding market transactions sufficiently comparable to the tested related party transactions very difficult. A second major difficulty is in the recent emphasis on people's functions in the generation of income in related party transactions.¹⁷⁵ The main functions in the information industry are in the creation, maintenance, and upgrades of the software used by the data giants. These activities take place away in both place and time from the jurisdictions in which the immediate economic impact takes place, which would cause the same difficulties as in the case of remote services described above.¹⁷⁶

4. Treaty Application

The provisions of bilateral tax treaties divide tax bases among contracting states with a view to reducing instances of double taxation. They do so by limiting the taxing powers of the contracting states with a set of norms parallel to the domestic tax rules.¹⁷⁷ As such, treaties do not present new challenges in the context of this Article. Valuation, sourcing, and, most importantly, classification would consequently be difficult under tax treaties in essentially the same manner as under the international tax laws of states.¹⁷⁸ One comment about the taxation of business profits under tax treaties may however be useful.

The normal tax treaty business profits provision provides that such profits will be taxed exclusively by the residence state unless the taxpayer has a permanent establishment in the other state.¹⁷⁹ The concept of permanent establishment, already mentioned above in the context of the physical presence requirement for source taxation, is a source-like concept operating as a threshold rule for taxation of business income. It is a rather high threshold, encouraging cross-border investment, which allows taxation "at source" only when the investor significantly participates in the economy of a state that is not their state of residence. Having an establishment, physical presence of brick-and-mortar, and people on the ground with some degree of permanence in both time and place serves as a proxy or a test for such

174. See, e.g., SPRAGUE, *supra* note 8, at 16, 43-49.

175. This emphasis has emerged in response to what had been conceived as manipulation of the risk factor for inappropriate allocation of tax bases among jurisdictions. The idea was that functions of people are less manipulable and hence more appropriate for transfer pricing analysis. See, e.g., OECD/G20 BASE EROSION & PROFIT SHIFTING PROJECT, ALIGNING TRANSFER PRICING OUTCOMES WITH VALUE CREATION 21-24 (2015), https://read.oecd-ilibrary.org/taxation/aligning-transfer-pricing-outcomes-with-value-creation-actions-8-10-2015-final-reports_9789264241244-en#page1 [<https://perma.cc/3796-NM58>].

176. For examples of these difficulties from a comparative perspective, see sources cited *supra* notes 170 and 173.

177. KLAUS VOGEL, ET AL., KLAUS VOGEL ON DOUBLE TAXATION CONVENTIONS 26 (John Marin & Bruce Elvin trans., Kluwer L. Int'l 3d ed. 1997) (using the metaphor of a "stencil" over domestic tax law to describe the function of tax treaty provisions).

178. See, for example, the discussion of treaty application from a comparative perspective including a summary of *Big Data* case studies' analysis by over thirty country experts in SPRAGUE, *supra* note 8, at 181-83.

179. See OECD, *supra* note 19, at art. 5, 7.

significant participation in an economy. This very successful *old economy* concept is obviously ill-fit for the *new economy* and indeed it came under much pressure that required constant tweaking of the rules.¹⁸⁰ Intangibles, and particularly digital goods and services, do not require a permanent establishment in a state to significantly participate in such state's economy;¹⁸¹ neither does information. Tracking the physical elements of the information business (computers and people engaged in management and research) won't do since that will likely lead to primarily residence taxation, similar to the problems mentioned in the discussions of transfer pricing and services above. Using proxies, such as the volume of users or the dollar worth of transactions, has its own problems. First, unlike the permanent establishment threshold, these are not independent of state specific properties such as size, wealth, degree of development, and similar features, all of which will produce clear winners and losers. Reaching a stable agreement over a single proxy will be very difficult if not impossible. Second, whatever proxy chosen will likely be static and therefore may create incentives and disincentives (to development, for example). Third, such proxies cannot track the economic contribution of information to an economy and are likely to be anecdotal and therefore subject to criticism from the start, which will jeopardize the stability of the international tax regime. The inevitable conclusion is that at least this iconic feature of tax treaties, the threshold rule for taxing business profits, requires reform.

C. INTERIM CONCLUSION: REFORM IS INEVITABLE

The above discussion only touches upon the most salient issues that the current income tax-based international tax regime faces with the ascent of information. The difficulty to identify the subject of taxation should be sufficient to cast doubt on the survival chances of the modern income tax, yet the essential impossibility of classification, valuation, and sourcing of income generated by transfers of information must bring one to that inevitable conclusion. This Section demonstrated that attempts by the dominant forces in the tax world to preserve the existing rules by analogies and tweaking in response to what seems like ad hoc difficulties cannot save the international tax regime. The next Part further argues that information-minded reform is not only inevitable but is also imminently required.

II. THE IMPORTANCE OF REFORM NOW

It may seem that the importance of information in all our lives, and more specifically, the impact of the data revolution on markets, deems it unnecessary

180. See generally SKAAR, *supra* note 20 (discussing the permanent establishment concept and the challenges it faces in the twenty-first century).

181. For an analysis of the failure of the permanent establishment concept in the digital economy and proposals to remedy such failure by allowing different proxies for an equivalent significant participation in an economy see, for example, Peter Hongler & Pasquale Pistone, *Blueprints for a New PE Nexus to Tax Business Income in the Era of the Digital Economy* 22–35 (Vienna Univ. Econ. & Bus., Working Paper No. 2015-15, 2015), https://papers.ssrn.com/sol3/papers.cfm?abstract_id=2586196 [<https://perma.cc/3C5V-243Z>].

to justify a deeper dive into the taxation of information. But the need for an Article such as this one is not self-explanatory. This is proven by the lack of past scholarship on the matter. When one thinks about the data revolution, one most intuitively thinks about Google searches, an activity that is common to almost all people. Consequently, the most obvious association one makes between taxation and information exchanges is to the taxation of Google and the other data giants. Since Google is generally taxed on the income it generates from the sale of advertisements and similar activities, one may puzzle what more is needed. This Part argues that not only more, in the form of reform, is needed, but that it is needed now.

There are three specific reasons for this argument, all with significant current tax policy implications. The first is the mere confusion over information exchanges. Some such transactions are taxed with little debate over the justification of such taxation. The first Section of this Part elaborates on the immediate importance of identifying the subject of taxation for an effective and stable tax regime. The second immediate challenge that information poses to the current rules is the ease of engagement in undesirable tax planning, especially international tax planning for transactions involving transfers of information. Indeed, most of the current discussion of the taxation of Google, Facebook, and similar enterprises relates to their ability to minimize their group-level effective tax rate, not their being taxed in the first place.¹⁸² The most immediately relevant importance of this Article however is in the context of the international tax reform promoted by the OECD in the so-called BEPS 2.0 context.¹⁸³ This reform, parts of which have already been or are being implemented in a few states,¹⁸⁴ relies on the idea that the data giants operate within states via their customers based on a construction that they engage in barter, receiving information from users in exchange for services, such as the search services provided by Google to its users. As already discussed in the last Part, this is a very problematic construct, which may collapse the entire house of cards built by the OECD. This Part elaborates on these three issues to demonstrate, beyond intuitions, that an information-minded reform of the international tax regime is presently necessary.

182. The current international tax discourse focuses on the Pillar Two or the global minimum tax program, which sole goal is to ensure the minimum taxation of the world's largest multinational enterprises, particularly the data giants. *See, e.g., Action 1 Tax Challenges Arising from Digitalisation*, *supra* note 16.

183. *See id.*

184. *See, e.g.,* Stephanie Soong, *Asia Leaps Ahead on Adopting OECD Global Minimum Tax Rules*, 109 TAX NOTES INT'L 1110, 1111–12 (2023) (reporting that South Korea became the first state to domestically implement Pillar Two, likely to be followed by other Asian states, led by Japan); Council Directive 2022/2523 of 14 Dec. 2022, Ensuring a Global Minimum Level of Taxation for Multinational Enterprise Groups and Large-Scale Domestic Groups in the Union, 2022 O.J. (L 328) 1, 7–8 (directing EU member states to adopt a Pillar Two compatible tax).

A. THE SUBJECT OF TAXATION

The multitude and magnitude of difficulties to apply the current income tax rules to transfers of information discussed above in Part I should suffice to support reform of the international tax regime. Some of these difficulties however cannot wait due to the threat that they present to the stability of the regime. The most obvious example is the untaxed barter transaction between, for example, Google search engine users and Google. Not taxing, or not being able to tax, everybody on the one prong of the transaction (providing information to Google) is one thing, but not taxing Google on the consideration it receives for the supply of search services is quite another. Google is eventually and indirectly at least partly taxed on such enrichment when it sells advertisements, but its business enjoys an unintentional tax advantage that distorts the supposed neutrality of the tax system. Moreover, when the same information is sold forward by Google to another firm that uses it to sell, say advertising to others, that firm will be taxed differently than Google (having a cost basis or being able to deduct the cost of the purchase from Google). The difficulty to classify these and other transactions opens the door to further distortions and non-neutralities in the tax system.

The lack of consistency in treatment of each of the stages of income tax analysis does not only distort domestic tax systems but also causes incompatibilities due to differences in treatment between states, putting further pressure on the international tax regime that is supposed to bring a fair allocation of tax bases. Most problematically, different classifications in trade partners result in hybrid transactions (classified in one manner in one state—say, a license—and otherwise in another—say, a sale). Hybrid transactions have been identified as some of the most problematic threats to the international tax regime, leading the BEPS project to propose new rules to alleviate them, with little success to date.¹⁸⁵ The inconsistent treatment of information transfers featured prominently in that work and promises to be even more problematic the more important information becomes in the market.¹⁸⁶

B. FACILITATION OF INAPPROPRIATE TAX PLANNING

A second reason for the urgency advocated by this Article is the unique tax minimization opportunity that information transfers present to multinational enterprises (“MNEs”). The BEPS project was triggered by the public outrage over the low taxation of MNEs fed by media exposure of the low effective tax rates faced by the largest world corporate groups and the extensive tax planning they engage in to achieve such low taxation.¹⁸⁷ MNEs associated with the digital economy and especially those known as the data giants, led by the

185. See OECD/G20 BASE EROSION & PROFIT SHIFTING PROJECT, NEUTRALISING THE EFFECTS OF HYBRID MISMATCH ARRANGEMENTS, ACTION 2 - 2015 FINAL REPORT 11-12, 151-68 (2015), <https://www.oecd-ilibrary.org/docserver/9789264241138-en.pdf> [<https://perma.cc/S4L5-72QZ>].

186. See generally the examples used as case studies in the IFA comparative study of Big Data taxation, in SPRAGUE, *supra* note 8.

187. See *supra* note 18 and accompanying text.

now commonly called GAFAs (Google, Apple, Facebook (now Meta), and Amazon),¹⁸⁸ featured most prominently in this campaign¹⁸⁹ and were quite transparently the primary targets of the BEPS project.¹⁹⁰

Nonetheless, the BEPS project failed to deal directly with the challenges that the digital economy presented to the international tax regime.¹⁹¹ Criticism of this failure led in the aftermath of the BEPS project to what some may call BEPS 2.0 and a renewed attempt by the OECD to tackle these challenges.¹⁹² BEPS evidently changed little for the data giants that continue to be taxed at relatively low effective rates.¹⁹³

As explained above, most data transactions are difficult to define or identify under the income tax, let alone value. For the data giants the “hooks” for taxation are primarily the receipt of income for advertisement, payments for services related to data (mainly Big Data-related services), and payments for databases (the data themselves). All three hooks present income tax planning opportunities that are largely in the control of the taxpayers. Advertising income is mainly taxed based on residence or a physical nexus (permanent establishment) in a state. The former is clearly controlled by the taxpayers while in the case of the latter, although also controlled by the taxpayers, may be compromised for business reasons more important than taxation. The sale of services and databases may easily be substitutes and therefore manipulated to reduce tax exposure. Moreover, shifting the profits generated by these transactions may be as simple as moving legal paperwork or the use of a computer in one jurisdiction rather than the other.¹⁹⁴

188. See generally SCOTT GALLOWAY, *THE FOUR: THE HIDDEN DNA OF AMAZON, APPLE, FACEBOOK, AND GOOGLE* (2017) (documenting and analyzing the strategies that brought these four to prominence based on the uniqueness of the information business).

189. See, e.g., *id.* (Google, Apple, and Amazon); Victor Fleischer, *Why Facebook Is Paying the Tax Tab on Employee Compensation*, N.Y. TIMES: DEALBOOK (Sept. 10, 2012, 1:24 PM), <https://archive.nytimes.com/dealbook.nytimes.com/2012/09/10/why-facebook-is-paying-the-tax-tab-on-employee-compensation> (on file with the *Iowa Law Review*) (Facebook).

190. See, e.g., *Hearing on the OECD Base Erosion and Profit Shifting (BEPS) Project: Hearing Before the Subcomm. on Tax Pol’y of the H. Comm. on Ways & Means*, 115th Cong. 50 (Dec. 1, 2015) (statement of Rep. Jim Renacci, Member, Subcomm. on Tax Pol’y of the H. Comm. on Ways & Means) (discussing the BEPS project and its targeting of U.S. corporations).

191. Indeed, it ended with merely a report. See OECD/G20 BASE EROSION AND PROFIT SHIFTING PROJECT, *supra* note 146, at 4–5.

192. See, e.g., *Action 1: Tax Challenges Arising from Digitalisation*, *supra* note 16 (describing challenges and OECD’s latest actions to handle them).

193. See, e.g., Richard Rubin, *Does Amazon Really Pay No Taxes? Here’s the Complicated Answer*, WALL ST. J. (June 14, 2019, 4:30 AM), <https://www.wsj.com/articles/does-amazon-really-pay-no-taxes-heres-the-complicated-answer-11560504602> (on file with the *Iowa Law Review*).

194. This problem is very well-known in the international tax community since it represents the same problem that electronic commerce began to present in the 1980s. The OECD attempted to alleviate the problem by accepting computer servers as permanent establishments in certain cases, but such acceptance made the location of taxation essentially elective for many taxpayers, as simple as locating their computer servers in one or another jurisdiction. See OECD, *supra* note 19, art. 5 cmts. 122–31. For a scholarly analysis of the problem, see, for example, RICHARD L. DOERNBERG, LUC HINNEKENS, WALTER HELLERSTEIN & JINYAN LI, *ELECTRONIC COMMERCE AND MULTIJURISDICTIONAL TAXATION* 341–42, 344 (2001).

The proliferation of digital service taxes (“DSTs”) and taxes directed at advertising is a natural reaction to this ease of tax planning,¹⁹⁵ yet these taxes evolved outside the international tax regime, proving the vulnerability of income taxes in cases of information transfers.¹⁹⁶

C. BEPS 2.0

Undesirable tax planning and the unique tax minimization opportunities for the data giants are not the only problems that the BEPS process revealed in the context of taxation of information. Even more worrying is the impact of the impotence of the existing rules on the international tax regime itself. The rationale of the BEPS project was twofold: (1) the international tax rules were not fit for the new economy, where states’ economies are tightly interdependent, where capital became almost universally mobile (with a collapse of exchange controls), and where important transactions, such as those in derivatives, electronic and digital commerce, and related party transactions, were poorly taxed;¹⁹⁷ and (2) geopolitical developments led developing and emerging economies to reject the basic norms of international taxation, and particularly the trend of increasing residence taxation at the expense of source taxation.¹⁹⁸ BEPS 1.0 responded to almost none of these challenges.¹⁹⁹

BEPS 2.0 eventually attempted to respond to these challenges with a compromise under which the supposed interests of the developed states (tighter taxation of MNE, primarily at the level of the residence states) would be served by what is now known as Pillar Two or the global minimum tax idea, while the interests of the rest of the world would be served by Pillar One or a new taxing right (at source) based not on the traditional physical presence threshold for tax jurisdiction but rather based on the existence of users or a

195. See, e.g., ANA CEBREIRO-GÓMEZ, COLIN CLAVEY, MARCELLO ESTEVÃO, JONATHAN LEIGH-PEMBERTON & BENJAMIN STEWART, WORLD BANK GRP., DIGITAL SERVICES TAX: COUNTRY PRACTICE AND TECHNICAL CHALLENGES 10–11 (2021), <https://openknowledge.worldbank.org/bitstream/handle/10986/36840/P169976002e89a07209ae40d48d6ebb7154.pdf> (on file with the *Iowa Law Review*) (documenting such proliferation and the problems they present to the international tax regime).

196. Adopters of DSTs take the position that they are not subject to tax treaty obligations since these taxes are usually levied on turnover rather than income, yet this position is not without doubt, which further complicates international relations under the international tax regime. For differing positions on this question, see, for example, Roland Ismer & Christoph Jescheck, *Taxes on Digital Services and the Substantive Scope of Application of Tax Treaties: Pushing the Boundaries of Article 2 of the OECD Model?*, 46 *INTERTAX* 573, 574 (2018); and Daniela Hohenwarter, Georg Kofler, Gunter Mayr & Julia Sinnig, *Qualification of the Digital Services Tax Under Tax Treaties*, 47 *INTERTAX* 140, 143–147 (2019).

197. See *Action 1 Tax Challenges Arising from Digitalisation*, *supra* note 16.

198. See generally BRICS AND THE EMERGENCE OF INTERNATIONAL TAX COORDINATION (Yariv Brauner & Pasquale Pistone eds., 2015) (discussing the shift of power in the global economy from the OECD to emerging economies and the BRICS and related shifts in international taxation). In addition, participants in OECD tax meetings testified that developing states (India and China in particular) participating in such meetings as observers had been increasingly vociferous in their demands for more source taxation during the first years of the twenty-first century.

199. See, e.g., Yariv Brauner, *Treaties in the Aftermath of BEPS*, 41 *BROOK. J. INT’L L.* 973, 975–84 (2016).

market in the taxing jurisdiction.²⁰⁰ The original focus on the digital economy has simply vanished.

An evaluation of the substance of the rule changes is beyond the scope of this Section, which solely focuses on the threat that the BEPS 2.0 program presents to the stability of the international tax regime. BEPS 1.0's feebleness shook the regime, revealing serious tears in its seams when states, some of which clearly leaders in the supposed collaborative international effort, *jumped the gun* and acted unilaterally to enact new taxes in direct confrontation with the effort to reach an agreement on a coordinated solution that they themselves led.²⁰¹ BEPS 2.0, even more relevant to this Article, uses an indefensible justification for the compromise it is promoting with the Pillars program. After years of resistance to reconsider the physical presence requirement, the OECD now promoted a new taxing right based on explicitly nonphysical participation in the market of the taxing jurisdiction. The declared justification for this right is the exchange of information for services between users in the taxing jurisdiction and the nonphysically present otherwise taxpayer.²⁰² This is well-known by now to the reader as the Google search barter transaction. The logic of this justification is similar to what is known in tax policy as the *benefits principle*, or the idea that taxes are somehow payments for government services that taxpayers enjoy.²⁰³

The intellectual underpinning of the benefits principle has always been suspect, and subject to scathing criticism.²⁰⁴ It cannot be understood literally since the very definition of a tax requires payment not in exchange for specific government services.²⁰⁵ Moreover, even beyond the difficulty to quantify the benefits specific taxpayers enjoy from government services, all tax systems employ mechanisms explicitly contradictory to the idea of parallel benefits and payments, based *inter alia* on other principles such as the ability-to-pay

200. See *Action 1 Tax Challenges Arising from Digitalisation*, *supra* note 16.

201. See, e.g., Marie Sapirie, *News Analysis: Diverted Profits Tax Undermines BEPS Consensus*, TAXNOTES (Jan. 20, 2015) (on file with the *Iowa Law Review*) (reporting on the U.K.'s unilateral adoption of its diverted profits tax while being heavily involved in the effort to build a global consensus at the BEPS project level); see also *supra* note 195 (reviewing DST adoptions).

202. See *supra* note 11.

203. See, e.g., RICHARD A. MUSGRAVE & PEGGY B. MUSGRAVE, PUBLIC FINANCE IN THEORY AND PRACTICE 194–98 (Jack R. Crutchfield ed., 1973) (explaining the general premise of the benefits principle as a policy guideline for fairness in taxation); see also Joseph M. Dodge, *Theories of Tax Justice: Ruminations on the Benefit, Partnership, and Ability-to-Pay Principles*, 58 TAX L. REV. 399, 401–07 (2005) (defining the benefits principle).

204. See generally Ira K. Lindsay, *Benefits Theories of Tax Fairness*, in 9 STUDIES IN THE HISTORY OF TAX LAW 93 (Peter Harris & Dominic de Cogan eds., 2019) (providing a good review, both historical and substantive of the merits and criticism of the benefit theory of taxation in the past and the present).

205. “The OECD working definition of a tax is a compulsory unrequited payment to the government.” *Glossary of Tax Terms*, OECD (Feb. 11, 2021), <https://web-archiver.oecd.org/2021-02-12/78005-glossaryoftaxterms.htm> [<https://perma.cc/U3DP-GUL6>].

principle²⁰⁶ or other structures of redistribution via taxation.²⁰⁷ Nonetheless, even scholars continuously hang on to the benefits principle to justify whatever tax norms they wish to promote based on the intuitive appeal of the benefits principle. It seems intuitively just that one who benefits should pay for that enjoyment. The same goes for the use of the benefits principle in the cross-border context.²⁰⁸ It is difficult for some to accept a naked political or moral justification for the division of tax bases among states, preferring the pseudo-economic analysis, which perhaps carries the allure of being scientific. Therefore, the OECD hangs on the exchange of information between, e.g., Google and its users, to justify taxation of Google in that case by states where Google does not have physical presence.

Such justification is however difficult to defend. First, if the point is that participation in an economy or market justifies tax jurisdiction then why would such jurisdiction be different from other types of “participation” in an economy or market? Second, it is awkward to base a taxing right on a transaction that is itself not taxable. Finally, if the transfer of information is the justification for taxing Google in the case mentioned above (even assuming that the users are simply untaxed, for whatever reason), how could one explain that the taxation itself (the calculation of the tax) is completely divorced from the exchange of the information for services which justified it in the first place? It is easy to observe that the arrow here was shot first and only later the target was drawn around it.

A weak justification exposes the unprincipled approach of the OECD in devising the Two Pillars program. This will inevitably further threaten the stability of the international tax regime. The course taken by the OECD had been guided by its desire to preserve its power and protect the interests of its most powerful members. But these powers cannot continue to dictate the rules for the rest of the world and the inevitable result will be a loss of legitimacy and even a collapse of the regime. Only a principled reform mindful of the unique properties of information and the role of data in the markets today could restabilize the regime. This Article assesses options for such reform in the next Part, yet first, a few words are due about the importance of the international tax regime.

D. A NOTE ON WHY IT IS IMPORTANT TO TRY AND PRESERVE THE INTERNATIONAL TAX REGIME

An important premise of this Article in general and the argument of this Section in particular in favor of an urgent tax reform is that the preservation

206. See, e.g., MUSGRAVE & MUSGRAVE, *supra* note 203, at 204–07.

207. For an example of the efficiency-based approach, see Louis Kaplow & Steven Shavell, *Why the Legal System Is Less Efficient Than the Income Tax in Redistributing Income*, 23 J. LEGAL STUD. 667, 667–69 (1994).

208. In this context, the benefits principle is used to justify the division of tax bases among competing tax jurisdictions. See, e.g., REUVEN S. AVI-YONAH, *ADVANCED INTRODUCTION TO INTERNATIONAL TAX LAW* 3–7 (2015); Reuven Avi-Yonah, *The Benefits Principle* 1–3 (May 17, 2022), (unpublished manuscript), <https://ssrn.com/abstract=4126198> [<https://perma.cc/Q8C6-4UJ3>].

of the existing international tax regime and its legitimacy is desirable for all.²⁰⁹ At a first glance, this may seem like a strange argument since in tax law reform there are always winners and losers. International tax reform necessarily benefits the fisc of some states and not others. It is often difficult to predict such outcomes for specific states, yet simplistic perceptions can be powerful political motivators in this context. One may argue that a weaker international tax regime means more tax competition, which benefits only a certain subset of states (which one depends on one's biases). This Article argues that in principle a stable regime is desirable for all.²¹⁰ It is desirable since it removes significant waste that may result from an unintentional diversity of rules.²¹¹ Today, the converged rules of the international tax regime provide a *lingua franca* for cross-border investment; it is not perfect, yet it is obvious that abandoning it after over a century of building it up would be costly for all, and building it up states have done. Despite political turmoil, diplomatic, and financial crises, states have cooperated to preserve the regime. Complaints, grievances, and criticism have been regularly made, yet never in demand of dismantling the regime itself. Such behavior has implications in fields beyond taxation, of course, and therefore it should not be surprising that it is consistent with the primary purpose of international law more generally to stabilize international relations to a maximal extent.²¹² Finally, as demonstrated next, effective reform that should not destabilize the international tax regime is feasible.

III. REFORM

Heretofore, this Article demonstrated the inability of the existing international tax rules to effectively tax information, and hence their incompatibility with contemporary market activities. The Article further highlighted specific instances where such incompatibility is detrimental to the stability and future of the international tax regime, exhibiting the necessity of immediate reform. This devastating conclusion begs the question whether anything could be done to preserve the regime and reform its rules to accommodate the data revolution.²¹³ If not, the chaotic state, which one can

209. For a more detailed argument in support of defending the stability of the international tax regime see, for example, Yariv Brauner, *The True Nature of Tax Treaties*, BULL. INT'L TAX., Jan. 2020, at 29–30 (on file with the *Iowa Law Review*).

210. A detailed analysis of this question is beyond the scope of this Article, and it is possible that some states will benefit, at least in the short term from the collapse of the international tax regime, yet no state can know that in advance since it will depend on actions of other states that are impossible to predict.

211. See, e.g., Brauner, *supra* note 144, at 291–300.

212. In accordance with international law's primary goal of facilitating the maximum stability of international relations. See, Akbar Rasulov, *Theorizing Treaties: The Consequences of the Contractual Analogy*, in RESEARCH HANDBOOK ON THE LAW OF TREATIES 74, 122 (Christina J. Tams, Antonios Tzanakopoulos, Andreas Zimmermann & Athene E. Richford eds., 2014) (partly quoting ANTHONY CARTY, *THE DECAY OF INTERNATIONAL LAW? A REAPPRAISAL OF THE LIMITS OF LEGAL IMAGINATION IN INTERNATIONAL AFFAIRS* 79 n.147 (1986)).

213. Based on the basic assumption that all states should be interested in preserving the international tax regime and its stability and legitimacy. See *supra* Section II.D.

already begin to observe, where each state goes alone in futile attempts to adopt unilateral measures that permit short-term revenue collection is certain to take over the regime to the detriment of all.²¹⁴ This Article argues that reform and the preservation of the regime are possible.

This Part analyzes three paths to reform that could meet the challenges that the data revolution presents to the international tax regime: consumption taxes, data taxes, and formulary taxation of income. All three options avoid the key difficulties identified in prior Sections, namely the identification, classification, nexus, and sourcing of income generated by transactions in information.²¹⁵ None of these three options provide simple relief to the valuation problem, yet they are all superior to the current rules in this regard. Politics, or what some may articulate as chances of adopting a reform, is discussed only to the extent relevant to related matters. Forecasting the chances of tax reforms is futile and anyway beyond the scope of this Article. This Part begins, next, with perhaps the most proposed international tax reform path, namely consumption taxation.

A. CONSUMPTION TAXES

The taxation of consumption complements income taxation in most of the world.²¹⁶ The relative simplicity of the almost universal destination-based consumption taxation, and particularly that of the Value-Added Tax (“VAT”) made it an increasingly popular form of taxation around the world, and growingly the biggest source of revenue for states, or, in some cases, second only to a personal income tax.²¹⁷ Despite the universality of this mix of income tax and VAT, policymaking rarely considers the tax mix holistically, dealing with each (as well as other forms of taxation) independently.²¹⁸ In the few states that do not employ this common tax mix, most notably the United States, an adoption of a consumption tax has often been considered as a replacement for the income tax, consistent with the global trend of independent

214. See *supra* note 200 and accompanying text.

215. See *supra* Section I.

216. *Global Revenue Statistics Database*, OECD, <https://www.oecd.org/tax/tax-policy/global-revenue-statistics-database.htm> (click on Tax Revenue dropdown and select “5111 Value added taxes”) (annually updating with current data true to 2020); William G. Gale, *Raising Revenue with a Progressive Value-Added Tax*, in *TACKLING THE TAX CODE: EFFICIENT AND EQUITABLE WAYS TO RAISE REVENUE 191, 192–97* (Jay Shambaugh & Ryan Nunn eds., 2020) (reviewing the universality of the VAT and proposing its addition as a complement for the income tax in the United States).

217. See, e.g., *Global Revenue Statistics Database*, *supra* note 216; Daniel Bunn & Cecilia Perez Weigel, *Sources of Government Revenue in the OECD, 2023*, TAX FOUND. (Feb. 23, 2023), <https://taxfoundation.org/oecd-tax-revenue-by-country-2023> [<https://perma.cc/EAM8-J64C>] (demonstrating the increasing importance of consumption taxes in OECD member states).

218. See, e.g., Robin Boadway, Maurice Marchand & Pierre Pestieau, *Towards a Theory of the Direct-Indirect Tax Mix*, 55 J. PUB. ECON. 71, 71 (1994) (“[T]here is very little theory devoted to explaining the direct-indirect tax mix.”); Bjørn Volkerink & Jakob de Haan, *Political and Institutional Determinants of the Tax Mix: An Empirical Investigation for OECD Countries 19–21, 34* (Jan. 1999) (unpublished working paper) (on file with the *Iowa Law Review*) (hypothesizing but failing to tie tax mix policies with political backgrounds).

tax policymaking.²¹⁹ This Section examines the benefits of consumption rather than income taxation of information at the present, beginning next with a general assessment followed by an analysis of the most salient proposal in recent years to replace income taxation with a consumption tax, namely the Destination Based Cash Flow Tax (“DBCFT”) proposal.²²⁰

1. In General

Put simply, consumption taxes are levied whenever value is transacted (consumed). The modern VAT does so typically on a destination basis, which means that it is levied on the consumer and calculated by a mechanism of netting input and output so that each link in the supply chain remits VAT on the piece of value added to *them*.²²¹ The burden of the tax generally falls on the final consumer since they are the last member of the supply chain and does not have somebody else to which they can shift the burden of the tax.²²² Other consumption taxes, such as sales taxes apply only to the final transaction, which makes them perhaps simpler yet they lack the self-regulating quality of the VAT (the interest of each link in the chain to accurately report its part of the transaction in order to be able to shift the tax burden forward to the next link in the chain).²²³ Cross-border transactions similarly shift burdens and tax liabilities with some of them shifted across borders due to the destination principle; such shifting is corrected typically by a system of border adjustments.²²⁴

A VAT, therefore, does not simply resolve the problem of identifying the subject of taxation, yet its explicit transaction-by-transaction operation as well as its self-regulation make it more effective than the income tax when information

219. See, e.g., Gale, *supra* note 216, at 194–96.

220. See, e.g., Michael P. Devereux & John Vella, *Implications of Digitalization for International Corporate Tax Reform*, in DIGITAL REVOLUTIONS IN PUBLIC FINANCE 91, 103–07 (Sanjeev Gupta, Michael Keen, Alpa Shah & Geneviève Verdier eds., 2017); Alan J. Auerbach, Michael P. Devereux, Michael Keen & John Vella, *International Tax Planning Under the Destination-Based Cash Flow Tax*, 70 NAT'L TAX J. 783, 783–84 (2017). The proposal, developed by the abovementioned scholars was adopted by House Speaker Ryan in his 2017 plan. See, e.g., William G. Gale, *Understanding the Republicans' Corporate Tax Reform*, BROOKINGS (Jan. 10, 2017), <https://www.brookings.edu/opinions/understanding-the-republicans-corporate-tax-reform> [<https://perma.cc/3VXL-VSMP>] (the original website promoting the Speaker's plan became unavailable as the plan lost support in Congress); Kyle Pomerleau & Stephen J. Entin, *The House GOP Destination-Based Cash Flow Tax, Explained* (June 30, 2016), <https://taxfoundation.org/blog/destination-based-cash-flow-tax-explained> [<https://perma.cc/2DHH-2YQD>].

221. For a good introduction to VAT, see, for example, Gilbert E. Metcalf, *Value-Added Taxation: A Tax Whose Time Has Come?*, 9 J. ECON. PERSPS. 121, 122–27 (1995).

222. In practice, most of the burden falls on consumers most of the time, yet not always fully. See generally RICHARD M. BIRD & PIERRE-PASCAL GENDRON, *THE VAT IN DEVELOPING AND TRANSITIONAL COUNTRIES* (2007) (reviewing VATs and their impact in different states).

223. See, e.g., *Why Is the VAT Administratively Superior to a Retail Sales Tax?*, TAX POL'Y CTR. (May 2020), <https://www.taxpolicycenter.org/briefing-book/why-vat-administratively-superior-retail-sales-tax> [<https://perma.cc/TT4P-B5KV>].

224. See, e.g., Mike Kastner, *What Is Border Adjustment Tax?*, NTEA NEWS (Apr. 2017), https://www.ntea.com/NTEA/NTEA/Member_benefits/Industry_leading_news/NTEANewsarticles/W hatisborderadjustmenttax.aspx [<https://perma.cc/Q4SG-Q7F2>] (explaining the mechanism in the context of a U.S. reform proposal).

exchanges are concerned. With a VAT, the income tax's identification difficulty is somewhat differently manifested in the question of which taxpayer should locally register for VAT purposes and the enforcement of such rules. This is a known problem and there is already global cooperation to support such enforcement and simplified registration regimes to ensure the clarity of the rules and ease of compliance.²²⁵ States may also wish to exempt some transactions from taxation, yet such decisions must be explicit and more transparent and hence more desirable than exemptions under the income tax. Of course, pure exchanges of information may escape a VAT if not reported and they do present relatively simple opportunities for collusion for taxpayers, yet these are not more acute than those under the income tax, and the implications of not reporting a value added may be discovered or serve as a deterrent to fraud of this kind. In any event, such fraud is more complicated to initiate than straightforward non-reporting under the income tax. A version of this problem arose recently when Italy decided to pursue Facebook for VAT on the *barter transactions* (social media services for the provision of personal information), yet essentially all VAT experts and the rest of the European Union do not view these transactions as *VATable*.²²⁶

A significant benefit of consumption taxation in comparison to income taxation is that it does not generally require classification of income, which, as demonstrated above, presents one of the most serious challenges for our income tax. Nonetheless, classification can become a problem under a VAT if certain types of goods or services received separate treatment in the form of lower rates or exemptions. In such cases, a VAT may face similar classification difficulties to the income tax, yet these will likely be more limited (due to fewer classification options), and, more importantly, will depend on the specificity of the legislation granting the beneficial treatment.

The corresponding cross-border manifestation of this problem, the sourcing of income, is overcome by the simpler VAT destination rules.²²⁷ Destination-based consumption taxation should also benefit from greater legitimacy than the current income tax rules since they should satisfy the demands of developing (or market) economies for more taxation in the context of the digital economy, and hence should be viewed as fairer than the current solution on the agenda of the inclusive framework (known as Pillar One) and

225. See, e.g., *Questions and Answers: VAT in the Digital Age*, EUR. COMM'N (Dec. 8, 2022), https://ec.europa.eu/commission/presscorner/detail/en/qanda_22_7518 [<https://perma.cc/QL3G-N4B7>].

226. See, e.g., William Hoke, *Italian Claim That Facebook Owes VAT Could Have EU-Wide Impact*, 109 TAX NOTES INT'L 1442, 1442-45 (2023) (reviewing the Italian claim, the argument that the EU jurisprudence that does not support such a claim, and experts' opinions that Italy's interpretation of EU VAT law is possible yet extraordinary).

227. The VAT and other consumption taxes basically follow the cash flow per transaction and hence are fundamentally simpler than an income tax where connections to taxpayers, a potpourri of different source rules should be applied, some of which require complicated interpretation exercises. See, e.g., *supra* Section I.B.2.

a more natural replacement for DSTs, which has been the primary purpose of developing the Pillar One program.²²⁸

One may argue that the above statement is too optimistic when it declares the superiority of the VAT destination rules over the income tax's source rules. Indeed, the former are not foolproof and a target for extensive tax planning, like the source rules, yet BEPS Action One succeeded in making progress, and effectively developed a framework for the promotion of an international consensus over the consumption taxation of the digital economy,²²⁹ an achievement that it had not even come close to in the income tax context.²³⁰ Moreover, the diversity of source rules and their implementation worldwide overwhelms the uncertainties under consumption taxes.

Consumption taxation faces however at least two types of difficulties with information. First, the infamous barter transaction (data for free search services) and similar barterers, although not difficult to analyze in terms of destination, would be difficult to enforce. This is true however for all transactions that depend on end-user (customer) reporting for compliance, and states have developed a variety of mechanisms to minimize it.²³¹ A second problematic type of transactions, namely pure information/data exchanges, involve very similar challenges, even when transacted between firms, although the tracing of such transactions should be easier and less costly than that of a large number of end users. Valuation in all cases of nonmarket transactions is a problem, similar to the income tax.

At the international level consumption taxes are particularly attractive since in the imposing country they should not raise an opposition based on

228. See, e.g., Letter from Jonathan C. Davidson, Assistant Sec'y of Legis. Affs., U.S. Dep't of the Treasury, to Mike Crapo, U.S. Senator (Mar. 1, 2022) (on file with the *Iowa Law Review*) (stating that eliminating DSTs was the impetus for Pillar One and the consistent policy of the administration in supporting it).

229. A Global Forum on VAT was created during the BEPS project. See *First Meeting of the OECD Global Forum on VAT*, OECD WEB ARCHIVE (Apr. 1, 2014), <https://web-archive.oecd.org/2014-04-02/200997-first-meeting-vat-global-forum.htm> [<https://perma.cc/H4K5-PNUS>]. The third meeting of the Forum endorsed the OECD's International VAT/GST Guidelines as a global standard in 2015. See OECD, INTERNATIONAL VAT/GST GUIDELINES 4 (2017), <https://www.oecd.org/ctp/international-vat-gst-guidelines-g789264271401-en.htm> [<https://perma.cc/5NWY-Z9KK>]. The fourth meeting of the Forum discussed implementation in 2017. See OECD, MECHANISMS FOR THE EFFECTIVE COLLECTION OF VAT/GST: WHERE THE SUPPLIER IS NOT LOCATED IN THE JURISDICTION OF TAXATION 9 (2017), <https://www.oecd.org/ctp/consumption/mechanisms-for-the-effective-collection-of-vat-gst.htm> [<https://perma.cc/A3GA-96ZQ>]. The fifth and most recent meeting discussed specific issues related to online sales. See OECD, THE ROLE OF DIGITAL PLATFORMS IN THE COLLECTION OF VAT/GST ON ONLINE SALES: AS PRESENTED FOR CONSIDERATION AT THE FIFTH MEETING OF THE GLOBAL FORUM ON VAT 6-7 (2019), <https://www.oecd.org/tax/consumption/the-role-of-digital-platforms-in-the-collection-of-vat-gst-on-online-sales.pdf> [<https://perma.cc/A8VX-KXVM>].

230. See, e.g., *supra* Sections II.B-C.

231. See, e.g., Seema Jayachandran, *Why a Tax the U.S. Hasn't Embraced Has Found Favor in Much of the World*, N.Y. TIMES (May 17, 2019), <https://www.nytimes.com/2019/05/17/business/value-added-tax-enforcement.html> (on file with the *Iowa Law Review*) (reviewing *inter alia* ways used to deal with nonreporting for VAT purposes in different states).

their supposed regressivity,²³² and, in general, they should be perceived as fairer in comparison to the current income tax rules being based on the destination principle. They do present however unique enforcement challenges in the cross-border context, but these are being tackled by the Global Forum on VAT in a significantly more advanced discourse than that over income taxation of the digital economy.²³³

2. The DBCFT

The most notable recent tax reform proposal based on consumption taxation has been the DBCFT.²³⁴ The DBCFT is similar to a VAT, yet it allows a deduction for employee compensation.²³⁵ This difference is irrelevant to the benefits it has in the context of information transfers, which are generally similar to the above described benefits all consumption taxes have over income taxes. The DBCFT proposal gained favor in the BEPS climate of increased scrutiny of corporate tax planning yet eventually succumbed to the conservative devotion to personal (and hence essentially origin-based) taxation, to its problematic distributional consequences, and to international law barriers.²³⁶

Nonetheless, the DBCFT offers a clear advantage over the existing income tax rules in the context of the data economy. It accounts for all cash flow and does so on a destination basis. Its newness and unitary design make it likely less vulnerable to deviations of the kinds used in some VAT regimes (lower rates and exemptions).²³⁷ Like other consumption taxes, the DBCFT does not provide a simple solution to pure data exchanges and the discussed barter transaction, yet the income tax does not do better with these. Pure data exchanges should also not be significant in the general scheme of things, since naturally they would be difficult to devise in a manner that would not involve the recording of cash or equivalents. This is particularly true for large MNEs that are complex firms, all of which are likely to have their own data gathering and organizing enterprises. Moreover, these should be rather rare transactions in an economy where the control of data, the best and most useful data, is critical for the success of firms, and therefore it is only in unique

232. But research demonstrates that in reality the picture is slightly more complex. See, e.g., Alastair Thomas, *Reassessing the Regressivity of the VAT*, 43 *Fiscal Stud.* 23, 23–26 (2022) (comparatively studying the progressivity of a VAT in different states with differing results).

233. See *supra* Section I.B.2.

234. See *supra* note 219 and accompanying text.

235. See, e.g., Eric Toder, *What is the Difference Between the Current Corporate Income Tax and a Destination-Based Cash Flow Tax?*, TAX POLY CTR. (Feb. 27, 2017), <https://www.taxpolicycenter.org/publications/what-difference-between-current-corporate-income-tax-and-destination-based-cash-flow/full> [https://perma.cc/4W49-A5YP].

236. See, e.g., Daniel Shaviro, *The Rise and Fall of the Destination-Based Cash Flow Tax: What Was That All About?*, 1–7 (NYU L. & Econ. Rsch. Paper Series, Working Paper No. 17-20, 2017), https://papers.ssrn.com/sol3/papers.cfm?abstract_id=2979971 [https://perma.cc/PH98-74MX] (Presentation Slides); see also Alice Pirlot, *Don't Blame It on WTO Law: An Analysis of the Alleged WTO Law Incompatibility of Destination-Based Taxes*, 23 *FLA. TAX REV.* 432, 435–36 (2019) (responding to a critique that the DBCFT is “incompatible with WTO law”).

237. Of course, politicians may intervene and add deviations from the original DBCFT proposal, yet this would be less likely or at least less pronounced if enacted as in response to a global agreement.

circumstances that competitive players in the market would be willing to exchange such data (and, as mentioned above, also be able to tailor it as a pure exchange). Dealing with the barter transaction is much less important with a tax regime that is based on destination, since the entire logic of mentioning the barter transaction in the BEPS and post-BEPS context in the first place was to increase source taxation that is already what the destination-based tax does.²³⁸

The main difficulty that a DBCFT will face as a global solution for the problem of taxing information is likely to be its uncertain (global) distributional impact.²³⁹ On the one hand, destination-based taxation should be acceptable as a fair tax allocated to the jurisdiction where the economic benefit or value arises. On the other hand, the perceived fairness of the tax would be very sensitive to its design. Its one-dimensional directionality may raise opposition from developed or developing states, or both.

3. Interim Conclusion

In conclusion, consumption taxation has significant advantages over the current income tax rules when it comes to taxing the information economy. It also has some challenges, such as dealing with said barter transactions and pure data exchanges, yet such challenges are less meaningful than in the income tax context, and perhaps are not so significant overall. The DBCFT should be superior to a VAT-style consumption tax since it involves a lesser valuation challenge as it applies to each identified cash transaction on a destination based and is likely simpler. The political opposition to the DBCFT and the international law complexities it presents may prove difficult to overcome, yet such opposition may subside once states understand their viable options and realize that simply going on and tweaking the current income tax rules would not be feasible.

B. DATA TAXES

An alternative reform that similar to consumption taxation focuses on the subject of transactions rather than the persons transacting does so even more directly.²⁴⁰ Such reform wishes to tax data directly.²⁴¹ The original form

238. See *supra* note 24 and accompanying text.

239. These are uncertain and very sensitive to the ultimate design. See, e.g., Shafik Hebous, Alexander D. Klemm & Salla Stausholm, *Revenue Implications of Destination-Based Cash-Flow Taxation* (IMF, Working Paper No. 2019/007, 2019), <https://www.imf.org/en/Publications/WP/Issues/2019/01/15/Revenue-Implications-of-Destination-Based-Cash-Flow-Taxation-46506> [<https://perma.cc/2RXP-HZH7>].

240. Also, similarly to consumption taxes, data taxes could replace or complement the existing ineffective income tax.

241. U.S. states have made more progress with this idea than the federal government to date. Maryland was the first state in the United States to enact such a tax. MD. CODE ANN., Tax. § 7-5-103 (West 2021). See also Andrea Muse, *Maryland's Digital Ad Tax Faces Strong Legal Challenges, Practitioners Say*, TAX NOTES, (May 12, 2021) (on file with the *Iowa Law Review*). Other state bills followed. See, e.g., Carolina Vargas, *Massachusetts Bill Would Tax Digital Ad Services*, TAX NOTES (Aug. 3, 2021) (on file with the *Iowa Law Review*) (The "bill . . . would impose an excise tax on digital advertising

of data taxation was the “BIT Tax,” proposed in the 1990s in the context of the debate over electronic commerce taxation.²⁴² The predicted importance of information to the world economy and the perceived fairness of the tax (imposed on a pay-per-use basis) were its main justifications.²⁴³ Doubts about the feasibility of the tax and its potentially negative impact on innovation and growth, however, bolstered the political opposition to the tax and the eventual demise of its discussion.²⁴⁴

1. In General

Data taxes do not resolve the difficulty of taxing information under the primary form of taxation, which today is the income tax, unless one believes that they could replace that tax, an unlikely position. Yet, they may complement an income tax, for example, to compensate for the ineffectiveness of that tax in taxing information. Such a solution is awkward from a policy perspective, likely leading to over or under taxation of information, yet one may take the position that the importance of information in today’s economy and its incompatibility with income taxation make such a solution desirable and sustainable even if not ideally compatible with the deficits of the income tax.

There are several advantages to data taxation in comparison to income taxation. The subject of the tax should be very clear (bits used) and technically not so complex or expensive to comply with and enforce.²⁴⁵ There would be

services”); Evan Fallor, *West Virginia Bill Would Impose Digital Advertising Tax*, TAX NOTES (Mar. 12, 2021) (on file with the *Iowa Law Review*); Carolina Vargas, *New York Lawmaker Again Proposes Digital Advertising Tax*, TAX NOTES (Jan. 11, 2021) (on file with the *Iowa Law Review*). New York also has another proposal: S4959 proposes an excise tax on the collection of consumer data by commercial data collectors. *See* S. 4959, 2021–2022 Leg., Reg. Sess. (N.Y. 2021).

242. *See, e.g.*, Arthur J. Cordell, Special Advisor, Info. Tech. Branch of the Canadian Dep’t of Indus., *Taxing the Internet: The Proposal for a Bit Tax* (Feb. 14, 1997), <https://www.icommercecentral.com/open-access/taxing-the-internet-the-proposal-for-a-bit-tax.pdf> [<https://perma.cc/4RRS-K6G7>]. The idea was effectively shut off by the moratorium on internet taxes imposed by the Internet Tax Freedom Act of 1998 (codified as amended at 47 U.S.C. § 151, Sec. 1104). The OECD has also contemplated the bit tax in the context of the Ottawa Framework, yet the idea gained no traction. *See, e.g.*, OECD, IMPLEMENTATION OF THE OTTAWA TAXATION FRAMEWORK CONDITIONS: THE 2003 REPORT 11, 13 (2003), <https://web.archive.oecd.org/2012-06-15/158956-20499630.pdf> [<https://perma.cc/SLA7-XABR>] (“The report covered the full range of taxation issues noting that work since Ottawa had shown that neither of the two extremes – a tax-free environment for e-commerce nor special e-commerce taxes (such as a bit tax) – were acceptable to governments.”). A bit tax was also explored by a high-level group of experts that had been set up by the European Commission in 1995. A paper in favor of the tax was eventually published but the idea not advanced by the European institutions. *See* Luc Soete & Karin Kamp, *The ‘Bit Tax’: The Case for Further Research*, 23 SCL. & PUB. POL’Y 353, 358 (1996). Finally, the UN also made a global bit tax proposal. UN DEV. PROGRAMME, HUMAN DEVELOPMENT REPORT 1999, at 10, 13, 66 (1999), <https://www.un-ilibrary.org/content/books/9789210576888/read> [<https://perma.cc/KRL3-ZGVH>].

243. *See, e.g.*, Cordell, *supra* note 242.

244. *See, e.g.*, S. Con. Res. 52, 106th Cong. (1999) (“Expressing the sense of Congress in opposition to a ‘bit tax’ on Internet data proposed in the Human Development Report 1999 published by the United Nations Development Programme.”); *see also* Charles E. McLure, Jr., *Taxation of Electronic Commerce: Economic Objectives, Technological Constraints, and Tax Laws*, 52 TAX L. REV. 269, 275 (1997) (purporting that the bit tax “seems to be a singularly bad idea”).

245. Although questionable in the 1990s when the bit tax idea emerged, at the present its technical feasibility is obvious when detailed web analytics is available to all. *See, e.g.*, *Welcome to Google*

no need to classify the subject of taxation since it would be singular and part of the definition of the tax itself. Valuation should not be a problem since the tax base would be some sort of a quantification of the data flow or bandwidth, which measurement is a technical rather than a legal problem and could either be done or not. Finally, sourcing is not an issue for a data tax since such tax has no interest in jurisdictional determinations beyond whatever flow of data it measures in each location.

Technically, therefore, data taxation is clearly superior to the income tax in taxing information. It is the policy implications of data taxation that may draw criticism. First, a data tax applies to all data, useful and not useful, which may raise fairness and legitimacy concerns. Second, it seems unlikely that data taxation will be able to raise sufficient revenue to justify a reduced attention to the difficulties of taxing information under the income tax. Third, data taxation is most likely to benefit the most developed jurisdictions, increasing the global fairness concerns about it. Fourth, data taxes do not track the enrichment of taxpayers from information-related activities, which threatens their ability to gain legitimacy. Finally, it is difficult to imagine the world's states adopting a single form of data taxation due to the very different levels of digitalization around the world,²⁴⁶ and a multitude of these taxes would lead to a world not much different from the present chaotic potpourri of "Google taxes," further threatening the stability of the international tax regime. Next, this Article examines a few concrete proposals for data taxes, pointing to their relative benefits and drawbacks.

2. Omri Marian's Data Tax Proposal

A recent version of the BIT Tax was proposed by Omri Marian.²⁴⁷ Marian's proposal however is somewhat different from the original BIT Tax proposals. He subscribes to the idea of "data as the new oil" and data's replacement of capital (or parallel standing) as a primary source for enrichment in our society.²⁴⁸ His excise tax on data flows wishes therefore to tax this new source of enrichment in the same way the income tax does so for capital.²⁴⁹ Marian is not only concerned about the taxation of the resource. It seems that he is

Analytics, GOOGLE ANALYTICS, <https://analytics.google.com/analytics/web> [<https://perma.cc/gVVP-8LHP>].

246. See, e.g., *Secure Internet Servers (per 1 Million People)*, WORLD BANK: DATA, <https://data.worldbank.org/indicator/IT.NET.SECR.P6> [<https://perma.cc/F3AH-KMD7>]; Hannah Ritchie, Edouard Mathieu, Max Roser & Esteban Ortiz-Ospina, *Internet*, OUR WORLD DATA (2023), <https://ourworldindata.org/internet> [<https://perma.cc/K4QM-52UE>].

247. Marian, *supra* note 8, at 567. Marian suggests a few forms for a data tax, but the entirety of his argument promotes an excise tax on data flows. *Id.* at 567–69. Alas, Marian does not engage with the design of his proposed tax, so some of the analysis in this Section makes reasonable assumptions regarding its design while keeping the critique general when the matter discussed is sensitive to specific design choices.

248. See *id.* at 516.

249. See *id.* at 519.

even more concerned about the power accumulated by the data giants and argues that his Data Tax would curb such undesirable power.²⁵⁰

There is much to like about Marian's proposal in a world in which states starve for revenue and find it difficult to coordinate their tax policies and hence are unable to fulfill their revenue needs under the existing international tax regime. Although it requires some technological investment, his tax is relatively simple and inexpensive to enforce. It seems fair in the sense that one pays for what they use, somewhat similarly to consumption taxation, sharing with the latter also an imposition on a destination basis. At the same time, Marian's proposal is exposed to the same critique as all data taxes.

The regressive nature of an excise tax on data is particularly salient in a world where the internet is open to everyone, and a lot of services could be portrayed as basic consumption. Marian himself identifies regressivity as a potential subject of criticism,²⁵¹ yet such criticism may not be decisive for the desirability of the tax. It is not impossible to think about measures that would help to alleviate such perception (for instance, a "standard credit" granted to all individuals), but one could also refute the regressivity critique by arguing, first, that it is an empirical question whose outcome is not obvious (larger, more sophisticated firms may use so much more data than other market players that in fact data taxes may be proven progressive); second, that the current income tax-based rules may effectively be even more regressive; and, third, that by collecting data taxes governments would face fewer revenue pressures and hence be more free to engage in direct redistribution (through the personal income tax or through spending, for instance). Regressivity *per se* may not therefore be valid criticism against Marian's proposal, yet the global fairness implications of such a data tax remain. These implications are highly sensitive to the particular design of the tax (which Marian does not provide) and the global agreement on it, making any critique (or benefits) hypothetical.

One can assess however Marian's main claim that data taxes are necessary to curb the power accumulated by the data giants.²⁵² He argues that the corporate income tax has been exposed as especially inadequate in taxing the data economy, a conclusion obviously shared by this Article.²⁵³ The focus on corporations is interesting since the sole possibly viable justification for a corporate income tax in the first place is its service as a device to regulate corporations, more specifically to curb the power of corporate management.²⁵⁴ This author has expressed skepticism of the potential magnitude of corporate tax reduction of corporate management power elsewhere.²⁵⁵ A similar argument should be made against the idea of a BIT Tax providing a sufficient reduction

250. See *id.* at 519–20, 550–51.

251. *Id.* at 569.

252. See *id.* at 519–20, 550–51.

253. See *supra* Part II.

254. Reuven S. Avi-Yonah, *Corporations, Society, and the State: A Defense of the Corporate Tax*, 90 VA. L. REV. 1193, 1201 (2004).

255. Yariv Brauner, *The Non-Sense Tax: A Reply to New Corporate Income Tax Advocacy*, 2008 MICH. ST. L. REV. 591, 635.

or control of the power of data giants, since it is unreasonable to believe that the tax rate will be sufficiently high, and the profits of such corporations can only be described as extraordinary.²⁵⁶

Naturally, the impact of data taxes depends on their design. This is where Marian's proposals (although he admitted that he had no intention of providing prescriptions for actual taxes), much like the BIT tax proposals of the past, face practical difficulties. His primary proposal is an excise tax on data,²⁵⁷ or more accurately on every "use" of data (upload or download). The idea is that data is the new currency and hence should be viewed as the most obvious base for taxation. Marian dismisses the technical challenge of enforcing such a tax based on present technological advancements. The problem is that the internet is decentralized and, in fact, there are only a few intersections where one could put BIT "meters." Like the original BIT taxes, Marian's excise tax would have to be collected from internet service providers, viewed widely, which indeed is technologically possible (and practically feasible since they are largely regulated), but also from private networks, where such exercise would likely be very difficult. But the technical challenges may not be the most difficult challenges for such a tax. The perceived regressivity of the tax, to which Marian admits may be more devastating to his proposal despite the possible answers mentioned above by this Article (mainly that the tax may not be regressive at all). It is a political rather than a technical problem. The data giants are likely to assert their lobbying power in the same way they did when the BIT tax proposals were made and leverage the regressivity argument to prevent the exercise. Moreover, realistically, it would be very difficult to impose a data tax without international cooperation, if not consensus, in the current world where states are increasingly competing for investment and even for (skilled) residents, and where the most valuable resources are increasingly mobile. It is difficult to see how such consensus is achieved and what could be the give-and-take with states that are expected to be on the losing side of such reform.²⁵⁸

3. Other Data Tax Proposals and Implementations

Several jurisdictions have either proposed or already implemented some forms of data taxes. Most notably, Maryland brought into effect in 2022 a digital advertising tax,²⁵⁹ not dissimilar to a tax used by other jurisdictions,²⁶⁰ led by Hungary.²⁶¹ New York even made a proposal for an excise tax on the

256. See, e.g., Shira Ovide, *Big Tech Has Outgrown This Planet*, N.Y. TIMES (July 29, 2021), <https://www.nytimes.com/2021/07/29/technology/big-tech-profits.html> (on file with the *Iowa Law Review*).

257. The other options explored by Marian are less developed and have some obvious challenges identified by Marian himself and therefore remain to be fully critiqued elsewhere.

258. See *supra* note 246 (documentations of the technology gap among the states of the world).

259. See *supra* note 241.

260. See *supra* note 195 and accompanying text.

261. For a description of the tax, see *Hungary: Corporate – Taxes on Corporate Income*, PWC (Jan. 24, 2024), <https://taxsummaries.pwc.com/hungary/corporate/taxes-on-corporate-income> [https://perma.cc/CK2B-QMFP]. The tax came under attack from European institutions and suspended for a while but expected to be reintroduced in 2023. See, e.g., *Tax Changes in Hungary*

collection of consumer data.²⁶² All of these taxes have a clear revenue raising purpose, and (quite transparently) none had been a result of a learned policy process. The international versions of these taxes, such as the Hungarian tax, were practically variations on DSTs, adopted as ad hoc interim measures to collect revenue while the global discourse over the taxation of the digital economy continued.²⁶³ Therefore, these cannot be viewed as models for a new global consensus on the taxation of information.

Beyond these, a few other scholarly proposals for data taxes have recently been made. World Bank researchers, Lucas-Mas & Junquera-Varela proposed in 2021 a digital license tax and a levy on bandwidth, also consistent with the old BIT tax proposals.²⁶⁴ This proposal limits some of the unfairness critique with regulatory monitoring of (presumably) businesses that generate riches with information. Further, taxing bandwidth rather than actual flows of data perhaps simplifies the administration of the tax and further limits potential criticism over taxation of data flows that are completely disconnected from business, profit seeking activities. Yet, this proposal is awkward since it requires heavy monitoring by a government in an industry whose most important and problematic feature for taxation by governments is its decentralization. There is no doubt that this proposal will suffer the same kind of critique as the original BIT Tax.²⁶⁵ Avi Yonah, Kim, and Sam more recently proposed a Data Excise Tax as a unilateral alternative to DSTs.²⁶⁶ This is a version of Marian's idea but rather than a general data tax they propose targeting only large businesses. Such targeting may alleviate some of the regressivity critique, but it will still suffer, and perhaps suffer more severely from the global unfairness criticism since larger businesses concentrate even more in richer, more powerful economies. Furthermore, this proposal is manifestly inferior to a general data tax in terms of simplicity and administrability, and hence vulnerable to substantive and political criticism of the same kind as the Lucas-Mas & Junquera-Varela's proposal.

4. Interim Conclusion

In conclusion, taxation of data as such overcomes many of the challenges that income taxation faces and cannot effectively meet. Data taxes face,

from 2023 | *News Flash*, ACCACE (Dec. 28, 2022), <https://accace.com/tax-changes-in-hungary> [<https://perma.cc/73ZF-GRFE>].

262. See S. 4959, 2021–2022 Leg., Reg. Sess. (N.Y. 2021); see also Marian, *supra* note 8, at 570, 574 (discussing the potential proposals New York could implement in an excise tax based on the collection of consumer data).

263. See, e.g., *supra* note 195 and accompanying text.

264. Cristian Óliver Lucas-Mas & Raúl Félix Junquera-Varela, *Tax Theory Applied to the Digital Economy: A Proposal for a Digital Data Tax and a Global Internet Tax Agency*, WORLD BANK GRP. 90 (2021), <https://documents1.worldbank.org/curated/en/615591614758099110/pdf/Tax-Theory-Applied-to-the-Digital-Economy-A-Proposal-for-a-Digital-Data-Tax-and-a-Global-Internet-Tax-Agency.pdf> [<https://perma.cc/G8J8-5Q6G>].

265. See *supra* notes 240–43 and accompanying text.

266. Reuven Avi-Yonah, Young Ran (Christine) Kim & Karen Sam, *A New Framework for Digital Taxation*, 63 HARV. INT'L L.J. 279, 284 (2022).

however, other difficulties, namely the perception of regressivity, global unfairness, and likely political opposition at both the domestic and international level. They potentially face also unique technological challenges, and their “newness” that may exacerbate the political opposition (although the DBCFT faces the same issue, and the DSTs “overcame” such potential issues quite swiftly). Data taxes carry promise and attraction, yet it is difficult to see how they can become anything more than a minimal source of revenue at the present political reality.

C. FORMULARY BUSINESS TAXATION

One possible reform may not require a complete departure from income taxation. Formulary business taxation has long been promoted, primarily by academics to remedy some of the glaring ailments of the current income tax-based international tax regime.²⁶⁷ Although the income tax and the income tax-based international tax regime generally take a market approach, following arm’s length taxation,²⁶⁸ they both increasingly use formulary elements.²⁶⁹ The October 8 agreement on the two “Pillars” itself includes an explicit formulary tax.²⁷⁰ Formulary taxation allows states to safeguard their income tax systems, personal taxation, and attractive redistribution mechanisms, while avoiding the pitfalls of cross-border taxation based on false, increasingly unworkable market proxies, known as arm’s length taxation.²⁷¹ Formulary

²⁶⁷. See, e.g., Paul R. McDaniel, *Formulary Taxation in the North American Free Trade Zone*, 49 TAX L. REV. 691, 702–03 (1994); Walter Hellerstein, *Income Allocation in the 21st Century: The End of Transfer Pricing? The Case for Formulary Apportionment*, 12 INT’L TRANSFER PRICING J. 103, 106 (2005); Kimberly A. Clausing & Reuven S. Avi-Yonah, BROOKINGS INST., HAMILTON PROJECT, *Reforming Corporate Taxation in a Global Economy: A Proposal to Adopt Formulary Apportionment* 12 (2007), https://www.brookings.edu/wp-content/uploads/2016/06/200706clausing_aviyona_h.pdf [<https://perma.cc/UR9B-L5CM>] (proposing system of sales-based formulary apportionment for taxing the corporate income of multinational firms); Sol Picciotto, *Towards Unitary Taxation: Combined Reporting and Formulary Apportionment*, in GLOBAL TAX FAIRNESS 221, 225–27 (Thomas Poggee & Krishen Mehta eds., 2016); Mitchell Kane & Adam Kern, *Progressive Formulary Apportionment: The Case for ‘Amount D,’* 171 TAX NOTES FED. 1713, 1718–21 (2021) (proposing a “fix” Pillar One).

²⁶⁸. Interestingly, the participants in the League of Nations’s work that initiated the international tax regime originally leaned towards formulary taxation. That changed with the introduction of the “Carroll Report” and the insistence of the United States on a market approach and arm’s length taxation. See generally Mitchell B. Carroll, 4 TAXATION OF FOREIGN AND NATIONAL ENTERPRISES: METHODS OF ALLOCATING TAXABLE INCOME (1933) (providing an overview of tax income laws in a number of countries). The formal origins of arm’s length taxation are probably in U.S. legislation attempting to deal with domestic related-party transactions in the early twentieth century. See STAFF OF S. COMM. ON FIN., 74TH CONG., WAR REVENUE ACT 4–6 (Comm. Print 1917); Stanley I. Langbein, *The Unitary Method and the Myth of Arm’s Length*, 30 TAX NOTES 625 (1986) (reviewing these historic developments).

²⁶⁹. Even the U.S. federal income tax increasingly uses formulary elements. See, e.g., Treas. Reg. §§ 1.861–9(g), 1.861–9T(g) (explaining the “asset method” generally requires corporations to allocate interest expense between domestic and foreign source income based on the value of their domestic and foreign assets).

²⁷⁰. See OECD/G20 BASE EROSION AND PROFIT SHIFTING PROJECT, *supra* note 146, at 16–17 (providing formulae for the allocation of Amount A among the competing tax jurisdictions).

²⁷¹. See, e.g., Hubert Hamaekers, *Arm’s Length – How Long?*, in INTERNATIONAL AND COMPARATIVE TAXATION: ESSAYS IN HONOUR OF KLAUS VOGEL 29, 30 (Kees van Raad ed., 2002). For a concise

taxation directly reflects the political division of tax bases among states. It is often criticized as arbitrary, and indeed it is openly arbitrary, because the division of tax bases among states is a political, and hence necessarily an arbitrary, exercise, in contrast to the equally arbitrary arm's length taxation that camouflages its arbitrariness behind pseudo-market theory, a strategy that is increasingly proven indefensible.²⁷²

The failure of the current business taxation rules should be attributed also to another fiction: the simplistic following of the separate corporate personality.²⁷³ Tax rules personify the legal fiction we call corporation and attempt to subject it to the same rules applicable to flesh and blood.²⁷⁴ Thus, a concept of corporate *residence* had to be invented, and strictly adhered to, despite the controversy over what that concept really means; a controversy that has lasted over a century, throughout the modern income tax era.²⁷⁵ Source taxation of corporations has been matched with a corollary test of sufficient participation in an economy (where the corporation is not resident), using different tests based on physical presence.²⁷⁶ As demonstrated above, these tests do not fit the intangible economy and clearly would not fit the data economy.²⁷⁷ Moreover, the more complex and sophisticated the subjected business structures became, the more difficult it has been to attribute profits (i.e., to divide firm profits among residence and source) to such physical

historical review of the arm's length standard's origins, see generally Reuven S. Avi-Yonah, *The Rise and Fall of Arm's Length: A Study in the Evolution of U.S. International Taxation*, 15 VA. TAX REV. 89 (1995). Even the OECD, the primary advocate of arm's length taxation admitted that it is wanting in the current economy. See OECD/G20 BASE EROSION & PROFIT SHIFTING PROJECT, *supra* note 175, at 9. The reports and later work fail however to respond to the original challenge presented by the original BEPS action plan. See OECD, *supra* note 16, at 20 (stating that "special measures, either within or beyond the arm's length principle, may be required," especially in the analysis of "hard-to-value intangibles").

272. See, e.g., Reuven S. Avi-Yonah & Ilan Benschalom, *Formulary Apportionment – Myths and Prospects: Promoting Better International Policies by Utilizing the Misunderstood and Under-Theorized Formulary Alternative*, 3 WORLD TAX J. 371, 382 (2011) ("Formulary allocation is indeed merely an approximation which cannot penetrate the MNE profit-generating process. However, from a theoretical perspective, formulary alternatives are as arbitrary as the ALS. From a revenue-generating perspective, formulary arrangements are probably less arbitrary – because they are less susceptible to manipulation by intra-MNE contractual arrangements."); see also Yariv Brauner, *Between Arm's Length and Formulary Apportionment*, in THE ALLOCATION OF MULTINATIONAL BUSINESS INCOME: REASSESSING THE FORMULARY APPORTIONMENT OPTION 209, 212 (Richard Krever & François Vaillancourt eds., 2019).

273. The difficulty of accepting this fiction for tax law purposes was identified early. See, e.g., Arthur A. Ballantine, *Corporate Personality in Income Taxation*, 34 HARV. L. REV. 573, 574–75 (1921). This fiction has proven material in causing much of the complexity of business taxation. See, e.g., David A. Weisbach, *The Irreducible Complexity of Firm-Level Income Taxes: Theory and Doctrine in the Corporate Tax*, 60 TAX L. REV. 215, 217 (2007). And there is no independent rationale for the extension of the fiction to tax law. See, e.g., Brauner, *supra* note 253, at 617–18.

274. See e.g., Brauner, *supra* note 255, at 617–18.

275. See, e.g., David Elkins, *The Myth of Corporate Tax Residence*, 9 COLUM. J. TAX L. 5, 29–30, 42 (2017) (reviewing the debate over corporate residence as a tax concept, concluding that it is incongruous with an effective corporate income tax).

276. The most common being the permanent establishment concept. See OECD, *supra* note 19, at art. 5.

277. See *supra* Section I.B.1.

presence.²⁷⁸ Both the separate corporate personality fiction and the physical presence requirements have been abandoned as fundamental features of the international tax regime in the October 8 agreement. Pillar Two (as well as prior antideferral rules) adopts a consolidated view of MNEs for tax purposes. Pillar One permits taxation regardless of physical presence.²⁷⁹ Both permit deviations from arm's length taxation. Formulary taxation is therefore neither antithetical to the rules of the international tax regime, nor an untried method; it is also an allocation method condoned by essentially all nations of the inclusive framework.²⁸⁰

1. In General

The basic design of formulary business taxation is straightforward. Based on the existing income tax rules in their residence state, each taxpayer calculates their worldwide income.²⁸¹ Then, such income is divided for the purpose of taxation among states based on an agreed formula that tracks proxies for the involvement of the taxpayer in an economy (like sales, assets, etc.).²⁸² The *Achilles' heel* of formulary taxation is the design of the formula itself, and indeed the ability to reach such an agreement should decide the fate of such reform, yet there are good reasons for optimism in this regard: first, formulae have been creeping into income tax systems, including through the BEPS project and, as has been discussed throughout this Article, the two pillars program; and, second, the duration and energy unsuccessfully spent on the BEPS's digital economy project should make states more realistic and amenable to compromise, especially when the solution involved a true political negotiation among states.

278. Attribution of profits is likely the most controversial part of the international tax regime. Even the OECD Model includes two versions of the relevant Article 7, one in the Model and one (old version) in the commentaries together with its own old commentaries. See OECD, *supra* note 19, at art. 7.

279. See OECD, SECRETARIAT PROPOSAL FOR A "UNIFIED APPROACH" UNDER PILLAR ONE, *supra* note 11, at 4. Even prior to that the OECD accepted it for the purposes of taxation of hard-to-value intangible pursuant to BEPS Actions 8-10. See OECD/G20 BASE EROSION & PROFIT SHIFTING PROJECT, *supra* note 175, at 63-66.

280. In addition, of course, it has been used for many years by the U.S. states. See, e.g., Charles E. McLure, Jr., *Understanding Uniformity and Diversity in State Corporate Income Taxes*, 61 NAT'L TAX J. 141, 146 (2008) (tracking this practice to the "Massachusetts Formula" eventually adopted union wide). See generally Jerome R. Hellerstein, Walter Hellerstein & John A. Swain, STATE TAXATION I & II (Thomson Reuters 3d. ed. 2016) (outlining state taxation as the authoritative U.S. treatise on state taxation).

281. Income tax laws in different states are different but not that different; Pillar Two and BEPS' Country-by-Country Reporting ("CbCR") rules demonstrate that states can reach an agreement over acceptable tax accounting standards for the calculation of worldwide income. See *supra* note 181; Action 13: *Country-by-Country Reporting*, OECD, <https://www.oecd.org/tax/beps/beps-actions/action13> [<https://perma.cc/J2US-CHL3>].

282. States may also agree on a Nexus rule that will serve as a threshold for participation in the tax base division. Again, the Pillar One work includes such a Nexus rule (based solely on revenue), which demonstrates its feasibility. See OECD/G20 BASE EROSION AND PROFIT SHIFTING PROJECT, *supra* note 146, at 13-15.

The political context of formulary taxation sets a realistic tone rather than a futile debate over dessert. This is also the main advantage of formulary taxation that does not call for an “accurate” division of tax bases among the relevant economies, but rather provides increased certainty to taxpayers and governments alike.²⁸³ As such, it is also less manipulable, and arguably less costly and wasteful.²⁸⁴ States do not “deserve” revenue based on some natural law, but rather claim them based on political viability. The use of economically relevant variables, such as sales, location of productive assets, and employees, etc. in formulary taxation makes the method palatable and legitimate, and therefore more politically viable.²⁸⁵

These general advantages of formulary taxation are particularly pronounced in the context of taxing information. Formulary taxation avoids the complexity of income item identification based on uncertain legal status. Realization of income remains an issue since it is determined under the existing income tax rules, yet it should be a less severe issue when based on a global agreement over specific realization rules. The same goes for valuation, yet again, fewer frictions among systems of valuation should be expected and the very severe challenge of transfer pricing and attribution of profits are resolved by the agreed formula. Classification and sourcing, perhaps the most difficult challenge presented by information, are nonissues under a formulary system, although some classification matters may remain relevant for the purposes of the determination of worldwide income. In conclusion, the transition to formulary business taxation requires reform of both domestic tax laws and tax treaties, yet it permits the preservation of personal taxation and the redistributive properties of income taxation in the information era.

Pure information exchanges and business-to-consumer barter will be captured only indirectly by the formula once profits are realized (or recognized).²⁸⁶ They are however untaxed under the current rules and do not fare better under the other reform paths analyzed above. Moreover, there may be good reasons not to tax them directly as discussed in Part I. There are particularly good reasons not to tax business-to-consumer barter, and indeed even under the two pillars program, they are not taxed. Pure information exchanges among related parties are captured at the corporate group level

283. Being formulaic rather than depending on proxies and often unavailable comparability exercises. See Kerrie Sadiq, *Unitary Taxation – The Case for Global Formulary Apportionment*, 55 BULL. INT’L TAX. 275, 280–83 (2001).

284. See, e.g., Avi-Yonah & Benshalom, *supra* note 272, at 390–92 (formulary apportionment is less manipulable than the existing rules); Brauner, *supra* note 270, § 8.05, at 237 (“[F]ormulary apportionment should be much less complex and costly than the arm’s length standard . . .”).

285. As demonstrated by the agreement to adopt it by the inclusive framework. See *supra* note 183. Furthermore, beyond the long use of formulary taxation by the U.S. states, the European Union has promoted it for intra-union taxation, although not yet in agreement over the details. The European Commission initiative Business in Europe: Framework for Income Taxation (“BEFIT”) has gone through various consultation stages in its way for legislation. See *Transfer Pricing Directive - Head Office Tax System for SMEs - Business in Europe: Framework for Income Taxation*, EUR. COMM’N, https://ec.europa.eu/info/law/better-regulation/have-your-say/initiatives/13463-Business-in-Europe-Framework-for-Income-Taxation-BEFIT_en [<https://perma.cc/T44R-5MXM>].

286. In the same way they are under the current income tax system.

and allocated based on the formula, so only exchanges among unrelated parties present a taxing challenge, yet these are unlikely to be significant (data giants mainly “sell” information, not exchange it). When they exist, they should legally be reported under the formula, which makes this problem, to the extent it is a problem, not harsher than the one faced by the existing rules.

The greatest benefit of a formulary solution in the context of the data economy is that it does not require a complete overhaul of the international tax regime and of states’ domestic reliance on income taxes. Furthermore, it is a flexible solution, so as the global economy relies more on information the agreed formula could reflect more directly such importance if necessary.

CONCLUSION

Tax policy has essentially ignored the ascent of information in society and the global economy. When taken into consideration, in the context of international tax reform, policymakers focused on the preservation of the existing rules, and forced the application of such rules to new economy transactions, by analogy, ignoring the incompatibility of the rules and these transactions. Unsurprisingly, such conservative approach has failed, and states and international organizations are struggling to recover from such failure. This Article argues that the conservative approach could not have succeeded since it ignored the unique properties of information as a subject of taxation. The Article demonstrates that the incongruity between the rules of the income tax-based international tax regime and information transactions is fatal to the latter. The Article further argues that reform is not only necessary but also imminent. Finally, it discusses three paths to international tax reform that would be capable of taxing information effectively.

The Article does not provide a detailed prescription for reform, yet it argues that all three paths to reform should be feasible and superior to the current rules of the international tax regime. If one were to choose among these reform options, the deciding criteria advocated by this Article would be the extent to which a reform can maintain the stability and legitimacy of the international tax regime.²⁸⁷ Based on that criterion the last discussed formulary business taxation reform is at the present superior to the others. In comparison to the single factor-based reforms (destination in the case of consumption taxation and a measurement of data in the case of data taxes), multifactor formulae have a strong advantage in terms of legitimacy and ability to maintain flexibility. Under a single factor, a state would likely find itself a winner or a loser with little wiggle room which a multifactor formula can provide “something for everybody.” Moreover, and not less importantly, formulary business taxation is generally compatible with the current rules of the international tax regime, which should make transition simpler, cheaper, and more palatable.

287. For the argument, see *supra* Section II.D.