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Taxing Data

Omri Marian

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Taxing Data

Omri Marian*

The Article offers a new theory of tax on data collection and transmission as a primary source of government revenue. This tax does not depend on the monetary value of data. This “data tax” can supplement, and in some instances replace, income taxes. The data tax can (1) mitigate some of the failures of income taxes in a globalized data-based economy, and (2) serve to alleviate some of the externalities of a data-based economy.

The Article advances the following four arguments. First, current challenges to tax systems stem largely from the fact that traditional models of taxation were designed for an economy in which the location of labor, the ownership of capital, and the monetary value of income were identifiable. These assumptions no longer stand in the modern economic environment: the data economy. Today, one the most significant sources of value creation is the analysis, manipulation, and utilization of large quantities of dispersed data. In so-called “data-rich markets,” source, ownership, and value are not only hard to identify – they are not always economically meaningful concepts.

Second, current responses to the tax challenges of the digital economy constitute – for the most part – efforts to identify proxies for the location in which monetary profits are created, or to identify the owners of such profits. The results are attempts to keep taxing the economic components of income (consumption and savings). Instead, this Article posits that one must look again at the normative goals of taxation, and question whether taxes on savings and consumption are still the best functional instruments to achieves such goals. The Article argues they are not. Income tax is only theoretically justifiable where it is the best proxy for ability

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to pay. In a data economy, monetary income is not necessarily the best instrument to measure ability to pay.

Third, to address such challenges, the Article offers a framework of tax on data collection and transmission. The tax does not depend on the monetary value of such data. Data tax is a suitable instrument to achieve the primary normative purposes of taxation. Moreover, tax on data can alleviate some of the challenges that the data economy presents to democratic institutions.

Fourth, data tax can be designed to be fair, efficient, and administrable. The Article offers various possible tax instrument designs in which data (rather than savings or consumption) is the tax base.

CONTENTS

| | |
|---|-----|
| INTRODUCTION | 513 |
| I. A BRIEF HISTORY: THE RISE OF INCOME TAXATION..... | 520 |
| A. The Basics of Tax Policy Choices..... | 520 |
| B. The Rise of the Modern Income Tax..... | 523 |
| 1. Individual income taxation | 523 |
| 2. Corporate income taxation..... | 527 |
| II. TRADITIONAL INCOME TAX DESIGNS MEET THE NEW ECONOMY | 531 |
| A. The Three Modern Tax Challenges of Income Tax: Globalization, Dispersion, and Intangible-ization..... | 531 |
| 1. Globalization..... | 532 |
| 2. Dispersion | 535 |
| 3. Intangible-ization and “Capital’s Vanishing Act” | 539 |
| B. Income Tax and the Rise of Data Capitalism | 543 |
| 1. Data capitalism | 543 |
| 2. Data, source, ownership, and value..... | 546 |
| 3. The other challenges of data capitalism | 548 |
| III. THE CAMPAIGN TO SAVE INCOME TAXATION | 551 |
| A. The OECD’s Two-Pillar Approach | 552 |
| B. Digital Services Taxes..... | 555 |
| C. Formulary Apportionment | 557 |
| D. Robo-Taxes..... | 558 |
| E. Excess Return Taxes | 559 |
| F. Taxes That Impute Value to Data | 560 |
| IV. THE DATA TAX | 560 |
| A. Data Tax: A Conceptual Framework | 560 |

| | |
|---|-----|
| 1. Raw data is the tax base..... | 561 |
| 2. Tax is imposed as data is collected and used..... | 561 |
| 3. Tax is imposed on the user of the data | 562 |
| B. The Normative Underpinning of the Data Tax..... | 562 |
| 1. Progressivity | 563 |
| 2. Efficiency | 564 |
| 3. Pigouvian properties..... | 565 |
| 4. Administrability | 566 |
| C. Models of Data Taxation | 567 |
| 1. Data tax as an excise tax – the return of the “bit tax”? | 567 |
| 2. Data dividend taxes | 569 |
| 3. Data-sharing mandates..... | 571 |
| 4. Surrogate taxes on data | 572 |
| 5. Direct data tax..... | 573 |
| 6. Data tax as royalties on data collection | 574 |
| CONCLUSION | 575 |

INTRODUCTION

One of the main ways by which governments raise revenue is by taxing the economic components of income.¹ This has been the case since the early twentieth century.² Assume we had the opportunity to redesign all tax systems from scratch, behind a veil of ignorance, knowing all that we know today about the current global economy – would income tax still be the prevailing mode of taxation? This Article posits it would not. Instead, “data” would be the preferred (or at the minimum, a supplemental) tax base.

We live in an economy which is based on “data-rich markets,”³ where markets are gradually disengaging from financial capital, data takes over some of the roles of money, and data analysis is used to automate economic decision-making, and to predict and to

1. “On average, in 2018, OECD countries collected 34.3% of their tax revenues through taxes on income and profits (personal and corporate income taxes taken together).” OECD, *REVENUE STATISTICS 2020: TAX REVENUE TRENDS IN THE OECD* 9 (2020).

2. See, e.g., Reuven S. Avi-Yonah, *Globalization, Tax Competition, and the Fiscal Crisis of the Welfare State*, 113 HARV. L. REV. 1573, 1576 (2000) (“From its inception in the late nineteenth century through the recent rise of payroll taxation, the welfare state has been financed primarily through progressive income taxation.”).

3. See VICKTOR MAYER-SCHÖNBERGER & THOMAS RAMGE, *REINVENTING CAPITALISM IN THE AGE OF BIG DATA* 10–15 (2018) (explaining the concept of data-rich markets).

modify consumption behavior.⁴ In such markets, income—measured in monetary value—is no longer the best basis for taxation.

From an economic point of view, income taxation is imposed on the aggregation of taxpayers' "savings" and "consumption."⁵ Both concepts rely on our ability to identify the geographical "source," the beneficial "ownership," and the monetary value of income. Source refers to "where" income is geographically created. "Ownership" refers to who is the taxpayer that enjoys the income.⁶ We must identify source, ownership, and value in order to decide who is the liable taxpayer, who gets to tax her, and to what extent.⁷

The rise of the global digital economy challenged these concepts. In the age of electronic commerce, geographical source and ownership are fluid concepts.⁸ Moreover, in the digital economy, income—which is earned by the utilization of proprietary intangibles—cannot be easily valued in monetary terms (if at all).⁹ There is a widespread agreement that the global tax system no longer fits the modern economy.¹⁰ Governments have struggled to come up with solutions.¹¹ Most proposed solutions are focused on identifying new proxies for source and ownership of income, or on ways to value intangible assets.¹²

The data economy exacerbates these challenges. It is not only that "source," "ownership," and "monetary value" are difficult to pinpoint in a data economy. They are not truly meaningful, even as theoretical constructs. It makes little sense to base our main tax instrument—the income tax—on obsolete theoretical underpinnings.

This Article offers a radical departure from the century-long tax theory of income taxation and the legal designs it suggests. The problem with income taxation is not its legal design. It is its very

4. See SHOSHANA ZUBOFF, *THE AGE OF SURVEILLANCE CAPITALISM: THE FIGHT FOR A HUMAN FUTURE AT THE NEW FRONTIER OF POWER* 214 (2019) (describing using data to generate "behavioral surplus").

5. HENRY C. SIMONS, *PERSONAL INCOME TAXATION* 50 (1938) (describing that income is equal to the sum of a taxpayer's consumption and savings).

6. See discussion *infra* Section II.A.

7. See discussion *infra* Section II.A.

8. See discussion *infra* Section II.A.

9. See discussion *infra* Section II.A.

10. Ruth Mason & Leopoldo Parada, *Digital Battlefield in the Tax Wars*, 92 *TAX NOTES INT'L* 1183, 1183 (2018).

11. See discussion *infra* Part III.

12. See discussion *infra* Part III.

nature. Income taxation, even in its optimal theoretical form, cannot be expected to serve the underlying purposes of taxation in our current environment. Instead, this Article offers a theory for the taxation of “data” as a primary tax base, where the tax is divorced from whatever monetary value “data” may (or may not) have.

When income taxes were originally designed, the world’s economy was much simpler. Taxpayers worked where they lived and traded mostly tangible goods.¹³ Corporate entities were a rarity, and where they existed, law mandated that they be owned and managed primarily by domestic residents and operate within specific territories.¹⁴ There were very few corporations that operated internationally. Under such circumstances, identifying *who* owns what income, *where* the income was earned, and *how much*, was a manageable task.

In the past century and a half or so, the world has changed dramatically.¹⁵ We live in a global marketplace, in which dispersed corporate entities generate value for shareholders from the creation and utilization of intangibles.¹⁶ And the creation and utilization of these intangible assets is relying ever more heavily on the collection and manipulation of data. User personal data.¹⁷ Location data.¹⁸ Personal preference data.¹⁹ Speed data.²⁰ Speech and tone data.²¹ Sleep data.²² Fitness data.²³ Your home layout data.²⁴ Literally any and all data. Shoshana Zuboff suggests that we are transitioning

13. Cf. JONATHAN HASKEL & STIAN WESTLAKE, CAPITALISM WITHOUT CAPITAL: THE RISE OF THE INTANGIBLE ECONOMY 24 (2018) (calling intangible investment a “sideshow” to tangible investment in earlier years).

14. See discussion *infra* Section I.B.2.

15. See discussion *infra* Part II.

16. For a description of the rise of the intangible economy, see HASKEL & WESTLAKE, *supra* note 13, at 1–11.

17. ZUBOFF, *supra* note 4, at 8–12 (describing the collection of personal data of users).

18. *Id.* at 242–44 (describing the collection of location data of users).

19. *Id.* at 74–82 (describing how data collectors infer personal preferences of internet users).

20. *Id.* at 213 (describing how insurers collect data on driving behavior).

21. *Id.* at 263–68 (describing how certain home appliances collect audio data).

22. *Id.* at 236–37 (describing how the Sleep Number bed and its corresponding app collect data on users’ sleep patterns).

23. *Id.* at 247–50 (describing how certain applications collect data of users’ health and fitness).

24. *Id.* at 235–36 (describing how automated vacuum cleaning robots document and record home layout patterns).

into a capitalist system that “claims human experience as free raw material for the transition into behavioral data.”²⁵ In our data-based economy, data is the base ingredient used in the production of wealth. It is a unit of account, and a medium of exchange. People “pay” with their data for services. Data is referred to as the “new oil”²⁶ or even as the “new money.”²⁷

In such an economy, “value” is not centrally sourced or even centrally created but is the result of manipulation of massive amounts of dispersed data,²⁸ benefiting those who can harvest it, manipulate it, and feed the insights back into the market in order to guide consumption behavior. This is true not only for “tech” companies. Even brick and mortar businesses heavily rely on the analysis of large quantities of data to understand, anticipate, and manipulate economic behavior.²⁹ “Every company has big data in its future and every company will eventually be in the data business.”³⁰

These economic shifts present challenges to traditional models of taxation. In a dispersed data economy, location of income and ownership of data mean very little. You and your data are not severable. Even when you “transact” in your data, you get to keep it. You just share it with others. You do not lose it. Ownership means little in such context.

Location is similarly meaningless. What is the location of your data once it is collected by Google? Is it where you are physically located? Or is it where the Google servers are located? Or is it both? Or is it where Google harnesses computing power from its computing machines around the globe, to join your data with other data from millions of other users, in order to generate valuable and operational insight? What is the “location” of an algorithm, anyway?

25. *Id.* at 8.

26. Kiran Bhageshpur, *Data Is the New Oil – and That’s a Good Thing*, FORBES (Nov. 15, 2019, 8:15 AM), <https://www.forbes.com/sites/forbestechcouncil/2019/11/15/data-is-the-new-oil-and-thats-a-good-thing/?sh=598c582d7304>.

27. Omri Ben-Shahar, *Data Pollution*, 11 J. LEGAL ANALYSIS 104, 141 (2019) (“Data, it is often said, [is] the new money.”).

28. See HASKEL & WESTLAKE, *supra* note 13, at 5–11.

29. LESLIE BRADSHAW, U.S. CHAMBER OF COM. FOUND., *BIG DATA AND THE CHANGE IT BRINGS* 1 (2013) (stating that “Big Data is *already* an integral part of every sector in the global economy,” including “manufacturing, finance, and especially retail”).

30. Thomas H. Davenport, *What’s So Big About Big Data?*, RACONTEUR (June 12, 2012), <https://www.raconteur.net/whats-so-big-about-big-data/>.

Your data also has no monetary value on its own. What is the nominal dollar value of knowing your name? Or address? Your data only becomes valuable once combined with billions of other pieces of data of other individuals. Or it becomes valuable when combined with data that does not “belong” to anyone. Think, for example, of weather patterns. In and of themselves, they are valueless. But they become valuable if they are somehow joined with your location data to convince you to buy an umbrella. Data only becomes valuable when it is manipulated, and insights are used to anticipate and modify your consumption behavior. It becomes even more valuable when feedback data is used to assess the success of such manipulations and to better affect behavioral modifications.³¹

In the past few decades, savvy multinational taxpayers were quick to identify tax saving opportunities and structure their affairs in a way that creates income that is produced “nowhere,” or belongs to “no one.”³² This puts significant budgetary strains on the democratic welfare state.³³ As a result, we have seen a gradual, decades-long shift from governments’ reliance on capital taxation for revenue to taxing less mobile income (mostly by taxing salaries and end-consumer sales). This has shifted much of the tax burden from high-income earners to low- and middle-income earners.³⁴

The data economy has the potential to make even “labor” taxation disappear with the advent of artificial intelligence. Some argue that artificial intelligence will eventually replace most of the work force.³⁵ In such a case, without “labor,” what is left to tax? Even if artificial intelligence does not “replace” labor per se, it certainly makes it harder to identify the places where actual labor happens and the unique value contribution of labor. If workers rely

31. ZUBOFF, *supra* note 4, at 305–07 (describing the use of feedback loops to modify users’ behaviors).

32. See European Commission Press Release IP/16/2923, State Aid: Ireland Gave Illegal Tax Benefits to Apple Worth Up to €13 Billion (Aug. 30, 2016) (discussing Apple’s international corporate structure, which allowed it to allocate profits in such a way that it was immune from taxation in many countries).

33. Avi-Yonah, *supra* note 2, at 1578.

34. See *id.* at 1576 (“However, greater capital mobility and international tax competition allow investors to escape taxation easily by shifting capital to low- or no-tax jurisdictions. Consequently, the income tax’s progressive effect is significantly weakened.”).

35. For a discussion of such arguments, see BYRON REESE, *THE FOURTH AGE: SMART ROBOTS, CONSCIOUS COMPUTERS, AND THE FUTURE OF HUMANITY* 83–92 (2018).

ever more heavily on assistance of algorithms in their job performance, how much of the value creation is attributable to the worker, and how much to the supporting algorithm? And where is value created when we rely on algorithms in our everyday work? The fact that we tax labor more than capital may be problematic enough on its own. What happens if we cannot even tax labor?

The data economy offers an additional important challenge to the modern state, beyond the revenue challenge. It challenges the foundation of democracy. Data is not equally owned, shared, or used to generate economic benefits. The so-called “data economy” is exceptionally concentrated in the hands of the few. A small number of corporations collect, control, and transact in most data.³⁶ A small number of individuals guide the behavior of these corporations. The accumulation of data in the hands of a few large corporations,³⁷ which seek to use such accumulation for monetary profits, creates “instrumentarian power [that] exceed[s] the historical norms of capitalist ambitions, claiming dominion over human, societal, and political territories that range far beyond the conventional institutional terrain of the private firm or the market.”³⁸

For several decades now, governments have been engaged in attempts to address these challenges. For example, addressing the so-called “tax challenges of the digital economy” has been a main focus of the Centre of Tax Policy and Administration at the Organisation of Economic Cooperation and Development (OECD).³⁹ Multiple innovative models of taxation have been offered, such as new ways to allocate income between jurisdictions involved in cross-border transactions, a multitude of new anti-abuse rules, new taxes on digital services, taxes on robots, “destination-based” taxes, taxes on “excess profits,” and the list

36. Maurice E. Stucke, *Should We Be Concerned About Data-opolies?*, 2 GEO. L. TECH. REV. 275, 275 (2018).

37. The use of data to generate economic surplus is concentrated in the hands of a very few corporations. For a description of these market monopolies, see ZUBOFF, *supra* note 4, at 130–37.

38. *Id.* at 21. The democratic challenge is discussed below. See discussion *infra* Section II.B.3.

39. Nana Ama Sarfo, *How the OECD Became the World’s Tax Leader*, FORBES (Aug. 11, 2020, 9:01 PM), <https://www.forbes.com/sites/taxnotes/2020/08/11/how-the-oecd-became-the-worlds-tax-leader/?sh=3ec6dd806628> (describing OECD BEPS plan to address the tax challenges of the digital economy).

goes on. But to date there does not seem to be a consensus (or even a broad agreement) on what the future of taxation should look like.

This Article posits that unlike our economic reality, tax models—even the new innovative tax models—remained theoretically stagnant. All these new attempts to come up with new ways of taxation share the same tax policy aim: they all still represent various attempts to tax the components of *economic income measured in monetary terms*. This, for the most part, is a result of necessary political compromise. These attempts to save income taxation should not be abandoned. But they should, at the minimum, be supplemented by rethinking how we tax in the first place. We designed *income* tax in a different reality. Should we still tax income (or mostly income) in our new reality?

No. We should not. There is no standalone normative justification for the taxation of income. Income tax was designed merely as an instrument to achieve the primary normative purposes of taxation: funding governments in an efficient and equitable manner. Using income as the tax base achieved such purposes in the end of the nineteenth century. It made sense then. It probably made significant sense until the 1980s or so. For a large part of the economy, it does not make sense anymore. In the age of data capitalism, we should tax data.

A well-designed tax on the collection and transmission of data saves the need to identify the “source” of value creation. It also saves the need to identify the beneficial owner of monetary gain. It completely avoids the insurmountable task of trying to assess the “monetary value” of data. Tax on data can be designed to be equitable and efficient.⁴⁰

Moreover, tax on data can alleviate some of the threats the data economy poses to society.⁴¹ The data economy infringes upon users’ autonomy, creates economic oligopolies, and even raises environmental concerns.⁴² It challenges democratic institutions.⁴³ Certain tax instruments can alleviate such externalities.⁴⁴ Congress did use taxes in the past to counter anti-democratic societal processes. For example, Professor Reuven Avi-Yonah explicitly

40. See discussion *infra* Section I.A.

41. See discussion *infra* Section II.B.3.

42. See discussion *infra* Section II.B.3.

43. See discussion *infra* Section II.B.3.

44. See discussion *infra* Section IV.B.3.

argues that the United States corporate tax was adopted in 1909 partly to counter the concentration of power with corporate managers during the age of corporate consolidation.⁴⁵ Imposing tax on data will alleviate similar concerns in an age where data is power. The revenue from such tax can also be used to remedy some of the negative consequences of the data economy.

This Article continues as follows. Part I discusses the basic normative underpinning of taxation, and briefly explains the historical background that led to the global popularity of income tax as the revenue measure of choice. Part II explains the historical processes of globalization, dispersion, and digitalization—culminating in the data economy—that made the income tax somewhat obsolete and presented significant other challenges to the modern nation state. This Part also explains how the rise of the data economy exacerbated such challenges and made them qualitatively different. Part III outlines the myriad current responses to the tax challenges of the digital economy. The argument is that all such proposed solutions keep trying to identify proxies for income in an economy where income is no longer the best theoretical instrument for taxation. Part IV offers an alternative in the form of tax on data collection and transmission. This Part also considers several possible designs of tax on data.

I. A BRIEF HISTORY: THE RISE OF INCOME TAXATION

This Part briefly explains how income taxation became the prevalent mode of government funding. It starts by explaining the very basic considerations of tax policy design. It then explains the historical rise of individual income taxation and corporate income taxation as responses to the societal challenges of the nineteenth century.

A. The Basics of Tax Policy Choices

We tax in order to fund government.⁴⁶ That is not a controversial statement. Rather, policy controversies arise when we question

45. Reuven S. Avi-Yonah, *Corporations, Society, and the State: A Defense of the Corporate Tax*, 90 VA. L. REV. 1193, 1195 (2004).

46. JOEL SLEMROD & JON BAKIJA, *TAXING OURSELVES: A CITIZEN'S GUIDE TO THE DEBATE OVER TAXES* 13–15 (2008) (explaining different taxes as sources of government revenue).

how we should design tax law, and the extent to which we want to fund government.⁴⁷

Commonly, there are three competing primary normative considerations in the design of a tax system: efficiency, equity, and administrability.⁴⁸ One's preference for a specific tax design largely reflects ideological preference for one normative value over others.

"Efficiency" considerations reflect the common understanding that tax has "disincentive effects."⁴⁹ Taxpayers' economic behaviors—such as how much to work, which assets to invest in, when and where to invest—are different in an environment with taxes than they would have been in an environment without taxes. An "efficient" tax system is one that adequately funds government while minimizing distortions in economic behavior.

A flat poll tax is an example of a very efficient tax. It is difficult to avoid, is unaffected by the taxpayer's economic decisions, and is easy to administer.⁵⁰ But a poll tax is not equitable. An "equitable" (or "fair") tax system is one that takes into consideration the individual circumstances of each taxpayer when determining her tax burdens.⁵¹ In popular terms, such tax system requires taxpayers to contribute their "fair share" to government revenue, based on their so-called "ability to pay."⁵² Researchers identify the theoretical bases of fairness considerations as "vertical equity" and "horizontal equity."⁵³ Vertical equity is achieved when taxpayers' tax burdens correlate with their well-being.⁵⁴ Affluent taxpayers should carry a higher overall tax burden than poor taxpayers. Horizontal equity questions "under what, if any, circumstances it is acceptable that two equally well-off households bear a different tax burden."⁵⁵

47. *Id.* at 3–7 (outlining the main controversies related to the tax system).

48. There are other secondary considerations in tax policy, such as guiding behavior and impose costs on specific behaviors (so-called "Pigouvian taxes"). For a discussion, see Victor Fleischer, *Curb Your Enthusiasm for Pigouvian Taxes*, 68 VAND. L. REV. 1673, 1682–90 (2015) (discussing the theory and design of Pigouvian Taxes).

49. SLEMROD & BAKIJA, *supra* note 46, at 66.

50. *Id.*

51. *Id.*

52. See discussion *infra* notes 74–81 and accompanying text.

53. See SLEMROD & BAKIJA, *supra* note 46, at 59–60.

54. See *id.* at 59.

55. See *id.* at 60.

In theory, one could imagine a tax system that takes into account every possible aspect of each taxpayer's existence to apply a perfectly adjusted individual tax burden. Even if we set aside the obvious worry about how much we want governments to know about us, such system would be impossible to administer and difficult to comply with. Thus, one must also consider the issue of administrability of a tax system.

In the context of tax policymaking, "administrability" can be described as the principle under which "societies ought to be able to enforce the tax systems they create."⁵⁶ There is more to this than simple administrative convenience. Administrability is a normative value in and of itself. For example, there are negative ramifications to rule of law principles if a tax law is designed in a way that is impossible for government to enforce or for taxpayers to comply with.⁵⁷ There is also a normative agency element here, as "governments have duties as agents of societies to practice careful management of resources entrusted to them."⁵⁸ Failing such fiduciary capacity will harm public trust in government. Moreover, administrability directly affects the two other normative considerations: efficiency and fairness. A complex tax system may create efficiency losses as it offers many opportunities to "game the system." Taxpayers' economic decisions may be dictated by their ability to navigate loopholes rather than by a business rationale. Complex systems also create compliance costs which, from an efficiency point of view, are a waste.

From an equity point of view, a complex system may offer planning opportunities for rich taxpayers who can pay lawyers and accountants to navigate the system in a way poor taxpayers cannot. On the other hand, a too-simplistic tax system is also obviously unfair as it may be over- or under-inclusive, as in the case of a poll tax.

These normative considerations have underlined tax law design in modern times. The next section discusses how such considerations brought about the tax instruments we have today.

56. ALLISON CHRISTIANS, INTRODUCTION TO TAX POLICY THEORY 23 (2018) (emphasis omitted).

57. *Id.*

58. *Id.*

B. *The Rise of the Modern Income Tax*

Income taxation of business entities and individuals present different challenges and have their own unique histories. I therefore discuss each separately.

1. *Individual income taxation*

At the end of the nineteenth century, almost all federal revenue in the United States came from duties, excise taxes, customs, and tariffs levied on a broad list of goods.⁵⁹ In 1880, these levies accounted for 90% of all national receipts.⁶⁰ The United States was not exceptional. Many nineteenth-century industrializing nations also turned to tariffs, customs, duties, and excise taxes to fund their public outlays.⁶¹

These taxes were immensely unpopular.⁶² U.S. tariffs were “initially used mainly as a geo-political tool to combat British naval imperialism.”⁶³ But late nineteenth-century industrialization led to a significant increase in international commerce and turned tariffs to instruments of favoritism, designed to “protect domestic industries” from overseas competition.⁶⁴ Stated in tax-policy design

59. AJAY K. MEHROTRA, *MAKING THE MODERN AMERICAN FISCAL STATE: LAW, POLITICS, AND THE RISE OF PROGRESSIVE TAXATION, 1877-1929*, at 3-4 (2003) (describing consumption taxes at the end of the nineteenth century in the United States).

60. *Id.* at 7.

61. *See, e.g.*, Brian J. Arnold, *Canada*, in *COMPARATIVE INCOME TAXATION: A STRUCTURAL ANALYSIS* 27, 27 (Hugh J. Ault & Brian K. Arnold eds., 3d ed. 2010) (“Until [1917], the major sources of federal revenue were customs and excise taxes.”); Minoru Nakazato, Mark Ramseyer & Yasutaka Nishikori, *Japan*, in *COMPARATIVE INCOME TAXATION*, *supra*, at 93 (“Prior to [1887], Japanese national revenues had been heavily dependent on the land tax and the liquor tax.”); Kees van Raad, *The Netherlands*, in *COMPARATIVE INCOME TAXATION*, *supra*, at 111 (“Most of these [pre-1892] taxes were excise taxes . . .”); Peter Melz, *Sweden*, in *COMPARATIVE INCOME TAXATION*, *supra*, at 129 (describing the gradual transition from excise tax to income tax as a main source of government revenue in nineteenth-century Sweden).

62. MEHROTRA, *supra* note 59, at 37-39 (describing Thomas E. Cooley’s scathing criticism of the American tax system, which “typified the prevailing view of American taxation” during Cooley’s day).

63. *Id.* at 38.

64. *Id.*

terms, such taxes are immensely inefficient, as they distort market prices, investment decisions, and consumption decisions.⁶⁵

Tariffs and excise taxes were also unpopular because they are inequitable, with much of the burden falling on low- and middle-income taxpayers.⁶⁶ Excise taxes, for the most part, are simply transaction-based taxes where the tax burden falls on the end user.⁶⁷ They are usually set at a flat rate, which makes them regressive. Wealthy taxpayers, on the other hand, were popularly perceived to be largely beyond the reach of these levies.⁶⁸ Since poor taxpayers consume most of their income, and rich taxpayers save much of their income, excise taxes—as a share of taxpayer’s income—excessively burden low-income taxpayers.⁶⁹

The failures of the late nineteenth-century system of taxation—both in terms of efficiency and equity—manifested themselves as substantial scholarly interest in tax theories. Until then, most tax scholars viewed taxation simply as “the price that individual citizens paid in exchange for the benefits of government protection.”⁷⁰ Similar reasoning was applied in the context of government services⁷¹—meaning, taxes are the price one pays for government benefits such as defense, education, healthcare, utilities, transportation, and so on. This justification of taxation—known as the “benefits principle”—gradually fell from favor given the failures of the types of taxes it led to.⁷² Today, the benefits

65. SLEMROD & BAKIJA, *supra* note 46, at 139 (describing a tariff as “a particularly inefficient tax from the perspective of the country that imposes it because it induces its residents to buy domestically produced goods that could be obtained more cheaply by importing”).

66. *See, e.g.*, STEVEN A. BANK, FROM SWORD TO SHIELD: THE TRANSFORMATION OF THE CORPORATE INCOME TAX, 1861 TO PRESENT 40–41 (2010) (describing the progressivity and the unpopularity of early excise taxes and tariffs); MEHROTRA, *supra* note 59, at 41–45 (same).

67. *Patton v. Brady*, 184 U.S. 608, 618 (1902) (defining an excise tax as “an indirect tax on the consumer, levied upon certain specified articles, as tobacco, ale, spirits, etc., grown or manufactured in the country”).

68. BANK, *supra* note 66, at 41–45; *see also* KIMBERLY CLAUSING, OPEN: THE PROGRESSIVE CASE FOR FREE TRADE, IMMIGRATION, AND GLOBAL CAPITAL (2019).

69. *Who Bears the Burden of Federal Excise Taxes?*, TAX POL’Y CTR. BRIEFING BOOK, <https://www.taxpolicycenter.org/briefing-book/who-bears-burden-federal-excise-taxes> (last updated May 2020).

70. MEHROTRA, *supra* note 59, at 61.

71. SLEMROD & BAKIJA, *supra* note 46, at 62–64.

72. MEHROTRA, *supra* note 59, at 62–67 (describing the early scholarly critiques of benefits theory); SLEMROD & BAKIJA, *supra* note 46, at 63 (concluding that “the benefit principle fails to offer practical guidelines about how the tax burden should be distributed”).

principle is no longer the main theoretical underpinning for tax law design. The main critiques of the benefits theory are that it is (1) impossible to administer (how do we determine national defense's value to a single individual?) and (2) incoherent with a modern welfare state, in which some taxpayers are intended to be net recipients of government services while others are net payers.⁷³

During the late nineteenth century, a new school of political economy emerged which—shaped by the economic experience of the period—was “inclined . . . toward social change,”⁷⁴ seeking to move “the existing tax system in the direction of greater justice.”⁷⁵ Scholars of this new school agreed that “benefits theory provided an inconsistent and hence incoherent intellectual basis for creating a modern tax system.”⁷⁶ Instead, the “ability to pay” principle became the theoretical basis for the new social order.⁷⁷ The ability to pay principle suggests that one's tax burden should relate to one's “ability to bear the sacrifice of material well-being a tax burden entails.”⁷⁸ The ability to pay principle became the theoretical bedrock for designing the modern progressive income tax.

To design a tax system adhering to “ability to pay,” we need a way to measure this “ability,”⁷⁹ in order to decide the extent to which one would have to pay in tax out of her total ability.

“Ability,” however, is not a measurable economic term that offers objective benchmarks for one's well-being. The measurement of “ability” must rely on proxies. During the early twentieth century, income (measured in terms of monetary value) emerged as a preferred proxy for ability to pay,⁸⁰ and taxes on income

Slemrod and Bakija suggest, however, that the benefit principle may provide a general justification for progressive taxation, since “households with higher income and wealth have more to lose . . . if the government withdrew from providing defense . . . [and] should therefore carry a higher tax burden.” *Id.*

73. Joseph M. Dodge, *Theories of Tax Justice: Ruminations on the Benefit, Partnership, and Ability-to-Pay Principles*, 58 TAX L. REV. 399, 399 (2005).

74. MEHROTRA, *supra* note 59, at 101.

75. *Id.* at 116 (quoting Edwin R. A. Seligman, *The Income Tax*, 9 POL. SCI. Q. 610, 610 (1894)).

76. *Id.*

77. *Id.* at 114.

78. SLEMROD & BAKIJA, *supra* note 46, at 64.

79. Dodge, *supra* note 73, at 449 (defining “‘objective ability to pay,’ meaning that ability to pay is measured in nominal dollars (rather than subjective utility) on a year-to-year basis and ignores nonalienable endowments”).

80. MEHROTRA, *supra* note 59, at 150, 185.

“became institutionalized as . . . socially and culturally legitimate mass tax[es].”⁸¹

Income is economically defined as the “value of the goods and services you consume during a year, plus the net change in your wealth (saving) that occurs in that year.”⁸² Known as the Schanz-Haig-Simons model, income is formally stated as $I = C + \Delta S$, where I is income, C is the value spent in consumption, and S is savings (the net assets one owns).⁸³

Of course, an actual legal design will often deviate from this easy formula for various policy purposes. An obvious example is the “realization doctrine,” which requires that income be “realized” (short for converted into liquid cash or other assets).⁸⁴ Nonetheless, the Schanz-Haig-Simons model still serves as the economic benchmark for measuring income, and deviations from it represent tax policy preferences.⁸⁵

Once income is measured, tax writers must come up with a legal design ensuring that taxpayers who are better-off indeed pay “more.” There are many ways one might design a “progressive” tax system, but the most common method used is increasing the tax rate as income itself increases.⁸⁶

When the income tax system was born, this design made a lot of sense. Most people earned money in their individual capacities. Corporations were a rare creation, which required state legislation.⁸⁷ In this pre-globalized, pre-corporate world, people

81. *Id.* at 15.

82. SLEMROD & BAKIJA, *supra* note 46, at 28.

83. Robert Murray Haig, *The Concept of Income – Economic and Legal Aspects*, in THE FEDERAL INCOME TAX 1–28 (Robert Murray Haig ed., 1921); SIMONS, *supra* note 5, at 41–58.

84. SLEMROD & BAKIJA, *supra* note 46, at 35–36.

85. A note of clarification is in order here. “Income taxes” are frequently contrasted with “consumption taxes” in tax policy discussion. For a summary of the tax policy discussion juxtaposing consumption versus income taxes, see, for example, Joseph Bankman & David A. Weisbach, *The Superiority of an Ideal Consumption Tax over an Ideal Income Tax*, 58 STAN. L. REV. 1413 (2006). However, as evident from the Schanz-Haig-Simons model, “consumption” is part of the definition of “income.” The difference between income tax and consumption tax is that the income tax base also includes “savings,” namely the return from capital investment. While this difference in policy is significant, it is not the main focus of this Article. For the rest of the Article, taxes on “consumption” are simply viewed as one economic component of the “income tax” (the other being tax on “savings”). The Article notes the importance of taxing “savings” where relevant.

86. This is how most progressive income tax systems work. See, e.g., 26 U.S.C. § 1.

87. Frederick Tung, *Before Competition: Origins of the Internal Affairs Doctrine*, 32 J. CORP. L. 33, 45–46 (2006).

generally traveled little, worked where they lived, and locally traded or invested in tangible goods. Even corporate stock came in barer, tangible form.⁸⁸ It was easy to tell who earned what income, where, and how much. The measurement of the tax base did not introduce very significant administration challenges. It worked.

2. Corporate income taxation

There are two acceptable historical reasonings for the taxation of corporate income. One suggests that corporate taxation was originally adopted in 1909⁸⁹ “as a substitute or ‘proxy’ for taxing corporate shareholders directly.”⁹⁰ Even before 1909, Congress imposed specific taxes on companies in highly consolidated industries such as transportation, banking, and insurance.⁹¹ With the proliferation of general incorporation laws during the second half of the nineteenth century, corporations came to dominate most businesses, making the industry-specific approach inadequate.⁹² Congress made a first attempt to tax corporations in 1894, in an act understood by historians as a first explicit federal attempt to systemically get at shareholders’ wealth through the taxation of corporations.⁹³ The 1894 Act was struck down by the Supreme Court,⁹⁴ but general taxation of all corporate entities was reintroduced in the 1909 Act. The 1909 Act was evidently tailored to withstand constitutional challenges, but still was a mechanism to get at shareholders’ wealth.⁹⁵ Under this theory, corporate taxation was simply another functional instrument to tax based on the “ability to pay” of the eventual corporate equity holders.

88. George S. Geis, *Traceable Shares and Corporate Law*, 113 NW. U. L. REV. 227, 232 (2018).

89. See Corporate Tax Act of 1909, 36 Stat. 11, 112.

90. Steven A. Bank, *Entity Theory as Myth in the Origins of the Corporate Income Tax*, 43 WM. & MARY L. REV. 447, 452 (2001) [hereinafter Bank, *Origins of the Corporate Income Tax*]; see also Steven A. Bank, *Entity Theory as Myth in the U.S. Corporate Excise Tax of 1909*, in 2 STUDIES IN THE HISTORY OF TAX LAW 393 (John Tiley ed., 2007) [hereinafter Bank, *Entity Theory as a Myth in the U.S. Corporate Excise Tax of 1909*].

91. See Bank, *Origins of the Corporate Income Tax*, *supra* note 90, at 504–05.

92. See *id.* at 505–08 (describing the dramatic increase in doing business through a corporate form toward the end of the nineteenth century).

93. *Id.* at 462 (noting that “[t]he simultaneous income taxation of individuals and corporations was unprecedented as the federal level”).

94. *Pollock v. Farmers’ Loan & Trust Co.*, 157 U.S. 429 (1895), *aff’d on reh’g*, 158 U.S. 601 (1895).

95. Bank, *Origins of the Corporate Income Tax*, *supra* note 90, at 532.

A second historical theory of corporate tax posits that the 1909 Act reflected negative sentiment in Congress toward large-scale business entities,⁹⁶ which accumulated substantial power in the age of corporate consolidation. Influential corporate managements were identified as a source of abuse of power.⁹⁷ It had therefore been suggested that “the imposition of the corporate tax would enable the government, the shareholders and the public to obtain information that will serve as the basis for restricting such managerial abuses of power.”⁹⁸ Under this approach, the 1909 Act was an attempt to restrict excessive corporate power, which is incompatible with democratic governance.⁹⁹

Whichever theory one might prefer, both could serve as a reasonable normative justification for the taxation of corporate income when first introduced. During much of the nineteenth century, states enjoyed “territorial monopolies on corporate law.”¹⁰⁰ Incorporation was not freely available. Rather, corporate charters were granted by special legislative acts of the states.¹⁰¹ Consistent with such notion, “it was generally understood that a corporation’s legal standing reached only to the borders of the incorporating state” and that “a corporation existed only within the borders of the sovereign that created it.”¹⁰² Consequently, it was accepted that a corporation, as a separate entity, “[could] not be taxed except by the State which created it,”¹⁰³ and that states could tax “foreign” corporations only on “[t]he privilege of acting” within the taxing state’s territory.¹⁰⁴ Moreover, corporations had limited geographical reach. “Businesses transacted primarily in local product, labor, and capital markets, and rarely had operations out-

96. Ajay K. Mehrotra, *The Public Control of Corporate Power: Revisiting the 1909 U.S. Corporate Tax from a Comparative Perspective*, 11 THEORETICAL INQUIRIES L. 497, 510 (2010); Bank, *Origins of the Corporate Income Tax*, *supra* note 90, at 508–11.

97. Avi-Yonah, *supra* note 45, at 1219–20 (citing President Taft Message to Congress, 44 Cong. Rec. 3344 (1909)).

98. Reuven S. Avi-Yonah, *Why Was the US Corporate Tax Enacted in 1909?*, in 2 STUDIES IN THE HISTORY OF TAX LAW, *supra* note 90, at 377, 383.

99. *Id.* at 382–87.

100. Tung, *supra* note 87, at 46.

101. Mehrotra, *supra* note 96, at 515.

102. Tung, *supra* note 87, at 54.

103. JOSEPH HENRY BEALE, JR., *THE LAW OF FOREIGN CORPORATIONS AND TAXATION OF CORPORATIONS BOTH FOREIGN AND DOMESTIC* § 462, at 619 (1904).

104. *Id.* at 620.

of-state.”¹⁰⁵ State-level corporate taxation had even been justified, among other reasons, on administrative grounds, noting the advantage of the state over the federal government in taxing locally operated businesses.¹⁰⁶

It is not only the case that state-chartered businesses happened to operate locally by the nature of their business,¹⁰⁷ but it has also been required by many states’ laws. “Corporations and legislatures expected – and legislatures sometimes mandated – that corporations would have significant operations in the incorporating state, that officers and directors would be residents of that state, and that shareholders’ and directors’ meetings would be held in the state.”¹⁰⁸

Under such set of circumstances, it was perfectly sensible to use corporate taxation as an instrument to measure corporate owners’ “ability to pay.” Payouts from a company of a state could have been assumed to be burdening income earned in that state, owned by residents living in that state.

The same can be said about federal-level corporate tax. During the late nineteenth century, U.S. businesses were overwhelmingly focused on U.S. local markets, which provided a “continental size” consumer base for their products.¹⁰⁹ The economic opportunities of scale could be all exploited with no need to look to foreign markets. American companies thus “tended to invest in their [own] backyard[],”¹¹⁰ and the United States only played a minor role in global trade.¹¹¹ Even with U.S. exports steadily increasing during

105. Tung, *supra* note 87, at 46; see also Thomas R. Navin & Marian V. Sears, *The Rise of a Market for Industrial Securities, 1887-1902*, 29 BUS. HIST. REV. 105, 107 (1955) (noting that until 1880 the U.S. economy was “typified by small single-plant companies serving limited markets”).

106. Mehrorta, *supra* note 96, at 516.

107. Tung, *supra* note 87, at 56 (“[F]irms ordinarily incorporated in the state where *their organizers resided and where their major operations were located.*”) (emphasis added).

108. *Id.* at 56-57.

109. MANSSEL G. BLACKFORD, *THE RISE OF MODERN BUSINESS: GREAT BRITAIN, THE UNITED STATES, GERMANY, JAPAN, AND CHINA* 87 (3d ed. 2008).

110. JOHN MICKLETHWAIT & ADRIAN WOOLDRIDGE, *THE COMPANY: A SHORT HISTORY OF A REVOLUTIONARY IDEA* 164 (2003); see also LANCE E. DAVIS & ROBERT J. CULL, *INTERNATIONAL CAPITAL MARKETS AND AMERICAN ECONOMIC GROWTH, 1820-1914*, at 79-91 (1994) (discussing the insignificance of foreign investment by U.S. investors between 1797 and 1896).

111. Robert E. Lipsey, *U.S. Foreign Trade and the Balance of Payments, 1800-1913*, at 5 (Nat’l Bureau of Econ. Rsch., Working Paper No. 4710, 1994).

the nineteenth century, the United States remained a net-capital importer until the end of the century.¹¹² Even amid positive inflow of investment, up until the early twentieth century (when the 1909 Act became functional), foreign investment in the United States did not play a significant role in U.S. economic growth.¹¹³ Thus, it would seem plausible to argue that taxing U.S. corporate entities was a good proxy to tax income earned in the United States, by U.S. residents.

The historical circumstances also support the “democratic argument” for corporate taxation. During the second half of the nineteenth century, an increasing number of states neglected the model of state-chartered corporations in favor of general incorporation laws.¹¹⁴ Local business entrepreneurs were quick to take advantage of the liberalization of corporate laws, and “by 1904 corporations accounted for three-quarters of the United States’ industrial output.”¹¹⁵ Between the 1890s and the early 1900s, the U.S. economy underwent an unprecedented wave of consolidations, resulting in the separation of management from control.¹¹⁶ This period saw the institutionalization of managerial capitalism, namely the rise of professional, hierarchical salaried management at the expense of personal management by owners.¹¹⁷

The wave of consolidations engulfing the United States starting in the 1890s may have changed ownership structures of U.S. corporations. However, it apparently did not change the national identity of the corporations’ owners and managers, nor did it change the geographical source of the corporations’ income. The consolidation movement was horizontal in nature. It was characterized by the amalgamation of multiple small and medium

112. *Id.* at 10.

113. DAVIS & CULL, *supra* note 110, at 111.

114. See ADOLF A. BERLE JR. & GARDINER C. MEANS, THE MODERN CORPORATION AND PRIVATE PROPERTY 135-37 (1933) (describing the erosion of centralized ownership structure in parallel to adoption of general corporate laws in multiple states).

115. See BLACKFORD, *supra* note 109, at 87.

116. PAUL FRENTROP, A HISTORY OF CORPORATE GOVERNANCE, 1602-2002, at 192-94 (Ted Alkins trans., 2002); Navin & Sears, *supra* note 105; Brian R. Cheffins, *Investor Sentiment and Antitrust Law as Determinants of Corporate Ownership Structure: The Great Merger Wave of 1897 to 1903*, at 6-10 (Dec. 15, 2002) (unpublished manuscript), <https://escholarship.org/uc/item/2x90s8bc> (describing the corporate merger wave of the late nineteenth century).

117. Mehrotra, *supra* note 96, at 524.

businesses in the same industry into trusts, and later to holding companies.¹¹⁸ Owners of the “old” family businesses ceded management rights to some form of central management, but generally did not relinquish their ownership.¹¹⁹ The result was the diffusion of ownership, but the centralization of management.¹²⁰ Thus, the transformation was from a situation in which many U.S. individuals owned and managed many U.S.-incorporated corporations, to a situation in which many U.S. individuals owned or managed few U.S.-incorporated corporations that earned income in the United States. Thus, it made sense to target managerial power through corporate taxation.

At the dawn of corporate taxation, the corporate world was localized and managerially centralized. Thus, whether the attempt was to target shareholders’ ability to pay, or managerial interest, the taxation of corporate *income* made sense.

II. TRADITIONAL INCOME TAX DESIGNS MEET THE NEW ECONOMY

This Part starts by identifying three historical processes that challenge the traditional model of taxation, all of which preceded the data economy: globalization, dispersion, and the decline of tangible capital, or “intangible-ization” of the economy. Each of these processes challenges the traditional underpinnings of income tax design: source, ownership, and monetary value. These challenges are all exacerbated by the rise of the data economy, which effectively combines these challenges at scale. The data economy not only makes source, ownership, and value difficult to identify—it makes them theoretically meaningless for income tax design. As such, they can no longer serve as underlying instruments to identify one’s “ability to pay.”

118. For a description of the U.S. horizontal consolidation movement at the end of the nineteenth century, see, for example, FRENTROP, *supra* note 116, at 192–94; Navin & Sears, *supra* note 105; Cheffins, *supra* note 116, at 12 (“One key constituency which remained when a turn-of-the-century merger had been concluded was composed of the owners of the formerly autonomous firms encompassed within the consolidation. This was because of the merger package typically offered to incumbents with an industry.”).

119. FRENTROP, *supra* note 116, at 193.

120. Cheffins, *supra* note 116, at 10–11.

A. *The Three Modern Tax Challenges of Income Tax: Globalization, Dispersion, and Intangible-ization*

1. *Globalization*

During the nineteenth century, growth in international trade introduced the potential of competing tax claims by multiple jurisdictions over the same streams of income. In the early 1920s, the League of Nations appointed a Committee of Experts to develop principles for the prevention of double taxation. The most influential work of the Committee of Experts was a 1923 report drafted by the four economists of the Committee.¹²¹

The 1923 report established that “[t]he classification and assignment of specific categories of income to *source* or *residence* should be determined by an objective test, ‘economic allegiance.’”¹²² The “source” of income refers to the territorial boundaries of the jurisdiction in which income is created. The “residence” jurisdiction is the jurisdiction in which the beneficial owner of the income is resident for tax purposes. Some commentators have suggested that the principles proposed by the 1923 report provide, to this day, the foundational features for the taxation of cross-border transactions.¹²³ Indeed, to this day, the allocation of taxing rights between the source and residence jurisdiction remains the essential element of international tax policy.¹²⁴ These principles suggest that “active income” should be taxed mostly at the source jurisdiction, while “passive income”¹²⁵ should be taxed mostly at the residence jurisdiction.¹²⁶

121. *Report Submitted to the Financial Committee on Double Taxation*, League of Nations Doc. E.F.S.73. F.19 (1923). The four economists are Edwin Seligman of the United States, Professor Luigi Einaudi of Italy, Professor G. W. J. Bruins of the Netherlands, and Sir Josiah Stamp of Great Britain.

122. Michael J. Graetz & Michael M. O’Hear, *The Original Intent of U.S. International Taxation*, 46 DUKE L.J. 1021, 1076 (1997) (emphasis added).

123. Hugh J. Ault, *Corporate Integration, Tax Treaties and the Division of the International Tax Base: Principles and Practices*, 47 TAX L. REV. 565, 567 (1992); Reuven S. Avi-Yonah, *The Structure of International Taxation: A Proposal for Simplification*, 74 TEX. L. REV. 1301, 1303–06 (1996).

124. REUVEN S. AVI-YONAH, *INTERNATIONAL TAX AS INTERNATIONAL LAW: AN ANALYSIS OF THE INTERNATIONAL TAX REGIME 3* (2007) (explaining the two principles).

125. *Id.* at 53.

126. *Id.*

In the years leading up to the drafting of the 1923 report, these principles made much sense. Both components of income – savings and consumption – were relatively immobile. In an age of tangible production and tangible commerce, it was easy to identify the country of the source of income, as well as the country of residence of the income owner. Economic competition was largely focused on local markets.

But the explosion of international commerce during the twentieth century changed that. The “[l]iberalization of trade, commercial, and financial flows increase[d] pressures on states to make their tax regimes appeal to highly mobile business and investment.”¹²⁷ Developed countries responded to these competitive pressures “first, by shifting the tax burden from (mobile) capital to (less mobile) labor, and second, when increased taxation of labor has become politically and economically problematic, by reducing the social safety net.”¹²⁸ This confluence of events created what Professor Reuven Avi-Yonah described as “the fiscal crisis of the welfare state.”¹²⁹ “If developed countries are unable to tax income from capital and if alternative taxes are not feasible, their only recourse is to cut the social safety net.”¹³⁰

Another effect of globalization is the transcendence of “tax arbitrage.” Tax arbitrage refers to the ability of taxpayers to take advantage of differences in tax law among jurisdiction involved in a cross-border transaction. This allows return on capital from cross-border investment to easily escape taxation. This may not have been a major issue in a localized economy but is one of the defining issues of taxation of a global economy where multiple domestic laws constantly interact.¹³¹

Consider, for example, “debt/equity arbitrage.”¹³² Assume Parent corporation invests in another jurisdiction through a subsidiary organized in the jurisdiction – Sub. Parent finances Sub with a financing instrument known as a CPEC (convertible

127. Ruth Mason, *The Transformation of International Tax*, 114 AM. J. INT’L L. 353, 357 (2020).

128. Avi-Yonah, *supra* note 2, at 1576.

129. *Id.* at 1632.

130. *Id.* at 1578.

131. OECD, NEUTRALISING THE EFFECTS OF HYBRID MISMATCH ARRANGEMENTS, ACTION 2: 2015 FINAL REPORT 11 (2015).

132. For a discussion of debt/equity arbitrage, see Omri Marian, *The State Administration of International Tax Avoidance*, 7 HARV. BUS. L. REV. 1, 24–26 (2017).

preferred equity certificate).¹³³ Under the laws of Parent's jurisdiction, CPECs are classified as equity; thus, payment on the CPECs to Parent are considered dividends. Most countries in the world do not tax dividends received by parents from foreign subsidiaries.¹³⁴ What if, however, under the laws of Sub's jurisdiction, CPECs are classified as debt? This means the payments on the CPECs are classified as deductible interest payments to Sub. Sub gets to reduce its income through deductible payments, which are not taxed to Parent. The result is that Sub's earnings are taxed nowhere.¹³⁵ Such planning techniques are not available to wage earners, who live, earn, and pay tax in a single jurisdiction. But such planning is available to international capital investors.

Globalization's main challenge to the traditional models of taxation is divorcing the components of income taxation from one another. Taxing capital and taxing labor became distinctively different undertakings. Affluent taxpayers, who make much (if not most) of their income from capital investment,¹³⁶ face steadily decreasing effective tax rates, while wage earners face steadily increasing tax rates.¹³⁷ The system becomes less progressive over time. Thomas Piketty's seminal work, *Capital in the Twenty-First Century*, empirically documents the process of increased inequality with the rise of globalization.¹³⁸ Papers by Emmanuel Saez and Gabriel Zucman show similar trends.¹³⁹ In tax policy terms,

133. For a discussion of CPECs, see *id.* at 32–33.

134. Under a “participation exemption” regime, dividends received by domestic parent corporations from their foreign subsidiaries are exempt at the parent's jurisdiction of residence.

135. This form of planning was rampant until recently, when a whistleblower leak exposed the immense magnitude of such planning and brought about legal changes. For a discussion of tax-related whistleblower leaks that brought about legal reforms, see Shu-Yi Oei & Diane Ring, *Leak-Driven Law*, 65 UCLA L. REV. 532 (2018).

136. See Philip Stallworth, *Let Me Tell You About the Very Rich. They Are Different from You and Me*, TAX POL'Y CTR. (Mar. 18, 2019), <https://www.taxpolicycenter.org/taxvox/let-me-tell-you-about-very-rich-they-are-different-you-and-me>.

137. Avi-Yonah, *supra* note 2, at 1577 (“If much of both passive and productive income from capital can escape the tax net, the income tax becomes in effect a tax on labor.”).

138. THOMAS PIKETTY, *CAPITAL IN THE TWENTY-FIRST CENTURY* (Arthur Goldhammer trans., Harvard Univ. Press 2017) (2013).

139. See, e.g., Emmanuel Saez & Gabriel Zucman, *The Rise of Income and Wealth Inequality in America: Evidence from Distributional Macroeconomic Accounts*, J. ECON. PERSPECTIVES, Fall 2020, at 3 (finding that between 1978 and 2018, the share of pre-tax income earned by the top 1% rose from 10% to about 19%, and the share of wealth owned by the top 0.1% rose from

globalization brought about tax competition, which in turn caused a shift from taxing capital income to taxing labor income. This makes the system significantly less equitable.

Such a global income tax system also has obvious efficiency costs. Instead of straightforward corporate structures, taxpayers come up with convoluted structures with the intention of taking advantage of tax planning opportunities. The result is less than optimal financing structures, choice of jurisdictions, and choice of business entities.

2. Dispersion

As noted above, when income taxes were originally designed, corporate ownership was a rarity.¹⁴⁰ Corporate charters were granted by special legislative acts of the states. Corporations operated almost exclusively locally, and states had significant control over corporate actions.¹⁴¹

The functional consequence was that it was easy to identify the location of both corporate ownership and corporate management. Consider ownership – business owners either owned their business directly or through concentrated corporate structures. It was very easy to tell who was the beneficial owner of corporate earnings.

The liberalization of corporate laws, separation of corporate ownership from corporate control,¹⁴² and the diffusion of the corporate ownership shifted significant control to corporate managers. This explains the introduction of corporate tax, at least in part, as an attempt to curtail managerial power.¹⁴³ But at the beginning of the twentieth century, management was still centralized. It was rather easy to identify where a corporation was managed from. Indeed, multiple countries adopted legal tests that

7% to about 18%); Emmanuel Saez & Gabriel Zucman, *Wealth Inequality in the United States Since 1913: Evidence from Capitalized Income Tax Data*, 131 Q.J. ECON. 519 (2016) (finding increase in wealth inequality in recent decades is due to the upsurge of top incomes combined with an increase in saving rate inequality).

140. See Tung, *supra* note 87, at 47 (“[C]orporate charters were granted only sparingly, one-by-one, through special acts of state legislatures.”).

141. Cheffins, *supra* note 116, at 4 (“As the 19th century was drawing to a close, family control of industrial enterprises was the norm in the United States and there were only very rare examples of companies with widely dispersed shareholdings and well-developed managerial hierarchies.”).

142. See BERLE & MEANS, *supra* note 114.

143. See *supra* text accompanying notes 102-03.

determined the place of corporate “tax residence” based on “the place of effective management,” or the place of “central management and control.”¹⁴⁴

But this is also a bygone era. Dispersion is common not only in corporate ownership. Rather, dispersion defines all other functions of the modern multinational corporate entity. “The archetypal multinational firm with a particular national identity and a corporate headquarters fixed in one country is becoming obsolete as firms continue to maximise the opportunities created by global markets.”¹⁴⁵ Globalization and the increased mobility of capital allowed specialization *within* a company, enabling multinational corporations to utilize different jurisdictions’ comparative advantages for specific functions within the firm.¹⁴⁶ This brought about a global fragmentation of the supply chains, which in turn led to the outsourcing of value-creating activities.¹⁴⁷ For example, Apple’s iPhones are not manufactured by Apple, but by third-party contractors.¹⁴⁸ “Contract manufacturing” is a prevalent method of making consumer goods in the world today.

Firms no longer have a “home” where they reside, nor a clearly identified location where they create value. Firm “homes are now being separated and reallocated advantageously and the home for managerial talent can itself be served by many locations.”¹⁴⁹ Value is created by multiple interactions between related entities and by outsourcing many value-creating functions to unrelated entities.

Under such circumstances, explaining corporate *income* taxation as a functional instrument to tax corporate owners or managers is a tenuous argument. When the owners are dispersed and management functions are decentralized, there is no substantively meaningful corporate “home” that would justify corporate residence-based taxation. Indeed, the concept of “corporate residence” has been harshly criticized as lacking any

144. Omri Marian, *Jurisdiction to Tax Corporations*, 54 B.C. L. REV. 1613, 1643 (2013).

145. Mihir A. Desai, *The Decentering of the Global Firm*, 32 WORLD ECON. 1271, 1271 (2009).

146. *Id.* at 1275–76.

147. *Id.* at 1275 (“[I]f my activities are spread around the world in this way, do I need to own all of them? With *outsourcing*, firms contract with outside firms for some activities and only the most central activities remain within the ownership chain.”).

148. See Patrick Moorhead, *Who Are Apple’s iPhone Contract Manufacturers?*, FORBES (Apr. 13, 2019, 6:54 PM), <https://www.forbes.com/sites/patrickmoorhead/2019/04/13/who-are-apples-iphone-contract-manufacturers/?sh=53ee49334e6d>.

149. Desai, *supra* note 145, at 1276.

normative underpinning.¹⁵⁰ As a practical matter, smart tax lawyers made the location of corporate tax residence “elective.”¹⁵¹ Under such circumstances, it is difficult to find the tax residence of a corporation to still be a meaningful tax policy instrument.

Similarly, “source taxation” in the context of corporate entities seems equally meaningless. When “value creation” is fragmented, outsourced, and facilitated through a multitude of intercompany transactions between affiliated companies, there is also little we can do to clearly identify “where” a corporation earns its income.¹⁵² Does Apple create value where its research facilities are located? Where the third-party manufacturing facilities are? Where its marketing teams are located? In Apple stores? The answer is probably all of these places. But allocating the taxing rights between all jurisdictions involved is an impossible task. It is difficult to measure and even more difficult to theoretically justify. For example, is “marketing” more important than “manufacturing” for tax purposes?

Taxpayers were quick to identify opportunities in this new reality and engage in “income shifting” through “transfer pricing,”¹⁵³ “tax arbitrage,” and other techniques. “Income shifting” refers to the ability of taxpayers to legally shift income to a low tax jurisdiction, which is neither the jurisdiction where income is substantively created nor the jurisdiction where the taxpayer who is the beneficial owner of the income resides (sometimes referred to as “stateless income”).¹⁵⁴ “Income shifting” became one of the defining problems of corporate taxation in the modern economy¹⁵⁵ and prompted the OECD Base Erosion and Profit Shifting (BEPS) project, announced in 2013.¹⁵⁶ The BEPS

150. Marian, *supra* note 144, at 1618–28.

151. See generally Daniel Shaviro, *The David R. Tillinghast Lecture: The Rising Tax-Electivity of U.S. Corporate Residence*, 64 TAX L. REV. 377 (2011).

152. See generally Lawrence Lokken, *What Is this Thing Called Source?*, INT’L TAX J., May–June 2011, at 25.

153. Transfer pricing is the “pricing of transactions between related entities for goods, services, intangible property transfers, rents, and loans.” MARC. M. LEVEY, STEVEN C. WRAPPE & KERWIN CHUNG, *TRANSFER PRICING: RULES, COMPLIANCE AND CONTROVERSY* 1 (2001).

154. Edward D. Kleinbard, *Stateless Income*, 11 FLA. TAX REV. 699, 703 (2001).

155. OECD, *ADDRESSING BASE EROSION AND PROFIT SHIFTING* 7 (2013).

156. The BEPS project’s purpose was to offer remedies for BEPS. Press Release, OECD, *Closing Tax Gaps—OECD Launches Action Plan on Base Erosion and Profit Shifting* (July 19, 2013), <https://www.oecd.org/tax/beps/closing-tax-gaps-oecd-launches-action-plan-on-base-erosion-and-profit-shifting.htm>.

project is by far the most comprehensive international coordinated effort at addressing tax avoidance and has brought about meaningful shifts in international tax policies.¹⁵⁷ A follow-up OECD project recently resulted in a global agreement imposing new taxing models and a global minimum tax.¹⁵⁸ This agreement is described as “[t]he most sweeping overhaul of the international tax system in a century.”¹⁵⁹

To better understand income shifting and how it utilizes tax arbitrage, consider the following example. The United States determines the place of tax residence of corporations based on the place of incorporation.¹⁶⁰ Before a recent change in law (largely as a result of international pressure),¹⁶¹ Ireland determined the tax residence based on the location of management.¹⁶² If a corporation was incorporated in Ireland but the management team was in the California Bay Area, the corporation was a tax resident nowhere. Under U.S. law it is an Irish corporation. Under Irish law it is a U.S. corporation. Neither of the two countries could assert residence-based taxing jurisdiction over the entity. This, in broad terms, was Apple’s international tax structure until the late 2000s.¹⁶³

157. Mason, *supra* note 127, at 354 (“BEPS reflected—and to a significant extent operationalized—major changes in the participants, agenda, institutions, norms, and legal instruments of international tax.”).

158. Press Release, OECD, International Community Strikes a Ground-Breaking Tax Deal for the Digital Age (Oct. 8, 2021), <https://www.oecd.org/tax/international-community-strikes-a-ground-breaking-tax-deal-for-the-digital-age.htm> [hereinafter 2021 OECD Press Release].

159. Alan Rappeport & Liz Alderman, *A Global Deal Aimed at Ending Tax Havens Gains Momentum*, N.Y. TIMES (Oct. 7, 2021), <https://www.nytimes.com/2021/10/07/us/politics/global-minimum-tax.html>.

160. 26 U.S.C. § 7701(a)(4).

161. See, e.g., Sam Schechner, *Ireland to Close ‘Double Irish’ Tax Loophole*, WALL ST. J. (Oct. 14, 2014, 4:48 PM), <https://www.wsj.com/articles/ireland-to-close-double-irish-tax-loophole-1413295755> (“Ireland’s decision to close the loophole follows heavy pressure from other governments and the European Union amid a broader effort to update tax rules written before the Internet era.”).

162. For a discussion of the 2015 change of corporate residence rules in Ireland, see Joe Duffy and Shane Hogan, *Ireland: Change to Irish Corporate Residence Rules*, INT’L TAX REV. (Dec. 16, 2014), <https://www.internationaltaxreview.com/article/b1f9jzxnm77q/ireland-changes-to-irish-corporate-residence-rules>.

163. See Memorandum from Sen. Carl Levin & Sen. John McCain to Members of the Permanent Subcomm. on Investigations (May 21, 2013), [https://www.hsgac.senate.gov/imo/media/doc/EXHIBIT%201a%20-%20Subcommittee%20Memo%20on%20Offshore%20Profit%20Shifting%20&%20Apple%20\(May%202013\).pdf](https://www.hsgac.senate.gov/imo/media/doc/EXHIBIT%201a%20-%20Subcommittee%20Memo%20on%20Offshore%20Profit%20Shifting%20&%20Apple%20(May%202013).pdf).

Two Apple subsidiaries were incorporated in Ireland and managed from California, with the boards meeting in Bermuda.¹⁶⁴ One of the subsidiaries, Apple Operations International, owned Apple's intellectual property right for Europe and the Middle East, and—between 2009 and 2012—collected over \$30 billion dollars in royalties from Apple subsidiaries elsewhere.¹⁶⁵ The income was a result of intellectual property (IP) developed in the United States and incorporated in Apple products sold abroad. Yet the income was taxed nowhere.¹⁶⁶

The result is the reduction of taxation on corporate income and, as a consequence, on the owners of capital. There is plenty of empirical evidence demonstrating how corporate income is shifted to low tax jurisdictions. Gabriel Zucman, for example, estimated in 2015 that the revenue cost from income shifting is \$130 billion from strategies applied by U.S. firms alone.¹⁶⁷ Kimberly Clausing estimated that figure to be anywhere between \$61 billion and \$117 billion.¹⁶⁸

Dispersion made it very hard to identify the source of value creation and the residence of value owners. Even if one could do so, dispersion combined with globalization allowed taxpayers to easily, and legally, avoid tax on their income.

3. Intangible-ization and “Capital’s Vanishing Act”¹⁶⁹

The third historical process that challenges the traditional income tax models is the digitalization of the world economy. We are not just talking here about a change to the nature of investment over time, but rather about a complete qualitative transformation of capitalism.

During most of the twentieth century, “even in the most developed countries, intangible investment was something of a sideshow.”¹⁷⁰ The rise of computing power, the invention of the

164. *Id.*

165. *Id.*

166. *Id.*

167. GABRIEL ZUCMAN, *THE HIDDEN WEALTH OF NATIONS: THE SCOURGE OF TAX HAVENS* 4 (Teresa Lavender Fagan trans., Univ. of Chi. Press 2015) (2013).

168. Kimberly A. Clausing, *How Big Is Profit Shifting?* 14 (May 17, 2020) (unpublished manuscript), <https://ssrn.com/abstract=3503091>.

169. HASKEL & WESTLAKE, *supra* note 13, at 15–35.

170. *Id.* at 24.

internet, and the ascent of tech-centered firms brought about a shift in investment behavior, with more capital directed toward intangible assets. This “digitalization” of the world economy is well documented.¹⁷¹ But it was not until the mid-1990s that intangible investment actually overtook tangible investment in the United States.¹⁷² In the United Kingdom this did not happen until the late 1990s,¹⁷³ and in several European countries it still has not happened.¹⁷⁴ The significant shift from a tangible to an intangible economy is a recent phenomenon. Haskel and Westlake described this as a shift to “Capitalism without Capital,” and described intangible-ization as “Capital’s Vanishing Act.”¹⁷⁵

These changes are significant, because the market structures they create are qualitatively different from market structures that were in place when income tax was first designed. To begin with, it is difficult to measure intangible investment. As Haskel and Westlake explain, the conventional accounting practice is not to measure intangible investment, such as creating a long-term capital asset.¹⁷⁶ “[T]here is no market where you can see the raw value of its investment in developing better software or redesigning its user interface.”¹⁷⁷ This makes the immediate theoretical challenge to income taxation obvious: If we cannot measure investment, how can we measure the *return* on investment—namely, the “gain” subject to income taxation? This makes it impossible to measure one of the components of the income formula: “savings.”

Moreover, “the basic economic properties of intangibles make an intangible-rich economy behave differently from a tangible-rich [economy].”¹⁷⁸ Haskel and Westlake offer the following as unique traits of an intangible economy. First, intangible investments “tend[] to represent a sunk cost.”¹⁷⁹ Investors can generally sell their tangible assets. It is much harder to sell intangible investments. The reason is that much of the investment put into

171. *Id.* at 23–27 (describing the rise of intangible investment around the world).

172. *Id.* at 25.

173. *Id.*

174. *Id.* 26–27.

175. *Id.* at 35.

176. *Id.* at 7–8.

177. *Id.* at 8.

178. *Id.* at 7.

179. *Id.* at 8 (emphasis omitted).

intangible assets does not actually create a valuable asset. Not all research creates patent, and not all new medications work. Even if some intangible asset is created, it is very likely tailored to the specific needs of the firm that created it.¹⁸⁰ For example, Peloton likely invests significant amounts in the development of its proprietary screen interface, but the interface is useless without the stationary bike it is attached to. This suggests that most intangible assets do not have a stand-alone objective market price.

This creates insurmountable tax administration challenges. The reason is that much of the taxation of multinational corporations heavily depends on attempts to identify “fair market value” for their intangible assets for “transfer pricing” purposes. Transfer pricing refers to the practice of affiliated entities to set inter-company transfer prices of goods in a way that saves tax. For example, consider the run of the mill tax planning relating to the use of intangibles. A U.S.-based parent company performs research and development in its labs in the United States (and, of course, deducts the research costs). The resulting asset (say, a patent) is then being “sold” to a subsidiary in a tax haven, where the subsidiary is free to collect royalties for the use of the patent, without being subject to income tax. In order to determine the gain to the Parent from the sale of the patent to the subsidiary, one must calculate the difference between the sales price of the patent to the subsidiary, and the “tax basis” (or investment) of the Parent in the patent.¹⁸¹

Both components of this equation are largely meaningless. As noted above, it is almost impossible to measure the amount of intangible investment, which we must do in order to calculate the tax basis for income tax purposes. Even more problematic is an attempt to identify the “sale price” to the subsidiary. There is no comparable asset in the market, and there is no objective “price.”¹⁸² The Parent is left to determine the transfer price at which it sells the patent to its own subsidiary. The Parent is incentivized to declare as low price as possible in order to minimize the gain subject to tax in the United States. The result is an extremely complex legal system aimed at trying to prevent such abuse by identifying “arm’s

180. *Id.* at 8–9.

181. 26 U.S.C. § 1001.

182. 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, 149 (1995).

length” prices, at which related companies are assumed to trade among themselves for tax purposes.¹⁸³ But the reality is that no such price exists. The bottom line is that in the absence of such objective values for intangible assets, determining the taxable income they generate becomes, in effect, a guessing game.

The practice of transfer pricing as it relates to intangibles is one of the most challenging aspects of our current income tax system.¹⁸⁴ When the Arm’s Length standard was first introduced, intercompany transactions dealt mostly with tangible assets. Comparable prices were generally available.¹⁸⁵ Today, however, “in those situations arising in the majority of transfer pricing cases, where there are no comparables . . . it will be impossible to find the ‘right’ transfer price.”¹⁸⁶ The use of the Arm’s Length Standard in an economy where arm’s length prices do not exist leads to “pervasive uncertainty” and “widespread possibility of abuse.”¹⁸⁷ The problem is indeed well documented.¹⁸⁸

Haskel and Westlake’s second tax-relevant trait of intangible investment is that it creates “spillovers.”¹⁸⁹ It is easy for the owner of tangible assets to make sure that they are the sole beneficiaries of their investment. If you invest in factory machinery, you put a lock on the door. But whatever intangible you create and sell is not as easy to keep to yourself, even with all kinds of IP protections. Competitors can reverse engineer your product design. Or design something that is just “close enough” but “not too much” to avoid legal challenge.¹⁹⁰ This means that some of the income generated from the original intangible investment is captured by someone other than the taxpayer who has made the investment. This makes

183. For an explanation of the Arm’s Length standard, see AVI-YONAH, *supra* note 124, at 6–8.

184. Andrew Blair-Stanek, *Intellectual Property Law Solutions to Tax Avoidance*, 62 UCLA L. REV. 2, 10–11 (2015) (“Treasury regulations provide detailed econometric methods to estimate IP values, but these are extremely imprecise, often leading to a wide range of acceptable prices.”) (footnote omitted).

185. For a discussion of early cases, see Avi-Yonah, *supra* note 182, at 98–111.

186. *Id.* at 149.

187. *Id.*

188. For a summary of studies finding that multinational companies use transfer pricing to reduce their tax bills, see Kleinbard, *supra* note 154, at 734–38.

189. HASKEL & WESTLAKE, *supra* note 13, at 9.

190. *Id.*

it very challenging to identify the taxpayer who, in theory, owns the income from capital and hence should be subject to tax.

Third, intangible investments are also easily scalable.¹⁹¹ This means that the problem of supply chain dispersion described above¹⁹² is exacerbated in an intangible economy. Coca-Cola does not make all of its money from selling Coke.¹⁹³ It makes a lot of money selling the Coca-Cola concentrate to others, who use it to produce the drink, bottle it, and sell it.¹⁹⁴ The unrelated bottlers obviously do not pay for the physical components of the concentrate. They pay for the right to use the secret formula and the brand name. The IP rights for the formula reside in Atlanta. What is the *economic* source of the Coca-Cola Company's income in such a case? The place where the formula is kept (Atlanta)? Where the Coke concentrate is produced (all over the globe)? Or maybe where it is sold (also all over the globe)? Tax writers had to create intricate source rules to try to identify the place where income is earned in such cases.

In an intangible-rich economy it is difficult (if not near impossible) to identify *who* owns the income, *where* income is created, and what is the *monetary value* of the intangible assets that generate income. It is rather astonishing we are still trying to tax income in such a world.

B. Income Tax and the Rise of Data Capitalism

1. Data capitalism

"The modern Internet ecosystem is largely built on the collection, analysis, and monetization of consumer data. The business model popularized by companies like Facebook and Google operates by offering consumers access to desirable digital products in exchange for the opportunity to collect their personal information."¹⁹⁵ Data is collected in exchange for services because it is valuable to the collectors. Data is perceived as a new asset

191. *Id.* at 9–10.

192. *See supra* notes 162–63 and accompanying text.

193. HASKEL & WESTLAKE, *supra* note 13, at 9–10.

194. For a detailed description of the Coca-Cola operating structure, see Coca-Cola Co. v. Comm'r, 155 T.C. 145, 153–99 (2020).

195. Adam B. Thimmesch, *Transacting in Data: Tax, Privacy, and the New Economy*, 94 DENV. L. REV. 145, 146 (2016).

class, if not a new form of currency.¹⁹⁶ But a bit of data is not an “asset” in the traditional meaning of the term. It has no value of its own. It becomes valuable when it is combined with other data and manipulated.

Data-rich markets transform the very essence of business models. Data is collected and analyzed to predict and *modify* consumption behavior.¹⁹⁷ It is then being recollected to test and refine the prediction algorithm.¹⁹⁸ It is an endless business feedback loop. Shoshana Zuboff calls the new data reality “surveillance capitalism.”¹⁹⁹ She defines surveillance capitalism as “unilateral[] claims [of] human experience as free raw material for translation into behavioral data.”²⁰⁰ A portion of this data is “applied to product or service improvement, [but] the rest [is] declared as a proprietary *behavioral surplus* . . . fabricated into *prediction products* that anticipate what you will do now, soon, and later.”²⁰¹

We live in a reality in which “[t]he world’s most valuable resource is no longer oil, but data.”²⁰² We increasingly transact with our data, and companies extract value from analyzing and manipulating our data. Data is a medium of exchange.²⁰³ “Data, it is often said, [is] the new money,”²⁰⁴ and data indeed performs some of the basic functions of currency.²⁰⁵

The argument that “data is money” requires some elaboration. In traditional capital markets “[w]e rely on money and price to reduce the amount of information that needs to be communicated and processed.”²⁰⁶ Price is a coordination device. It aims to relieve the need to individually collect information and process it to

196. WORLD ECON. F., PERSONAL DATA: THE EMERGENCE OF A NEW ASSET CLASS 5 (2011).

197. See Ryan Calo, *Digital Market Manipulation*, 82 GEO. WASH. L. REV. 995, 1002–03 (2014).

198. See *id.* at 1004.

199. See ZUBOFF, *supra* note 4.

200. *Id.* at 8.

201. *Id.*

202. *The World’s Most Valuable Resource Is No Longer Oil, but Data*, ECONOMIST (May 6, 2017), <https://www.economist.com/leaders/2017/05/06/the-worlds-most-valuable-resource-is-no-longer-oil-but-data>.

203. Ben-Shahar, *supra* note 27, at 141–42.

204. *Id.* at 141.

205. “‘Money’ has three broad characteristics: a store of value, a unit of account and a medium of exchange . . .” Adrian Blundell-Wignall, *The Bitcoin Question: Currency Versus Trust-less Transfer Technology* 7 (OECD, Working Papers on Fin., Ins. and Priv. Pensions, No. 37, 2014).

206. MAYER-SCHÖNBERGER & RAMGE, *supra* note 3, at 63.

communicate preferences for particular market transactions. Information collection and processing is a particularly difficult task, especially in a global, dispersed, digital world, where information is available in huge quantities and can be easily and cheaply transferred.

But modern technology absolves humans from the need to engage in data processing. The exponential rise of computing power over the past few decades,²⁰⁷ the development of sophisticated algorithms and machine learning, and the rise of artificial intelligence made the accurate processing of vast amounts technically possible and relatively cheap. “Rather than being restricted to the information trickle around price, in data-rich markets participants . . . act upon the full gamut of preference information, utilizing the market’s informational structures to communicate all this data at low cost,”²⁰⁸ and to do so by outsourcing decision-making to algorithms.

When “money will no longer be necessary as an efficient information shorthand, one of the central functions that money has performed in the economy will be gone.”²⁰⁹ Mayer-Schönberger and Ramge expect this trend to continue and the importance of money to further diminish as the data economy continues to grow.²¹⁰ They expect that the demise of money will further exacerbate the demise of financial capital and will increase the role for data as a store of value.²¹¹ In essence, they argue markets are being realigned as “data takes over from money.”²¹² And unlike monetary profits, data is sourced nowhere, owned by no one, and is devoid of value.

In essence, our data-rich economy amplifies by orders of magnitude—the historical processes of globalization, dispersion, and digitalization described above. “Thanks to digital networks, massive amounts of data now can flow quickly, easily, and cheaply between transaction partners, whether they are near each other or

207. REESE, *supra* note 35, at 28 (describing Moore’s Law, according to which computing power doubles approximately every two years).

208. MAYER-SCHÖNBERGER & RAMGE, *supra* note 3, at 63.

209. *Id.* at 136.

210. *Id.* at 136–37.

211. *Id.* at 141.

212. *Id.* at 143.

thousands of miles apart.”²¹³ The data economy fundamentally changes the role of source, ownership, and monetary value in the market. It is not just that “source,” “ownership,” and “value” become hard to define. Rather, in data-rich markets, it is not even clear that source, ownership, and monetary value are theoretically meaningful constructs of legal-tax design. It is not clear that they assist, in any meaningful way, to identify one’s “ability to pay.” If the underlying theoretical linchpins of a conceptual tax design are no longer meaningful, maybe we should revisit our conceptual tax design. These issues are discussed in the next section.

2. *Data, source, ownership, and value*

a. Data has no monetary value per se. Data collectors believe that data has value; otherwise, they would not collect it. But each little piece of data—the raw material of value in data-rich markets—is useless. In tax terms, a little data, or even many dispersed pieces of data, do not change one’s “ability to pay.” But vast amounts of data that can be analyzed—do.

Data collectors are interested in each and every piece of available data, specifically for the purpose of analyzing as-large-as-possible quantities of data in order to identify and predict patterns. It is impossible to identify patterns from separate pieces of data. Only when terabytes of data come together do they become valuable, and only because they are aggregated. Even if you and I had vast amounts of data, it would be useless without the ability to meaningfully process such data.

Where you live, what your age is, and what your gender identity is are useless pieces of information on their own. They have no value until combined with the data of millions of other people, and with data that is freely available, like weather and traffic patterns. Only then can data collectors predict (or guide) your consumption behavior, based on your individual data. Consumption behavior is then monitored, generating “new” data, which is collected to further improve predictions.

b. Data ownership is meaningless. You may “own” your own data, but it is in no way an economically meaningful concept. It does not increase your “ability to pay” your tax. The ownership of “data” is dispersed among all the people that own it, but only when it comes

213. *Id.* at 63.

together, say, on the Google servers, does it become meaningful. Google may now “own” your data, but you also still own it. Does this mean your data is equally beneficial to you and to Google? You were not severed from your data. You still know your age. The only change is that Google now knows it too. If both you and Google own your data, have you and Google experienced an equal increase in your ability to pay? The answer is that the data is more beneficial to Google, because of the *other* data it has.

c. Data has no meaningful source of value. And what is the source of the value of data, for tax purposes? It is probably not where people whose data collected reside because, as stated, each individual piece of data has no value. Data collected in the United States does not mean that the value attributable to such data was created in the United States.

One could argue the source is where the data is analyzed into actionable form. This also seems theoretically farfetched. The data is probably not being manipulated in one place, or even by any one person, for that matter. The manipulation of data is outsourced to robots. We live in the age of machine intelligence where we teach machines to teach themselves how to use data and provide us with valuable insights. We can probably source the “sale” resulting from the prediction, but is that a meaningful construct of value? The sale is not where the value was “created.” A sale is simply the place where the value is realized in monetary terms. But the value was created from investing in data, which was collected and manipulated nowhere and everywhere at the same time, and eventually led you to purchase those sneakers. The shoe store is not the place where value was created. It is simply the place where value is converted to cash.

The data economy also adds a new potential challenge to identifying the source of income: the disappearance of labor. Recall that one of the challenges of globalization is the shift from taxing capital to taxing labor.²¹⁴ This was a result of the increasing mobility of capital, at a time when labor remains more or less localized. The age of the data economy brings about the rise of artificial intelligence and automated processes that some expect to replace

214. See *supra* notes 147–49 and accompanying discussion.

human laborers.²¹⁵ While this argument is not without controversy, automatization at scale clearly strains the reliance on the taxation of labor. The data that enables the artificialization of processes that once were left for humans is globally dispersed. Humans are geographically localized. Big data is not.

At the end of the day the theoretical question boils down to this: If source and residence are no longer meaningful constructs in identifying income, why should we rely on them in our tax design? If money is no longer the best conveyer of information about wealth and value, is it still reasonable to use it as the best measurement of “ability to pay”? If “big data” is a main determinant of value, why should it not be *the* tax base?

3. *The other challenges of data capitalism*

The data economy presents additional challenges to societies beyond challenging traditional tax models. It is important to note such challenges, as taxation of data may, under certain circumstances, help to address these challenges.

a. Privacy. Data collection firms want to know “who is doing what, when, and where,” and to be able to predict “who will do what, when, and where.”²¹⁶ This raises privacy concerns. Data collection is not inherently evil. We willingly reveal information about ourselves every day. However, data collection in the digital age is often nonconsensual.²¹⁷ Users are often not given a choice to decide what information to hide or reveal, or who to reveal it to.²¹⁸ And even when consent is given to a specific data collector, there is no assurance that the collector will protect the data from hackers or other unfriendly eyes.²¹⁹

It is not even clear that consent in this context is meaningful.²²⁰ The terms and conditions or privacy settings are either too lengthy

215. See ANNIE LOWREY, *GIVE PEOPLE MONEY: HOW A UNIVERSAL BASIC INCOME WOULD END POVERTY, REVOLUTIONIZE WORK, AND REMAKE THE WORLD* 12–35 (2018). *But see* REESE, *supra* note 35, at 123–33 (discussing how human labor will not disappear, just change in substance).

216. Jack M. Balkin, *Free Speech in the Algorithmic Society: Big Data, Private Governance, and New School Speech Regulation*, 51 U.C. DAVIS L. REV. 1149, 1155 (2018).

217. William Magnuson, *A Unified Theory of Data*, 58 HARV. J. ON LEGIS. 23, 45 (2021).

218. *Id.*

219. *Id.*

220. Anita L. Allen, *Protecting One’s Own Privacy in a Big Data Economy*, 130 HARV. L. REV. F. 71, 73 (2016).

or too complicated for the average user to understand. The average user does not “and cannot effectively negotiate over privacy-related ‘terms and conditions’ to ensure privacy advantages.”²²¹

Moreover, these terms of service are often offered on a take it or leave it basis,²²² where “leave it” means effective denial of services users need. Individuals are effectively forced to relinquish their privacy.

b. Economic inefficiencies. The big data economy creates oligopolies in which a few companies may “possess vastly more data than other actors.”²²³ For example, a 2015 study found that 923 of the 1,000 most visited websites contained “Google tracking infrastructure.”²²⁴ Such actors are in a position to reinforce their dominance, by algorithms which “learn by doing.”²²⁵ In a search engine, for example, the more people use a particular engine, the better it becomes.²²⁶ By using more data, the engine becomes more likely to return a positive result to the user.²²⁷ This in turn brings people back to the search engine in a continuous reinforcing loop.²²⁸ The more data used, the better the service. The better the service, the more data used.

These dominant actors play a dual role in “select markets: as both an operator of a dominant platform that hosts third-party merchants, content creators, or app developers, and as a market participant that competes with those same producers.”²²⁹ As a result, they are able to utilize data from merchants and other customers in order to gain a dominant position on the platform. Amazon, for example, might offer data analytics to merchants on its site in order to allow them to reach more customers, but then turn around and use that same data to undercut the competition.²³⁰

221. *Id.*

222. *Id.* (“Moreover, individuals do not and cannot effectively negotiate over privacy-related ‘terms and conditions’ to ensure privacy advantages.”).

223. Magnuson, *supra* note 217, at 52.

224. ZUBOFF, *supra* note 4, at 136.

225. Stucke, *supra* note 36, at 283.

226. *Id.*

227. *Id.*

228. *Id.*

229. Lina M. Khan, *The Separation of Platforms and Commerce*, 119 COLUM. L. REV. 973, 984 (2019).

230. *Id.* at 992-93.

c. Environmental concerns. Physical data storage raises serious environmental concerns. Although the data economy is often thought of as existing only in a digital medium, it occupies a large physical space through the use of data centers and warehouses.²³¹ These are facilities that house the servers that are necessary for large data companies to operate.²³² These facilities often span hundreds of thousands of square feet and contain massive industrial cooling systems to prevent the servers from overheating.²³³ In order to meet the demands of their customers at all hours of the night, these data centers are up and running 24/7 regardless of the actual customer use.²³⁴ Millions of old emails and unused applications sit on idle servers that continue to run in perpetuity.²³⁵ To ensure that no data is ever lost, each data center is backed up by a generator that is often run using diesel fuel.²³⁶ Worldwide, these data centers' power usage is roughly the equivalent of thirty nuclear power plants.²³⁷ These centers continue to grow as more and more data is required to be stored.²³⁸ Even with all of this power currently in use, experts are predicting that "it will be a challenge for current methods of storing and processing data to keep up with the digital tsunami."²³⁹

d. Social and political challenges. Data collection has a direct effect on democracy. The increase in "data-driven voter research and the possibility of political microtargeting," as well as the trend toward voters' use of "social media and news aggregators that obfuscate the origin of news," both cause concerns about the role of data collection in the political process.²⁴⁰

For example, political microtargeting "allows interest groups . . . to differentiate their news reports, which may contain

231. James Glanz, *Power, Pollution and the Internet*, N.Y. TIMES (Sept. 22, 2012), <https://www.nytimes.com/2012/09/23/technology/data-centers-waste-vast-amounts-of-energy-belying-industry-image.html>.

232. *Id.*

233. *Id.*

234. *Id.*

235. *Id.*

236. *Id.*

237. *Id.*

238. *Id.*

239. *Id.*

240. Freek van Gils, Wieland Müller & Jens Prüfer, *Big Data and Democracy* 1 (Tilburg L. & Econ. Ctr., Discussion Paper No. 2020-003, 2020).

disinformation, to influence voters' beliefs in their favor in each subgroup of the electorate."²⁴¹ In essence, interest groups can use data collected on certain individuals or groups of individuals and send them targeted information (or misinformation) in an attempt to manipulate their belief systems and drive them toward a particular political ideology. This type of behavior has already created issues surrounding the 2016 U.S. election and may only grow worse as "[m]ore than half of digital news consumers use an algorithm-driven platform as their main way to obtain news."²⁴² Since data is concentrated in the hands of a few companies, like Facebook and Google, the ability to microtarget lends tremendous political power to the few who control data companies.

Data collection and analysis can be a source of discrimination. Databases are not free of bias. Data models learn by example. "The data that function as examples are known as 'training data' – quite literally, the data that train the model to behave in a certain way."²⁴³ "[I]f data mining treats cases in which prejudice has played some role as valid examples to learn from, that rule may simply reproduce the prejudice involved in these earlier cases."²⁴⁴ Alternatively, "if data mining draws inferences from a biased sample of the population, any decision that rests on these inferences may systematically disadvantage those who are under- or overrepresented in the dataset."²⁴⁵ Data mining is only as good as the underlying data, and "[i]f the data fail[s] to serve as a good sample of a protected group, data mining will draw faulty lessons that could serve as a discriminatory basis for future decision making."²⁴⁶

III. THE CAMPAIGN TO SAVE INCOME TAXATION

The tax challenges of the new economy have not gone unnoticed. Multiple unilateral and multilateral efforts have attempted to address, and are still trying to address, such challenges. Recently, we have witnessed a dramatic shift from

241. *Id.*

242. *Id.* at 1–2.

243. Solon Barocas & Andrew D. Selbst, *Big Data's Disparate Impact*, 104 CALIF. L. REV. 671, 680 (2016).

244. *Id.* at 681.

245. *Id.*

246. *Id.* at 687.

unsuccessful unilateral measures to meaningful international cooperation on tax matters, mostly through the OECD and the European Union.²⁴⁷ These efforts have culminated in a recently announced global agreement on international taxation.²⁴⁸ It is difficult to overstate how significant this collective effort is. It has been described as one of the most fundamental shifts in international policymaking.²⁴⁹ Countries' claims for tax sovereignty made way to meaningful cooperative initiatives, sometimes resulting in binding multilateral agreements.²⁵⁰ This would have been unheard of just two decades ago.

This Part details some of the notable attempts to address these challenges. However, it also points to the fact that these efforts are essentially repeated attempts to keep taxing income. This is not necessarily a critique. Many of the initiatives to try to save the income tax originate from the late 1990s, before the role of data in the economy became obvious. Other attempts are a result of a political compromise. It is easier (not "easy," just "easier") to get countries with varying interests to cooperate around a well-known framework than to create a new one. But it also might be time to try supplementing these efforts with new thinking—aimed at re-envisioning tax theory in the age of the data economy—and designing tax instruments for this age, rather than trying to save old designs.

A. *The OECD's Two-Pillar Approach*

Probably the most important international project trying to address the modern challenges of income taxation is the OECD's anti-BEPS project, which "reflected—and to a significant extent

247. Mason, *supra* note 127, at 364–67 (describing how the recent financial crisis transformed international cooperation on tax matters).

248. 2021 OECD Press Release, *supra* note 158.

249. *Id.* at 401 (arguing that "BEPS both reflected and achieved fundamental change in the decisionmakers, agenda, norms, and legal forms of international tax"); Itai Grinberg, *The New International Tax Diplomacy*, 104 GEO. L.J. 1137, 1141 (2016).

250. In the wake of the BEPS project, several binding multilateral tax agreements have been signed. This represents a shift from an international tax regimen that included mostly bilateral treaties. See, e.g., MULTILATERAL CONVENTION TO IMPLEMENT TAX TREATY RELATED MEASURES TO PREVENT BEPS (2016). The new agreement reached by 136 countries in October of 2021, see 2021 OECD Press Release, *supra* note 158, also contemplates the creation of a binding multilateral tax convention.

operationalized—major changes in the participants, agenda, institutions, norms, and legal instruments of international tax.”²⁵¹

There is a plethora of literature discussing the BEPS project and its political, social, and doctrinal achievements and limitations.²⁵²

The BEPS Project was divided into fifteen different action plans, each aimed at targeting a particular challenge to international taxation. Action 1 was specifically aimed at “Addressing the Tax Challenges of the Digital Economy.”²⁵³ The OECD summarized the challenges as follows: “The digital economy is characterised by an unparalleled reliance on intangibles, the massive use of data (notably personal data), the widespread adoption of multi-sided business models capturing value from externalities generated by free products, and the difficulty of determining the jurisdiction in which value creation occurs.”²⁵⁴

Following the conclusion of the BEPS project in 2015, the OECD established the “Inclusive Framework on BEPS,” bringing together multiple jurisdictions to monitor the implementation of the standards offered by the project.²⁵⁵ Work on Action 1 recommendations continued under the Inclusive Framework with members agreeing on examining proposals for “a two pillar” approach, intended to “form the basis for a consensus solution to the tax challenges arising from digitalisation.”²⁵⁶ The OECD Inclusive Framework published its final reports on the two pillars in July of 2020.²⁵⁷ An agreement for implementing this framework was announced in October 2021.²⁵⁸

The OECD’s two-pillar approach explicitly states that it “would adhere to the concept of *net taxation of income*.”²⁵⁹ This framework

251. Mason, *supra* note 127, at 354.

252. See, e.g., *id.*; Andres Báez Moreno & Yariv Brauner, *Taxing the Digital Economy Post BEPS . . . Seriously*, 58 COLUM. J. TRANSNAT’L L. 121 (2019); Yariv Brauner, *What the BEPS?*, 16 FLA. TAX REV. 55 (2014). This Part does not add to this discussion. Rather, this Part briefly summarizes some of the most recent ideas that have been offered that are relevant to the discussion herein.

253. OECD, ADDRESSING THE TAX CHALLENGES OF THE DIGITAL ECONOMY, ACTION 1: 2015 FINAL REPORT 11 (2015).

254. *Id.* at 16.

255. OECD, TAX CHALLENGES ARISING FROM DIGITALISATION—REPORT ON PILLAR ONE BLUEPRINT: INCLUSIVE FRAMEWORK ON BEPS (2015) [hereinafter Pillar 1].

256. *Id.* at 3.

257. *Id.* at 4.

258. 2021 OECD Press Release, *supra* note 158.

259. *Id.* at 8 (emphasis added).

has probably been adopted as a matter of political pragmatism. While the pillars may offer improvement to income taxation in a data-based economy, their very conceptual foundation is inherently limited, as it requires the calculation of “net income.” To be workable, it requires the identification of the monetary value of income, source of income, and residence of the owners of income.

“Pillar One seeks to adapt the international income tax system to new business models through changes to the profit allocation and nexus rules applicable to business profits.”²⁶⁰ Under the Pillar One Blueprint, jurisdictions are accorded taxing rights based on the calculation of two different tax bases. First, multinational groups’ income is calculated on a worldwide basis and then shared between jurisdiction based on one of several suggested formulaic approaches.²⁶¹ Second, countries are guaranteed certain taxing rights in respect of “a fixed return for certain baseline marketing and distribution activities taking place physically in a market jurisdiction.”²⁶²

This requires the development of a new set of source rules to identify the countries to whom the taxing right is allocated.²⁶³ This is problematic under the framework of this Article, because it assumes that “source” is a meaningful concept.

Pillar Two is a proposed set of anti-abuse rules. Pillar Two “seek[s] to . . . ensure minimum taxation while avoiding double taxation or taxation where there is no economic profit.”²⁶⁴ The main concept offered by Pillar Two is the Global Anti-Base Erosion (GloBE) rule. Under this rule, certain large multinational entities²⁶⁵ must pay a minimum tax at the countries of source.²⁶⁶ If such tax is not paid, tax jurisdiction is switched over to the country of residence.²⁶⁷

260. *Id.* at 11.

261. *Id.*

262. *Id.*

263. OECD, STATEMENT ON A TWO-PILLAR SOLUTION TO ADDRESS THE TAX CHALLENGES ARISING FROM THE DIGITALISATION OF THE ECONOMY 2 (2021) (“[S]ource rules for specific categories of transactions will be developed.”).

264. OECD, TAX CHALLENGES ARISING FROM DIGITALISATION – REPORT ON PILLAR TWO BLUEPRINT: INCLUSIVE FRAMEWORK ON BEPS 14 (2020).

265. *Id.* at 40 (proposing a €750 million threshold).

266. *Id.* at 112.

267. *Id.* at 124.

The difficulty with this approach for purposes of this Article is apparent. It relies heavily on source and residence concepts in an economy in which source and residence are not coherent concepts for purposes of determining value. Moreover, it is clear that the administration of these blueprints will be a very heavy undertaking. As the blueprints stand, they cover 483 pages. And these are just policy proposals, not actual legislative language. Finally, in order to be successful, they require an extremely high level of inter-governmental coordination.

The two-pillar framework may indeed improve income tax collection and compliance. But it does not transcend the challenge of the current data economy. It is still an attempt to square the circle—to force a century-old framework of taxation designed for a tangible economy into the reality of the data economy.

B. Digital Services Taxes

A recent tax design making headway in a number of countries is the “digital service tax” (DST). DST “involves a tax on turnover associated with specific types of digital services, for example, revenue from selling online advertisements.”²⁶⁸ DSTs have been proposed and adopted in several countries,²⁶⁹ and in 2018, the European Commission proposed an EU-wide DST directive,²⁷⁰ which is still being considered.²⁷¹

DSTs are viewed as temporary measures.²⁷² They are a revenue stopgap put in place until a more permanent solution is adopted

268. Mason & Parada, *supra* note 10, at 1184.

269. As of March 2021, “Austria, France, Hungary, Italy, Poland, Spain, Turkey, and the United Kingdom have implemented a DST.” Elke Asen, *What European OECD Countries Are Doing About Digital Services Taxes*, TAX FOUND. (Mar. 25, 2021), <https://taxfoundation.org/digital-tax-europe-2020/>. Multiple other countries are examining proposals for the implementation of DSTs. *Id.*

270. *Commission Proposal for a Council Directive on the Common System of a Digital Services Tax on Revenues Resulting from the Provision of Certain Digital Services*, COM (2018) 148 final (Mar. 21, 2018) [hereinafter *Commission Proposal*].

271. Gavin Bade & Doug Palmer, *EU Ready To Impose Digital Services Tax*, POLITICO (Oct. 19, 2020, 10:00 AM), <https://www.politico.com/newsletters/weekly-trade/2020/10/19/eu-ready-to-impose-digital-services-tax-791044> (noting the Executive Vice President of the European Commission stated the Commission “stand[s] ready to come forward with a digital taxation proposal at the EU level”).

272. Mason & Parada, *supra* note 10, at 1188 (DST directives “represent a temporary stage on the way to more thorough harmonization,” adding in n.34 that “[t]his deference . . . may

(for example, the two-pillar approach discussed in this Part). The European Union proposal,²⁷³ for example, is rather explicit about being temporary in nature, until the development of a “significant digital presence” that would allow a source state to tax nonresident companies with substantial business activities in the state, even absent a physical presence or dependent agent.²⁷⁴ Indeed, as part of the adoption of the OECD Agreement to implement the two-pillar approach, countries agreed to eliminate DSTs. The agreement calls for “standstill and removal provisions in relation to all existing Digital Service Taxes and other similar relevant unilateral measures.”²⁷⁵

A temporary measure cannot be expected to cure the ills of the current tax system. In addition, DSTs are clearly conceptualized as a measure for the protection of the revenue of the countries of the perceived source of income. They do not seek to change the nature of income-based taxation. As explained by Christine Kim, DSTs are designed as consumption taxes.²⁷⁶ They function like excise taxes on gross revenue from digital advertisement.²⁷⁷ Being a consumption tax in substance, DSTs are essentially a subcomponent of income. They are not truly a “new” type of tax.

DSTs also require valuation of digital services, which, as explained above, is not very meaningful in a data economy. The monetary value imposed on a sale does not necessarily convey all information about actual value of data manipulation.²⁷⁸ DSTs also require an identification of the “destination” of the sale. This, in essence, is a geographical source rule, which assumes that “value” is created in the place where the sale happens. As explained,²⁷⁹ in a data economy, the place of the sale is, at best, a place where value is realized. It is not the place where it is created.

be particularly relevant when the measure, like the proposed DST, is meant to be a stage in a larger plan of harmonization.”).

273. *Commission Proposal*, *supra* note 270 (stating in the preamble that DSTs are viewed as “temporary measures aimed at revenues resulting from digital activities in the Union that would remain outside the scope of double tax conventions”).

274. Mason & Parada, *supra* note 10, at 1183.

275. 2021 OECD Press Release, *supra* note 158.

276. Young Ran (Christine) Kim, *Digital Services Tax: A Cross-Border Variation on the Consumption Tax Debate*, 72 ALA. L. REV. 131, 158 (2020).

277. Mason & Parada, *supra* note 10, at 1183–84.

278. MAYER-SCHÖNBERGER & RAMGE, *supra* note 3, at 55 (“We like to think that price allows us to compare apples to apples, but . . . sellers often use price to deliberately obscure information that would improve market efficiency.”).

279. *See* discussion *supra* Section II.B.2.

C. Formulary Apportionment

Under a formulary apportionment of income taxation, net income is calculated at the affiliated group level on a global basis, and then allocated among jurisdictions based on a formula that takes into account the location of sales, employees, and assets used in each jurisdiction. Let us assume that each of these three factors is equally weighted in the formula.²⁸⁰ A multinational group has 20% of its employees, 40% of its sales, and 45% of its assets located in jurisdiction A. Since the factors are equally weighted, the average of these factors in jurisdiction A is 35%.²⁸¹ This means that jurisdiction A will be eligible to tax 35% of the global net income of the corporate group.

The method of formulary apportionment of taxation is not new. It has been in place for many years now in the United States as a main method of allocating state taxing rights over the income of multi-state corporations.²⁸² In recent years, however, formulary apportionment was proposed and seriously considered as a method for allocating the international tax base among countries. The EU has been discussing an EU-wide formulary apportionment proposed directive for over a decade now,²⁸³ and some commentators propose that countries adopt the system unilaterally.²⁸⁴

While formulary apportionments may indeed be a better suited design for income taxation for the current economy, they do not account for the fact that income is probably no longer the best measure for ability to pay: they require the calculation of net income.

280. This does not have to be the case, of course. Multiple jurisdictions that use this method apply varying weights to each of these factors.

281. $(20 + 40 + 45) \div 3 = 35$.

282. *How Would Formulary Apportionment Work?*, TAX POL'Y CTR. BRIEFING BOOK, <https://www.taxpolicycenter.org/briefing-book/how-would-formulary-apportionment-work> (last updated May 2020) ("Many states in the United States use a formulary apportionment system to determine their taxable share of US-source corporate profits.").

283. For a discussion of the CCCTB proposal, see COMMON CONSOLIDATED CORPORATE TAX BASE (Michael Lang et al. eds., 2013).

284. Reuven S. Avi-Yonah, Kimberly A. Clausing & Michael C. Durst, *Allocating Business Profits for Tax Purposes: A Proposal To Adopt a Formulary Profit Split*, 9 FLA. TAX REV. 497, 515 (2009).

D. Robo-Taxes

There have been a slew of proposals in recent years for new “robot taxes.”²⁸⁵ The idea derives from the fear shared by many, that various forms of artificial intelligence, anthropomorphized as robots, are and will increasingly replace human labor.²⁸⁶ The fact that the majority of U.S. tax revenue is based on labor taxes has given traction to these proposals. Input from celebrities like Bill Gates has further fueled news media coverage of potential or proposed robot taxes, which has further fueled coverage of potential or proposed robot taxes in the news media.²⁸⁷

Robot taxes focus on an effort to identify a new taxable entity, which is not human. Professor Oberson, for example, suggests that taxing robots may be accomplished by granting a tax personality to robots based on a clear definition of robots, which in turn questions what level of use of artificial intelligence generates a sufficient level of autonomy.²⁸⁸ He suggests that a robot tax might first be imposed on the employer or owner of robots, but that as technology allows, an “ability to pay” may be recognized for robots themselves.²⁸⁹

Robot taxes may sound futuristic, but in practice they are just another iteration of income taxation. In the framework of this paper, robot taxes are income taxes, revised to identify “who” is the taxpayer that should be subject to income tax. In reality, and as long as the Cylons²⁹⁰ do not take over the world, it is but a mere proxy for the taxation of the owner of the robots. Robot taxes assume the

285. See, e.g., Joao Guerreiro, Sergio Rebelo & Pedro Teles, *Should Robots Be Taxed?* (Nat'l Bureau of Econ. Rsch., Working Paper No. 23806, 2020); William Hoke, *Taxing Automotons*, 88 TAX NOTES INT'L 11 (Oct. 2, 2017); Xavier Oberson, *Taxing Robots? From the Emergence of an Electronic Ability to Pay to a Tax on Robots or the Use of Robots*, 9 WORLD TAX J. 247 (2017) [hereinafter Oberson, *Taxing Robots?*]; Ryan Abbott & Bret Bogenschneider, *Should Robots Pay Taxes? Tax Policy in the Age of Automation*, 12 HARV. L. & POL'Y REV. 145 (2018); Jay A. Soled & Kathleen DeLaney Thomas, *Automation and the Income Tax*, 10 COLUM. J. TAX L. 1 (2018); Orly Mazur, *Taxing the Robots*, 46 PEPP. L. REV. 277 (2019); XAVIER OBERSON, *TAXING ROBOTS: HELPING THE ECONOMY TO ADAPT TO THE USE OF ARTIFICIAL INTELLIGENCE* (2019); Roberta F. Mann, *I Robot: U Tax? Considering the Tax Policy Implications of Automation*, 64 MCGILL L. J. 763 (2019).

286. Oberson, *Taxing Robots?*, *supra* note 285, at 248.

287. See, e.g., Arjun Kharpal, *Bill Gates Wants to Tax Robots, but the EU Says, 'No Way, No Way'*, CNBC (June 2, 2017, 1:37 AM), <https://www.cnbc.com/2017/06/02/bill-gates-robot-tax-eu.html>.

288. Oberson, *Taxing Robots?*, *supra* note 285, at 248.

289. *Id.* at 254.

290. Cylons are the artificial-being antagonists in the popular TV series *Battlestar Galactica*.

existence of a new type of taxpayer. This assumption is questionable at best. Robots are comprised of data. They are mostly software. They manipulate and use huge swaths of data to make themselves effective. They are not Cylons that walk around in physical location and “create value” in that location. Taxing what a “robot” creates does not solve any of the issues arising from taxing software. It is not truly located in one place. It does not truly create value in one place. The benefits and drawbacks of robot taxes are heavily explored in literature.²⁹¹ The purpose here is to merely point out that a robot tax is an income tax, and it does not fix any of the philosophical tax concerns of the data economy.

E. Excess Return Taxes

Several recent proposals try to tackle the difficulty of taxing income from intellectual property by creating a tax on “excess returns” or “excess profits.”²⁹² The idea is to circumvent the need to directly value IP by assigning IP a residual value.

We can measure the value of tangible assets and then assume some kind of “market return” from such assets. Any income in excess of such return is assumed to be attributable to intangibles and subject to some minimum tax. The United States has recently adopted such a rule known as Global Intangible Low-Taxed Income (GILTI).²⁹³ Other countries are considering adopting similar designs.²⁹⁴

As explained by Professor Faulhaber, a tax on excess returns simply seeks to tax *income* that has been successfully shifted to a low-tax jurisdiction where no meaningful activities took place.²⁹⁵ It seeks to allow other jurisdictions – where meaningful activities did take place – to claw back such income.²⁹⁶ For our purpose, this is

291. See sources cited *supra* note 285.

292. For a summary of recent proposals and legislative designs, see Lilian V. Faulhaber, *Taxing Tech: The Future of Digital Taxation*, 39 VA. TAX REV. 145, 164 (2019).

293. See 26 U.S.C. § 951A.

294. Daniel Bunn, *Blending Considerations for Minimum Taxes on Foreign Income*, TAX FOUND. (Dec. 4, 2019), <https://taxfoundation.org/gilti-global-minimum-tax-on-foreign-income/> (“The adoption of GILTI has created interest by other countries around the world in ways to implement a similar provision at the international level.”).

295. Faulhaber, *supra* note 292, at 167.

296. *Id.* at 179–85.

simply another attempt at identifying proxies for source in an economy where source is not a theoretically meaningful concept.

F. Taxes That Impute Value to Data

Another set of proposals aims to tax data more directly by imputing monetary value to data collected by data collectors. Under such proposals, data collection will constitute a taxable transaction, and tax will be included on the deemed value of the data collected.²⁹⁷

The obvious difficulty in such context is that one would have to figure out the monetary value of data at the point of collection. This is not just administratively difficult; it is not clear that the idea is theoretically coherent. The value of the data when collected is negligible. It is only valuable with other data. The value that we impute, therefore, is the value of the manipulation and analyses of the data. If this is the case, it is not clear what *value* is taxed at the point of collection. In the alternative, if the value is imputed to the collectors' liability as income tax, it is not clear which jurisdiction has the right to collect the tax because the source, again, is unclear.

There is an alternative to the income tax and these proposed solutions. The final Part will present a framework for taxing data that solves many of the previously discussed problems with the current tax system and some of the currently proposed solutions.

IV. THE DATA TAX

A. Data Tax: A Conceptual Framework

The purpose of this Part is to start a discussion about a data tax as a remedy for the failure of income taxes in data-rich markets. To summarize the theoretical argument to this point: money is not necessarily the best conveyer of information about ability to pay. Data may be a better proxy. Source and residence no longer provide a meaningful theoretical underpinning to identify who gets to tax value and where.

The Article proposes a reimagined tax on data, which can hopefully solve these issues. The proposed data tax rests on three principles. First, the volume—not the value—of raw data is the

²⁹⁷ See, e.g., Florian S. Zawodsky, *Value Added Taxation in the Digital Economy*, 5 BRIT. TAX REV. 606 (2018).

taxable base. Second, the taxable base includes all uses of data. Third, the data user is the taxpayer.

1. Raw data is the tax base

The tax depends on the volume of data, not on the monetary value of data. The idea is to prevent the need to ascribe monetary value to data, which, as previously stated, is an insurmountable, if not a logically incoherent, task. Instead, under a data tax, the tax base is measured in gigabytes, not in dollar amounts.

A tax on data volume has the benefit of being self-adjusting. One of the difficulties of the current tax system (or any law, for that matter) in adjusting to technological development is the mere fact that development happens much more quickly than tax legislation happens. It is well documented that our ability to collect, process, and transmit data is exponentially growing.²⁹⁸ This exponential growth in computing power is what enables the creation of new technologies. Instead of trying to adjust the tax each time a new technology appears, taxing the raw commodity that enables technological advances will automatically adjust the tax collected: the more of it is used, the higher the tax. Thus, as the amounts of data used in the development of new technologies increase, so does the revenue. Even if a new technology enables the avoidance of other types of taxes, some of the revenue will be picked up as a data tax.

2. Tax is imposed as data is collected and used

Instead of trying to figure out where the data is analyzed to create value (which is probably nowhere), tax is collected on the flow of data. In essence, the proposal is for a “data-flow” tax. Tax is collected on both upload and download of data.

We can measure when data is uploaded and downloaded. Your cell phone service provider or your internet service provider can tell you exactly how much data you downloaded, uploaded, and when you will hit the data limit of your plan. It can collect fees once you cross the allowable data threshold. If your cell services provider can do that, so can the government.

298. See discussion *supra* Section II.B.

It is easy to measure the flow of data, and it is easy to identify where it happens. Certain authoritarian regimes can block all or most of the data flow in and out of the country because data, at the end of the day, requires a physical infrastructure to be uploaded from, downloaded to, or simply to flow. If a bad government can block data from flowing, good governments can allow it to flow, but tax it in the process.

3. Tax is imposed on the user of the data

Imposing tax on data as it is being used solves the need to question *where* value is created. However, there is still a need to identify the taxpayers who are subject to the tax. Under the proposed framework, taxpayers are the users of data. It does not matter how data is used and for what purpose. If you upload data to the internet, you are a taxpayer. If you download data from the internet, you are a taxpayer.

Of course, this may raise objections on the basis of fairness and administrability. Do we really want to tax an individual every time she sends a text message? Of course not. But these issues can be addressed in the tax design stage, discussed in section IV.C. For now, it is enough to say that all data usage, including both uploads and downloads, should be subject to a generous exemption, where the tax will be imposed only after a certain large volume of data has been transmitted within the taxable period. A successful design would exempt most taxpayers from data tax and will only capture heavy users, for whom big data collection and analysis is an integral part of the business model.

B. The Normative Underpinning of the Data Tax

A direct tax on data users has the potential to achieve the normative purposes of taxation and outperform income taxes on this issue. As discussed, the income tax was designed as a relatively efficient, fair, and administrable proxy for the “ability to pay” principle. For that purpose, it required the identification of source, ownership, and monetary value. Source, ownership, and monetary value are not meaningful concepts in a data economy, at least not to the same extent as in the tangible economy of the early twentieth century. Tax on data, however, can function as a fair, efficient, and

administrable instrument of taxation. It also can function to alleviate some of the externalities of the data economy.

1. Progressivity

The question of progressivity relies, of course, on the design of tax, which is discussed in section IV.C. But the argument here is that a direct tax on data owners will, by definition, improve the progressivity of the tax system.

The reason is that a tax on direct data is expected to burden most of the taxpayers who were able to avoid income taxation by shifting to data-reliant business models. Taxpayers who still rely heavily on brick-and-mortar operations, in one or few localities, are still likely captured by traditional income taxes. For the most part, they are likely to be small- or medium-sized businesses or individual taxpayers. But taxpayers who were able to take advantage of the scalability of big data operate everywhere and nowhere. Tax authorities are having a hard time collecting income tax from them.

Data-rich taxpayers are also the richest taxpayers in traditional terms. These are the Googles, Amazons, and Facebooks of the world. It is well documented that such taxpayers pay extremely low effective tax rates.²⁹⁹

Stated differently, “data-rich taxpayers” are able to avoid income tax, while low- and middle-income (“data-poor”) taxpayers cannot. This hurts the intended progressivity of the tax system. A tax that is focused on the use of data will capture high-volume users that otherwise avoid income tax. This will help to restore progressivity in the system. In addition, as discussed in section IV.C, it is possible (and relatively easy) to design a progressive data tax schedule where the tax burden increases with data usage.

299. See, e.g., Matthew Gardner and Steve Wamhoff, *55 Corporations Paid \$0 in Federal Taxes on 2020 Profits*, ITEP (Apr. 2, 2021), <https://itep.org/55-profitable-corporations-zero-corporate-tax/>; Erik Sherman, *A New Report Claims Big Tech Companies Used Legal Loopholes to Avoid Over \$100 Billion in Taxes. What Does That Mean for the Industry’s Future?*, FORTUNE (Dec. 6, 2019, 3:32 PM), <https://fortune.com/2019/12/06/big-tech-taxes-google-facebook-amazon-apple-netflix-microsoft/>.

2. *Efficiency*

Here too, efficiency effects of a data tax are very much a function of design. But a direct data tax, as suggested here, is efficient. Recall that tax efficiency relates to changes in taxpayers' behavior in response to tax. We want to minimize these behavioral distortions. In theory, we would not want business decisions, such as where to incorporate, where to build a new factory, or where to set up the corporate headquarters, to be influenced by tax.

Data tax as proposed herein does not affect such considerations. The collection of data is not expected to have a major elastic response to tax. You collect the data where the data is. People live, work, and consume somewhere. This somewhere is where data is collected from and transmitted to. This is similar to taxation of mineral exploration. Activity must happen where the minerals are. As long as the tax is not prohibitively expensive and there is profit to be made, activity will take place where the valuable resources are found.

For example, Google can plan its tax structure in the context of data collection all it wants – it will not matter under a data tax as envisioned here. Under a pure data tax, if Google collects my data when I use its search engine in the United States, Google will pay tax in the United States. If I travel to Spain and Google sends me a push notification to try to make me buy something there, tax will be paid in Spain. It does not matter for that purpose where Google is a resident, what it does with my data, where it analyses it, or when and how it monetizes it. As long as Google makes money from big data, it will keep collecting it. It will not stop collecting the data just because it is more expensive to do so (of course, the assumption here is that tax rates are not extremely high to the extent they are confiscatory). Google will just share a larger part of its wealth with governments around the world.

One potential counterargument in this context is that in the presence of a tax on data, services providers will pass the burden to users by charging users for the use of services that are now free. This is a good thing for two reasons. First, simple supply and demand theory predicts that if the price of the use of Facebook increases, people will use less of it, which some may argue is a

good thing!³⁰⁰ Second, if Facebook wants to put monetary value on the collection of information of residents of a particular jurisdiction – fantastic! Income tax is back in vogue! We can just tax Facebook using the traditional methods of taxation that rely on monetary value.

3. Pigouvian properties

As discussed above, the data economy creates a multitude of externalities. It can have negative effects on privacy, economic competition, the environment, and the democratic process. Taxes can be instrumental in remedying such externalities.

A Pigouvian tax, named after economist Arthur Pigou, is a “tax[] that [is] designed primarily to change behavior rather than raise revenue.”³⁰¹ In general, “[a] Pigouvian tax is . . . equal to the harm that the firm imposes on third parties.”³⁰² The function of Pigouvian taxes can be seen in the following example: “[I]f a manufacturer pollutes, and the pollution causes a harm of \$100 per unit of pollution to people who live in the area, then the firm should pay a tax of \$100 per unit of pollution.”³⁰³ A Pigouvian tax is intended to ensure that those engaging in certain harmful activities will only continue to engage in them if their value exceeds the harm.³⁰⁴

Pigouvian taxes, however, are not always a useful instrument. When the marginal cost of the bad activity varies, Pigouvian taxes may be inefficient.³⁰⁵ That is, “[u]niform Pigouvian taxes . . . may work where there is little variation among taxpayers. Where there is variation, uniform taxation . . . will be inefficient.”³⁰⁶ Consider guns, for example.

Most of the social cost of guns . . . comes from a relatively small number of bad actors. Suppose guns cause \$1 billion of social cost

300. Of course, there may be implications for other free-to-use services such as Google Maps, which arguably add real value to society though free use. It is not clear that decreased use of such services is a good outcome.

301. Fleischer, *supra* note 48, at 1675.

302. Jonathan S. Masur & Eric A. Posner, *Toward a Pigouvian State*, 164 U. PA. L. REV. 93, 95 (2015).

303. *Id.*

304. *Id.*

305. Fleischer, *supra* note 48, at 1676–77.

306. *Id.* at 1689.

annually, and that there are 100 million guns. Using average social cost, we would impose a tax of \$10 per gun. Such a tax would have no effect on criminals, whose private benefit from using the gun presumably vastly exceeds \$10 per year.³⁰⁷

On the other hand, when the marginal social cost is equal among different actors, Pigouvian taxes are likely to work well.³⁰⁸ Since data tax as envisioned here is going to be effectively targeted only at taxpayers who use data as an integral part of their business model, meaning the ones causing the externality, data tax can have the intended functionality of a Pigouvian tax.

4. *Administrability*

Finally, a data tax is significantly easier to administer than income tax. It requires measurement of the amount of data used. This happens anyway. How much we upload and download, and at what speed, is information that any of us can easily get. There should be no technical problem for governments to measure the volume of data flowing through their physical internet infrastructure.

There also needs to be a way to identify the sender (uploader) or the recipient (downloader) of data, as these will be the taxable entities. This is also rather easy with current technologies. All we need is an IP address or a physical machine address. Under a data tax, it does not matter who, at the end of the day, is the “beneficial owner” of value. The owner of the IP address or machine is the taxpayer. You can work through VPNs all you want—the government does not care. The owner of the IP address from which data is sent or received is the taxpayer. If a VPN is used, it will be the VPN service provider who pays the tax.

There needs to be an enforcement mechanism in place. Taxpayers should not be able to easily avoid the data tax. Since governments control (or at the minimum, regulate) tangible internet infrastructure, which is needed for the transmission of data, they can enforce tax on data. For example, governments can impose a requirement for owners of any server that uploads or downloads data to the country’s internet infrastructure to register their servers. The owner must report data usage (in volume) and pay any resulting data tax. The government is always in a position

307. *Id.* at 1701 (footnote omitted).

308. *Id.* at 1679.

to force the owner to do so, to go after assets of the server owner, or, in the extreme, to just block any data to be downloaded from or to be sent to specific non-paying servers.

C. Models of Data Taxation

It is well beyond the scope of this Article to offer a full-blown design of tax on data. The main aim here is to make the theoretical tax policy case for data tax as a replacement or supplement to income tax. Nonetheless, the viability of the idea requires at least some examples for potential tax design. This section offers some possible data tax design ideas.

1. Data tax as an excise tax – the return of the “bit tax”?

A data tax is not a new concept. Tax on data by volume was in vogue for a very short time in the mid-1990s following a proposal by Arthur Cordell.³⁰⁹ Unfortunately, this proposal gained little traction and a lot of bad rap.³¹⁰

This proposal is referred to as a “bit tax.” The bit tax is effectively “an excise or turnover tax based on the flow of information over digital networks.”³¹¹ More recently, Professor Ben-Shahar suggested a tax on data that “reflect[s] both the quantity and the quality of the information collected. Obviously, the more information a firm collects about more people, the greater the tax.”³¹² Ben-Shahar suggests that

[A] data tax could be levied directly on the people who provide it. A tax is levied on a transaction and in real economic terms it does not matter who among the two parties – the data taker or the data giver – pays for it, since it would be incorporated either way into the overall price.³¹³

309. ARTHUR J. CORDELL, T. RAN IDE, LUC SOETE & KARIN KAMP, *THE NEW WEALTH OF NATIONS: TAXING CYBERSPACE* (1997).

310. David J. Shakow, Commentary, *Taxing Nothings: Intangibles on the Internet*, 52 *TAX L. REV.* 571, 577 (1997) (“The proposal has gotten so little good press . . .”); Charles E. McLure, Jr., *Taxation of Electronic Commerce: Economic Objectives, Technological Constraints, and Tax Laws*, 52 *TAX L. REV.* 269, 275 (1997) (commenting that the bit tax “seems to be a singularly bad idea”).

311. Dale Pinto, “Conservative” and “Radical” Alternatives for Taxing E-Commerce (Part 2), *J. INT’L TAX’N* 38, 40.

312. Ben-Shahar, *supra* note 27, at 140.

313. *Id.* at 141 (emphasis omitted).

When originally proposed, “the bit tax proposal [was] widely condemned and almost universally rejected by most governments and international bodies that . . . considered it.”³¹⁴

The bit tax was considered an impediment on international trade because of wariness of extensive internet use, discrepancies in internet access, and environmental impact.³¹⁵ This argument made sense when bits simply facilitated transactions, but it falls flat when bits are the transactions. Taxpayers are not going to simply stop profitable data collection because they are taxed. They are just going to have a little bit less after-tax income. In addition, it is possible to design certain exemptions to prevent the burden from falling on certain taxpayers.

Another criticism was that the bit tax required international coordination to prevent double taxation (meaning the same transfer would be taxed both to the downloader and the uploader).³¹⁶ This made sense under standard concepts of income taxation: income should be taxed once. But under the proposed formwork, the transaction *should* be taxed (subject to any exemptions) to both the uploader and the downloader of data. We are not measuring income in data. We are measuring data use. Upload and download are two different uses of data. There is no need for international coordination per se. Data tax can be a purely domestic tax. Simply put, unlike in the context of income tax, “double taxation” is simply not a thing under a data tax framework.

It has also been suggested that tax on data is inefficient and would cause distortion in the measuring of taxable value, because not all data is valued the same.³¹⁷ Some data is more valuable than others, so why tax all the same? Under the theoretical framework presented here, this is exactly the reason *not* to try to value data and to instead tax it based on volume. If the economy moves away from measuring value in monetary terms to measuring value in data volume, so should the tax system.

Finally, it was also argued that administration would be difficult in terms of measuring the volume and collecting the tax.³¹⁸ This may have been the case, as it reflected the technology of the

314. Pinto, *supra* note 311, at 40.

315. *Id.* at 47–48.

316. *Id.* at 49–50.

317. *Id.* at 48–49.

318. *Id.* at 51.

1990s. Today, such tax can be easily administered and collected, to an extent that the processes can be almost completely automated.

To summarize, an excise data tax is efficient and easily administrable. And in a data economy it makes sense: data *is* the value, so it is being taxed as such—not as a proxy for some other measurement of value.

The problem is that an excise tax on data is likely regressive. If tax is imposed at the point of data transactions, it might be easy for service providers to transfer the burden to consumers in the same way any indirect tax works, such as sales taxes. There may be better, more progressive designs for the data tax.

2. Data dividend taxes

Several commentators have suggested a data dividend tax.³¹⁹ This would impose a tax on companies whose business model requires collecting and storing significant quantities of personal information and data. The government would then distribute dividends to the individuals who supplied the data to the companies. As an alternative for direct distribution, it is possible to simply tax the revenue as a “data dividend.”

For example, Facebook co-founder Chris Hughes looks to Alaska’s Permanent Fund as a template for how this data dividend might work.³²⁰ Alaska’s Permanent Fund is comprised of a mandatory contribution from oil companies based on a percentage of gross revenues. Alaska then earmarks a portion of those contributions in a savings account for Alaska residents and distributes 2.5% of the total value of the account to Alaska residents each year, amounting to about \$1,500 per person per year.

Hughes envisions the data dividend tax as one on the gross revenues of “any large company making a significant portion of its

319. See, e.g., Chris Hughes, *The Wealth of Our Collective Data Should Belong to All of Us*, GUARDIAN (Apr. 27, 2018, 6:00 AM), <https://www.theguardian.com/commentisfree/2018/apr/27/chris-hughes-facebook-google-data-tax-regulation>; Dante Alighieri Disparte, *The Problem with Data Dividends and Taxes*, FORBES (Apr. 28, 2019, 12:08 PM), <https://www.forbes.com/sites/dantedisparte/2019/04/28/the-problem-with-data-dividends-and-taxes/?sh=5af2e99315ab> (stating “calls for a citizen data dividend or punitive data tax are getting louder”); Liz Farmer, *Should Big Tech Be Taxed for Using Our Data?*, GOVERNING (May 2, 2019), <https://www.governing.com/archive/gov-tech-companies-tax-data-states.html> (“Most recently, California Gov. Gavin Newsom called for a ‘data dividend,’ saying that ‘consumers should also be able to share in the wealth that is created from their data.’”).

320. Hughes, *supra* note 319.

profits from data that Americans create . . . [which] would encompass not only Facebook and Google, but banks, insurance companies, large retail outlets, and any other companies that derive insights from the data you share with them.”³²¹ Hughes estimates that a 5% tax could raise over \$100 billion each year and that because data is not a non-renewable resource, the data dividend fund could be disbursed in full every year.³²²

There have been some legislative proposals in this vein. For example, in March 2017, Washington representative Norma Smith proposed the addition of a 3.3% business and occupation tax “on gross receipts from the sale of personal data relating to Washington state residents” with an eye toward modernizing the Washington tax code.³²³ In proposing HB 1904, an additional sales tax targeting the sale of personal information, Representative Smith pointed to a 2013 Congressional Report on the U.S. data broker industry and recent findings that data brokerage had already become a multi-billion dollar industry.³²⁴

The bill passed through Washington’s House Committee on Technology and Economic Development.³²⁵ However, it was ill-received at a public hearing of the House Committee on Finance, where representatives from TechNet, the Association of Washington Business, the Consumer Data Industry Association, the Washington Bankers Association, and CompTIA testified against the bill.³²⁶

Two bills were recently introduced in New York.³²⁷ They propose to add an additional 5% tax on the gross income of corporations that derive income from the data individuals of New York share with corporations. Neither bill has seen much traction.

Data dividend taxes seem to have some equitable potential, as their effect is to increase the tax burden on data collectors and distribute the proceeds to consumers. The main difficulty with a

321. *Id.*

322. *Id.*

323. John Stang, *Proposed State Tax on Sale of Personal Data Faces a Fight from Business Groups*, GEEKWIRE (Mar. 11, 2017, 10:30 AM), <https://www.geekwire.com/2017/proposed-state-tax-sale-personal-data-faces-fight-business-groups/>.

324. *Id.*

325. *Id.*

326. *Id.*

327. S.B. 6102, 2019 Leg., 2019–2020 Sess. (N.Y. 2019); Assemb. B. 09112, 2020 Assemb., 2019–2020 Sess. (N.Y. 2020).

data tax is the need to assess value on data collected from people within a specific territory. It requires some measure of gross income (in monetary value) on which tax will be assessed. In that sense, it looks like a proxy to the value of data, which, in turn, seems like a proxy for income tax. The gross revenue then needs to be allocated among the various jurisdictions in which data is collected, which requires a source rule.

3. *Data-sharing mandates*

Some have suggested a per se data tax – that is, tax paid in data. For example, Mayer-Schöneberger and Ramge propose that “[g]overnments might consider a partial payment of taxes in data rather than money.”³²⁸ They envision anonymized data sets provided by companies that benefit from data. For example, they propose that car manufacturers might provide the public with “anonymized sensor data from their cars.”³²⁹

Such ideas, while representing a direct tax on data, are unlikely to succeed. The first problem is that they assume that there exists an “arm’s length price” or “value” for shared data. Consider data on driving behavior: the same bulk of data has completely different utility in the hands of, say, Toyota, than it has in the hands of the government. Toyota may use the data to improve driver experience and passenger comfort. The government may use the data to improve road safety. Toyota and the government use the data on two completely separate utility functions. In such a case, it would be impossible to decide “how much” data sharing is enough to satisfy the tax liability.

This reflects the fact that even though data is referred to as the “new money,” it does not, in fact, function as money. Data successfully performs only one function of money: it is a unit of exchange. It does not perform the other functions of money: it is not a unit of account, nor it is a store of value. The reason is that data accounting and value are subjective. They depend on what you can do with the data. Data has no objective value. Governments cannot possibly successfully administer tax systems where tax payments do not possess objective value. At least in the foreseeable future, governments will still have to collect taxes in fiat currencies.

328. MAYER-SCHÖNEBERGER & RAMGE, *supra* note 3, at 199.

329. *Id.*

Data-sharing proposals are also inherently inequitable. Wealthy firms that monetize our data will be exempt from some of their taxes paid in money. They will keep *more* of their monetary gains, while the rest of us—all individual taxpayers—will keep paying taxes with hard money. The government already knows my address, my driver’s license number, and who am I married to. It is unlikely the government will let me pay less taxes in money on account of me sharing information that I share with the government already. A data-sharing tax is regressive.

A data-sharing tax is also inefficient. It will create huge incentives for companies to play the line between taxes they pay in money and taxes they pay in data. If companies believe that certain data is particularly valuable, with a potential for future scalability to profit, they will try to keep it for themselves. Companies will do their best to load the government with useless data and claim that by doing so they satisfy their tax liability.

It is also unclear what the government is expected to do with the data it collects from companies. Do we expect the companies to share with the government their proprietary algorithms for analyzing the data? And if not, what good would the data do for the government?

As far as tax policy is concerned, the data-sharing mandate is simply a bad idea.

4. *Surrogate taxes on data*

It is conceptually possible to impose a data tax as a surrogate tax. Rather than tax the ultimate users of data, we can impose the tax on the owners of data infrastructure through which data is transmitted. The more data is transmitted, the higher the tax. In this instance as well, it is reasonable to expect that owners of data infrastructure will largely transfer the cost of the data to their customers. In such a case, taxing internet infrastructure is a form of a “surrogate tax” that achieves similar results.

This proposal views data taxes as data consumption taxes. Such taxes can be relatively efficient and administrable. They are administrable because they are collected at the point of transaction. They are efficient because there is little that the end data giver or collector can do to avoid them other than not giving its data. But since such taxes can be transferred to consumers, they may have regressive effects.

It is worth noting that proposals in this vein have been considered and explicitly rejected in the United States. Such a tax would be illegal. In an effort to “establish a national policy against State and local interference with interstate commerce on the Internet or online services, and to exercise congressional jurisdiction over interstate commerce by establishing a moratorium on the imposition of exactions that would interfere with the free flow of commerce via the Internet,” Congress passed the Internet Tax Freedom Act of 1998.³³⁰ The Act prohibited, for a three-year period, state and local governments from imposing new taxes on imposing either new “[t]axes on Internet access” or “[m]ultiple or discriminatory taxes on electronic commerce.”³³¹ During this three-year period, state and local governments could not “impose their sales tax on the monthly payments that consumers make to their Internet service provider in exchange for access to the Internet.”³³² “The Act had a grandfather clause allowing states that already taxed Internet access to continue enforcing those taxes.”³³³ After extending the Act eight times, Congress passed the Trade Facilitation and Trade Enforcement Act of 2015, which made the Internet Tax Freedom Act permanent.³³⁴ The states previously grandfathered in could continue taxing internet access only until June 30, 2020.³³⁵

5. Direct data tax

There is no inherent reason to envision data taxes as indirect transaction taxes. It is possible to impose tax on data collectors without the need to explore each data transaction separately. Instead, the tax can be imposed on the entire data collected from whatever “source,” which, in essence, makes it a direct tax on the data collectors. In such a case, it is difficult for the data collector to

330. H.R. 3529, 105th Cong. (1998) (codified as 47 U.S.C. § 151 *et seq.*).

331. Internet Tax Freedom Act (ITFA), 47 U.S.C.A. § 151 Statutory Note (2018); *Internet Tax Freedom Act: Internet Access Taxation*, S.D. DEP’T OF REVENUE 1 (December 2019), <https://dor.sd.gov/media/qmbavimi/internet-tax-freedom-act.pdf>.

332. JEFFREY M. STUPAK, CONG. RSCH. SERV., R43772, THE INTERNET TAX FREEDOM ACT: IN BRIEF (2016).

333. *Internet Tax Freedom Act: Internet Access Taxation*, S.D. DEP’T OF REVENUE 1 (December 2019), <https://dor.sd.gov/media/qmbavimi/internet-tax-freedom-act.pdf>.

334. P.L. 114–125, § 922 (codified as 19 U.S.C. §§ 4301–4454).

335. STUPAK, *supra* note 332, at 3.

transfer all the tax burden to consumers because the benefit of data collection is not necessarily equally allocated among consumers.

Under a direct data tax, data can be assessed on a dollar amount per volume of data collected. For example, assume New York State imposes a \$1 tax per gigabyte of data collected. Google will have to pay tax on all data collected from New York State's IP addresses transmitted to Google servers or transmitted to New York State's IP addresses. It does not matter from whom in New York the data is collected, what the type of data is, or through which machine the data is uploaded. In such a case, the tax is a direct tax on Google, and Google cannot easily transfer the cost to users because Google cannot assess the cost of each piece of data it collects. Google, of course, could start charging for its services, at which point it will become subject to income tax in New York State.

In order to make sure we do not capture small-time data users, there should be an exemption threshold. The exemption threshold does not have to be structured as a "cliff," but as an exponent so as to make sure that once people start using large amounts of data, they will be quickly (yet somewhat gradually) captured by the tax. Once a certain threshold is crossed, the marginal tax rate can be designed as a logarithmic function in order to streamline data collection tax and prevent cliff effects.

In the alternative, if we seek to disincentivize data collection beyond a certain threshold, it may be a good idea to create high marginal tax brackets beyond certain levels of data.

6. Data tax as royalties on data collection

Finally, since data is essentially a raw commodity, it can be taxed as such. This type of revenue stream is predicated on the idea that resources located within the borders of the state belong to the state.³³⁶ Thus, those wishing to extract the resource must pay a "concession" to the government for the right to do so. While not technically a tax, royalties are a common way by which governments raise revenue from extractive industries.³³⁷ Royalties can be collected based on the

336. Carole Nakhle, *Petroleum Fiscal Regimes: Evolution and Challenges*, in *THE TAXATION OF PETROLEUM AND MINERALS: PRINCIPLES, PROBLEMS AND PRACTICE* 89, 94 (Philip Daniel et al. eds., 2010).

337. *Id.*

volume or value of oil and gas extracted.³³⁸ Oftentimes, royalties are imposed at a flat rate, but some countries have begun implementing “progressive” royalty payments that increase based on some measurement of production.³³⁹ That is, the rate increases when some profit ratio increases.

The same can be applied to the right to collect information on subjects of the states, events occurring in the state, or any pattern occurring within the state.

The benefit of royalties from a government perspective is that they do not require the project be profitable before revenue is earned and allow taxation of the project from the very beginning. Additionally, royalties are typically easy to administer.³⁴⁰

Royalties on licenses to collect data avoid some of the drawbacks of royalties applied in the extractive industries. For example, extractive industries are highly speculative, and taxing an activity before there is a certainty of profit can provide a deterrent effect on investment.³⁴¹ If the royalty is too high, it could prevent investment in the first place or abandonment of a site once the company realizes it will not be able to recover the costs.³⁴² These issues do not present themselves for data royalties: data is always available. It is not depletable. There is always more of it to be collected. It is infinite. Royalties on the right to collect data can also be designed to be progressive and increase with the amount of data collected.

CONCLUSION

The digital economy has made traditional income tax models unworkable. Even with admirable attempts to reform the income tax to current economic conditions, income is no longer the best base for generating government revenue in an efficient and equitable manner. Income taxation as it stands requires the identification of monetary value, source, and ownership of income – all of which are largely economically meaningless in data

338. Emil M. Sunley, Thomas Baunsgaard & Dominique Simard, *Revenue from the Oil and Gas Sector: Issues and Country Experience*, in FISCAL POLICY FORMULATION AND IMPLEMENTATION IN OIL-PRODUCING COUNTRIES 153, 155 (J.M. Davis et al. eds., 2003).

339. Nakhle, *supra* note 336, at 96.

340. Sunley, Baunsgaard & Simard, *supra* note 338, at 155.

341. *Id.* at 156.

342. *Id.*

rich markets. With these difficulties in mind, data may be the best (or at least a viable supplemental) tax base going forward. A tax imposed on the user and collector of data based on volume would alleviate many—if not most—of the issues facing modern governments in raising revenue, as well as help deter some of the negative externalities data collection creates.