Devising Administrative Approaches for Improving Tax Compliance

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Abstract

How can administrative policies be devised to improve tax compliance? To answer this broad question, I examine three specific questions. First, why do people pay their taxes? Second, that are the impacts of recent technological innovations on tax administration and tax compliance? Third, what are the implications of this research for tax administrations? In the spirit of much of Richard Bird's work, I examine academic research on these questions that is relevant for both developed and developing countries, focusing on those aspects of research that may be of some use in administrative efforts to improve tax compliance. I conclude with some predictions about future research trends.

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1. Introduction

How can administrative policies be devised to improve tax compliance? Put differently, what can tax administrations like the U.S. Internal Revenue Service (IRS) do by itself to increase compliance, if it had the resources to implement its desired policies? Devising appropriate strategies depends on understanding why individuals (and firms) may fail to comply fully with their legally due tax obligations, on considering how technological innovations may affect both government and individual behaviors, and on pursuing administrative policies that are consistent with these motivating factors and the available technologies.

As Richard Bird has emphasized in his astonishing number of books and articles with an equally astonishing array of co-authors (Bird, 1983, 1989, 1992, 2004, 2010, 2015; Bird and Casanegra de Jantscher, 1992; Bahl and Bird, 2008; Bird and Zolt, 2008; Bird and Martinez-Vazquez, 2014), tax administration matters because how a tax system is administered affects in intimate ways how the overall tax system achieves its broad goals of efficiency, equity, and adequacy. The basic tasks of a tax administration are the identification, assessment, and collection of taxes, and a useful perspective here (Bagchi, Bird, and Das-Gupta, 1995; Alm and Duncan, 2014) is to view the tax administration process as a production function in which "inputs" (e.g., personnel, materials, information, laws, procedures, technology) are used to produce various "outputs". The most obvious output is government revenue, as achieved by the administration taking steps to monitor compliance (e.g., measuring the various ways by which individuals and businesses pay – or do not pay – their legally due taxes), to facilitate compliance (e.g., ensuring that individuals and businesses paying their legally due taxes and making payment easier for them), and to enforce compliance (e.g., keeping taxpayers honest), perhaps even to improve governance (e.g., keeping tax collectors honest). However, there are also other outputs,

such as allocative efficiency, taxpayer equity, social welfare, even political legitimacy of the government. The impacts of tax administration on these other outputs may as important as its effects on revenues; that is, *how* revenue is raised may be as important as *how much* revenue is raised. As someone once said (exactly who is still debated), "Tax administration *is* tax policy".

In this paper I focus on the issue of how tax administration may be used to improve revenue collections via improved tax compliance. To answer this question, I examine three specific questions:

- Why do people pay their taxes? Insights and evidence from theoretical and empirical research on tax compliance

- What are the impacts of recent technological innovations on tax administration and tax compliance?

- What are the implications of this research for tax administrations? Three "paradigms" for tax administrations and their associated administrative policies

I discuss each of these three questions in turn. In the spirit of much of Richard Bird's work, I examine academic research that is relevant for both developed and developing countries, focusing on those aspects of research on tax compliance that may be of use in administrative efforts to improve tax compliance. I conclude with some predictions about future research trends.

2. Why do people pay their taxes? Insights and evidence from theoretical and empirical research on tax compliance

2.1. Insights from theoretical analyses[1]

The economics-of-crime model: The central role of enforcement. Most all research on tax compliance starts with a standard theoretical model based on the Becker (1968) economics-of-

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[1] See Alm (2019) and Slemrod (2019) for recent surveys. For earlier discussions, see Cowell (1990), Andreoni, Erard, and Feinstein (1998), Alm (1999, 2012), Slemrod and Yitzhaki (2002), and Sandmo (2005, 2012).

crime model, first applied to tax noncompliance by Allingham and Sandmo (1972). Here, a rational individual is viewed as maximizing the expected utility of the tax evasion gamble (or lottery), weighing the benefits of successful cheating against the risk of detection and punishment. The standard conclusion from this approach is that an individual pays taxes because he or she is afraid of getting caught and penalized if he or she does not accurately report income and bear the resulting tax liability. This approach therefore leads to the plausible conclusion that compliance depends upon audit and fine rates. Indeed, the central point of this approach is that an individual pays taxes because – and *only* because – of the economic consequences of detection and punishment. This is an important insight, with the obvious implication that the government can encourage greater tax compliance by increasing audit and penalty rates.

However, it is clear to many observers that compliance cannot be explained entirely by such purely financial considerations, especially those generated by the level of enforcement. The percentage of individual income tax returns that are subject to a thorough tax audit is generally quite small in most countries, almost always well less than 1 percent of all returns. Similarly, the penalty on even fraudulent evasion seldom exceeds more than the amount of unpaid taxes, and these penalties are infrequently imposed; civil penalties on non-fraudulent evasion are even smaller. A purely economic analysis of the evasion gamble suggests that most rational individuals should either underreport income not subject to source withholding or overclaim deductions not subject to independent verification because it is extremely unlikely that such cheating will be caught and penalized. However, even in the least compliant countries evasion never rises to levels predicted by a purely economic analysis, and in fact there are often substantial numbers of individuals in countries around the world who apparently pay all (or most) of their taxes all (or most) of the time, regardless of the financial incentives they face from

4

the enforcement regime. Although compliance varies significantly across countries and across taxes and is often quite low, compliance seldom falls to a level predicted by the standard economic theory of compliance. It seems implausible that government enforcement activities alone can account for these levels of compliance; the basic model is certainly unable to explain this behavior. Indeed, the puzzle of tax compliance behavior may well be why people pay taxes, not why they evade them. This observation suggests that the compliance decision must be affected by factors not captured by the basic economics-of-crime approach. What other factors are suggested by theory to explain why people pay taxes?

Theoretical extensions within the economics-crime-approach. One strand of research stays within the basic framework of economics-of-crime model, by adding a range of potentially relevant considerations (e.g., employer withholding, labor supply decisions, alternative tax and penalty systems, systematic audit selection procedures, complexity and uncertainty, use of paid tax preparers, government services, positive rewards). These many extensions make the basic model more realistic, and withholding especially gets predictions of compliance closer to its observed levels. However, these extensions do not altering the fundamental conclusion of the economics-of-crime approach: compliance is driven entirely by financial considerations like detection and punishment.

Theoretical extensions using behavioral economics. Another and more recent strand of research expands the scope of the economics-of-crime beyond purely economic considerations theory by introducing some aspects of behavior considered explicitly by other social sciences, especially psychology. These aspects change the ways in which an individual makes decisions (e.g., misperceived probabilities of audit, guilt and shame, and "rules of thumb" for decisions), and they also introduce group considerations (e.g., fairness, altruism, and social norms).

The foundation for this strand of research is behavioral economics. The standard neoclassical economic model of human behavior is based on several main assumptions: individuals are rational, they have unlimited willpower, and they are purely self-interested. While these assumptions may be a useful starting point for the analysis of individual behavior, there is increasing evidence that they are inaccurate and unrealistic depictions of many, perhaps most, individuals. As emphasized by Congdon, Kling, and Mullainathan (2011), these so-called "deviations" from neoclassical assumptions can be classified into two broad areas: imperfect individual optimization (stemming from, say, limited computation abilities or bounded self-control) and non-standard preferences (like other-regarding preferences).

In the context of tax compliance, behavioral economics has been applied to these two broad (and somewhat overlapping) dimensions. One extension keeps its focus on *individual* factors stemming from imperfect optimization; the other extends the analysis to *group* considerations stemming largely from non-standard preferences.

Behavioral economics extensions focusing on the individual. Many of the individual behaviors that diverge from neoclassical predictions involve some form of "frame dependence," in which an individual's decision depends upon how the choice is presented. Frame dependence is typically related to some cognitive limitation of the individual in perceiving decision problems and in evaluating the available options. Given these cognitive limitations, many individuals do not maximize expected utility, but instead pursue different strategies, as modeled by non-expected utility theories. The most well-known of these alternative theories is likely the prospect theory of Kahneman and Tversky (1979); other theories include rank-dependent expected utility theory (or anticipated utility), first-order and second-order risk aversion, regret / disappointment theory, non-additive probabilities, ambiguity theory, and hyperbolic discounting, among others.

6

There are many applications of non-expected utility theories to tax compliance are discussed in comprehensive surveys by Hashimzade, Myles, and Tran-Nam (2013) and Alm (2019); see also Kirchler (2007) and Torgler (2007). Relative to expected utility theory, these models change the "probability" that an individual perceives and the "objective function" that he or she pursues. In doing so, they continue to demonstrate the importance of enforcement on tax compliance. However, these models can also generate predictions that better approximate observed levels, especially if they have overweighting of probabilities. All of this comes at the cost of adding many complications to the analysis of individual behavior.

Behavioral economics extensions focusing on the group. A second strand of behavioral economics focuses more on group behavior, often summarized as "social interactions theory." There is abundant evidence that individuals are influenced by the social context in which, and the process by which, decisions are made and that they are motivated not simply by self-interest but also by group notions like social (or group) norms, social capital, social customs, appeals to patriotism or conscience, or feelings of fairness, altruism, reciprocity, empathy, sympathy, trust, guilt, shame, morality, and alienation. Regardless of the specific term that is used, all of this research concludes that one's own *individual* behavior is strongly influenced by the behavior of the *group* to which one identifies, largely via other-regarding preferences.

There are various aspects of these social interactions. Perhaps the most useful approach to social interactions emphasizes that much individual behavior can be viewed as a "psychological contract" between individuals (and between individuals and government). Central to this contract is the broad notion of a "social norm" of behavior. A social norm represents a pattern of behavior that is judged in a similar way by others and that is sustained in part by social approval or disapproval. Put differently, a social norm is a recognized, customary, and self-reinforcing

7

pattern of behavior in which everyone participates, given the expectation that everyone else will also participate. Put still differently, a social norm is an informal rule of behavior that individuals follow for reasons largely distinct from the fear of legal penalties. Consequently, if others behave according to some socially accepted norm of behavior, then the individual will behave appropriately; if others do not so behave, then the individual will respond in kind. The presence of a social norm is also consistent with many other approaches that incorporate similar notions of social interactions, such as those that recognize some form of other-regarding preferences. It is hard to think of any type of social interaction that is not governed in some way by a social norm.

There are many prominent examples of theories that include these social interactions, such as the fairness model of Rabin (1993), "ERC" (or equity, reciprocity, and completion) of Bolton and Ockenfels (2000), "inequality aversion" of Fehr and Schmidt (1999), and "reciprocal altruism" of Cox, Friedman, and Sadiraj (2008). All introduce some elements of interdependent, or other-regarding, preferences. As for specific applications of these approaches to tax compliance, again see Hashimzade, Myles, and Tran-Nam (2013) and Alm (2019) for surveys. These models maintain the importance of enforcement, but they also introduce many other relevant considerations that go well beyond narrow financial considerations. Notably, they are able to generate realistic predictions about the level of compliance, although at the cost of considerable complexity.

Summary of theoretical research. Overall, then, the many theories of tax compliance suggest that enforcement matters, including the ways in which third-party sources of information and tax withholding systems affect the enforcement capabilities of tax administrations. However, theory (especially theory based on behavioral economics) also suggests an individual does not always behave as assumed in the standard economic approach; that is, an individual may not be

able to make all calculations required under expected utility theory, an individual may not be able to determine the true costs of an action, an individual may face limits on his or her self-control, and an individual may be affected by the framing of a decision. Finally, theory (again, theory based on behavioral economics) suggests that an individual is a social creature, and may be influenced by group considerations in his or her compliance behavior. All of these results indicate that *there are administrative policies suggested by theory that can improve compliance.*

Regardless, all theories are by definition speculative. It is therefore necessary to examine available empirical evidence.

2.2. Insights from empirical analyses[2]

Empirical research on tax compliance is notoriously difficult. Hard and useful evidence on tax compliance is very hard to find, for obvious reasons, and indeed the fundamental difficulty in analyzing empirically what motivates tax compliance is the lack of reliable information on taxpayer compliance. After all, tax evasion is illegal, and individuals have strong incentives to conceal their cheating, given financial and other penalties that are imposed on individuals who are found cheating on their taxes. Even so, researchers have been increasingly creative in finding data to examine evasion using naturally occurring field data, controlled field experiments, and laboratory experiments. Further, researchers have also been quite creative in finding new econometric methods to analyze these data, especially taking advantage of nonlinearities in policy design (e.g., the presence of "kinks" in tax schedules, regression discontinuity at a discrete schedular threshold). Regardless of the specific source of data or the specific empirical methodology, it is important to remember that there are problems with all tax evasion data and all methodologies. Even so, these data and these methods have provided many

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[2] Much of this discussion is drawn from Alm (2019), who also provides detailed references for the many empirical

important insights. For detailed discussions of data and methods, see Slemrod and Weber (2012) and Torgler (2016).

Most of the empirical research has examined compliance behavior in developed countries, although this has been changing in recent years. Regardless, the various strands of empirical evidence indicate clearly that individuals respond predictably, if not always significantly, to a wide array of policies, including many that are directly controlled by the tax administration and many that require legislative action. More specifically, empirical research suggests several main conclusions on what motivates compliance:

(1)   ***Audits matter – and matter a lot.*** There is strong evidence that audits have "direct effects" by raising revenue through the assessment of additional taxes, interest, and penalties on individuals who are audited, with an estimated reported income-audit rate elasticity that generally lies between 0.2 and 0.4. Audits also have "indirect effects" by deterring future noncompliance among both audited taxpayers ("specific deterrence") and unaudited taxpayers ("general deterrence"). This "spillover" effect of audits, or the increase in compliance revenues generated directly from each dollar of direct audit revenues, is typically estimated to vary between from 4 to 12.

(2)   ***Perceptions of audits affect behavior; that is, cognitive considerations matter.*** Taxpayers often misperceive audit rates, typically overweighing a (low) probability of audit, and the effects of audits also depend on taxpayers' subjective experiences of the audit.

(3)   ***Fines, whether financial or nonfinancial, affect compliance, but their deterrent effects are often small.*** The limited amount of work on fines typically finds that a higher fine rate leads to marginally more compliance, with an estimated reported income-fine rate elasticity of less than 0.1. There is also evidence that nonfinancial penalties (e.g., public disclosure and "shame") may act as a deterrent in some settings.

(4)   ***Positive inducements, whether to individuals or to groups, improve compliance.*** There is evidence that, when a government gives an individual a reward for honest tax reporting (e.g., social insurance, entry into a lottery), these efforts increase compliance. Similarly, if a group of taxpayers receives a benefit from their taxes (e.g., a public good), tax compliance generally improves.

(5)   ***Tax rates affect compliance, but the effects are nuanced.*** The *level* of tax rates matters in a taxpayer's compliance decision, with an increase in tax rates generally leading to greater noncompliance. In addition, one's tax rate *relative* to others' matters; that is, if a taxpayer believes that his or her tax rate is too high relative to others, then he or she is likely to become less compliant.

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findings. See also Slemrod (2019).

(6)   ***The social and institutional environment in which individuals live affects compliance.*** The overall setting in which a taxpayer lives, works, and functions has important effects on tax compliance, consistently demonstrated by empirical findings of differences in behavior among countries with similar fiscal systems but different social and institutional environments. One compelling explanation for these differences in compliance behavior is the existence of a social norm of compliance. Consistent with this perspective, when individual trust in government is greater, enforcement tends to be more effective at deterring tax noncompliance.

(7)   ***Individual participation in the choice of institutions affects compliance; that is, process (versus outcome) is an essential determinant of compliance.*** Independent of the actual levels of tax, audit, and fine rates, individual taxpayer participation in the choice of institutions improves tax compliance. For example, taxpayers exhibit a greater propensity to pay their taxes when they choose how their taxes are spent compared to when an identical use is imposed upon them.

(8)   ***The information that tax authorities have on income sources is an essential component of a compliance strategy.*** Compliance is far higher on income subject to employer withholding and to third-party information sources than on income not subject to these features.

(9)   ***The information that individuals are provided about the tax system and about other individuals affects tax compliance, but sometimes in surprising ways.*** For example, higher audit rates have no impact on compliance if this "official" information is not provided; if it is provided, higher audit rates generally – but not always – increase compliance. Also, knowing what one's "neighbors" are doing affects taxpayers' own decisions – both positively and negatively.

(10)   ***The knowledge (or understanding) that taxpayers have about the tax system affects compliance, but the overall impact is unresolved.*** Given a complex and uncertain tax system, taxpayers often do not know what they should pay in taxes, and so they increasingly rely upon paid tax practitioners. Perhaps surprisingly, data indicate that noncompliance is generally higher for returns prepared by tax practitioners. Accordingly, a complicated tax system tends to increase noncompliance; conversely, a simpler tax system with better administrative services that make it easier for taxpayers to pay their taxes tends to reduce noncompliance. Even so, these effects often vary across studies.

(11)   ***Demographics matter.*** There is consistent evidence that compliance may be affected by numerous demographic variables. Noncompliance tends to be higher for individuals who are younger, single, self-employed, and male; the effects of most other demographic variables are uncertain.

(12)   ***Individuals are motivated in their compliance decisions by many factors beyond narrow financial self-interest.*** Individuals who are identified as expressing greater capacities for sympathy and empathy tend to be more tax compliant. Other motivations have also been found to affect compliance; for example, individuals who exhibit greater patriotism are often more tax compliant. Relatedly, there is some emerging evidence that cheating on one's taxes creates emotional distress.

These general conclusions obscure many subtleties in the findings of the empirical

literature. As only one illustration of these subtleties, consider in more detail the effects of audits.

Again, the basic result here is that more audits generally improve compliance. However, there

are also many other empirical results that demonstrate the fragility of this basic result. For

example, the empirical literature also finds that:

- More audits may increase compliance but often in a non-linear way, so that the deterrent effect diminishes as the audit rate increases.
- Simply telling individuals that they will be subject to "more scrutiny" via a message often has some impact on compliance, even if of small size and of unknown duration.
- Laboratory experiments nearly always find that there is some compliance even with no audits.
- Audits can sometimes backfire – experiencing an audit does not necessarily increase subsequent compliance, and indeed compliance may actually decline after an increase in the audit rate or the experience of an audit (e.g., the "bomb-crater effect").
- Some studies suggest that the effect of audits on post-audit tax compliance depends on the type of the audit; that is, many taxpayers do not perceive some types of audits (in particular correspondence audits) as a "real" audit, as they do not recall their audit experience.
- Given that information available to tax administrations is typically incomplete and imperfect, audits do not always detect tax evasion when it is present and they may even find evasion when it is not present; that is, audit "effectiveness" (or the tax administration's capacity to detect noncompliance in an audit) and audit "fairness" (or the probability that an audit overestimates a taxpayer's true tax liability) matter.
- There is evidence that taxpayer responses to audits depend on previous reporting behavior; that is, the same audit rate seems to affect differently taxpayers who are compliant versus taxpayers who are not compliant.
- The overall audit experience (effective or not), the audit outcome (found cheating or not), and the taxpayer reporting history determine taxpayer post-audit compliance, in complicated ways.
- Experimental evidence shows clearly that, relative to a random audit selection rule, strategic audit selection (especially a "cutoff rule") is far more effective in increasing compliance than random audit selection, even with identical overall audit rates, although some random selection seems necessary for audit schemes to work.

Note that most of these "subtleties" cannot be explained by the standard economics-of-crime

model and its extensions, and it is only with behavioral economics considerations that

12

explanations for these results emerge. In any event, these "subtleties" – and similar ones that have been found for the other main empirical results – indicate that much further research is needed.

2.3. Summary of theoretical and empirical research

Overall, the theoretical and empirical research indicates that individuals are motivated by narrowly defined, and individually based, financial considerations (e.g., audits, penalties). However, the evidence also indicates that: individuals are motivated by non-financial considerations (e.g., empathy, sympathy, guilt, shame, morality, alienation); they are motivated by social considerations (e.g., fairness, altruism, reciprocity, patriotism, social customs, social norms), along with other considerations (e.g., public goods, voting, neighbor behavior); and they are motivated by information and by the ways in which they process this information. Finally, the evidence is clear that there is great heterogeneity across individuals; that is, individuals cannot be represented by a single representative agent, but must be considered a collection of different segments.

This last conclusion – on individual heterogeneity – is especially important for administrative policies to improve tax compliance. Put differently, there is no "typical" individual who responds predictably and reliably to all policies. People are complicated, motivated by many different factors, and responsive (if at all) in different ways. In this regard, Gould (1996) emphasizes that it is grossly misleading to represent a complex system by a single, so-called representative agent, who behaves in some average or typical way. Instead, most systems have incredible variety – a "full house" of individual behaviors – and the proper understanding of any system requires recognition of this basic fact. Indeed, Gould (1996) argues that the ways in which a system changes over time are attributable largely to changes in the

13

amount of variation within the system, rather than to changes in some largely meaningless "average" behavior across its individual members.

This lesson seems especially apt for tax compliance. People exhibit a remarkable diversity in their behavior. There are individuals who always cheat and those who always comply, some who behave as if they maximize the expected utility of the tax evasion gamble, others who seem to overweight low probabilities, individuals who respond in different ways to changes in their tax burden, some who are at times cooperative and at other times free-riders, and many who seem to be guided by such things as social norms, moral sentiments, and equity. Indeed, these many findings suggest that research needs to recognize that a "theory" of taxpayer compliance must really consist of a "full house" of theories, each explaining the behavior of different individuals at different times, even the same individual at different times.

Indeed, recent research suggests that understanding the "full house" of taxpayer heterogeneity is essential in determining a "full house" of policies to control evasion. This research indicates that taxpayers may usefully be divided, or segmented, along several key dimensions, especially awareness, ability, opportunity, and motivation. Devising administrative policies for improving compliance requires recognizing the existence of these many taxpayer segments and then targeting policies appropriately, as I discuss later.

2.4. Implications of research: Administrative approaches for improving tax compliance

Not all of these theoretical and empirical results are relevant for the choice of administrative policies – only these results that pertain to policies that can be changed directly by the tax administration are germane. For example, the tax administration cannot change tax rates or fines rates on its own, it cannot affect social institutions (other than the tax administration itself) or individual participation in the choice of these institutions, it cannot change the

14

demographics of the taxpaying population, and it cannot change what motivates taxpayers. These changes either require legislative approval or are outside the control of the tax administration.

Even so, there are many factors that are under the direct influence of the tax administration, at least a tax administration with some independent authority and with some budgetary discretion. Those results that pertain especially to administrative policies that can be changed by the tax authorities indicate that *individuals respond predictably and positively (if not always significantly) to such administrative policies as: increased audit rates, greater use of audit "messages", more "productive" audits, repeated audits, strategic and targeted audit selection, public disclosure of audits and their results (e.g., "shaming"), public dissemination of audit information, increased penalty rates, greater use of source-withholding and third-party information, greater use of information-sharing between government audit agencies (and across tax administrations in different countries), increased individual rewards for compliance (e.g., audit "lotteries"), stronger and better publicized links between taxes and services, decreased complexity and uncertainty, and so on.* It is these types of administrative policies that can improve tax compliance, as I discuss in a later section.

3. What are the impacts of recent technological innovations on tax administration and tax compliance?

The basic issue in tax administration has always been *getting information* on taxpayers and their activities, and for much of history tax administrations have not had full, complete, and timely information. Even during much of the 20th century, especially in developing countries but even in developed countries, information has been limited, due to several factors. Many transactions were in cash, so that there was no "paper trail" that could be used to verify the

15

accuracy of any reports. Many types of transactions were not reported via third-party information, so again there was no paper trail of transactions. Many types of income were also not subject to source withholding, which also decreased the flow of information to the tax authorities. Many types of tax shelters were shrouded in secrecy. Many individuals (and firms) hid income and assets in offshore accounts (e.g., tax havens). Many multinationals were able to shift profits to low-tax jurisdictions via transfer prices that were largely hidden and, even when reported, that could not be independently verified.

Overall, these factors generated several main strategies for tax evasion during much of the 20th century. Individuals (and firms) would fail to report all cash receipts and cash expenses on their tax returns; indeed, many individuals especially in developing countries would simply fail to file a tax return. Individuals would use sophisticated tax shelters that were in principle legal forms of tax avoidance but that in practice shaded heavily into illegal forms of tax evasion. Individuals would move income and wealth into hidden offshore accounts, thereby evading any taxes on the hidden income and wealth, and firms would shift profits to lower tax jurisdictions via various strategies, including the manipulation of transfer prices. The end result was predictable: tax evasion (along with money laundering and tax avoidance) existed, persisted, and flourished in most all countries around the world, largely because tax administrations did not have the information necessary to prevent these practices.

However, technological changes have dramatically and fundamentally affected the flow of information to tax administrations. These changes are of course more concentrated in developed countries, but they are also emerging even in developing countries, given especially the efforts of international organizations like the International Monetary Fund, the World Bank, and the Inter-American Development Bank, individual country organizations (e.g., U.S. Agency

for International Development, Swedish International Development Cooperation Agency, Italian Development Cooperation Programme), and non-profit institutions like the Bill and Melinda Gates Foundation and the Aspen Institute.

Most all of the technological changes start with "digitization", or the transformation of information storage into digital formats (e.g., a series of binary numbers) for use by computers. Computers have opened the doors to a range of methods, all of which affect the flow of information to tax administrations, via:

- Information retrieval and storage
- Information transmission
- Information analysis.

Indeed, with the integration of digitization into most all aspects of everyday life, often termed "digitalization", there have been numerous additional technological innovations, creating what Gordon (2016) has referred to as the "Third Industrial Revolution". See Gupta et al. (2017) for a detailed discussion of digitalization and its effects on government finances.

3.1. Some technological innovations

Specifically, briefly, and not exhaustively, these technological innovations driven largely by digitalization include the increasing use of or growth in:

- Electronic "cash"
- Electronic commerce
- Blockchain technology
- Supply chains
- Peer-to-peer (P2P) networks
- "Monopolization"
- "Apps" and the disclosure of personal information
- Biometrics
- "Big data"
- "Deep learning".

Each of these developments emerges in large part from digitization and its digitalization

applications, and each requires an in-depth analysis. For a more detailed discussion of these developments, see Bird and Zolt (2008), Alm et al. (2020a), and Alm (2021).

In short, digitalization offers the potential – for government but also for private agents – to generate better information (e.g., more information, more timely information, and more precise information), better analysis of this information (e.g., more powerful and more predictive statistical methods), and better designed systems and policies all based on this information and its analysis. Digitalization also offers the potential for abuse of this information.

Technological changes therefore open up new frontiers for tax administrations to improve tax compliance, while also presenting to private agents new opportunities for evading detection and punishment. How will these technological changes affect both the ability of tax administrations to collect taxes and of private agents to cheat on their taxes?

3.2. Toward more tax compliance

From the standpoint of government and its tax administration, it seems clear that these technological changes have the potential for vastly improving the ability of government to collect taxes, mainly by increasing the ability of government to track and then to analyze any and all transactions that leave some kind of electronic trail. For example, the decreasing use of cash and the increasing use of digital currencies allow the government to track increasing numbers of transactions because digital currencies create an electronic paper trail that government can use to trace and verify many dimensions of taxpayers' reporting decisions. Further, these innovations increase the ability of government to retrieve information (e.g., the Panama Papers); to transmit this information across jurisdictional borders via linked cross-agency governmental databases, linked international data bases, and expanded transparency agreements, as discussed later; and to analyze this information (often with artificial intelligence algorithms). Finally, these innovations

allow government to expand greatly the use of tax administration improvements like electronic filing, third-party information returns, and presumptive taxes; to track transactions via P2P networks and even perhaps blockchains and supply chains; and to monitor workers in large enterprises subject to third-party information and source withholding systems. All of these innovations give tax administrations tools that may reduce the ability of individuals and firms to evade or to avoid their tax obligations.

3.3. Toward less tax compliance

Of course, the same technologies for information retrieval, transmission, and analysis that are available to tax administrations are also accessible to private individuals and firms. This means that the ability of private agents to hide their income and assets from government tax administrations is enhanced by the ways in which technology makes easier profit-shifting via transfer pricing, locating intangible assets in low-tax jurisdictions, intra-group debt-shifting, treaty shopping, corporate inversions, and tax deferral. Technology also makes it easier for individuals and firms to utilize global supply chains both for locating income in tax havens and for engaging in tax evasion via money laundering. Blockchains also are seen as making money laundering easier, although it is increasingly believed that the supposed anonymity of blockchains may be overstated. Finally, the growing use of P2P transactions, many of which involve "independent contractors" and the "informal sector", may in fact make it easier for participants to hide these transactions from the tax authorities, given the relatively small financial size of these taxpayers together with the absence of an electronic trail for many of the P2P transactions.

Again, all of these activities are abetted by the same technologies for information retrieval, transmission, and analysis that are available to government tax administrations. As a

result, it seems likely that certain forms of tax evasion, as well as tax avoidance, and money laundering, will actually become easier and more prevalent. Almost certainly, these activities will become easier for multinationals, high-income individuals, and independent contractors, especially those operating in developing countries.

3.4. Implications of technology: Administrative approaches for improving tax compliance

Which of these trends – those toward more compliance versus those toward less compliance – will dominate? It is of course impossible to predict these trends, or to predict trends that are as yet still unknown. Even so, I believe that a strong case can be made that the dominant technological trend will be toward the ability of tax administrations in all countries to access better information, to conduct better analysis of this information, and to design better systems and policies, all of which will improve its ability to enforce the tax laws. However, this prediction depends upon two crucial conditions being met.

First, tax administrations *within each country* must be given the resources to access, analyze, and utilize this information, in order to stay ahead of those individuals wishing to cheat on their taxes. Second, tax administrations *across countries* must establish the necessary policy coordination and information exchanges to utilize these new technologies, again in order to stay ahead of those individuals who intend to evade. So my conclusion is that tax evasion will tend to decrease in the future – as long as government tax administration funding is adequate and as long as international policy coordination is achieved. It is certainly possible, even plausible, that both conditions will be met.

Even so, one cannot be too sanguine here, if recent history is any guide. For example, consider funding of the U.S. IRS. According to IRS data, since 2010, IRS funding has fallen by 20 percent, audit rates have fallen well below 1 percent, audit staff has shrunk by 25 percent,

revenues from audits have fallen from USD 23 billion to USD 14 billion, and the IRS "Global High Wealth Industry Group" has been effectively eliminated. Clearly, all of these actions reduce the ability of the IRS to utilize new technologies. OECD data suggest that the U.S. experience is not an isolated one, even in developed countries, and the experiences of developing countries are even more gloomier.

Similarly, there have been several international initiatives to combat profit shifting, aggressive tax practices, and money laundering, including as noted earlier the U.S. Foreign Account Tax Compliance Act (FATCA), the Financial Action Tax Force on Money Laundering (FAFT), G20/OECD Base Erosion and Profit Shifting (BEPS) Project, and the OECD Common Reporting Standard (CRS). All of these initiatives advance various recommendations designed to improve international policy coordination, to increase transparency and reporting, and to establish clear sanctions. However, to date achieving concrete action has been elusive, largely because countries seem unwilling to cede autonomy on tax affairs to any international organization. Indeed, EU countries recently blocked a law that would have forced multinationals to reveal their profits and their taxes in each of the 28 EU member states. Recent progress on a global minimum tax on corporations is encouraging but remains uncertain.

Indeed, there are plausible reasons for the failure of these efforts to improve reporting, based largely on political considerations. For example, the U.S. IRS has a long history of allegations of abuse, in which individuals in power have been accused of using the IRS and its investigative tools to target opposition individuals or groups. In the face of these allegations, it is common among elected officials of both parties to call for the reform of the IRS, even its abolition, and any politician advocating for increased (or even stable) levels of IRS funding faces significant political opposition. Similarly, there are major political challenges in any efforts to

coordinate joint international efforts to share information, to establish common reporting standards, to distribute enforcement-generated revenues, and the like, given the conflicting interests of the many political actors who are involved, both within and across countries. More broadly, recent research on tax policies in countries has demonstrated that the choice of many structural dimensions of tax systems, including enforcement features, is quite sensitive to political considerations. It is hardly surprising that calls for increased tax administration funding and/or increased international coordination often go unheeded, given the inherently political dimensions of these calls for action.

However, regardless of the exact impact of technology on the level of tax compliance, there is little doubt that technology has the potential to provide tax administrations the tools to improve compliance. To repeat, I believe that *the dominant technological trend will be toward the ability of tax administrations in all countries to access better information, to conduct better analysis of this information, and to design better systems and policies, all of which will improve its ability to enforce the tax laws – as long as government tax agency funding is adequate and international policy coordination is achieved*.

4. What are the implications of research for tax administration? Three "paradigms" for tax administrations and the associated administrative policies

What does all of this work suggest about devising administrative policies for improving tax compliance?

As my colleagues and I have argued elsewhere (Alm and Martinez-Vazquez, 2003; Alm and Torgler, 2011), I believe that there are three "paradigms" for tax administration that emerge from this

research. These paradigms start with a government compliance strategy based on detection and punishment. However, these paradigms also go well-beyond one that emphasizes only enforcement to include a range of additional policies for which there is now emerging much theoretical and empirical support.

Under a first paradigm – what we term the traditional *Enforcement Paradigm* – the emphasis is exclusively on repression of illegal behavior through frequent audits and stiff penalties. This has been the conventional paradigm of tax administrations throughout history, and it fits well the standard portfolio model of tax evasion based upon the economics-of-crime theory.

However, research also suggests a second paradigm, one that acknowledges the role of enforcement but also recognizes the role of tax administration as a facilitator and a provider of services to taxpayers-citizens, in order to assist taxpayers in every step of their filing returns and paying taxes. This new *Service Paradigm* for tax administration fits squarely with the perspective that emphasizes the role of government-provided services as a consideration in the individual tax compliance decision. Indeed, the most recent literature on tax administration reform has emphasized this new paradigm for tax administration, as a facilitator and a provider of services to taxpayer-citizens, and many recent administrative reforms around the world have embraced this new paradigm with great success.

A third paradigm is also suggested by recent work, especially the emerging work that sees the taxpayer as a member of a larger group, as a social creature whose behavior depends upon his or her own moral values (and those of others) and also upon his or her perception of the quality, credibility, and reliability of the tax administration. We term this a *Trust Paradigm*. It is consistent with the role of various behavioral economics factors like social norms broadly defined in the compliance decision. It is based on the notion that individuals are more likely to respond either to enforcement or to services if they believe that the government generally and the tax administration specifically are honest, and if

they believe that other individuals are similarly motivated; that is, "trust" in the authorities – and in other individuals – can have a positive impact on compliance.

Given this discussion, administrative approaches to address the broad issue of tax compliance fall into three main categories: increase the likelihood and the threat of punishment, improve the provision of tax services, and change the tax culture.

First, there is scope for an improvement in tax administration whose basic thrust is to increase detection and punishment (or the *Enforcement Paradigm*). Traditionally, there are three main aspects of tax administration: identification and registration, assessment, and collection and enforcement. Improvements in each of these areas are feasible, all of which would enhance detection and punishment:

- Increase the number of audits, either by hiring additional auditors or by contracting out audits to for-profit firms.
- Improve the effectiveness (or the quality) of audits – and of the auditors.
- Increase penalties for tax cheating, such as the interest rate on unpaid taxes.
- Publicize tax evasion convictions in the media as an alternative, non-financial type of penalty.
- Improve the effectiveness of audits via adoption of modern audit technology, including more systematic selection of returns for audit and greater use of "scoring" tax returns.
- Apply non-harsh penalties often and consistently, facilitate payments through the banking system, allow for simple cross-tax deductions (e.g., interests payments on loans or mortgages), and rely more heavily on source-withholding.
- Expand source-withholding.
- Expand information-sharing between governments and across tax administrations in different countries.
- Grant additional power for collecting delinquent accounts (e.g., imposing interest and fines for late reporting, revoking business licenses or driver's licenses).
- Increase taxpayer registration and identification via better and more consistent use of third-party information, such as use of cross-referencing between different taxes (e.g., checking sales tax vendors against income tax returns), use of social security records, phone records, financial system data, and agency data bases such as driver's licenses to identify potential non-filers.
- Disallow cash deductions unless the taxpayer identifies the person or firm that was paid. The IRS already requires such information for dependent exemptions or for charitable contribution deductions.

- Require increased information from selected taxpayers. For example, as a form of simple audit, the tax administration might request more detailed information from certain taxpayers about sources of income or deductions, particularly regarding business income.

As a particularly radical proposal, the tax administration might even allow third-party audits. For example, a tax administration could allow firms that have been identified for an audit to contract with a certified third party to conduct the audit. This is less disruptive for the firm, and it reduces the workload of the government audit staff. In addition, firms can voluntarily subject themselves to a third-party audit, and, in return, the tax administration can waive any penalty for underpayment of taxes.

Second, there is scope for an improvement in the services of the tax administration by becoming more "consumer-friendly", along the lines of the *Service Paradigm* of tax administration, via such actions as: promoting taxpayer education; providing taxpayer services to assist taxpayers in filing returns and paying taxes; improving phone advice service; improving the tax agency website; simplifying taxes; simplifying the payment of taxes; and simplifying tax forms. The basic thrust of these actions is to treat the taxpayer more as a client than as a criminal. The U.S. Taxpayer Advocate Service (https://www.irs.gov/taxpayer-advocate) provides detailed discussions, rationales, and analyses of these and other strategies for improving taxpayer services.

Third, there may be scope for a governmental-induced change in the culture of paying taxes, consistent with the *Trust Paradigm*, including such strategies as: using the mass media to reinforce tax compliance as the social norm – and publicize cheaters; emphasizing the link between payment of taxes and the receipt of government services; targeting certain groups (e.g., new firms or employees) in order to introduce from the start the notion that paying taxes is the social norm; enlisting other organizations to promote compliance, so that it is seen (again) that

paying taxes is the accepted pattern of behavior; avoid leading individuals to think cheating is "okay" – a tax amnesty is a classic example of sending the wrong signal; and addressing perceived inequities in the ways people feel that they are treated. Admittedly, strategies for changing the culture of paying taxes are the most difficult to devise and are the most in need of additional research. The general thrust of these strategies is to demonstrate to taxpayers that they receive something for their tax payments; that is, these strategies need both to establish and to reveal the basic elements of reciprocity that often seem absent in civic life these days, elements that are necessary to improve citizen trust in government. See Alm (2022) for further discussion of these strategies.

In short, there should be a "full house" of administrative strategies to address the "full house" of motivations. Indeed, all of these policies are available to tax administrations that have some independent authority and some budgetary discretion, whether in developed and developing countries, and all rely fundamentally a tax administration taking advantage of advancing technological tools to access better information, to conduct better analysis of this information, and to design better systems and policies. Even so, the actual evidence supporting these paradigms is not always compelling. Clearly, additional research is required on the potential impacts of these three paradigms, which leads to my final and concluding comments.

5. Conclusions: Unresolved issues and future directions

It is, I hope, apparent that enormous amounts have been learned about devising administrative approaches for improving tax compliance. However, it should also be apparent that much remains to be learned. One way to organize one's thinking about these unresolved issues is to group these questions

according to the three tax administration paradigms.

The *Enforcement Paradigm* has to date been by far the subject of most of research efforts, especially research on the effects of audits. Even so, a far from exhaustive list of unanswered issues includes the following types of questions. Do higher audit rates increase compliance, or do they destroy "trust" in government and crowd out "intrinsic motivation"? How long lasting are the effects of audits? How do less formal audits (e.g., information returns) affect compliance? How can more effective strategic audit selection methods be designed? How is information about enforcement disseminated among taxpayers, and how do taxpayers respond to this information? Does the specific way in which the tax agency communicates with taxpayers (e.g., letter, phone, email) affect compliance? What is the effect of an audit on the audited individual (e.g., the specific deterrent effect) versus its effect on non-audited individuals (e.g., the general deterrent effect)? How effective are higher financial penalty rates? Are non-financial penalties a deterrent? Does public disclosure and shame act as a strong deterrent?

On the *Service Paradigm*, there are also many unresolved questions. How does complexity affect individual compliance? How does the presence of taxpayer uncertainty about either taxable income or administrative parameters like the audit rate or the fine rate affect compliance? Does tax simplification contribute to more tax compliance? Can better tax agency services improve taxpayer compliance, and by how much? What specific services can the tax agency provide? What is the role of tax preparers in individual tax compliance? Can improved government service provision of *individual* inducements (e.g., audit lotteries) improve compliance? Again, this list is far from exhaustive.

Still other and perhaps more difficult questions relate to the *Trust Paradigm*, probably the least examined of the three paradigms. How can the impact of greater trust on tax compliance

actually be measured? If there is in fact a demonstrable and measurable effect of trust on tax compliance, how can such trust be changed by deliberate policy actions, especially by the tax administration itself? What is the role of a social norm (or its many related notions) in compliance? How can a social norm be affected by deliberately chosen administrative policies? There are also broader questions that go beyond the tax administration itself. What role do societal institutions (e.g., collective decision rules) play in this process? How can fairness be defined? Does the perception of fairness lead to increased trust in government, with a subsequent improvement in compliance? Does an increase in inequality affect perceptions of fairness? How can political support for improved tax compliance be generated? What are the social dynamics of compliance, and how can these dynamics be affected by government policies? What is the impact of trust in government (and not simply the tax administration) on tax compliance? How can trust in government be increased?

There are also even broader and more fundamental questions, which also extend beyond the tax administration and of which I list only a few. Given the demonstrable heterogeneity of taxpayers, how can these taxpayer "segments" be identified? Are there dimensions beyond awareness, ability, opportunity, and motivation that generate taxpayer segments, such as emotions? Even if one can identify these segments, how can different government policies be specifically targeted to these different segments? How does the effectiveness of government policies differ by taxpayer segment? What is the appropriate sequencing of the three paradigms in their implementation (e.g., does the effectiveness of, say, enforcement depend upon the prior existence of trust)? Why do policies that appear to be the same work in some settings and not in others?

In this regard, I conclude with five predictions about the directions of future research.

28

First, theory is essential, and new theories will continue to be developed. However, I believe that there will be growing recognition that one theory may not fit all individuals at all times, or even the same individual at different times. Individuals in their infinite variety exhibit a "full house" of behaviors, behaviors that cannot be neatly captured by a single methodology. As a result, I believe that it will be important to develop multiple theories of behavior, theories that allow the introduction into the compliance decision of numerous factors beyond enforcement, factors that reflect the enormous variety of administrative policies that can be brought to bear on tax compliance. Indeed, I believe that these new theories will be largely outside the mainstream of economics and indeed will move beyond psychology to sociology, anthropology, and other social sciences in order to understand better which features of naturally occurring settings are likely to affect individual and group decisions, as shown by the work of Akerlof and Kranton (2000). For example, the notion of "reciprocity" arises in large part from anthropology, and that of "adherence to group norms" from sociology. These theories may also move beyond the social sciences to the physical sciences – biology may well help explain the ways in which a system (e.g., paying taxes) based on cooperation and competition evolves over time, the channels by which culture and social norms are affected by genetics, the means by which demographics (e.g., age, gender) affect behavior like compliance, or the connections between emotions, neural activities, and subsequent decision-making like tax compliance behavior. Using alternative perspectives on human behavior cannot help but expand our understanding of individual behavior.

Second, and relatedly, I believe that the focus will tend to shift away from modeling *individual* behavior to modeling *group* behavior via a specific focus on social interactions. Indeed, behavioral economics facilitates the analysis of such social interactions. For example,

there is emerging evidence that group dynamics affect compliance behavior, but these dynamics are not yet fully understood. One promising avenue for future research in this respect is the analysis of network effects: How is compliance at the individual level affected by the affiliation and identification with different social groups, and how do regulatory efforts targeted at individuals spill-over to other members of these groups? Similarly, the extent to which tax consultants affect compliance at the individual level, for example through their effect on risk perceptions, remains largely unknown. Other social dynamics also affect compliance, but their effect has not yet been studied in detail. In particular, perceptions of fair or unfair treatment of other taxpayers, such as the "super rich" might affect compliance, but prior work does not address these dynamics. Ultimately, better understanding of individual decisions allows better understanding of group behavior, and behavioral economics allows us to identify which features are likely to affect group decisions. The use of "agent-based models" may well emerge as a leading tool here, as demonstrated by the work of Bloomquist (2011).

Third, I believe that research will expand far beyond the individual income tax and far beyond the experience of developed countries. These changes are already well underway, and recent efforts along these dimensions by the World Bank, the Inter-American Development Bank, and the International Centre for Tax and Development are especially promising here.

Fourth, I believe that administrative data will be increasingly used in testing theory. Even so, I also believe that experiments – both laboratory experiments and controlled field experiments – will also continue to play a crucial role.

Finally, I believe that there is little doubt that the ongoing SARS-CoV-2 pandemic will affect tax compliance in the years ahead, even if the pandemic becomes endemic, and tax administrations must recognize these potential effects and adjust accordingly (Alm et al., 2020b).

In the face of the pandemic, governments have pursued an unprecedented range of short-term policies in their efforts to provide relief to individuals and to prevent companies from becoming insolvent, and the amounts that governments have spent on these policies are staggering, totaling in the trillions of dollars. How will these tax policy measures be perceived, and how will these measures affect future tax compliance in a post-pandemic world?

There will likely be several major compliance drivers (Alm, 2022). There will be *increased compliance* largely via improved technology and increased tracking (e.g., electronic payments to recipients) – and if there is greater trust in an effective government. However, there will be *decreased compliance* largely via reduced budgets for enforcement activities and reduced income/greater unemployment – and if there is lower trust in an ineffective government.

Which effects will dominate are unclear. Even so, promising avenues by which these effects may be measured may well be to combine behavioral methods with the "new dynamic public finance" (Kocherlakota, 2010). Most dynamic modeling assumes that agents obey the standard assumptions in neoclassical economics. Combining behavioral notions like imperfect individual optimization and non-standard preferences with dynamic considerations will be quite challenging. Even so, these extensions seem likely to generate more accurate predictions of the intertemporal evolution of behavior, especially the evolution of tax compliance in different institutional settings. One already fruitful line of research in these areas is "agent-based modeling," as noted earlier. Another is to add behavioral considerations to endogenous growth models, as demonstrated by the recent work of Alm and Barreto (2022).

In conclusion, I believe – or rather I hope – that there will be increasing recognition that any answers that emerge from our research will necessarily apply only to the specific setting that is being considered. As Richard Bird has always emphasized in his many writings, and as I have

argued elsewhere (Alm, 2017), "[s]pecific circumstances differ so profoundly across individuals, firms, markets, countries, and time that most any attempt to define 'best practices' that apply in all circumstances will lead to profoundly misleading public policy recommendations". These difficulties should not discourage the search for, say, *specific* policy guidelines that apply to a *specific* setting at a *specific* point in time. However, such guidelines will necessarily be couched in the specific circumstances under consideration, and they will be quite unlikely to apply in other settings. Rather, public policies must make intimate connection to the time and institutional settings in which they are employed. However, even if economics cannot identify "the" truth, it can often identify "a" truth, and the possibility of identifying "a" truth suggests the ways in which economists can play a useful role in public policy discussions. So, as I have also argued (Alm, 2017), "[e]conomists should continue to develop multiple theories that inform public policies, but we should also focus our efforts on identifying and testing the critical assumptions that drive the results of these theories, recognizing that the validity of any assumptions will depend intimately on specific circumstances".

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