A Theory of Taxation:

The Elasticity Battles & Democracy's Informality Trap

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Abstract

Oftentimes, the political economy of taxation focuses on conflicts between income groups, in order to account for variations in tax-levels and tax-progressivity. The focus, however, not only overlooks other salient cleavages, but is unable to explain aspects of taxation, such as tax-mix, for which income-based groups provide neither the most salient, nor generalizable, impetuous for conflict.

This paper argues that citizens have an incentive to battle over tax-mix based upon the avoidability (more generally, "elasticities") of their taxable behaviours. Leveraging selectorate theory, I consider the greater challenges democracies face, relative autocracies, to implement efficient tax policy: because political leaders in democracies broad coalitions of supporters to gain (and maintain) office than autocrats, the consequent tax-mix will be avoidable (more generally, elastic) for a larger subset of the population, consequently harming economic production.

To test my theory, I consider how the informal sector implicates income taxation differently in autocracies than democracies. Whereas increased informality requires a reduction of taxation upon formal sector work, in order to restore an efficient tax-mix, evidence drawn from an international panel demonstrates that democracies fail to do such a "rebalancing," whereas autocracies succeed. To redress certain limitations of fixed-effects models for identification, mechanistic checks and discontinuity analyses are performed.

1 Introduction

This paper is premised upon a curious scenario whereby democracies, relative autocracies, have a chronic incentive to "leave free money on the table" through inefficient tax policy. While an established literature speaks to the effects of democratization on taxation's overall "level" and "progressivity," my contribution speaks to the, relatively thin, "tax-mix" literature. In other words, I offer an account of how governments choose between possible revenue sources (e.g., the proportion of income vs. consumption taxation, as a percent of government revenues).

I argue that government leaders prefer (i) to stay in power and (ii) ceteris paribus, taxes widely unavoidable (or, more generally, inelastic) to their citizens. Citizens, in contrast, prefer taxes that are avoidable relative their personal behaviour (or, more generally, elastic) so as to shift burden onto others. A tension arises that refracts through institutions. Autocratic leaders maintain power by retaining relatively few supporters, whereas democratic leaders require broad coalitions of support and, thus, favour taxes avoidable to (relatively) large segments of society. Democracy's consequent "narrowness" in tax-base causes an inefficiency of tax-mix.

To test this theory, I consider how the informal sector implicates income taxation differently in autocracies than democracies. I draw upon an international panel to demonstrate that increased informality in democracies corresponds with increased taxation of the formal sector, despite its (corresponding) "narrowness" as a tax-base. To avoid many pitfalls of a naive regression (with respect to my research design), I assess: (i) mechanistic checks implied by the theory; and (ii) discontinuity analyses through a method I have deemed "tax flips." By this method, I test for my theory's prediction of ruptures in tax policy upon sudden democratization (or backslide). In concluding, I reflect upon remaining vulnerabilities weighing upon prospects for identification. I suggest potential avenues by which confidence might be improved.

2 Motivating Puzzles

This dissertation chapter is built on a theoretical infrastructure made up of four "matters of consequence." Primarily, I ask what systemic features drive democracies to inefficient tax policy, in terms of tax-mix. Upon building a theory and establishing scope conditions, I required an empirical application for which my theory would be relevant. Thus, I consider second issue: conflicts between the formal and informal sectors may drive democracies (but not autocracies) to inefficient tax outcomes, which, in turn, may trigger "informality traps." Citizens reliant upon the informal sector have an incentive to shift tax onto the formal sector, resulting in a tax-mix that disincentivizes its future development (thus adding even more individuals – who become voters – into the informal sector).

Beyond these two immediate concerns, two additional theoretical concerns motivate this chapter

(but play-out in alternate chapters).

First, my introductory chapter introduces a theory of planned inefficiency. A functioning market economy has institutional prerequisites that are costly; moreover, the market is unable (without a centralized authority) to provide these foundations for itself. (Hence, the myth of the free market.) Just in providing the basic public goods necessary for functioning markets (let alone those that are unnecessary but beneficial), governments must raise substantial revenues. Curiously, while central planning may not be good at maximizing the efficiency of economic transactions, it may nonetheless be good at minimizing the inefficiencies of raising the market's prerequisite costs. Rather than a minimalist, and neutral, state that institutes flat tax rates, planned inefficiency suggests that the state should discriminate between economic transactions, in order to implement higher tax rates on relatively inelastic transactions occurring within the economy. (This is a form of Ramsey taxation.) Paradoxically, increasing the efficiency of the market's parts need not maximize the efficiency of the market system as a whole: select units must be intentionally endowed with disproportionate taxes and, thus, inefficiencies.

The theory of planned inefficiency, however, assumes a benevolent dictator. My thesis seeks to establish when planned inefficiency can actually be carried out, given political obstacles. One key consideration is the state's relative autonomy (or lack thereof). Whereas my second chapter reviews the importance of having autonomy from particularistic interests, this chapter considers the role of autonomy from the electorate. Do voters get in the way of good, technocratic, policy (i.e., assigning tax incidence disproportionately upon the inelastic elements of the market)?

Finally, I concern myself with linking the Robin Hood puzzle to the Free Lunch puzzle. Canonical models of political economy contend that, as democratization expands "the vote" to citizens of increasingly lower incomes, their newfound power will be used to increase their incomes by "soaking the rich" (i.e., demanding redistribution)[1]. Despite the intuitive appeal of theories consistent with the above schematic, abundant countervailing evidence has brought about the Robin Hood puzzle, which asks, "Why so little redistribution?" (Lind et al. 2005). Redistribution is not greatest in those democracies with the greatest pre-tax inequality, but the least. Likewise, evidence that democracy increases redistribution relative autocracy remains ambiguous [2], with many contending that democracy's "treatment effect" runs in the opposite direction[3].

While many theories have arisen to explain the Robin Hood paradox, most do not uproot the underlying logic of the foundational models: the same parameters remain in play, albeit with

[1]Examples include, but are by no means limited to: Mill et al. 1861; Meltzer and Richard 1981; Romer and Rosenthal 1979.

[2]E.g., for instance, while some papers support that democracy does aid the poorest (Blaydes and Kayser 2011), others find results to be a toss-up or heavily conditional (Mulligan, Gil, and Sala-i-Martin 2004; Albertus and Menaldo 2014).

[3]Directed towards the Robin Hood puzzle, the follow studies note redistribution falls with inequality Korpi and Palme 1998; Moene and Wallerstein 2001; Bradley et al. 2003 whereas other note a generally greater inequality Reuveny and Li 2003

qualifiers (i.e., added parameters) that serve as obstacles to attaining what otherwise would be realized (i.e., given the foundational models)[4]. Hence, redistribution remains, a priori, an income-based societal conflict, mediated by the (institutional) distribution of power. The relative poor still seek redistribution, and the relative poor still exercise greater power over policy in democracy than autocracy. Hence, theories built upon the Robin Hood paradox tend to graft ad hoc arguments atop of the canonical models, whereby variables exogenous to the foundational models dilute democracy's tendency to empower the preferences of those with lower incomes. In being framed as such, while allowing for variation across democracies, such theories nonetheless suggest their redistribution to be "bounded" above (the range of) redistribution in autocracies.

An alternate approach to explaining the Robin Hood puzzle would borrow from the internal logic of the workhorse models in order to find the limits, a priori, for democracy's redistributive prospects (rather than appending ad hoc mitigations). Indeed, the Robin Hood puzzle has been (partially) explained by deploying yet another empirical curiosity of the welfare state: the Free Lunch puzzle, which notes that a large welfare state should implicate inefficiency and, thus, an economic disadvantage; however, amongst democracies, those with high-levels of redistribution do not appear to be paying such a price. Some suggest the solution to the puzzle rests in tax-mix: supply-side efficiencies may reduce the effective cost of providing greater redistribution, thus incentivizing greater redistribution (Lindert 2003). In short, democracies that redistribute more will be the ones to use more efficient tax instruments, in more efficient proportions.

In this paper, I will study the efficiency of tax-mix by regime type. I will observe how democracies tend towards inefficient tax-mix relative autocracies, except under very particular circumstances (such circumstances, in turn, may explain those cases in which democracy does redistribute highly)[5]. In doing so, I hope to connect the Robin Hood and Free Lunch puzzles. Democracy's general inefficiency of tax-mix results in higher costs to pursue redistribution, thus disincentivizing it relative autocracy.

3 Literature Review

3.1 The Demand- Supply-Side of Taxation

The political economy of taxation can be divided into (i) demand-side explanations, which tend towards leveraging income-based cleavages in society to explain tax-levels and progressivity; and (ii) supply-side explanations, which largely explain tax-mix. Demand-side explanations are more prominent in the literature, for the obvious reason that they simply "invert" the findings of political

[4]The potential obstacles are many, including: union power (Mares 2006); electoral institutions (Iversen and Soskice 2006); exposure to economic liberalization (Swank and Steinmo 2002); etc.

[5]Namely, given a homogeniety amongst citizens in the elasticities of their taxable behaviours and/or given civic mindedness in voting.

economy's literature on the welfare state. The link is natural: for every dollar demanded by society's winning coalition, there is an "equal and opposite" requirement for the government to raise revenues. Hence, we are studying taxation from the perspective of a winning coalition's question of "what (and how much of it) do I want taxation to buy for me?" By studying how much spending the winning coalition of a society wants across a set of goods – generally categorized as rents, redistribution and public goods – the amount of taxation required is simply the sum. Hence, we arrive at the political economy of taxation's demand.

As such, the study of taxation's demand requires an understanding of the major components of government spending. The literature seeks to understand the effect of democracy, relative autocracy, upon demand for redistribution, public goods and rents. Herein, theorists will model (i) individual preferences as driven by income-maximization; and (ii) the distribution of power across income-groups in democracies relative autocracies. Cannoncial findings suggest that democracy will create a higher demand for redistribution and public goods, but less for rents[6]. The efficiency consequences of these different forms of spending vary, of course. Rents are, by definition, simply waste created to shift income towards elites[7]; public goods provide the clearest society-wide economic benefits, as markets alone cannot provide them (let alone optimally); redistribution spending falls into something of a mystery category, since their are distortionary implications, yet also offsetting effects (for instance, upon aggregate demand) – as such, its efficiency plausibly follows an inverted-U as quantity of redistribution increases)[8]. Nonetheless, while spending decisions have their own nuanced consequences, scholars of optimal taxation often assume (at least upfront) that funds are being thrown away, so as to isolate the distortionary effects of taxation. Despite obvious limitations in terms of painting a holistic picture, my purpose here is to understand efficiency of tax burden and, as such, I will follow suit.

The efficiency consequences of the demand for taxation can be split into two sources: tax levels (required to arrive at a level of spending on public goods, rents and redistribution); and tax-progressivity. The literature on optimal tax policy seeks to isolate the marginal cost of raising an additional dollar of government revenue (Feldstein 1999; Hausman 1998; Mirrlees 2006). Following Laffer (2004; and also Wanniski 1978) the economic cost of raising a dollar of revenue, in terms of overall tax-level, grows exponentially. Economic burden (i.e., deadweight loss), ensues due to disincentives vis-a-vis the profit motive and distortions upon the price mechanism. With every dollar raised, the cost of the next dollar increases. At a certain point, a marginal increase in the tax rate will draw less revenue.

[6]In particular, Hausken (2004) speaks to both elements, whereas a host of other models speak each item separately.

[7]Unless, of course, the rent is design to create a public good or redress an externality, such as an industrial base providing complementaries necessary for other industrial firms to enter the market.

[8]Moreover, from the perspective of enabling other capacity building programs and/or maintaining social peace, which is basic to the market's functioning, they may offer an element of public goods provision by preventing social upheaval.

Often Laffer's observation is used to make sense of the costs of progressivity: how many dollars are removed from the economy's total production in order to transfer one dollar from the wealthy to the poor. Okun (2015) provides the analogy of a "leaky bucket" to make sense of the economic cost of redistributing a dollar from the rich to the poor: to shift a certain amount towards the poor, how much money must be "drawn-out" of the economy knowing that a certain amount will "leak-out" in the process of being transferred[9].

3.1.1 Supply-Side Considerations

The literature on the supply-side of taxation takes a different tact. Whereas the demand-side largely speaks to taxation as derivative to the politics of the welfare state[10], the supply-side reveals that an independent "politics" operates in decisions over the structuring of taxation itself. In other words, the politics of taxation is not simply a restatement of the politics of spending, but has its own separate set of actors, incentives and institutional constraints (Peters 1991).

Understanding the supply of taxation requires transcending the welfare state literature's typical hang-up, whereby conflict occurs across income-based divisions in society (which may be leveraged to understand tax levels and progressivity). Rather, many tax instruments have unclear incidence-effects across income-levels[11]. While still assuming income maximizing individuals, the supply-side literature debates how tax-mix will play-out amongst actors seeking to avoid tax incidence (Hettich and Winer 2005). Here coalitions form along the lines of "taxable behaviour profiles," whereby citizens with similar "elasticities" to a particular tax instrument have an incentive to work together.

While the purpose of studying the demand for taxation is obvious (it is, after all, what affords us government programs that clearly implicate human wellbeing), the supply-side of taxation matters too. Beyond (generally morbid) academic curiosity, the politics of the supply-side will implicate the efficiency of raising revenues, which, in turn, changes the effective costs of taxation – ultimately limiting what government programs a society can afford). In short, the politics of taxation's demand is partially endogenous to the politics of taxation's supply, which determines its efficiency. (Considering the Robin Hood puzzle, it is entirely plausible that low redistribution in democracies has more to do with the efficiency of the "supply-line" of revenues than the winning coalition's demand for taxation).

Herein, it is crucial to understand the basic public economics (i.e., efficiency) of tax-mix, where a

[9]Additional empirical takes on the theory include: Korpi 1985; Beckman, Formby, and Smith 2004; Pirttilä and Uusitalo 2010. Okun further notes that putting a dollar amount on the "leak" may help us understand our own moral positions in terms of how much our society should be redistributing. Is one content to lose a quarter on every dollar moved, ... a dollar?

[10]I.e., tax-levels and progressivity directly arise from demand to maximize income from net government transfers.

[11]Corporate taxation being a common example – which not only has a mixed incidence (Felix 2007), but also is affected by other exogenous variables, such as a country's population and overall economic size (GDP); tariff are also cited often given their differential effects on workers of export-oriented vs. domestically-oriented industries.

benevolent dictator determines policy. Given a range of possible tax instruments, the policy maker maximizes efficiency by taxing behaviours that are (i) broadly held across the population and (ii) highly inelastic and/or unavoidable relative citizen behaviours. A tax that is "avoidable" means that the individual will not engage in the taxable behaviour, regardless of marginal increases in the tax rate (whereas an unavoidable tax means the individual cannot reduce their engagement in the behaviour, despite marginal increases in the tax rate). A tax that is relatively "elastic," means the citizen can easily shift away (i.e., at a low cost) from the economic behaviour that incurs a marginal tax increase (whereas relatively inelastic taxes are economically costly to substitute away from)[12].

When many people engage in a behaviour that is taxable, and the behaviour is difficult to reduce, then a relatively low tax rate may be used to raise necessary levels of revenue (thus minimizing distortions). When few engage in a behavior, or the behaviour is easily reduce, then a relatively high tax rate must be used to raise necessary levels of revenue (thus increasing distortions).

Proceeding I wish to briefly consider the literature on the relative efficiency-performance of democracy in terms of the demand and supply of taxation. I wish to demonstrate how an inefficient tax-mix can be seen as puzzling, insofar as we remain stuck-up on a model of income-based societal conflict. Rather, other salient cleavages (namely, of elasticity) need to be considered in order to build a comprehensive, generalizable, model of tax-mix.

3.2 The Demand-Side of Taxation: Democracy's Means-Efficiency, Ends-Inefficiency

Fears over democracy's effect upon economic efficiency[13] are long-standing, its threat generally couched in a "tyranny of the majority" framework (Mill et al. 1861). Scholars note that democracy, unlike autocracy, empowers the relative poor in society, who have an incentive to "soak the rich" by demanding redistribution (Meltzer and Richard 1981; Romer and Rosenthal 1979). Disincentives and distortions arise due to the ensuing tax-levels and tax-progressivity, limiting society's prospects for economic prosperity. The inefficiencies of democracy, thus, grow out of a societal conflict amongst actors. Their primary incentives are income-based, resulting in a battle for the spoils of redistribution.

However, demand for redistribution is but one dimension (i.e., mechanism) through which choice in political institution implicates the economy's efficiency. Scholars point to alternate dimensions by which democracy creates an incentive system that promotes efficiency. Namely, while self-

[12]N.b., an avoidable tax is a special case of an elastic tax, whereas an unavoidable tax is a special case of an inelastic tax (both represent corner solutions).

[13]For the purposes of this paper, the standard of efficiency evoked is the relatively commonplace measure that Jones labels as 'public profits' Jones (Ch. 8, 1991). Public profit is the difference between the social benefits and social costs of a firm's economic activities; that is, "the difference in the value to society between what the enterprise takes out of the economy (costs) and what it puts back in (benefits) in any one period" (ibid., 189).

interested voters may not choose the "best" (i.e., most efficient) ends for policy[14], elections do enable self-interested voters to hold leaders accountable for the wastefulness of the means of policy. Because voters have a credible threat to remove leaders from office, leaders have an incentive to reduce wastefulness when paying for and providing the ends of policy (i.e., political and economic goods)[15,16]. In contrast, autocrats, lacking such accountability, often profit by forgoing efficient means. Indeed, their rule may depend upon inefficient means: intentionally generating rents may serve to maintain the support of elite allies, on whom their power stands in the balance. To be certain, autocrats may be deposed by mass citizen action; however, the costs for citizens to attain this outcome (e.g., revolution) are far higher than in democracy (e.g., voting), in addition to being riddled with disproportionate collective action problems[17].

A political leader could have the same preferences whether placed in a autocracy or democracy, but their agency would differ. The autocrat is afforded a "buffer" given the costs to the mass citizenry of his removal. Thus, a political leader in an autocracy has greater power over decisions concerning both the ends and means of policy alike, relative democracy; however, the efficiency consequences of the leaders incentives will vary depending on whether the means or ends are at stake. Democracies incentivize leaders to select the best means through which to attain the electorate's chosen ends[18], however inefficient those ends might be[19]. After all, inefficiencies lost to the means cannot be ploughed back into affording further ends.

A useful example, demonstrating both mechanisms operating simultaneously, exists in the provision of public goods[20]. On the one hand, democratic leaders will enhance efficiency by (i) providing greater public goods due to their responsiveness to broad coalitions of citizens, who benefit by such spending; all the while, also (ii) reducing the wastes (i.e., rents) generated in providing public goods due to their relative unresponsiveness to elites. On the other hand, democratic leaders will inefficiently over- (and under-) provide public goods so as to favour electorally significant coalitions, which will produce inefficient distributions of government spending on public goods insofar as they provide disproportionate benefits to voters at strategic income-levels (e.g., Stasavage 2005). Similar

[14]E.g., excessively high redistribution; the regional misdistribution of public goods (Lizzeri and Persico 2001; Olson 2009); under-investment in capabilities of minorities (Alesina, Baqir, and Easterly 1999; Alesina, Glaeser, and Sacerdote 2001; etc.

[15]Namely, the literature on the creation of rents in autocracy:

[16] Profitable rent seeking opportunities may be pursued at a personal or systemic level. On the former, rent-skimming occurs through the leveraging of the state's apparatus, revenues or professional positions for personal purposes (e.g., embezzlement, vanity projects, nepotism, etc); on the latter, rent-skimming occurs through more systematic means such as the implementation of policies that forgo maximum efficiency for greater generation of rents that are easily captured by elites (e.g., structuring the economy around key monopolist industries, etc).

[17]Which serves to exaggerate the already present cost disparity relative democracy.

[18]Naturally, the citizen's ability to keep leaders accountable will be restricted by the salience of the means being deployed and their ability to monitor the leadership's decisions; however, insofar as these parameters are both greater than zero, democracy should offer a net-positive effect over autocracy.

[19]For example, given this paper's topic: decisions over tax-mix seemingly fall into this category (how best to pay for the electorate's already decided-upon level of redistribution and/or public goods).

[20]Or, also, subsidies to encourage positive externalities; and taxes upon negative externalities

analyses carry-over to understanding when negative externalities will be taxed and, further, when positive externalities will be incentivized (e.g., Monogan III, Konisky, and Woods 2017).

3.3 The Supply-Side of Taxation: Tax-Mix as Both Means & Ends

In contrast to the very purposes of government revenues, the *ends*, which are at stake when citizens vote on policy platform, the means of raising revenues are, seemingly, more technocratic and apolitical. Assuming one controls for the use of certain tax-instruments that do implicate the "ends" of redistribution across income-levels (namely, progressive income taxation), then democracy's means-efficiency should afford it an advantage in selecting tax-mix[21]. After all, once the politicized debate over "how much to raise?" has passed, there is an independent question of "how to raise it?" An answer of "efficiently," one might think, should not be contentious. Leaders must choose amongst different sets of tax-mixes, each designed to raise a fixed level of revenues, but resulting in differing economic distortions. To not choose the efficiency-maximizing mix is akin, somewhat, to leaving free money on the table: economic production is permanently destroyed, with no greater government revenues to show for it[22].

However, despite the "means-efficiency" of democracy, many scholars contend that – plus, many everyday citizens bemoan that – democracies do use inefficient tax-mixes. Whereas scholars have found many autocratic settings to foster efficient tax-mix and may even serve as "point of origin" for efficient, broad-based, taxes (e.g., Mares & Queralt 2015 argue the income tax in Prussia was due to the nobility seeking to shift taxation onto the rising capitalists), democracies are riddled with issues[23]

Herein lies, at first glance, a puzzle[24]. Unlike autocracy, democracy empowers citizens to demand unwasteful policy from their government leaders; moreover, while the penultimate "optimal tax

[21] Granted, the ease with which income taxation may be used as a tool of progressive redistribution (via income brackets) will result in its increased use within democracies, despite any inefficiencies incurred; however, upon factoring-out income-based redistributive concerns, it is in the selection of tax-mix that democracy may well be advantaged by its means-efficiency.

[22] The inefficiencies of higher tax levels, at the least, provide the government greater revenues, and the inefficiencies of higher progressivity at least provide the relative poor with greater income, both "ends" that are subjectively good things, thereby justifying the economic cost. In contrast, tax-mix inefficiencies are equivalent to the destruction of economic production that can never be retrieved, but do not directly implicate any such "ends."

[23] Many find efficient tax-mix in democracies to be a historically contingent "exception" to the "rule" (Steinmo 1996); others have found that in the driver-centric U.S.A. gasoline taxes are half the optimal rate, whereas in the driver-light U.K. they are double the optimal rate (Parry and Small 2005); others observe the under-utilization of property taxes, noting the opposition of homeowners (relative renters) (Brueckner 2000; Brunner, Ross, and Simonsen 2015); additionally, much has been said about the use of tariffs relative the power of domestically-oriented industry. Notably, in the above cases, the salient cleavage is not income, but other variables such as home-ownership, vehicle use, land vs. capital, in addition to exporters vs. domestic industry.

[24] Admittedly, there is a certain narcissism in my "objective" claiming of a "puzzle," which, in reality, relies entirely upon my own subjective experience of being "puzzled." Yet, the obligatory flair of a motivating puzzle in political economy has pitted itself deep within my subconscious and sense of self-worth, etc.

policy" may be troublesome to locate, many pitfalls are obvious (and, yet, are still taken)[25].

One plausible solution, develop in this paper, requires transcending income-based societal cleavages to demonstrate that salient cleavages of tax-elasticity will cause tax-mix to not only implicate "means-efficiency" but, also, "who gets what, when and how" (Harold 1936). Tax-mix, in other words, may have distributive consequences without them being (progressively) redistributive. Citizen preferences over tax-mix are most generalizable when based in the elasticities of their behaviours to taxation. The costs of changing behaviour to avoid any particular tax will higher for some than others, and often it is near impossible for some to not engage in a (taxable) behaviour.

In select cases, the distribution of a tax's avoidability may be correlated with income. A sales tax, for instance, implicates the middle class far more than the rich. However, this need not be the case and often is not. Imagine two citizens of similar income, but with different "declarable" amounts. For instance, contrast a civil servant with a small business man operating "under-the-table." A tax-mix dependent wholly upon income taxation will fall completely on the civil servant, whereas the civil servant would at least get to split the tax incidence were only a consumption tax used instead. Hence, their preferences are shaped by tax-incidence, which, in turn, is shaped by the elasticity of their taxable behaviour (not their income). In this example, the elasticity of the taxable behaviour is based on their ability to avoid selling their labour in the formal sector.

Tax-mix, as such, does become an "ends," but still remains a means: the two are intertwined. A citizen's preference for distributional advantages (reduced incidence) will implicate the efficiency of taxation, since the "tax-mix of least incidence" may be inefficient. If the citizen's preference is shared by many, then this will be the case, since it is broadly avoidable and/or elastic. Of consequence, an inefficient tax-mix will place a penalty upon everyone's "return" from government revenues (by, in effect, increasing the cost of raising revenue).

As I will further develop, tax-mix becomes more than a technocratic matter of choosing the most efficient path (minimized distortions) to arrive at a predetermined-end (level of revenues and redistribution) once we recast political economy's salient social cleavage (income-based coalitions) as elasticity-based. By no means are elasticities strictly a feature of income.

4 Theory

4.1 The Politics of Taxation as Elasticity Driven

This paper develops a theory to account for scenarios in which democracies chronically implement inefficient tax policies relative autocracies. Whereas a deep political economy literature explains "tax-levels" (e.g., as a % GDP) and "progressivity" (e.g., distribution of tax burden across income

[25]One might consider the adage, that "economics cannot always tell us exactly what to do, but it can certainly tell us something about what not to do."

levels) and "targeting" (e.g., the presence or absence of loopholes for members to select groups) – often with the objective of understanding democracy's "redistributive" effects – I contribute to the relatively nascent "tax-mix" literature. I explain how governments choose between possible revenue sources (e.g., the relative proportions with which a government raises revenues through taxes on income vs. consumption, property, corporations, etc.).

The theory is built in two stages: (1) the incentives of political leaders relative citizens over the efficiency-incidence tradeoff; and (2) the institutional brokering of power between both sets of agents, using selectorate theory, so as to explain final tax-mix outcomes. First, I will consider the conflicting tax preferences of government leaders relative citizens. Put briefly, political leaders are tax-receivers. If removal from office were impossible, government leaders would prefer implementing taxes that are broadly unavoidable and/or inelastic for citizens, since their efficiency characteristics maximize a leader's dual incentives for (i) revenues in the current period and (ii) a strong economic base upon which to secure maximized future revenue potentials (on which their other objectives, such as survival, are largely dependent)[26]. In contrast, citizens are taxpayers. Citizen tax preferences are shaped by the dual incentive to receive the benefits of an efficient economy (including the government services this affords) but, also, to shift taxes away from themselves and unto others[27]. As such, the citizen benefits from a tax mix that is elastic or avoidable relative their behaviours; however, they must consider the extent to which their preferred tax-mix is shared with others, since a broadly avoidable tax will reduce incidence, but also efficiency.

Second, I consider institutional constraints acting on leaders by relaxing the "absence of political pressures" assumption. A leader with preferences over collective decisions must, first and foremost, maintain a preference to remain in office. As such, leaders must consider whose support is required to retain political office and what policies must be implemented to maintain said supporters. Leaders will face pressure for vastly different tax-mixes when placed in different types of political regime. As leaders require increasing proportions of the population's support in order to maintain their power in office, they must implement taxes that are avoidable and/or elastic for an increasing share of their population. Consequently, the tax-base becomes inefficiently "narrow": to retain revenue levels with the selected tax mix, ever higher tax rates need be implemented[28].

Whereas the costs upon citizens to displace leaders are high in autocracy, the costs are relatively low in democracy, thus bringing citizens more effectively into the selectorate, which empowers them

[26]In other words, efficient taxes avoid "leaving money on the table" – they maximize revenues for a given level of burden upon the economy (or, alternately, minimize the economic burden of raising a given level of revenues).

[27] The effect is blunted for revenues that are user-pay – i.e., for which provision of government services to a specific citizen are closely linked to what they pay-in for the provision. While some spending, such as social security, has this trait, the bulk of government spending generates a pool of revenues from which largely non-excludable provisions are afforded.

[28] According to Ramsey taxation (1927), for a government to raise a given amount of revenue upon a narrow tax base requires using higher tax rates which will cause disproportionately greater distortionary effects in aggregate, relative using a lower tax rate upon a broader base.

to attain their preferences over tax-mix. This forces leaders into presenting a tax-mix acceptable to a broader coalition than would be the case in autocracy, where the selectorate is narrower. As such, an inefficiently narrow tax base may be expected in democracies.

4.2 Incentives

First, I will elaborate upon the incentives of the key actors within any state, considering what an individual in a position of (1) political leadership; and (2) the citizenry, would consider the costs and benefits of a particular tax-mix.

4.2.1 Government Leaders

Government leaders may not always have preferences, if left to themselves, to spend public money efficiently. Political scientist have developed, for instance, a cottage industry around the production of rents, which figures largely in demand-side accounts of taxation. However, whether government leadership has efficient spending-objectives or not, their is a clear (supply-side) incentive to raise revenues efficiently. Given a hypothetical leader unconstrained by any citizen (including the elites), an efficient tax-mix enables maximizing between two preferences, regardless of their prefered tradeoff between them: (1) to extract maximum revenues in the current time period; and (2) to increase the economic base so as to maximize future revenues potential. Generally, whatever a leader's spending desires, restraint is exercised in extraction so as to maintain an economy from which to draw upon in the future[29]. Failing to select a efficient tax-mix would mean giving up, unnecessarily, upon one of the two above goals. Either the leader does not maximize current revenues given the level of burden (upon future economic growth) that they have deemed acceptable; or, the leader does not minimize burdens (upon future economic growth) when drawing a certain amount of revenue from the economy.

Until this point I have leveraged a hypothetical situation in which the leader is unconstrained by the preferences of citizens. Shortly, I will consider the institutional constraints upon leaders as they must "bend" on policy to satisfy the preferences of those citizens whose support is required to remain in power. In short, we must consider that a political leader's first-order preference is to remain in power, without which preferences over revenues become obsolete.

4.2.2 Citizens

A citizen's incentive structure concerning tax-mix will be more complicated than a leader's, because they are not the recipients of revenue, but the payees. While the ruler unconditionally benefits from

[29] Only in the extreme case of a leader with a time horizon of zero would pillage take place, breaking-down the trade-off.

an efficient tax-mix, citizens must consider any trade-offs between (i) an efficient tax-mix versus (ii) a tax-mix for which they incur a low incidence. Thus, a tax that is personally avoidable, or only implicates highly elastic behaviours, will be preferred, *ceteris paribus*. However, the benefits of low incidence will come at an increasing cost of inefficiency as the proportion of other citizens sharing the same "elasticity profile" increases. Indeed, at an extreme, whereby citizens are homogeneous in terms of the elasticities of their behaviours to taxation, the incidence-effect of tax-mix will disappear since shifting tax incidence becomes impossible (i.e., everyone will react equivalently to a change in tax rates). Consequently, any preference over the efficiency-effects of tax-mix (however minimally weighted) will dominate.

If a single citizen could, hypothetically, implement a tax-structure of their choice – not needing the consent of political leaders or any other citizen – a tax-mix would be selected that reduces incidence for him, but for no others (or, at least, as few others as possible): his personal tax incidence would be reduced while having negligible efficiency effects. Due to the non-excludable nature of many publicly provided goods, this citizen would successfully shift tax-burden onto others, thus attaining the benefits of government spending but at a lesser cost[30].

Naturally, no citizen is able to determine tax-mix independently. Rather, the weight given to a citizen's preferences when forming policy is brokered by political institutions. As such, I will consider the role of the selectorate, in mediating tax-mix outcomes, given the preferences of government leaders and citizens.

4.3 Regime Type: the Role of the Selectorate & the Winning Coalition

Political leaders are not able to select the tax-mix of their choice, unhindered. Rather, they must maintain the support of a "winning coalition" (i.e., a set of citizens whose support is necessary so as to remain in power)[31]. This winning coalition is drawn from a "selectorate" (i.e., the body of citizens whose support can meaningfully contribute to the leader's continued rule). The winning coalition and the selectorate will constitute differing proportions of the population depending upon the regime type in play. Whereas democracies are understood to have broad selectorates (of equi-weighted citizens), defined by universal suffrage, autocracies are understood to have relatively narrow selectorates, whereby the support amongst elite actors is required. (Institutional variations within each type can further alter the size of the selectorate and winning coalition; however democ-

[30]Indeed, while some study the exogenous effect of total societal demand for government spending (i.e., revenues) upon tax-mix, which predominantly notes the need for greater income taxation in the context of higher spending-demands (Besley and Persson 2014), it is crucial to note here that tax-mix has an independent effect upon demand for total revenues: given a exogenous marginal benefits curve for government spending and equal spending by the state on each citizen (i.e., not a user-pay system of taxation), citizens that can attain low marginal costs (due to low tax incidence) will have incentive to promote higher total spending, since they reap the greater benefits of the added taxation without paying proportionately for their costs.

[31]This section draws entirely upon the selectorate theory as laid-out in De Mesquita et al. 2005

racies will generally have a winning coalition and selectorate of a proportion bounded below that of any autocracy.)

However, democracy and autocracy are, conceptually, "ideal forms" that are not realized in actuality. Rather, reality takes place upon a spectrum existing in between. Political leaders in democracy are – surprising absolutely no one – not perfectly responsive to citizens, just as political leaders in autocracy are not perfectly unresponsive. Two interrelated literatures study the conditions under which democracy digresses towards rule by elites[32] and, in contrast, the conditions under which an autocrat is forced to concede to the broad interests of the citizenry.

In selectorate theory, a blanket statement of "autocracy" vs. "democracy" serves more as a shorthand than as substance. Never is the only member of the selectorate the leader, nor is every citizen ever provided equi-weighted value in forming a winning coalition. There are many possible methods to define where a state exists on the spectrum. This paper utilizes selectorate theory to manage such distinctions. Political leaders, first and foremost, require continued power before any of their other preferences can be pursued. As such, the leader must ask whose support is necessary to maintain office. Political institutions (particularly, regime type), in turn, structure whose support amongst the citizenry is necessary to maintain in order to remain in power. Broadly speaking, states towards the "democracy" end of the spectrum feature a broad selectorate and winning coalition, whereby a leader requires support from a relatively large portion of the citizenry[33]; in contrast, the "autocratic" end of the spectrum features political leaders who only require support from relatively narrow segments of the citizenry – namely, a winning coalition amongst the elites.

Selectorate theory provides, in the context of this paper, three advantages. First, as I seek to refine my theory of taxation, I wish to be able to test the power of the government leaders relative the citizenry and the relative power of narrow (i.e., elite) coalitions relative broad (i.e., the mass citizenry) coalitions in society. For the time being, autocracy and democracy offer helpful metrics as approximations. However, selectorate theory will allows infinitely subdividing the categories of autocracy and democracy, since its unit of measure is the size of the selectorate and winning coalition (as a percentage of population). Given leaders and citizens in contest with each other over tax-mix, selectorate theory allows defining categories within autocracy and democracy that afford relatively more (or less) power to leaders relative the citizenry, in addition to the relative

[32] Perhaps most notably, the cottage-industry concerning interest groups. Here, economic elites leverage their abundant economic resources to purchase the advantages of power from the political elite. Citizens are sidelined by collective action problems in ways that elites, being narrow, are not. (CITES)

[33] This does lead to deeper theoretical questions such as whether electoral systems of proportional representation are more democratic than those of single member plurality. This will depend on what factors you consider necessary for a state to constitute a democracy. Those emphasizing that citizens all have equally weighted say over collective decisions would likely answer the question affirmatively. Those more worried about forms of horizontal accountability, due process, civil rights, etc. will likely downplay defining democracy along this dimension, in favour of its other dimensions. Selectorate theory need not comment on this particular question, however, to note that the the distribution of political and economic goods will be affected between democracy and autocracy, as well as within each group insofar as institutional variations cause differences in the selectorate.

power of narrow relative broad coalitions of citizens[34]. Second, many models of societal conflict are vulnerable to issues of cycling whereby equilibrium will become unstable in the presence of three of more coalitions[35]. However, in the context of my theory, the efficiency of tax-mix is primarily determined by the proportion of the population whose support the leader requires in order to maintain office. It does not matter who forms the coalitions, but rather their minimum size. As such, selectorate theory spares me from vulnerability to cycles. Third, the model is tremendously flexible to incorporating a variety of aggregation mechanisms (i.e., the rule structure by which individual preferences are mapped onto a collective decision) in a manner many models cannot. The Meltzer-Richards model (1981), for instance, functions in the case of a two-party systems, where the median voter is decisive, but breaks down in cases where multi-party systems arise or cross-cutting issues allow for voter-alignment based on income to break down.

As such, selectorate theory frames my theoretical expectations: a government leader will seek the most efficient tax-mix possible *subject to* the condition of maintaining the minimum threshold of support necessary amongst the selectorate. As such, we are provided a heuristic to predict the efficiency of tax-mix outcomes. When leaders require a relatively small selectorate, as occurs in autocracy, we can expect the narrow coalition to implement an unavoidable and inelastic tax-mix upon the vast majority of the citizenry, resulting in the efficiency of taxation. In contrast, as leaders require a relatively large selectorate, as occurs in democracy, we can expect the broad-based coalition to implement an unavoidable and inelastic tax-mix upon the relatively narrow segment of the citizenry with a different elasticity profile (while the broad coalition exempts itself), resulting in the inefficiency of taxation[36].

4.4 The Informal Sector's Interaction with Regime Type in Determining Tax Policy

To test my theory, I consider how a shift in the size of the informal sector implicates income taxation differently in autocracies than democracies. Given an increase of informal sector activity, the autocrat restores an efficient tax-mix by increasing the rates on tax instruments that the informal sector cannot avoid – this helps to offset the narrowing of the tax-base; in contrast, the democratic leader must consider that such a "rebalancing" will increase incidence upon, and thus

[34]Smaller selectorates increase the power of the leader relative the citizenry, whereas smaller winning coalitions would generally align with increased power of the elites relative the mass citizenry.

[35]For instance, the model of Iversen and Soskice 2006 suggests that systems of proportional representation will result in coalitions forming between the lower and middle class, whereas systems of single member plurality will result in coalitions forming between the middle and upper classes. Yet, as Hays (2016) points out, strong assumptions are made to exclude the lower class from colluding with the upper class in either case. Once this restriction is relaxed, the equilibrium breaks down.

[36]None of this is to ignore exceptional circumstances whereby an autocrat, fearing revolt, seeks to adapt policy to mass preferences. Likewise, democracies may see the dominance of elites when issue salience is low and voters are unable to monitor policy actions.

reduce support amongst, a growing (electoral) coalition that figures more formidably in maintaining the selectorate necessary for holding office. The probability of their lost support causing removal from office increases. Hence, in a democracy, informality's growth does not just bring the typical problems of informality, it also constructs an electorate with the incentive to raise taxes on the increasingly narrow formal sector. This causes a downward spiral as entry into the formal sector is disincentivized, which further reduces its size (creating yet more voters with a vested interest in maintaining high taxes on the informal sector, and so on and so forth). Ultimately, the tax-mix becomes increasingly inefficient as high tax rates are applied to an increasingly narrow tax-base.

5 An Empirical Test: Democracy's Informality Trap

For the sake of tractability, I will focus my empirical study upon how the informal sector implicates the use of income and property taxes in democracies relative autocracies. I demonstrate how democracies are relatively inefficient in the use of both taxes relative autocracies. By comparing voters who benefit from the formal sector against those who benefit from the informal sector, my research design leverages a cleavage in society that effects most everyone (since the vast majority of individuals need to earn a market income to survive). The cleavage also sorts individuals into one of two coalitions that are (largely) mutually exclusive since individuals generally receive the vast majority, if not all, of their income from either the informal or formal sector[37]. Additionally, in this particular contest, citizen tax preferences are very similar within-coalition but very different across-coalition [38]. Often the incidence of taxation is difficult to locate; however, in this case the implications of each tax on incidence are clear. The income tax is overwhelmingly avoided, by definition, among those in the informal sector. Nonetheless, while individuals in the informal sector can hide their income, they cannot hide their land: property taxes still apply. In contrast, those in the formal sector do pay taxes on their income. While individuals in the formal sector do pay property taxes too, these represent a small share of their total taxes. Most importantly, property taxes are shared with informal sector, thus allowing the formal sector to reduce their incidence of taxation.

Disconcertingly, my evidence demonstrates how the incentives that shape tax policy in democracies result in an "informality trap," whereas autocracies are able to force their way through. While I note the gravity of this particular situation, my theory extends to a greater variety of "elasticity battles," which I shall reflect upon in concluding. My model demonstrates how the elasticities of citizen behaviours sets the content over which conflicts occur between governments and citizens;

[37]In contrast, it would be difficult to credit certain tax preferences to a coalition if its members were also members of the other coalition with opposite preferences

[38]In contrast, if taxable behaviours are largely the same across coalitions, then they may have their fights, but taxes will not be one of them. Alternately, the research design would be impossible if the tax policy preferences varied within coalition, if other issues were salient in forming the coalition

and citizens amongst each other. Power, then, serves to set the probabilities over winning and losing said conflict.

In summary, while my theory of taxation is general, its implications and empirical testing is most clear when a split exists amongst citizens demarcated into two distinct groups (mutually exclusive), especially if the two groups subsume the vast majority of the population (mutually exhaustive); moreover, the groups must have clear differences in their incidence of taxation across a set of instruments. My theory, as such, makes particular predictions for tax outcomes given the preferences of citizens labouring in the informal versus formal sector. In the following, I shall introduce the puzzle this paper will confront, review the data drawn upon and layout the research design before contemplating my findings.

In this paper, I contend that it is the tax policy of democracies that obviates the growth of the formal sector, resulting in an "informality trap." While my empirical findings are particular to only one determinant of citizen tax preferences (i.e., work in the informal vs. formal sector) over merely two forms of taxation (property vs. income taxation), my model can be generalized to claims over preferences and tax policy more broadly, the scope conditions for which I will shortly specify.

5.1 Data

I drawn my dependent variable from two sources. First, when measuring tax revenues (income and property) as a percent of GDP, I use the International Centre for Tax and Development database (ICTD/UNU-WIDER 2017). When testing my mechanism (changes in actual tax policy), I use a country's Marginal Tax Rate at mean income from the World Tax Indicators (Studies 2017). The marginal tax rate at mean income provides an indicator of how much more a typical "formal sector worker" is paying in taxes relative the typical "informal sector worker."

Independent variables come from multiple sources. The measure for informality comes from a working paper by Leandro Medina and Friedrich Schneider (July, 2017). In their paper, imputations of the informal sector's size are updated (e.g., the time-series extended) from previous papers by Friedrich Schneider, easily the world's most cited estimator of informal sector size (Schneider and Enste 2000; Schneider 2005; Schneider, Buehn, and Montenegro 2010; Buehn and Schneider 2012). [In a future iteration of this paper, I will speak more at length regarding the imputation technique.]

Regime type is drawn from PolityIV; however, as a robustness check I also use the World Bank's Voice and Accountability measure.

Additionally, V-Dem and the World Bank Development Indicators are used for a host of robustness checks, including institutional quality (using the BCI, a measure of corruption), electoral system (PR vs. SMP), economic development (GDP per capita, GDP growth), population, unemployment and trade (as a percent of GDP).

5.2 Research Design: Fixed-Effects, Mechanistic Checks & "Tax Flips"

An empirical analysis of my theory applied to the informal sector offers two primary advantages. First, two natural coalitions fall out from the conflict, which provides a more readily testable case than studying an instance in which a multiple major coalitions exist (in such a case, I would need to provide a *post hoc dismissal of cycling*); second, whereas the incidence of taxation is often difficult to locate, in this case it is relatively straightforward[39]. While many taxes are plausibly effected by the conflict between the formal and informal sectors, I am able to select two instruments with straightforward, contrasting, incidences. Notably, formal sector voters must pay income taxation in full, whereas informal sector workers are, by definition, avoiding said tax. However, property cannot be so readily hidden and, as such, the formal sector shares the incidence of this taxation with the informal sector. In contrast, other taxes may be affected, such as social security contributions, but it is unclear, by *a priori* theorizing, how the incidence will fall out.

While the subject matter is advantageous, my empirical strategy must still leverage a research design that screens out omitted variable bias and endogeniety. Proceeding, I present the tests conducted and explain each test's value added in terms of raising our confidence in the identification of regime type (in interaction with informality) upon tax structure.

At a first cut, I use regression with fixed-effects to avoid time-invariant confounders, while also adding covariates to controls for plausible time-variant confounders laid-out in the tax-mix literature. Nonetheless, regression with fixed-effects has inherent limitation in controlling for unobserved time-variant confounders. As such, I invoke the idea of a 'tax flip,' to take advantage of a prediction inherent to my theory. Namely, my theory predicts that democratization (or backslide) will result in a sudden shock to tax policy, whereby instruments previously highly-used will become little-used and vice-versa.

Table 1: Patterns of Taxation Given Informality and Change of Regime Type

	Large Informal	Small Informal
Democratization	More Income, Less Property	Less Income, More Property
Autocratization	Less Income, More Property	More Income, Less Property

In determining "tax-flips" I use two approaches. First, I use the same fixed-effects models as prior, but I restrict the sample to only include those countries that have experienced democratization or backslide. Here, the predictions of my theory offers a very natural "cross-bracing." First, I avoid the possibility that democracies simply use different taxes than autocracies, whatsoever occurs in the formal sector. This is because within the democratizing subset, opposite policy reactions occur depending on the size of the formal sector. Likewise, some might suggest the tax policy is purely

[39]In contrast, other taxes are likely affected, but with unclear incidence effects. Consider, for instance, a test of excise taxes. Here we would need to consider market power and the elasticity of demand in order to determine the extent to which incidence falls on consumers relative business.

endogenous to the size of the informal sector, whereas I show with tax flips that the tax rate, upon fixing the size of the informal sector, will be opposite across countries when grouped by autocracy vs. democracy. By restricting my sample, I look only for the "tax flip" and thus reduce the possible influence of other factors irrelevant to my study. Second, I create a variable that measures the difference between the use of taxation five years post-regime change from five years pre-regime change. In doing so, I can visualize the interactive effect of regime type and informality.

Lastly, I also brace my findings by providing a direct test of the proposed mechanism through which the relative usage of taxes are determined. Namely, changes in the usage of income taxation should be policy-driven (i.e., political leaders reacting to the demands of their changing selectorate). As such, I demonstrate that my models also predict changes in marginal tax rates. This aides in demonstrating that the changes in the usage of income tax is policy-driven, not simply the consequence of some unknown economic effect[40]. This raises confidence that the political realm exerts pressure on final tax outcomes (via policy) rather than a story of purely economic variables bringing-about the outcome.

[Finally, I add robustness checks to the appendix. These remain very much under construction and, as such, I will exclude them from this working paper]

5.3 Findings [Using IGTRD 2017]

To begin, I consider the usage of income and property taxation (as a % of GDP) given the interaction of regime type[41] (0 = autocracy, 1 = democracy) and informality (as a % of GDP). While intended to be a minimalist model, I include GDP per capita to account for economic development, which influences the use of income taxation by deep consensus in the literature (N.b., the results are substantively the same in the absence of this control variable. These are provided in the Appendix.).

Interpretation: Note that the baseline, autocratic case, sees income taxes used less as a percent of GDP when a country's informality increases. This is intuitive: when less economic activity occurs in the formal sector, there are fewer (and smaller) incomes accessible to tax. In contrast, it is hard to overstate how counter-intuitive the democracy finding is: income tax receipts as a percent of GDP actually increase as the informal sector grows relative the economy. Economically, this is not sensible - indeed, violates stylized fact. After all, there is a smaller base to tax. For this result to occur, a political effect must be occurring to raise tax *rates* on formal sector incomes. Indeed, rates need to rise to an extent that fully offsets lost tax-base, if income tax *levels* are to stay even (let alone rise).

In contrast, the effect is opposite upon property taxation. Democracies use less property taxation

[40] Of course, even without this mechanism check, it would be odd that the economic effect plays out differently in autocracies than democracies.

[41] Cut-off set at polityIV score greater than 5.

Table 2: Basic Interaction Models

	Dependent variable: % Revenues	
	Income Tax	Property Tax
	(1)	(2)
Informal % GDP	-0.042^{**}	0.010^{***}
	(0.018)	(0.003)
Democracy (1 = Yes)	-1.446^{**}	0.479^{***}
	(0.607)	(0.108)
log(GDP per capita)	1.351^{***}	0.023
	(0.268)	(0.048)
Informal:Democracy	0.053^{***}	-0.012^{***}
	(0.014)	(0.003)
Observations	2,664	2,216
R^2	0.877	0.929
Adjusted R^2	0.869	0.923
Note:		*p<0.1; **p<0.05; ***p<0.01

as the informal sector grows, which is dangerous given that it remains a tax with which the growing informal sector must contribute to the government's revenues.

5.3.1 Considering Further Controls

I test for other factors considered to affect tax policy in the literature. First, I add a control for institutional quality: corruption. Second, I test a slate of economic variables known to effect both taxes and informality. I add the size of the economy, since it has economies of scale effects on policy. I include GDP growth and participation rates since this may create more income for taxation, and represents/offers opportunity to exit the formal sector. Second, I include trade, since international competition may serve to exert pressures on tax codes.

Interpretation: Notably, I find that the interaction effect holds, in its direction, approximate magnitude and significance.

Table 3: Interaction Effect upon Adding Controls

	Dependent variable: % Government Revenue					
	Income Tax			Property Tax		
	(1)	(2)	(3)	(4)	(5)	(6)
Informal % GDP	-0.062^{***}	-0.037^{**}	-0.045^{**}	0.010^{***}	0.010^{***}	0.009^{**}
	(0.019)	(0.018)	(0.020)	(0.003)	(0.003)	(0.004)
Democracy	-1.326^{**}	-0.696	-0.624	0.471^{***}	0.347^{***}	0.343^{***}
	(0.627)	(0.603)	(0.626)	(0.110)	(0.112)	(0.115)
log(GDP per cap)	0.946^{***}	-1.305^{**}	-0.997^{*}	0.068	0.580^{***}	0.548^{***}
	(0.354)	(0.534)	(0.565)	(0.062)	(0.110)	(0.116)
Corruption Rating	0.019		0.025	0.014^{***}		0.013^{***}
	(0.028)		(0.028)	(0.005)		(0.005)
log(GDP)		3.059^{***}	2.707^{***}		-0.588^{***}	-0.552^{***}
		(0.506)	(0.548)		(0.104)	(0.111)
Participation Rate		0.010	-0.004		-0.0003	0.001
		(0.017)	(0.018)		(0.003)	(0.003)
Growth in GDP per cap		-0.019^{***}	-0.015^{**}		0.002	0.001
		(0.006)	(0.007)		(0.001)	(0.001)
Trade (% GDP)		0.004	0.004		-0.0004	-0.0004
		(0.002)	(0.003)		(0.0004)	(0.0004)
Informal:Democracy	0.047^{***}	0.035^{**}	0.030^{**}	-0.011^{***}	-0.009^{***}	-0.008^{***}
	(0.015)	(0.014)	(0.015)	(0.003)	(0.003)	(0.003)
Observations	2,558	2,632	2,528	2,128	2,192	2,106
R^2	0.879	0.882	0.883	0.931	0.930	0.932
Adjusted R^2	0.870	0.873	0.874	0.926	0.924	0.926
Note:						*p<0.1; **p<0.05; ***p<0.01

5.3.2 Check of Mechanism: Marginal Tax Rates

Potentially, an unobserved economic variable may be influencing tax policy in the pattern observed. While it is unclear why the reaction would differ in democracies relative autocracies, I nonetheless corroborate my finding by testing for the mechanism proposed, namely, of changes in public policy to the tax code. To demonstrate that my mechanism is in play, I consider a new dependent variable: marginal tax rates at a country's average income. Indeed, this measure has a particular advantage: it is a direct reflection on policy changes, whereas income tax usage may fluctuate with other macroeconomic trends (such trends could co-vary with informality). Any marginal tax rate is set specifically by government policy. Moreover, tax rates on income are salient to the population and, thus, prone to be debated in the public sphere. Hence, we can imagine a contest over income taxes between cleavages in society that are differently affected.

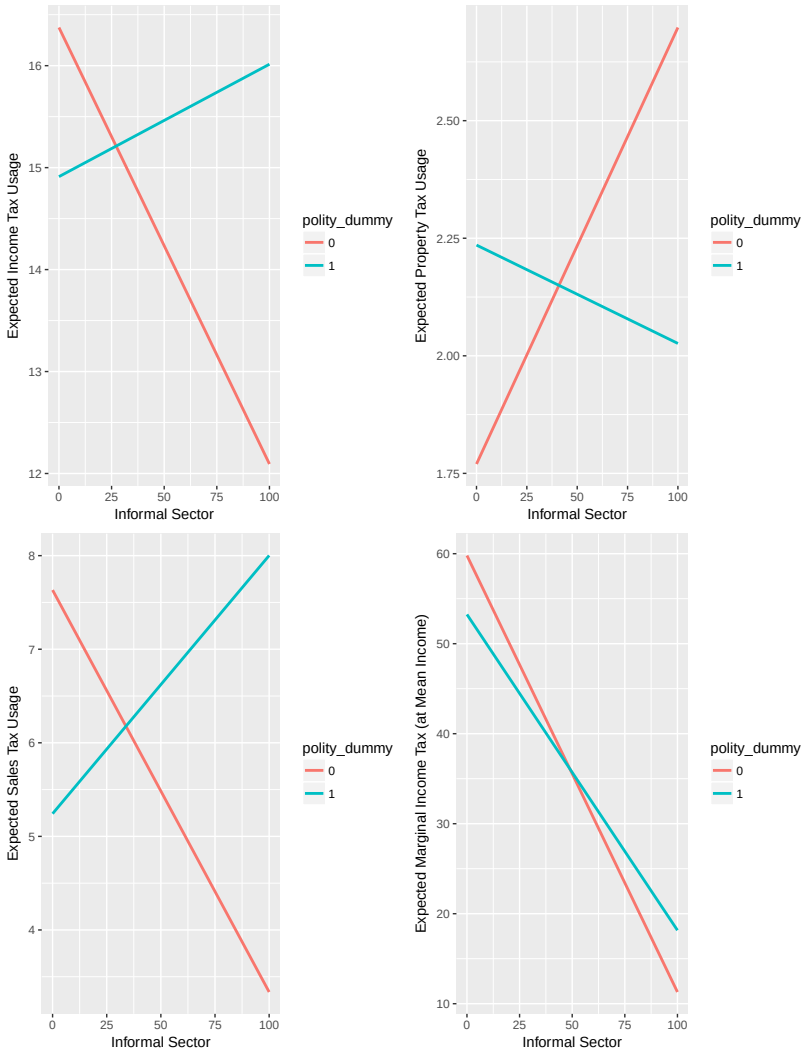
Table 4: Mechanism Check: Marginal Income Tax Rates at Median Income

	Dependent variable:			
	Marginal Tax Rate (%) at Median Income			
	(1)	(2)	(3)	(4)
Informal % GDP	-0.485^{***}	-0.507^{***}	-0.441^{***}	-0.469^{***}
	(0.075)	(0.076)	(0.083)	(0.083)
Democracy (Yes = 1)	-6.548^{***}	-6.366^{***}	-5.528^{**}	-5.625^{**}
	(2.153)	(2.160)	(2.210)	(2.218)
log(GDP per cap)	0.205	0.038	-6.779^{**}	-6.343^{**}
	(1.308)	(1.346)	(2.812)	(3.135)
Corruption_{bci}		0.101		-0.048
		(0.237)		(0.263)
log(GDP)			8.679^{***}	7.588^{**}
			(2.903)	(3.109)
Particpation Rate			0.018	0.029
			(0.074)	(0.074)
GDP Growth per Cap			0.018	0.023
			(0.026)	(0.026)
Trade % GDP			0.014	0.015^{*}
			(0.009)	(0.009)
Informal:Democracy	0.134^{***}	0.132^{***}	0.113^{**}	0.117^{**}
	(0.050)	(0.050)	(0.052)	(0.052)
Observations	1,580	1,548	1,553	1,524
R^2	0.902	0.905	0.902	0.905
Adjusted R^2	0.891	0.894	0.891	0.894
Note:				*p<0.1; **p<0.05; ***p<0.01

Interpretation: Here I find results that align with my previous findings on tax usage as a percent of GDP, which also remain robust to controls.

Additionally, I present a visualization considering the predicted use of various taxes and predicted marginal tax rates in Argentina. I present the alternate counter-factual conditions of autocracy and democracy. Beyond statistically significant differences between autocracies and democracies, we also find a large magnitude effect. A democracy that goes from total formality to informality has a *increase* in income tax usage from 15 to 18% of its GDP and a marginal tax rate change from 55 to 20%, whereas autocracies see a *decrease* in income tax usage from 20 to 12% and a far more severe collapse in marginal tax rates from 60 to 10%, which is 15 percentage points greater, or almost a 1.5-fold multiplier, in magnitude than experienced by a democracy.

Figure 1: Predicted Tax Usage (Income, Property and Sales) and Marginal Tax Rates Given Counterfactual Conditions of Autocracy vs. Democracy in Argentina



5.3.3 Identification Strategy: Tax Flips

Potentially, autocracies and democracies simply have different long-term trends due to unknown economic factors interacting with vastly different power structures. As such, I want to specifically demonstrate that changes in tax policy/incidence revolves around actors in an elasticity war. To make such a demonstration, I now focus upon "tax flips." I reduce the role, in driving my results, of "shifts" in tax policy occurring over time from shifts in the size of the informal sector; rather, I hone-in upon cases in which political order is upset. In such a case, the use of income taxes and property taxes should flip from low-to-high or vice-versa, given the increased power afforded to either citizens or government actors.

I re-run my tests, but evaluate specifically what is occurring in countries when a "flip" is predicted, thus giving less emphasis to countries where only marginal changes in taxation occur with shifts in informality. First, I use the same model, but the sample is limited to those cases experiencing a regime change. I then further tighten my sample by considering the years immediately pre- and post- transition. I compare tax policy in countries to experience transition, comparing taxes 5 years after regime type change to the 5 years before. I thus focus the causal effect upon the interaction of sudden ('largely' exogenous) regime change with informality.

Strategy 1: Fixed Effects

My first tests maintain the previous modelling strategy of regression with fixed effects. In the first set of cases, all country-years are included for those countries to experience a one-point shift (or more) in polity2 score. In the second set of cases, all country-years are included for those countries to experience a shift from "democracy" to "autocracy" or vice-versa based on crossing the polity2 threshold, set at 5.

Interpretation: Notably, I find that my previous results hold, but with sharper (larger) contrasts between the differences in tax policy between democracies and autocracies. Further robustness checks are included in the Appendix.

Table 5: Effect of Regime-type change. Right: polity score changes; Left: polity dummy (democracy = 1)

	Dependent variable: % Government Revenue; Marginal Income Tax Rate (MIRT)					
	Income Tax	MITR (%)	Property Tax	Income Tax	MITR (%)	Property Tax
	(1)	(2)	(3)	(4)	(5)	(6)
Informal	-0.047^{**}	-0.445^{***}	0.017^{***}	-0.020	-0.418^{***}	0.014^{***}
	(0.021)	(0.110)	(0.004)	(0.020)	(0.074)	(0.004)
polity_dummy	-1.471^{***}	-6.958^{***}	0.413^{***}	-1.787^{***}	-6.930^{***}	0.428^{***}
	(0.503)	(2.373)	(0.099)	(0.670)	(2.005)	(0.111)
log(GDP_cap)	-0.350	0.001	0.245^{***}	1.456^{***}	0.245	0.027
	(0.438)	(2.282)	(0.090)	(0.302)	(1.396)	(0.050)
Informal:polity_dummy	0.051^{***}	0.145^{***}	-0.010^{***}	0.062^{***}	0.143^{***}	-0.010^{***}
	(0.012)	(0.056)	(0.002)	(0.016)	(0.047)	(0.003)
Observations	861	468	661	1,796	1,008	1,452
R^2	0.828	0.804	0.736	0.774	0.869	0.833
Adjusted R^2	0.812	0.775	0.707	0.757	0.853	0.819

Note: *p<0.1; **p<0.05; ***p<0.01

Strategy 2: Linear Regression Using Pre- and Post- Regime Change Taxes

Now I wish to remove any possibility that year-to-year changes in the size of the informal sector solely drive the effect observed. I want to assure that the predicted "tax flip" occurs, rather than merely a "tax shift" due to incremental changes in informality. As such, I fix informality to the year of transition and run a linear model that predicts the difference between the pre- and post- transition use of income taxation as a % of GDP (using a 5 year average on each side of the transition). For example, a transition in the year 2000 would use a dependent variable of the difference in average use of income taxes (% GDP) from 2000 to 2004 against 1996 to 2000. I interact the direction of the polity change with the informality in the year of transition. I also include controls for the GDP growth to occur within this time frame, since it may not be equal between societies with small vs. large informal sectors. The two left columns correspond to a 1 point change or greater in PolityIV score; the centre columns corresponds to 4 point change or greater in PolityIV score; and the two right columns correspond to a change of polity dummy (thresehold set at 5 on the polityIV scale).

Table 6: Linear Regression: "Tax Flips." Left Columns: polity change more than 1; centre columns: polity change more than 4; right columns: change in polity dummy.

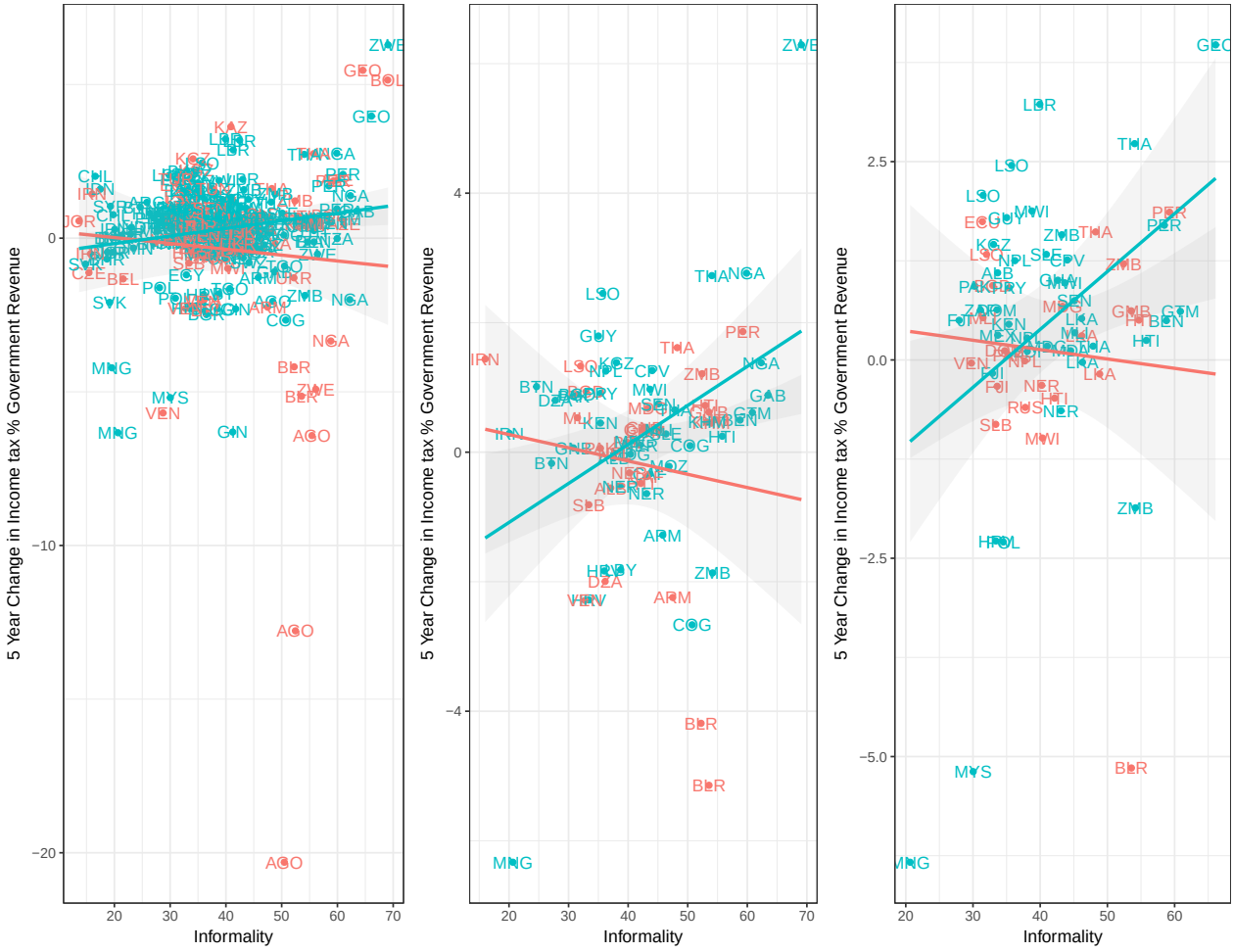
	Dependent variable: % Government Revenues					
	Income Tax % Govt Rev Before vs. After Transition					
	1-Point	1-Point	4-Point	4-Point	Dummy	Dummy
Informal % GDP	−0.019	−0.016	−0.020	−0.012	−0.012	−0.001
	(0.021)	(0.021)	(0.033)	(0.033)	(0.039)	(0.038)
$\Delta polity > 0$	−1.073	−1.030	−2.972*	−3.151*		
	(1.082)	(1.094)	(1.752)	(1.708)		
$\Delta GDPperCap$		1.205**		2.643**		2.844**
		(0.534)		(1.014)		(1.081)
Informal:$\Delta polity > 0$	0.044*	0.043*	0.081**	0.081**		
	(0.026)	(0.026)	(0.040)	(0.039)		
$\Delta PolityDummy$					−3.137	−2.546
					(1.993)	(1.955)
Informal:$\Delta PolityDummy$					0.085*	0.068
					(0.047)	(0.047)
Constant	0.400	0.138	0.682	0.234	0.602	−0.099
	(0.909)	(0.922)	(1.455)	(1.426)	(1.659)	(1.622)
Observations	275	269	72	70	65	63
R^2	0.034	0.054	0.119	0.205	0.122	0.223
Adjusted R^2	0.023	0.039	0.081	0.156	0.079	0.170
Note:						*p<0.1; **p<0.05; ***p<0.01

Interpretation: Significant differences result in tax outcomes given the reaction of democratization (or autocratization) to informality. Notably, these results grow stronger as we increase the size

of polity change required to enter the sample. This is sensible: a large change in polityIV corresponds with more power afforded to citizen (positive direction) or government (negative direction). [Note: Add regression in appendix that is weighted by size of polity change.] A graphic illustrates the size of the predicted effects.

Predicted Tax Usage (Income, Property and Sales) and Marginal Tax Rates Given Counterfactual Conditions of Autocracy vs. Democracy in Argentina

Figure 2: Change in Use of Income Taxes by Informal Sector Size (% GDP)



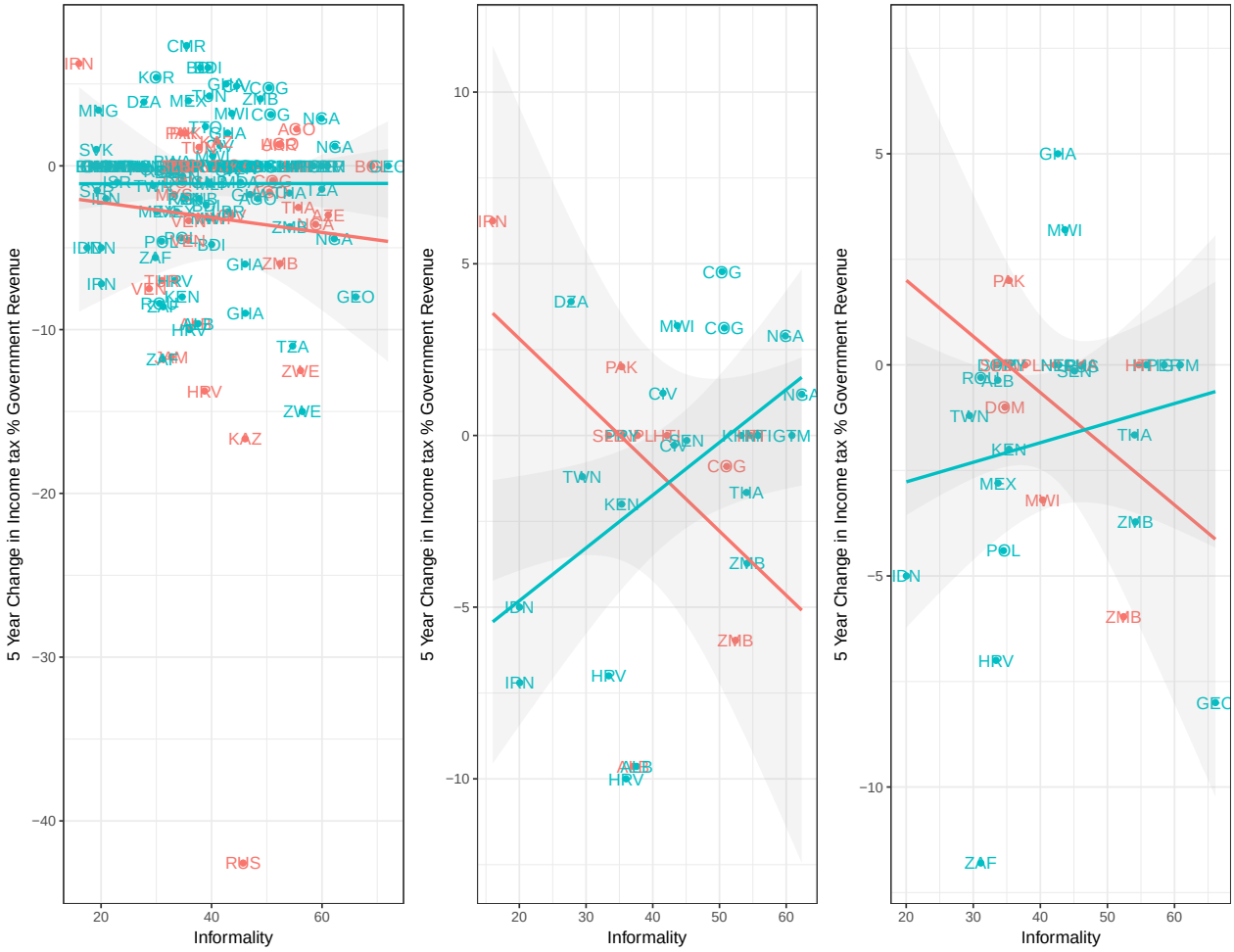
5.3.4 Tax Flip of Mechanism

Once again, our mechanism checks-out. The alternate DV bears consistent results when regressed against the interaction term plus controls. Despite having weaker statistical significance, the fewer cases nonetheless produce similar brute effects.

Table 7: "Tax Flip" of the Marginal Tax Rates on Income

	Dependent variable: Δ Marginal Tax Rates on Income					
	Difference in Marginal Income Tax Rates Before vs After Regime Change					
	1-Point	1-Point	4-Point	4-Point	Dummy	Dummy
Informal % GDP	−0.046	−0.069	−0.187	−0.255**	−0.133	−0.134
	(0.079)	(0.081)	(0.116)	(0.114)	(0.154)	(0.168)
Δ*polity* >0	0.222	−1.333	−14.441**	−16.755***		
	(3.881)	(4.007)	(5.718)	(5.571)		
Growth GDP per Capita		4.499*		−9.643**		1.151
		(2.332)		(3.834)		(3.993)
Informal:Δ*polity* >0	0.046	0.072	0.341**	0.413***		
	(0.089)	(0.091)	(0.135)	(0.132)		
Δ*PolityDummy*>0					−8.368	−8.798
					(7.089)	(7.827)
Informal:Δ*PolityDummy*>0					0.180	0.184
					(0.166)	(0.184)
Constant	−1.319	−0.340	6.551	9.728*	4.667	4.557
	(3.495)	(3.605)	(4.833)	(4.773)	(6.567)	(7.145)
Observations	151	138	31	28	32	28
R^2	0.036	0.057	0.223	0.398	0.058	0.067
Adjusted R^2	0.017	0.029	0.136	0.294	−0.043	−0.095
Note:						*p<0.1; **p<0.05; ***p<0.01

Figure 3: Change in Marginal Tax Rates (%) by Informal Sector Size



Strategy 3: Imputation with Linear Regression Using Pre and Post [Incomplete] Notion: Try to estimate the rough size of the informal sector as percent of employment instead of GDP.

5.4 Case Study [Incomplete]: the Evolution of Taxation in the Canadian Fur Trade & Beyond

In this section, I will use process tracing to demonstrate how my theory of taxation is borne-out in the case of the development of taxation in Canada. The evolution begins with the Canadian fur trade. Land was split between two agencies – the Hudson Bay Company and the North West Company – that were not only state sponsered, but increadibly state-like given their power in market transactions, being monopolists in both their respective areas. Crucially, their mode of "taxation" aligns with my prediction of an autocrat's taxing inelastic behaviours. Given the broadly informal

nature of all work, trading companies, in essence, operated on a sales-tax basis. As the single buyer of products in an area (monopsony), a "per fur" tax was charged. As the single seller of many products in an area (monopoly), a mark-up on goods traded for pelts (goods-in-lieu of cash) was charged.

As the fur trade lost its status as Canada's sole "staple," and other industries arose, traditional forms of government also started to take hold across the land, in place of the trading monopolies. The autonomous colonies of Canada started to "cede power" to an electorate as responsible government came into being. It is in the 1800s that we also see income taxation take root; a form of taxation that shifted burden off a majority of Canadians, who worked largely outside of formal employment. In this, the development of taxation parallels my predictions of the behaviour of politicians in democracies. Indeed, with the population largely benefiting from the government's focus upon income taxation that they could avoid, sales taxes were not introduced for hundreds of years, in the post-World War world. Not coincidentally, this occurred as Canada's employment was formalized through the development of a welfare state and a corporate economy.

As I develop this section, I will seek to demonstrate how politicians made direct appeals to the voter's self-interest: that they would support those taxes the majority citizen could most ably avoid.

6 Conclusion [Incomplete Pending Case Study]

This chapter, "A Theory of Taxation," has harked on the theme that political leaders must maintain the support of those who "select" them into power. Whereas in autocracies this is a rather small proportion of the population, in democracies it is quite large. To amass support in democracies, political leaders forgo "planned inefficiency." The do not implement tax-mixes that heavily draw on taxes that are unavoidable (or inelastic) to large segments of the population, on whom their support depends. As such, democracies see inefficient tax-mixes.

Using a database on tax-mix and imputations measuring the size of the informal sector, I evaluate how a growing informal sector affects the usage of income taxes in the context of democracies, with broad selectorates, contra autocracies, with narrow selectorates. Tests of mechanisms are performed by testing rates of income taxation, which are set by policy. Additionally, I perform a discontinuity analysis, whereby I find that sudden changes in regime from democracy to autocracy leads to "tax-flips," i.e., ruptures in tax policy consistent with my theory's predictions[42]

[42] As the informal sector grows in democracies, the usage of income taxation increases — which the informal sector entirely avoids, whereas taxes that do affect the informal sector, including property and sales taxes, tend to decrease as a share of government revenues. Checks of mechanism reveal increased income tax rates, confirming a policy avenue through which income taxes as a percent of revenues increases. Moreover, sudden changes of regime, whereby democratization or backslide occur, sees "tax-flips" occur consistently with predictions.

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