Transparency, Elections, and Pakistani Politicians' Tax Compliance*

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Abstract

Does providing information to citizens about incumbent politicians affect politicians' subsequent actions? And, are their responses conditioned by electoral incentives? Using an unforeseen decision by the Pakistani government to publish income tax payment records of all legislators several months after taxes had already been filed for the previous year, I exploit this 'information shock' and measure its effect on legislators' tax payments in the subsequent year. New data on politicians' asset ownership and tax payments, used within a difference-in-differences research design, show strong evidence that the pressure to respond by decreasing tax evasion was highest for competitively elected legislators and directly elected legislators. These heterogeneous effects are robust to controlling for relevant differences between legislators and electoral constituencies. Beyond implications for tax revenue collection, the findings are also important for the political accountability literature, shedding light on how politicians, knowing that citizens punish poor performance electorally, react to information shocks.

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1 Introduction

Does providing information to citizens about incumbent politicians affect politicians' subsequent actions? In particular, do politicians respond differently if they face different levels of electoral pressures? Recent literature often finds that access to credible information affects citizens' electoral choices, with poor performance and corruption by politicians being punished by voters (Ferraz and Finan, 2008; Eggers and Fisher, 2011; Larreguy, Marshall and Snyder Jr, 2016). Knowing that citizens care about what their elected representatives do, and hold them accountable when they can, do politicians respond to information shocks by 'improving' their behavior? I address this question, which has received comparatively little attention in the literature, in the context of federal income tax payments by Pakistani legislators.

Specifically, I exploit an unforeseen 'transparency shock' that released public information about legislators' federal income tax payments from the previous year, and measure its effect on their tax payments in the subsequent year. I use these data in a difference-in-differences framework with two main findings. First, I show that average tax compliance among Pakistani legislators increased after the information shock. Second, I find heterogeneous effects depending on the level of electoral pressures different legislators faced in the 2013 election, which had occurred before any tax information was released. That is, competitively-elected legislators increased their tax payments, on average, up to twelve times more than other legislators. I show that these groups of legislators are comparable on other dimensions relevant to their tax payment propensity, including legislative experience, and education levels. The results also hold when controlling for unobservable differences between political parties, geographical regions, and individual legislators, and for election-specific covariates. More broadly, legislators who were directly elected by citizens were approximately four times more responsive than indirectly-elected legislators.

The logic behind the observed patterns stems from electoral accountability. That is,

legislators need to keep their constituents satisfied to stay in office and to attempt re-election. Marginally elected legislators are particularly vulnerable in this regard, facing higher pressure to increase their tax compliance in response to an information shock. The argument and findings in this paper thus relate to several important literatures. First, it contributes to research on political accountability, as well as on the role of electoral incentives in conditioning this accountability. It adds to the growing literature on the effects of increased transparency, and also indirectly speaks to the small body of work on the effects of scandals on politicians' popularity. Finally, the paper relates more broadly to the literatures on corruption and tax compliance.

In addition, the empirical focus is on Pakistan, which is a relevant and important case for studying the effects of increased public information about legislators on their subsequent behavior. The sequence of events that took place in Pakistan provide near-perfect conditions for identifying the effect of interest, which is often a challenge outside of experimental settings. The exogeneity of the transparency increase, detailed in Section 3, ensures that legislators did not know about it ahead of time and, therefore, their initial tax payments were not conditioned by the anticipation of them being made public. Additionally, Pakistan, being a politically unstable developing country, has relatively low political transparency and accountability, and falls in the low electoral integrity category on the *Perceptions of Electoral Integrity Index* (Norris and Grömping, 2017). If anything, it provides difficult conditions for finding significant effects of public information to citizens on legislators' actions. Finally, though one country, it is representative of a broader set of developing countries where low tax compliance is a pervasive problem.[1]

The paper proceeds as follows. The next section discusses why electoral incentives might condition legislators' response to an information shock. Section 3 traces the events

[1]The proportion of tax filers to income earners is a shockingly low 2% in Pakistan (International Monetary Fund, 2016), which is worse than comparable developing countries but low compliance is a significant problem elsewhere as well. For instance, approximately 13% of the workforce in Nigeria, which had a similar GDP per capita to Pakistan in 2015, is registered to pay taxes (Oyedele, 2016) and only one third of income earners in India file their taxes (Singh, 2017).

that led to the unforeseen release of tax information and outlines the data and research design. The subsequent sections present the main results and robustness checks, respectively, and the last section concludes.

2 Transparency and Electoral Incentives

For politicians to change their behavior in response to an information shock, they must believe that citizens care about their actions. Though elections are tools for citizens to hold representatives accountable (Downs, 1957; Riker, 1982; Fiorina, 1981; Manin, Przeworski and Stokes, 1999), their effectiveness is often constrained by citizens having limited information about legislator performance (Manin, Przeworski and Stokes, 1999; Canes-Wrone, Brady and Cogan, 2002; Achen and Bartels, 2016). Despite some examples to the contrary, the literature increasingly finds that when citizens do have reliable information about politicians' misconduct or poor performance, they often take it in to account when making decisions at election time. For instance, political corruption being exposed in Brazil (Ferraz and Finan, 2008) and Mexico (Chong et al., 2015; Larreguy, Marshall and Snyder Jr, 2016) reduced support for incumbents, while screening public debates in Sierra Leone (Bidwell, Casey and Glennerster, 2016) and Uganda (Platas and Raffler, 2017) to increase citizens' knowledge about politicians and their platforms increased support for candidates who did well.[2]

Even in the developed world, Eggers and Fisher (2011) find that the UK parliamentary expenses scandal adversely affected vote shares for implicated legislators in the next election. Though Vivyan, Wagner and Tarlov (2012) conclude that the consequences were not substantively huge for all of the guilty legislators, they nonetheless find that misconduct had a large negative effect on voters' perceptions of their MPs. In other words, citizens were paying attention to reliable information about their legislators' illegal be-

[2]See Pande (2011) and Ashworth (2012) for detailed reviews of the relevant literature.

havior. Similarly, an experiment among U.S. voters finds that tax scandals, in particular, adversely affect politicians' reputations and support among voters (Funk, 1996). In short, citizens having information about their politicians' actions, particularly ones they would disapprove of, often matters.

At the same time, it is reasonable to assume that (most) politicians care about retaining office and being re-elected, be that for policy reasons or other benefits that accrue from holding office. The private financial returns from holding office are often high, especially in developing countries, such as in the case of India (Bhavnani, 2012; Fisman and Golden, 2017). Thus, there is reason to believe in a country like Pakistan, for instance, that politicians will want to stay in office.

Given the desire to stay in office and the knowledge that citizens may respond to information about 'bad' performance, politicians have incentives to improve their behavior after the release of information, which is what this paper focuses on. By doing so, not only am I addressing a question that has garnered relatively little attention in the existing literature, I also do so in the context of a region that is under-studied in terms of information and accountability. Most existing research on this particular question, and on the broader themes of accountability, stems from Latin American and African countries, especially Uganda. For instance, in on-going work, Grossman and Michelitch (2016) find that randomly disseminating information on parliamentarians' performance to citizens and politicians affects subsequent performance only in competitive constituencies, while Humphreys and Weinstein (2012) do not find significant changes in politicians' own behavior; both focus on Uganda. Earlier work by Reinikka and Svensson (2011) in the same country finds that newspaper campaigns that increase information to schools and parents on local government spending from a public education grant reduce grant-capture by the local governments.

I extend this growing literature both substantively and empirically by analyzing tax

compliance and by using observational data, where it is often more challenging identify the effects of exogenous information shocks. The empirical expectation is that politicians will respond by increasing their tax compliance. The pressure to do so could be through at least two underlying mechanisms. First, they might fear increased monitoring by the authorities as tax collectors could now also feel greater pressure to stringently implement tax laws and punish evasion. This mechanism is similar to the experimental literature finding of increased monitoring lowering corruption (Olken, 2007; Callen et al., 2013).[3] Second, as discussed above, citizens caring about tax evasion by politicians also incentivizes greater compliance for electoral reasons or based on fears of social sanctioning. Empirically, these mechanisms will lead to an average increase in tax compliance following the information shock.

At the same time, though, electoral pressures vary, which will play a part in conditioning politicians' reactions to information shocks. Generally, the more dependent a politician is on his or her voters to retain office, the greater the incentive to act in ways that constituents will approve of. This translates to the well-established finding in the literature that legislators elected in competitive races tend to work hardest to satisfy their constituents since they need to hold on to their narrow band of support to stay in power, and then to win re-election (Ward and John, 1999; Lee, 2003; Rodden and Wilkinson, 2004; Keefer and Khemani, 2009; Berry, Burden and Howell, 2010).

Based on this, I expect legislators elected by the smallest margins to respond by increasing their tax payments more in the subsequent year than legislators elected in less competitive races. This logic should be especially true in a country like Pakistan where legislators do not face any term limits and, hence, face low institutional constraints on running for re-election. The heterogeneous response based on electoral incentives is inde-

[3]A tangentially similar mechanism could be through explicit incentives being introduced for tax authorities to increase revenue collection. Though that was not the case here, recent experimental work on provincial tax collection in Pakistan finds that incentivizing higher tax collection through performance payments for tax collectors did increase revenue but also increased the bribes they were paid by citizens (Khan, Khwaja and Olken, 2015).

pendent of the first mechanism that could be driven by increased monitoring, fear of social sanctioning, or a general electoral accountability pressure. As I discuss in more detail in the empirical section, varying levels of electoral pressures do not correlate with these other considerations. More broadly, this mechanism also applies to legislators elected directly by citizens versus those who are elected indirectly since the direct dependence on citizens is higher in the first case.

Overall, two key empirical expectations arise. First, an exogenous increase in reliable information to citizens about their legislators' insufficient tax payments will induce greater subsequent tax payments. Second, legislators elected in competitive races, and directly elected legislators, will exhibit greater increases in their tax payments after the information release compared to those elected in uncompetitive electoral races and those elected indirectly, respectively. The next section outlines the research design and data that I use to empirically evaluate these hypotheses.

3 Data and Research Design

3.1 Information Shock

Low tax compliance, especially income tax compliance, has always been a significant problem in Pakistan. A recent International Monetary Fund (IMF) Special Issues Paper estimates that the tax revenue gap in Pakistan is more than the total tax revenue the government collects. The shortfall in personal income tax collection is even more stark, with fewer than one million tax filers in a country of over 56 million income earners (International Monetary Fund, 2016). Out of an estimated seven million people who are eligible to pay income tax, only about seven percent, or half a million, actually do (Sherani, 2015). Partly to compensate for this low compliance, more than half the tax revenue in Pakistan is raised through indirect taxation on goods and services instead,

disproportionately burdening the average citizen rather than the elites (Sherani, 2015). In addition, there is the common disgruntled notion among citizens that most elites, which includes politicians, do not pay their fair share of taxes and indulge in corrupt fiscal transactions – a view that gathered even more steam in the wake of the Panama Paper leaks. Despite citizens' priors about politicians' tax evasion, however, there has traditionally been no concrete information available on their actual income tax payments.

In late 2013, these issues became increasingly politically salient. The IMF was negotiating a loan with Pakistan, and cracking down on "rampant tax evasion" was one of the main conditions it imposed (Houreld, 2013). The British parliament also stated at the time that UK taxpayers should not be expected to help provide development aid to Pakistan, "if the Pakistani elite do not pay meaningful amounts of income tax" (DAWN News, 2013). Partly in response to these pressures, the Finance Minister, Muhammad Ishaq Dar, announced in a Senate speech in early 2014 that a tax directory of all parliamentarians would be published in the following month. He deemed this a move towards greater tax transparency. Consequently, on February 28, the Federal Board of Revenue (FBR) published the first "Parliamentarians Tax Directory" for the fiscal year ending on June 30, 2013, which listed federal income tax payments for all federal and provincial legislators (Federal Board of Revenue, 2014).

This release of information was both unprecedented and unforeseen, and has two particularly relevant features. First, the sequence of events, especially the length of time that elapsed between the end of the 2013 fiscal year and this announcement being made, makes it highly plausible that the release of tax information was unknown to all legislators when they filed their 2013 income tax returns. (Table 1 summarizes the timing of relevant events.) Since such information had never been shared publicly before, there was no reason for legislators to expect differently that year. Thus, this "information shock" can be exploited to systematically analyze whether, and how, it affected legislators' tax

payments in the subsequent 2013-2014 fiscal year, which was on-going at the time the report was published. That year's tax directory was subsequently released in April 2015.

Table 1: Sequence of Events

Event	**Date**
National Elections in Pakistan	11 May 2013
End of 2012-2013 fiscal year	30 June 2013
Tax filing deadline (for 2012-2013)	31 August 2013
Finance Minister announces publishing of 2013 taxes	6 January 2014
First Parliamentarians' Tax Directory published	28 February 2014
End of 2013-2014 fiscal year	30 June 2014
Tax filing deadline (for 2013-2014)	31 August 2014
Second Parliamentarians' Tax Directory published	10 April 2015

Second, this information release gained a lot of attention in the media and general public, and each year's tax directory has continued to do so ever since. Headlines such as "Directory of Shame" and "FBR publishes list to embarrass tax cheats in to paying up" emerged in national newspapers; another news article stated, "Income tax returns are the most imaginative fiction being written today" (Khan, 2014). These articles not only explained where citizens could access the tax lists, but also summarized information on zero- and low-tax paying politicians, discussed prominent politicians in particular, and also often mentioned the values of their assets (DAWN News, 2014; Reuters, 2014). Thus, not only was information about legislators' tax returns publicly available, legislators knew that citizens were paying attention and had access to reliable and clear information about their (very low) tax payments.

There may be concerns about the exogeneity of the information release since there is no proof that no legislator knew about the decision beforehand. Based on newspaper reports and summaries of senate proceedings, however, there appears no reason to believe that even the Finance Minister himself knew of this decision well ahead of time. Though full transcripts of senate sessions are not publicly available, the *Free and Fair Election*

Network (FAFEN) electronically publishes a *Daily Factsheet* that summarizes proceedings of each senate sitting. The Finance Minister made the announcement about releasing tax returns in the second sitting of the 100th senate session, which is mentioned in the relevant Factsheet (FAFEN, 2014). However, there is no mention of such an information release in the sessions leading up to this particular one, making it highly unlikely that the decision was pre-meditated well in advance.

Even so, if the Minister could still have somehow shared this decision before 2013 taxes were paid, presumably he would have done so with his own party's members. The Finance Minister, Muhammad Ishaq Dar, was a Senator from Pakistan Muslim League - Nawaz (PML-N), the party that controlled the federal government. If he did in fact forewarn his co-partisans, their reaction would have been to increase their tax compliance in 2013. First, that biases against finding a significant increase in 2014 tax payments, since PML-N legislators controlled more than half the seats in the Lower House. Second, if the ruling party legislators acted on this knowledge, their average tax payments should have been higher than others in 2013. However, the distribution of tax payments indicates that ruling party legislators, if anything, had slightly lower tax compliance than other parties' legislators that year.[4]

3.2 Research Design

The transparency shock in conjunction with the expectation that legislators will respond differently depending on electoral pressures is well-suited to a difference-in-differences research design. The treatment here is the exogenous change in information, and I am interested in both its average effect on tax payments as well as in the heterogeneous reaction of the most competitively elected legislators. The operationalization of these

[4]I also replicate the main models comparing the response of being a 'Ruling Party Legislator' versus not and find no relationship; results from this check are in Table 10 in Appendix B. Thus, I am not concerned about ruling party legislators knowing about the information shock beforehand.

groups is discussed in the next section. Importantly, this empirical strategy allows me to analyze the quantities of interest while controlling for initial variation in tax compliance among the different groups of legislators, which helps to separate the *response* of the competitively elected group.

The parallel trends assumption requires that, in the absence of a shock to the system, the initial differences between both groups would have been maintained. Here, that essentially translates to the assumption that, without the information release, all types of legislators would have maintained their earlier tax compliance trends. That is, any initial differences in tax payment proportions between both groups would have persisted. Unfortunately, given the sensitive nature of the data, obtaining legislators' tax payments for years before 2013 proved impossible, which means that the assumption cannot be directly tested. However, the data section presents difference-in-means tests for other factors that could be related to both a legislator's tax compliance and his dependence on voters, such as previous legislative experience, party affiliation, education et cetera, to show similarity on other relevant dimensions. I also take in to account differences between geographical regions, political parties and even individual legislators in the empirical section.

3.3 Federal Income Taxes in Pakistan

Pakistan is a parliamentary democracy with a bicameral federal legislature comprising the National Assembly (Lower House) and the Senate (Upper House). The Assembly has 342 members; 272 of these are directly elected (at least) every five years in single-member districts with plurality electoral rules. The remaining 70 Members of the National Assembly (MNAs) and all 104 Senators are indirectly elected, and are discussed in Section 5.3 where I generalize the electoral incentives argument. The main results focus on the 272 directly elected MNAs since these are the only federal politicians who come to office solely

based on citizens' votes, which makes it meaningful to talk about electoral pressures using their vote margins.[5] Thus, the unit of analysis is an electoral constituency/legislator_year, with data from 2013 and 2014.[6]

To analyze the effect of the information shock on subsequent tax payments, we need to know not just the amount of federal income tax each legislator paid in either year but also how much he owed. In Pakistan, this tax is levied exclusively on all sources of income rather than directly on assets. Thus, it includes an individual's salary and any income earned from renting out a property, returns on investments, yields on government bonds et cetera. The total income generated from all such sources is taxed progressively, with the minimum annual taxable income being PKR 400,000 (approximately 4000 USD in 2016). Since this total income is not listed for each legislator, I approximate it using legislator salary and relevant information on each legislator's asset ownership for both years.[7] Details on asset statements and exactly how taxable income is estimated from these are in Appendix A, and robustness checks for the main results using different thresholds for the calculation are in Appendix B.

Based on the estimated taxable income for each individual, I calculate the amount of tax owed using the federal income tax rates (summarized in Table 8 of Appendix A). Data

[5]'Solely based on citizens' votes refers to those candidates who run on a party ticket in the first place. Parties in Pakistan do not hold primaries, and who runs on the ticket is decided by party elites. However, independent candidates are also very common and quite successful; the 2013-2018 legislature has 18 independent MNAs out of 272.

[6]Due to data availability, the total number of observations is 362 rather than $272 \times 2 = 544$, as Table 9 in Appendix B also indicates. There are various reasons for the dropped observations: 40 did not file taxes, 5 are extreme outliers (discussed below), 10 did not report asset ownership, almost 100 have incomplete property ownership information due to which their 'tax owed' cannot be calculated, and the remaining have incomplete information on other types of asset ownership, with the same outcome that their tax owed cannot be estimated. Incomplete information in this case means that the report clearly indicates that the legislator *does* own that type of asset but an associated value is not provided.

[7]Legislators are legally required to declare all their personally owned assets every year, and these reports were available through the Election Commission of Pakistan until April 2016, when they were permanently taken down under controversial circumstances (Khan, 2016*a*). I am grateful to Muddassir Rizvi, CEO at FAFEN, for directing me to their archives of all current legislators' asset statements from 2013-2015. These were accessed in May 2016 through: http://openparliament.pk/. Information on legislator salaries is based on DAWN's recent newspaper reporting: http://www.dawn.com/news/1259375. (Accessed in July 2016.)

on the actual tax payments come from the Federal Board of Revenue.[8] Using tax paid as the numerator and tax owed as the denominator, I calculate *Tax Proportion Paid*. Summary statistics for this and other variables are in Table 9 in Appendix B. Given the prominent right skew of this variable (see Figure 1 in Appendix B), the dependent variable used in the regressions is *(Log) Tax Proportion Paid*.[9]

A possible concern with using legislators' self-reported statements to estimate taxable income is asset underreporting. Though asset declaration reliability cannot be directly tested, if there is systematic underreporting it will be a problem in two instances. First, if legislators underreport assets in 2014, my tax owed calculation will be artificially low for that year. Consequently, what appears to be a higher propensity to pay taxes in 2014 is merely a lower 'denominator' for *Tax Proportion Paid*. Second, if only 'competitively elected' legislators underreport their assets, especially in 2014, then a disproportionate increase in their tax compliance post-information shock is driven by a lower tax owed calculation rather than genuinely higher tax payments.

I conduct multiple tests to ensure this is not a problem. First, I find that a dummy variable for 2014 is not a significant predictor of asset ownership or taxable income, implying that asset declarations in 2014 are *not* significantly lower than 2013 (see Table 11 in Appendix B). Second, competition — defined in the next subsection — does not predict asset change between 2013 and 2014 (Table 12, Appendix B). In addition, the groups of competitively elected and other legislators are similar on various important dimensions, including their tax owed and asset declarations (see Table 2). Finally, robustness checks that use actual tax payments as the dependent variable, independent of asset declarations, yield similar results; this is discussed in more detail in the next section, and also addresses

[8] As of July 2016, the 2013 tax directory can be accessed here: http://download1.fbr.gov.pk/Docs/201469962916404 PARLIMENTARIANSTAXDIRECTORY2013Dt.09.06.2014.pdf and the 2014 directory here: http://download1.fbr.gov.pk/Docs/201569963615881PARLIMENTARIANSTAXDIRECTORY2014Dt10042015.pdf.

[9] Due to many zeros in tax payments, the exact calculation of the dependent variable is as follows: $\textit{(Log) Tax Proportion Paid} = log\left(\frac{\textit{Tax Paid}+1}{\textit{Tax Owed}+1}\right)$

any concerns about the choices I make regarding the coding of asset returns. Such a check is also helpful in allaying any concerns that citizens only care about legislators' actual tax payments since those are the figures that are explicitly available.[10]

Returning to the dependent variable, the median *Tax Proportion Paid* is a low 0.056, as Table 9 (in Appendix B) indicates. The maximum value of the variable is artificially high because taxable income is approximated based on available asset information; however, fewer than 10% observations are higher than 1. (Details on this calculation, as well as alternative ones, can be found in Appendix A.) The maximum value is not a concern, though, because if someone is seemingly 'overpaying' their taxes in my data, that must be because I underestimate tax owed rather than overestimate it. Thus, this conservative approach, if anything, biases against my results. Furthermore, the results presented in the next section are robust to limiting *Tax Proportion Paid* to 1, and to using raw amounts of tax paid as the dependent variable instead.[11]

Almost 20% observations (68 of 362) have 0 Pakistani Rupees (PKR) being paid in income tax. 61 of these cases occur in 2013, with only 7 "total evaders" in 2014. The true underpayment of taxes is probably even higher than what is seen here, however, because there are 40 observations where the tax returns are missing from the FBR's directories, primarily due to returns not being filed.[12] These missing numbers are plausibly indicative

[10]Nonetheless, for the main specifications, I choose to use the tax proportion paid because not only is that a more precise measure of tax compliance from a research point of view, it is not necessarily the case that citizens *only* paid attention to the raw amounts of income tax paid by their representatives. The media also covered news of legislators' asset statements being released, again summarizing that information, especially for the more prominent politicians (Akbar, 2015). Similarly, the comments sections of online news reports of both tax directory publication and asset statement releases indicate that many citizens reading these reports realize the relevance of the two information sources together, and are not solely focused on just the tax payments.

[11]To guard against extreme outliers in the dependent variable driving the main results, all the data summarized and used in the main paper exclude 5 observations where the *Tax Proportion Paid* is greater than 15. These unnaturally high values of the dependent variable are the inevitable result of approximating income earned on a given set of assets, which necessitates making the same assumptions about returns on assets for all individuals. Consequently, there is bound to be some discrepancy. However, as long as there is no correlation between this variation and the treatment group, which the balance tests indicate there is not, the main results of interest will not be affected. Additionally, running robustness checks without excluding the outliers strengthens the results.

[12]The only exception to non-filing is the handful of cases where a legislator's tax payment information

of legislators who grossly underpaid their taxes as well. Excluding these observations most likely drives down the results presented in the next section.

3.4 Competitive Elections

The main independent variable of interest, *Competitive*, is coded 1 for legislators who won by a 5% or smaller electoral margin in the 2013 election. Note that the 2013 election took place in May, so both instances of tax filing occur after this election. That also means that both tax directories refer to payments by the same legislators, making the over time comparison even more meaningful. Robustness checks, discussed following the main results, include a continuous measure of competition, using *Victory Margin*, and an alternative dummy variable that uses the median competition threshold (16.1% winning margin). Using this main measure of competitiveness, just over 15% of the races qualify as close. The remaining variables in the descriptive statistics (Table 9, Appendix B) primarily refer to the 2013 general election and to characteristics of the legislators themselves, which are used as covariates in various specifications in the next section.

Before proceeding to regression results, it is relevant to ensure that the two groups of legislators whose reactions to the information shock I am interested in comparing—namely, competitively elected legislators versus others—are similar on other dimensions that could be relevant for tax compliance. For instance, perhaps educational attainment is positively correlated with tax payment. Or, urbanized constituencies, through better access to media and information, elicit more accountability from their representatives. It could also be the case that as legislators gain more political experience, they learn 'better' ways to evade taxes without being caught. And so on. Such factors could confound the

may not have made it in to the FBR's directory depending on the timing of his joining the legislature, which could happen for some MNAs elected in by-elections after the May 2013 national elections. In such cases, we do not know if the missing information is due to not filing or due to the entry not making it in to the FBR's directory in time. However, this occurs in at most five cases in my data, which are coded as NAs and, hence, are dropped in the main analyses.

empirical analysis if they are correlated both with tax payment propensities and with either group of legislators. Table 2 summarizes difference-in-means t-tests for a host of such variables, indicating that the two groups are comparable on relevant observables.

Table 2: Difference-in-Means Tests

Variable	Comp. Mean	Uncompet. Mean	P-value of Diff.
Age	52.50	53.29	0.679
High School	0.982	0.957	0.245
College	0.804	0.803	0.987
Masters	0.143	0.174	0.546
Turnout	*0.503*	*0.547*	*0.054*
(Log) Pop. Density	*0.705*	*1.839*	*0.000*
# Candidates	16.88	16.56	0.772
Previous MNA	0.375	0.484	0.131
# Previous MNA Terms	*0.643*	*0.915*	*0.075*
# Previous MNA Years	3.018	3.873	0.191
Tax Owed (PKR million)	2.490	3.198	0.355
Res. Prop. (PKR million)	13.25	17.95	0.210

Note: Italics indicate that the difference-in-means is significant at the 90% level.

The main exception is *Population Density*, which I use as a proxy for urbanization at the constituency level. This variable is coded as the average number of people within each 0.01 square kilometer in the constituency. However, the imbalance points in the opposite direction, in that this difference would be problematic if competition was correlated with higher urbanization. In that case, it would be difficult to disentangle my proposed mechanism from a pure information story where citizens having greater access to information induces a change in legislators' tax payments rather than electoral pressures also being relevant. Here, though, less competitive constituencies are more urbanized, which cuts against my hypothesis and, thus, presents less of a concern.

The other two exceptions, albeit marginal, are *Turnout* and *# Previous MNA Terms*, both of which are significantly different with a 90% confidence interval. In the case

of *Turnout*, not only is the substantive difference between both groups very small, less competitive districts, perhaps counterintuitively, have a slightly higher average turnout rate. Based on the conventional wisdom that higher turnout induces more responsiveness, one would expect a greater response to the information shock in the less competitive districts, which again runs counter to the proposed argument. Previous experience, when measured as the number of past terms an MNA has served, is significantly associated with lower competition. By itself, this does not present serious concerns because the other two measures of past experience — *Previous MNA* and *# Previous MNA Years* — are not different in any meaningful way, and all three variables aim to measure the same underlying concept.[13] Furthermore, the results in the next section also use variables from Table 2 as controls to ensure that the main findings still hold.

4 Results and Implications

The main difference-in-differences specification used for empirical analysis is:

$$Y_{it} = \beta_0 + \beta_1 Yr2014_t + \beta_2 \text{Competitive}_i + \beta_3 2014 \times \text{Competitive}_{it} + f(X_i) + g(Z_j) + \epsilon_{it}, \quad (1)$$

where Y_{it} is the logged tax proportion paid by legislator i in time t (such that t is either 2013 or 2014), $Yr2014_t$ is a dummy variable that accounts for the time trend, Competitive_i indicates whether legislator i won in a competitive race, X_i is the set of other covariates associated with legislator i, and Z_j refers to the fixed effect for each specification, where j denotes administrative district, political party, or individual legislator, depending on the particular model.

[13] Note that *# Previous MNA Years* is not a linear function of *# Previous MNA Terms* since Pakistan has faced a lot of electoral instability, such that administrations have not always served the same number of years.

4.1 Electoral Competition and Tax Compliance

First, I consider whether there is a difference in how competitively-elected legislators reacted to the information shock compared to legislators who won more comfortably. Since the primary focus is on their *response*, β_3 from Equation 1 is the main quantity of interest, which estimates the interaction effect of being in the 'post-information shock state of the world' and being a 'competitively elected' legislator. Table 3 summarizes results from the four main specifications, all of which provide support for the main hypothesis.

The positive, significant interaction coefficient across all four specifications implies that, on average, competitively elected legislators showed a bigger increase in their 2014 tax payments compared to others. Specifically, the coefficient of 2.45 from the first model indicates approximately a 12 times higher tax payment in 2014 compared to 2013 for competitively-elected legislators.[14] Exactly how much more that is depends on what proportion of federal income tax the legislator paid in 2013. To put it in context, a legislator who paid the mean (logged) tax proportion of 0.013 in 2013 will now pay 0.15 (or 15%) of what he owes in 2014.[15] Similarly, a legislator who instead paid the median tax proportion (0.056), for example, will now pay 0.62 (or 62%) of what he owes, which is likely a much larger increase in absolute terms. Although these effects are substantively very large, they are plausible given how low average tax payments were in 2013, as these examples also indicate. The exact numbers should be interpreted with some caution, though, since the exact amount of taxable income is, as discussed earlier, an approximation based on asset ownership. Despite the approximation, however, the results are illustrative of a significant and discernible pattern, which holds up to more conservative calculations of taxable income. Results using those calculations are in Tables 13 and 14 in Appendix B.

Though I am primarily interested in whether different groups of legislators responded

[14] That is, $\exp(2.45) = 11.6$

[15] The mean from the logged variable is: $\exp(-4.334) = 0.013$.

Table 3: Competitive Elections and Taxes

	(Log) Tax Proportion Paid			
Comp.×2014	2.45*	2.18*	2.22**	2.27*
	(1.27)	(1.30)	(1.12)	(1.21)
Yr2014	2.93***	2.90***	3.12***	3.03***
	(0.48)	(0.50)	(0.41)	(0.46)
Competitive	−1.01	−1.55*		−1.36
	(1.07)	(0.89)		(1.05)
Turnout				−4.31
				(4.74)
# Candidates				0.10*
				(0.05)
(Log) Pop. Density				0.84***
				(0.29)
# Previous Years				0.24
				(0.19)
# Previous Terms				−0.86
				(0.75)
High School				3.11*
				(1.59)
College				1.68*
				(0.95)
Masters				−1.00
				(0.78)
PhD				−5.86
				(4.33)
Age				0.03
				(0.02)
Female				3.48*
				(1.77)
District FE	✓			✓
Party FE		✓		
Legislator FE			✓	
N	362	362	362	350
Adj. R-squared	0.59	0.54	0.72	0.64

***p < .01; **p < .05; *p < .1

Note: This table presents results from models that measure the effect of being a competitively elected Pakistani legislator on the (logged) proportion of tax paid in the year after an exogenous information increase about all legislators' tax payments. The main quantity of interest is the interaction effect of being in a post-information shock world (Yr2014) and being a legislator elected by a 5% or lower margin (Competitive). The first and fourth models include administrative district fixed effects, the second political party fixed effects, and the third legislator fixed effects (same as electoral district/constituency here). The fourth model also controls for electoral characteristics, legislative experience, education, and gender.

heterogeneously to the information shock, it is also noticeable that the baseline coefficient on *Competitive* is negative, indicating that these legislators paid a lower tax proportion in 2013. However, the coefficient is not consistently significant, and it is also not the case that competitively elected legislators responded to the information release 'more' simply because other legislators already paid all of their taxes and, hence, had no reason to improve their tax compliance. The median tax payment for the rest of the legislators, though higher in 2013, was still a very low 0.063. Thus, the interaction effect is not merely driven by only one group of legislators initially grossly underpaying their taxes. Furthermore, as already discussed above in Table 2, the two groups of legislators are comparable on a host of other relevant dimensions.

Other interesting trends also emerge in Table 3. The positive, significant *Yr2014* coefficient indicates a big average increase in all legislators' tax proportion paid after the information shock. Presumably, this change is due to a combination of expecting higher tax enforcement and the public release of tax records after 2013, especially because this result persists when controlling for different types of fixed effects and other political factors. The first two models take in to account differences between administrative districts and between political parties, respectively, showing that the main results hold within-district and within-party as well.[16] The third specification is the most restrictive, controlling for unobservable differences between each individual legislator. Since the election I use was held before taxes were filed for either year, using legislator or constituency fixed effects is equivalent in this case.[17] These results are reassuring given that they hold even when analyzing only within-legislator variation over time; the interaction coefficient is, unsurprisingly, smaller but still indicates a nine times increase in average tax proportion paid

[16]Administrative districts in Pakistan are larger than electoral districts, and are the second tier of administrative units in the country after the provinces. As of 2016, there are 149 administrative districts in the country.

[17]The two sets are not equivalent only if a legislator is changed during an administration, which does sometimes happen in Pakistan. However, given data missingness, the two are the same in my final dataset.

by competitively elected legislators in 2014.

In the final specification, I take in to account constituency-level variables, including the turnout and number of candidates for each race, as well as the constituency's population density (as a proxy for urbanization). This model also controls for legislator-specific characteristics, both in terms of previous federal legislative experience and educational attainment. These variables represent a variety of alternative explanations for the findings but, as the table shows, the main coefficient of interest is comparable across all four specifications. In particular, controlling for population density/urbanization takes in to account alternative explanations based on bureaucratic or sanctioning capacity. That is, bureaucratic presence tends to be higher in urban areas and is likely positively correlated with a greater capacity to enforce tax collection laws. However, controlling for it does not affect the results.

Finally, it is relevant to note that the main findings are not driven by a particular geographical region or political party. Given that Pakistan is a politically unstable developing country, personalistic politics tend to be a significant feature of the political landscape and the importance of the individual politician versus the political party varies across the country to some extent. For instance, most of the Independent MNAs — that is, those unaffiliated with any political party — are associated with the northern tribal areas. In other words, political parties are thus particularly weak in that part of the country, and individualistic relationships between constituents and their representatives perhaps more important. However, interacting competition and the *Yr2014* dummy individually with the geographical regions or with the political parties, as well as running specifications using triple interactions between the year variable, competition, and both regional or party dummies yield no discernible patterns.[18] Overall, the findings are not driven by a specific region in the country or by a particular type of political party.

[18]Results available upon request.

5 Robustness Checks and Further Discussion

The results thus far support the main hypothesis that high electoral competition incentivized a greater response to the information shock among such legislators. This section further substantiates this interpretation with three additional sets of results. First, I re-run the original analyses using alternative measures of 'tax owed' to ensure that the findings are not driven by how the dependent variable is calculated in the previous section. Next, I similarly establish that the results are not merely a function of how I define competition by using two different measures of this variable. Finally, I generalize the proposed mechanism by comparing directly and indirectly elected legislators, where the former group faces higher electoral pressures than the latter.

5.1 Tax Payments

To ensure the findings are not dependent on my approximation choices for income earned on each asset, I supplement the main results in four ways. Table 4 summarizes results from three robustness checks on the dependent variable. First, I use the log of the actual amount of tax paid in Pakistani Rupees (PKR) as the dependent variable rather than calculating the proportion. This variable presents a difficult test for the data since it does not consider whether the amount an individual paid is high or low with respect to how much he actually owed.[19]

The next two columns show results from an even stricter robustness check. I calculate tax owed based *only* on legislator salary, which is a tax threshold we are certain every legislator reaches. That is, I assume that every legislator only earns his basic salary, and has no taxable income beyond that, which puts each individual in the lowest tax bracket (owing PKR 640, which is approximately 6.5 USD in 2016). I use this to construct a

[19]I add a control simply for each individual's residential property ownership, which is the biggest asset in my data, to account for at least some variation in how much tax each person owes.

Table 4: Tax Payments - Alternative Measures

	(Log) Tax Paid		**Min. Tax Paid**		**Tax-Asset Ratio**	
Comp.×2014	2.19*	2.24**	0.27**	0.27**	2.21*	2.14*
	(1.20)	(1.08)	(0.11)	(0.11)	(1.23)	(1.11)
Yr2014	3.05***	3.17***	0.24***	0.25***	2.93***	3.13***
	(0.45)	(0.40)	(0.04)	(0.04)	(0.46)	(0.41)
Competitive	−0.66		−0.09		−0.68	
	(1.02)		(0.09)		(1.04)	
Res. Prop. (PKR mill.)	0.01	−0.02				
	(0.01)	(0.02)				
District FE	✓		✓		✓	
Legislator FE		✓		✓		✓
N	362	362	362	362	362	362
Adj. R-squared	0.85	0.89	0.85	0.87	0.82	0.87

***p < .01; **p < .05; *p < .1

Note: This table presents results from three sets of models measuring the effect of being a competitively elected Pakistani legislator on legislator federal income tax payments. Each set of models has one specification with administrative district fixed effects and one with legislator fixed effects; the three sets differ in the dependent variable. The first two columns use the logged value of actual tax paid as the dependent variable, the next two use a dummy coded 1 if the legislator meets a minimum tax payment threshold (where the minimum is based on earning *only* legislator salary), and the last two use the tax-to-asset ratio.

dummy dependent variable, coded 1 if the legislator paid at least this minimum amount. Despite this unrealistically low threshold for being a 'sufficient tax payer,' the main finding still holds with a positive and significant interaction term. The coefficient, though unsurprisingly smaller than other specifications, is still substantively quite large, and indicates that competitively elected legislators, on average, increase their tax payment by more than a quarter in 2014 compared to other legislators.

The last two columns of Table 4 use the tax-to-asset ratio as the dependent variable, which again means that the variable is constructed without relying on the estimation choices I make about asset returns. Both specifications have results consistent with the other models discussed thus far. Finally, Tables 13 and 14 in Appendix B replicate the results using two alternative calculations for taxable income, both of which are first outlined in Table 7 in Appendix A. As before, the main findings hold.

5.2 Competition Threshold

Table 5 replicates the baseline results from Table 3, using two alternative measures of competitiveness. First, I code a dummy variable, *Competitive_Median*, using the median margin of victory (16.1% votes) from the 2013 election, which allows the data to 'decide' what a competitive race looks like in Pakistan. The first two columns present these results, differing in their fixed effects. The next two specifications define competitiveness even more flexibly, using the continuous *Victory Margin* variable itself. Here, since an increasing margin of victory depicts *lower* competition, a consistent result would yield a negative interaction coefficient between the *Yr2014* dummy and this continuous measure. That is, the more one-sided an electoral race is, the lower the expected change in subsequent tax payment by the legislator in response to the information shock; both sets of models show that is indeed the case.

Table 5: Competitive Elections - Alternative Measures

	(Log) Tax Proportion Paid			
Comp_Med×2014	2.55***	2.66***		
	(0.87)	(0.74)		
Comp._Med	−2.87***			
	(0.80)			
Yr2014	2.04***	2.14***	4.83***	4.93***
	(0.61)	(0.51)	(0.72)	(0.63)
Vic. Mar.×2014			−7.40***	−7.24***
			(2.73)	(2.44)
Victory Margin			7.05***	
			(2.45)	
District FE	✓		✓	
Legislator FE		✓		✓
N	362	362	362	362
Adj. R-squared	0.60	0.74	0.60	0.73

***p < .01; **p < .05; *p < .1

Note: This table presents results from two sets of models that measure the effect of being a competitively-elected Pakistani legislator on the (logged) proportion of tax paid in the year after an exogenous information increase about all legislators' tax payments. Each set of models has one specification with administrative district fixed effects and one with legislator fixed effects; the two models differ in the measurement of competition. The first two columns define as 'competitive' those races won by less than the median victory margin of 16.1%. The next two columns use the actual victory margin (theoretically ranging from 0 to 1), such that higher numbers indicate *lower* competition.

5.3 Directly Elected Legislators

The proposed intuition through this paper has been that the more dependent legislators are on support from their citizens, the greater the incentive to react to an information shock, in this case by increasing their subsequent tax payments. In this section, I operationalize the dependence in a broader way, comparing legislators who are elected directly by citizens versus those who are elected indirectly.

The former group comprises the 272 directly elected Members of the National Assembly (MNAs) used for empirical analysis so far. As mentioned earlier, there are 342 seats in the National Assembly (Lower House), with the remaining 70 reserved for women (60) and religious minorities (10). These are awarded to political parties on a proportional basis after the general election for the directly contested seats takes place and results are announced. Parties then assign female and minority party members to their share of the reserved seats accordingly. Importantly, these 70 MNAs do not vie directly for citizens' votes and are not associated with geographical constituencies. There are also 104 Senators in the Upper House, each elected for 6 year terms.[20] These senators are all elected by the Provincial Assemblies rather than by citizens.[21]

Therefore, for both the reserved MNAs and the Senators, there is arguably an additional layer of insulation from being directly accountable to the average citizen, especially compared to the 272 members of the Lower House who are elected directly. Using this distinction, I code a dummy, *Directly Elected*, which is 1 for the directly elected legislators, and 0 otherwise. It should be noted here that the groups of directly and indirectly legislators, though well-suited for the argument made here, may not be similar in other respects. While I do not have reason to believe that the two groups would have changed

[20]Each of the four provinces has 23 senators, with 8 senators representing the Federally Administered Tribal Areas (FATA), and 4 representing the Federal Capital (Islamabad). There is reserved representation for females within the 23 senators per province as well. For full electoral details on the Senate, see: http://www.senate.gov.pk/en/essence.php?id=24&catid=4&subcatid=138&cattitle=About%20the%20Senate.

[21]Pakistan is a federal political system, with a national legislature and four provincial legislatures.

Table 6: Directly Elections and Taxes

	(Log) Tax Proportion Paid		
Direct×2014	1.64**	2.42**	1.33**
	(0.70)	(0.72)	(0.63)
Yr2014	1.64***	1.76***	2.10***
	(0.55)	(0.58)	(0.51)
Directly Elected	−2.54***	−2.65***	
	(0.47)	(0.48)	
Province FE		✓	
Legislator FE			✓
N	579	551	579
Adj. R-squared	0.13	0.54	0.69

***p < .01; **p < .05; *p < .1

Note: This table presents results from models that measure the effect of being a directly-elected Pakistani legislator on the (logged) proportion of tax paid in the year after an exogenous information increase about all legislators' tax payments. The main quantity of interest is the interaction effect of being in a post-information shock world (Yr2014) and being a directly elected legislator (as opposed to a reserved seat legislator or senator). The second model includes provincial fixed effects, while the third uses legislator fixed effects.

their tax payment propensities in different ways between 2013 and 2014 in the absence of an information shock, I do not have sufficient data on other covariates — such as age, education levels, previous experience et cetera — to show conclusively that the two groups are similar on these other dimensions. Thus, the results presented in Table 6 should be regarded as suggestive evidence.

The models in Table 6 have the same specifications as the main results presented earlier, with different fixed effects since indirectly-elected legislators are not associated with administrative districts. Results across all three models support the hypothesis that directly elected legislators, compared to indirectly elected ones, showed a greater change in their tax payments following the information shock. Even with the restrictive legislator fixed effects in the last column, the interaction term remains positive and significant, as before. The coefficient of 1.33 indicates an almost four times greater increase in tax payment proportion among directly elected legislators, on average, compared to everyone else.

6 Conclusion

This paper has shown that information shocks about legislator behavior can have 'positive' effects on their subsequent actions. Using new data on asset ownership and tax payments by federal legislators in Pakistan, in conjunction with an unforeseen release of information by the Pakistani Finance Ministry about legislators' income tax payments, I find robust evidence that legislators' tax compliance increased in the following year. I implement a difference-in-differences research design to analyze the heterogeneous response among competitively elected legislators, who I argue face higher electoral incentives to change their behavior in response to the information shock. In line with the proposed mechanism, I find strong evidence that the subsequent increase in tax payments among these competitively elected legislators is up to twelve times the effect for the others, and

is statistically different as well. The results are robust to controlling for other political factors and for legislator-specific characteristics. They are also robust to a variety of alternative measurement strategies for the two core variables in the empirical analysis: competitiveness and proportion of tax paid. In addition, I also provide suggestive evidence that the mechanism generalizes to other levels of analysis where one group faces greater pressure to be accountable to citizens than another – directly elected legislators responded to the information shock more sharply than indirectly elected legislators.

A skeptical interpretation of the results could argue that tax compliance did not increase to a hundred percent and, in fact, even the number of legislators paying absolutely *no* tax did not drop to zero. However, given how widespread tax evasion is in Pakistan, both within and outside the political sphere, it is remarkable that a seemingly small change had a systematic impact on politicians. The findings are perhaps even more meaningful given that the information was released in a non-election year when electoral pressures are relatively low.

These findings speak to both the political accountability and electoral incentives literatures and, more broadly, relate to scholarship on corruption and tax compliance as well. Studying the effect of information on political accountability is particularly important in developing countries, which are traditionally low information environments. More generally, the findings are also informative for policymakers interested in the effectiveness of increased transparency in reducing tax evasion in political environments where corruption is pervasive.

Finally, the results have interesting implications for future research. From a policy point of view, how can the gap between tax owed and paid be decreased even further, especially for legislators who face low electoral pressures? And, are the effects of the increased information limited only to the next year, or does the increase in tax compliance continue over time? Finally, are there really electoral punishments or rewards associated

with legislators' subsequent tax payments in a country like Pakistan, or are legislators responding merely on the assumption that there might be? The next general election in Pakistan, which is due to occur in 2018, will help to answer some of these questions.

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A Coding Details

This section outlines how the dependent variable, *Tax Proportion Paid*, is calculated. Given that legislators' exact taxable income is not known, there were three main steps for this calculation: 1) estimating each legislator's taxable income; 2) calculating the amount of tax owed by each legislator based on the taxable income; 3) and calculating the proportion of tax paid by including information on actual tax payment. First, taxable income for each legislator was approximated based on his asset statements, as summarized in Table 7, the only exception being the last variable, *Legislator Compensation*, which is based on information regarding legislator salaries taken from a recent report in DAWN News (Khan, 2016*b*). The table lists the assets that were used in this calculation, and summarizes how the calculation was made. For instance, for "Capital in Pakistan," I approximate that the annual income earned on capital ownership is worth 5% of the

value of the capital. That is, for a legislator whose capital ownership in Pakistan is worth PKR 500,000, the income he earns from this in an entire year is calculated to be PKR 25,000.

For assets where rent is estimated (that is, residential houses, land, and property), the calculation is slightly more involved. Since I would rather underestimate individuals' yearly income than overestimate it, I assume that only residential property that is worth more than PKR 20 million is rented out and, even within that, only 80% of the excess property is rented out. Using a conservative 1% of the remaining property value as the monthly rate for the rent, I multiply that number by 12 to reflect 'yearly income from rent' estimates. The returns for each type of asset are approximated based on current returns on similar investments, and current property values. But, since all such returns vary in a way that cannot be accounted for precisely, the three calculations go from a relatively high approximation of taxable income (Column 1) to a very conservative calculation (Column 3). Even the highest approximation is likely to be a lower estimate, as evidenced by the fact that the highest tax proportion paid in the dataset is over 1. Column 1 is used to construct taxable income in the results presented in the main analyses. Results using Column 2 are shown in Table 13 and those from Column 3 in Table 14; both results can be found in Appendix B.

Once the taxable income was calculated for each legislator using the method outlined above, the next step was calculating how much tax was actually owed by each individual on this income. That calculation is relatively straightforward, and was based on the federal 'tax rates for salaried individuals,' as shown in Table 8.[22] Individuals making less than PKR 400,000 a year (roughly equivalent to USD 4000 in 2016) are exempt from paying any income tax. For income amounts greater than that, the bandwidth determines a 'base tax' that is due plus some percentage of the income beyond the minimum of

[22]Summarized federal income tax rates can be found on several websites. For instance, see: http://www.paycheck.pk/main/salary/pay-and-income-tax

Table 7: Calculating Taxable Income

Asset Type	Taxable Inc. 1 (Table 3)	Taxable Inc. 2 (Table 13	Taxable Inc. 3 (Table 14)
House, Residential	$12 \times 0.01 \times 0.8\times$ $(Value - 20,000,000)$	$12 \times 0.01 \times 0.8\times$ $(Value - 20,000,000)$	$12 \times 0.005 \times 0.8\times$ $(Value - 30,000,000)$
Land, Residential	0.1	0	0
Land, Commercial	12×0.05	12×0.05	12×0.02
Property, Commercial	12×0.05	12×0.05	12×0.02
Capital in Pakistan	0.05	0.05	0.02
Capital outside Pakistan	0.05	0.05	0.02
Total Value of Stocks	0.03	0.03	0.01
Total Value of National Saving Cert.	0.10	0.10	0.08
Other Investment Value	0.08	0.08	0.04
Legislator Compensation	$12 \times 80,000$	$12 \times 80,000$	$12 \times 80,000$

Note: This table summarizes three formulas for calculating taxable income for each legislator. The first column's values are used for regressions presented in the main paper, the second in Table 13, and the third in Table 14. Each row lists an asset, and the corresponding column value indicates the proportion of that asset's value that I approximate is earned as 'income' on the asset annually. For instance, in the first column, I estimate that the return on Commercial Property is 5% of that property's value per month so the annual earning is 12×0.05. Similar calculations are done for each asset, and the sum of these gives the annual taxable income for the legislator.

that bandwidth. For instance, for an individual with a yearly taxable income of PKR 2,000,000, her tax amount due is 137,000 plus 17.5% of her income that exceeds 1,800,000. That is, she owes: $137,000 + 0.175 \times (2,000,000 - 1,800,000) = 172,000$.

Table 8: Pakistan Federal Income Tax Rates

Income Bandwidth	Tax Amount Due
$Income \leq 400,000$	0
$400,000 < Income \leq 500,000$	$0.02 \times (Income - 400,000)$
$500,000 < Income \leq 750,000$	$2000 + 0.05 \times (Income - 500,000)$
$750,000 < Income \leq 1,400,000$	$14,500 + 0.10 \times (Income - 750,000)$
$1,400,000 < Income \leq 1,500,000$	$79,500 + 0.125 \times (Income - 1,400,000)$
$1,500,000 < Income \leq 1,800,000$	$92,000 + 0.15 \times (Income - 1,500,000)$
$1,800,000 < Income \leq 2,500,000$	$137,000 + 0.175 \times (Income - 1,800,000)$
$2,500,000 < Income \leq 3,000,000$	$295,500 + 0.20 \times (Income - 2,500,000)$
$3,000,000 < Income \leq 3,500,000$	$359,500 + 0.225 \times (Income - 3,000,000)$
$3,500,000 < Income \leq 4,000,000$	$472,000 + 0.25 \times (Income - 3,500,000)$
$4,000,000 < Income \leq 7,000,000$	$597,000 + 0.275 \times (Income - 4,000,000)$
$Income > 7,000,000$	$1,422,000 + 0.30 \times (Income - 7,000,000)$

Note: All income amounts above are in Pakistani Rupees (PKR).
This table summarizes the federal income tax rates for Pakistan (2012-2013 and 2013-2014). I use these to calculate *Tax Owed* by each individual legislator. That is, I take the total taxable income for each legislator (explained above in Table 7) and then insert it in to one of the rows, depending on the band it falls in to. For instance, a legislator with an annual taxable income of 1,650,000 PKR falls in to the 6th row from this table, and owes $92,000 + 0.15 \times (1,650,000 - 1,500,000) = 114,500$ in federal income tax.

B Additional Empirics

Table 9: Descriptive Statistics

Statistic	N	Mean	Median	St. Dev.	Min	Max
(Log) Tax Proportion Paid	362	−4.334	−2.879	4.744	−18.618	2.447
Tax Proportion Paid	362	0.447	0.056	1.209	0.000	11.550
Competitive	362	0.155	0	0.362	0	1
Victory Margin	362	0.205	0.161	0.161	0.001	0.786
Turnout Proportion	362	0.540	0.571	0.109	0.105	0.688
# Candidates	362	16.605	16	6.403	5	42
(Log) Population Density	362	1.664	1.456	1.339	-2.400	5.871
Age (in 2013)	352	53.162	54	12.027	26	78
Previous MNA	362	0.467	0	0.500	0	1
# Previous MNA Terms	362	0.873	0	1.205	0	5
# Previous MNA Years	362	3.740	0	4.873	0	20
High School	360	0.961	1	0.194	0	1
College Degree	360	0.803	1	0.398	0	1
Masters Degree	360	0.169	0	0.376	0	1
PhD	360	0.003	0	0.053	0	1
Female	360	0.028	0	0.165	0	1

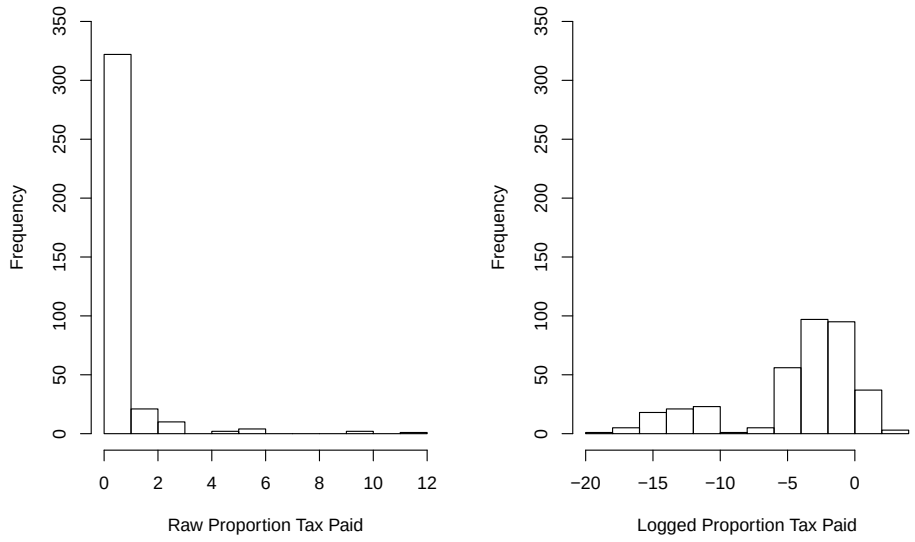

Figure 1: Histograms of the Raw and Logged Proportions of Tax Paid

Table 10: Ruling Party Legislators and Taxes

	(Log) Tax Proportion Paid		
RP×2014	0.47	0.32	0.32
	(0.89)	(0.77)	(0.77)
Yr2014	3.06***	3.26***	3.26***
	(0.63)	(0.55)	(0.55)
Ruling Party Leg.	−3.09***		
	(1.11)		
Competitive	−0.30	−14.78***	−10.74***
	(0.94)	(3.45)	(3.41)
District FE	✓		
Constituency FE		✓	
Legislator FE			✓
N	362	362	362
Adj. R-squared	0.59	0.72	0.72

***p < .01; **p < .05; *p < .1

Table 11: Taxable Income over Time

	Tax Owed/Taxable Income			
	Tax Owed	**Tax Owed**	**Taxable Inc.**	**Taxable Inc.**
Yr2014	-221518.80	-431066.80	-697369.00	-1430681.00
	(900242.90)	(696300.10)	(3019840.00)	(2322126.00)
Legislator FE		✓		✓
N	362	362	362	362
Adj. R-squared	-0.003	0.54	-0.003	0.56

***p < .01; **p < .05; *p < .1

Table 12: Change in Taxable Income

	Change in Tax Owed
Competitive	-1106104.00
	(2040824.00)
N	156
Adj. R-squared	-0.005

***p < .01; **p < .05; *p < .1
Note: The dependent variable here is the difference
in taxable income for each legislator between 2013 and 2014.

Table 13: Competitive Elections and Taxes V2

	(Log) Tax Proportion Paid			
Comp.×2014	2.56**	2.11	2.20*	2.20*
	(1.25)	(1.28)	(1.11)	(1.11)
Yr2014	2.77***	2.79***	3.01***	3.01***
	(0.47)	(0.49)	(0.41)	(0.41)
Competitive	−1.23	−1.64*		
	(1.05)	(0.87)		
District FE	✓			
Party FE		✓		
Constituency FE			✓	
Legislator FE				✓
N	362	362	362	362
Adj. R-squared	0.49	0.44	0.65	0.65

***p < .01; **p < .05; *p < .1

Table 14: Competitive Elections and Taxes V3

	(Log) Tax Proportion Paid			
Comp.×2014	2.53**	2.14**	2.21**	2.21**
	(1.23)	(1.26)	(1.10)	(1.10)
Yr2014	2.82***	2.85***	3.03***	3.03***
	(0.46)	(0.48)	(0.41)	(0.41)
Competitive	−1.08	−1.54*		
	(1.03)	(0.86)		
District FE	✓			
Party FE		✓		
Constituency FE			✓	
Legislator FE				✓
N	362	362	362	362
Adj. R-squared	0.44	0.39	0.61	0.61

***p < .01; **p < .05; *p < .1