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Do Deadline Extensions Encourage Tax Filing? Evidence from Pakistan*

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Abstract

This paper analyzes the impact of a tax broadening policy in a low compliance, developing country context with a narrow tax base. The Board of Revenue in Pakistan regularly gave out extensions to the tax filing deadline under the assumption that time is a binding constraint to filing behavior. To study the impact of extensions on tax compliance behavior, I use a rich panel dataset of all tax returns filed in Pakistan from 2007 to 2017 and combine this with data extracted from official government circulars containing details about deadline extensions. I find that deadline extensions are associated with individuals and unincorporated businesses delaying the filing of their tax returns by 88% and 70% of the extension duration respectively. Extensions also reduce the compliance of individuals and unincorporated businesses with the final extended deadline by 4.5 and 1.1 percentage points respectively. I then provide evidence for learning and information provision as the underlying mechanisms at play. Finally, I provide evidence that extensions do not encourage individuals and unincorporated businesses to file their tax returns, suggesting that time is not a binding constraint. Together, these findings reveal that deadline extensions are ineffective in broadening the tax net as they impose additional costs, such as lost interest revenue due to delayed filing and lower compliance with government set deadlines, without providing any benefits.

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1 Introduction

Developing countries typically tax a lower share of GDP, rely less on income taxation and have narrower tax bases when compared to developed countries (Besley and Persson, 2014).[1] Less than 1% of Pakistan's population files the income tax return, illustrating a narrow tax base that is common in the developing world. Governments in the developing world know the value of expanding the tax base as a potent lever to increase revenue, and hence regularly experiment with policies. However, little is known in the academic literature about the effectiveness of such policies targeted towards widening the tax net.

In this paper, I contribute towards our understanding tax enforcement by analyzing the impact of a tax broadening policy used regularly by Pakistan's tax administration over the last decade. As part of this policy, the government frequently gave out extensions to the tax filing deadline between 2007 and 2017 with a clear objective of encouraging tax filing. These extensions differed across time and type of tax filers, with varying durations. We would expect deadline extensions to help widen the tax net if time is a binding constraint to tax filing.[2]

These extensions were consistently given out to individuals and unincorporated businesses - an average of 66 extra days to file their tax return from 2007-2017. However, companies were given extensions only in exceptional circumstances.[3] The empirical analysis utilizes this variation in extensions across multiple types of tax filers over time to estimate the impact of the policy.[4] To conduct this analysis, I combine an administrative panel dataset of all tax returns filed in Pakistan from 2007 to 2017 with data extracted from official government documents containing details about deadline extensions.[5]

The results reveal that both individuals and unincorporated businesses respond to deadline extensions by delaying the filing of their tax return to a later date. Individuals delay their filing by 88% of the extension duration while unincorporated businesses delay by 70%.[6] Deadline extensions also reduce compliance of individuals and unincorporated businesses with the final extended deadline by 4.5 and 1.1 percentage points respectively.

To explain the underlying mechanisms at play, I provide evidence for learning - previous experience of receiving an extension leads tax filers to delay their filing in future years. I

[1] Developing countries typically collect only 10% to 20% of their GDP in taxes while developed countries often collect above 40% (Besley and Persson, 2014).

[2] Official communication from the government usually cites that time could be a binding constraint as a justification for these extensions. For instance, documents from 2009 mention the "pre-occupation of taxpayers with the Holy month of Ramzan" as justification for a 20 day extension (circular issued by the tax collection agency on 30 September 2009).

[3] Companies were only given an average of 5.5 extra days to file their tax return from 2007-2017.

[4] The panel nature of the tax dataset allows for robust estimation that controls for covariates, time fixed effects and individual fixed effects.

[5] The panel dataset of tax returns was obtained from the Government of Pakistan after receiving an approval from the federal cabinet. Unfortunately, such data prior to 2007 is not available with the government, which could have helped establish the parallel trends assumption and hence causality. This remains an important caveat to the findings of this paper.

[6] The average duration of the extension is 23.09 days. Individuals delay the filing of their tax return by 20.24 days while unincorporated businesses delay by 16.21 days.

also provide evidence for responding to information - earlier announcements of deadline extensions provide more time for tax filers to change their behavior and are associated with more delays in filing. One additional day of earlier announcement is associated with a delayed filing of 0.44 days for individuals and 0.42 days for unincorporated businesses.

Finally, I answer the question about the effectiveness of this policy to broaden the tax base by showing that deadline extensions do not increase the probability of tax filing for both individuals and unincorporated businesses.[7] Back of the envelope calculations reveal that deadline extensions in Pakistan were associated with a total of USD 5 million lost in interest revenue from 2007-2017. To put this into perspective, this amount is equivalent to the entire annual federal budget for Environment Protection in 2019-20 (Government of Pakistan, 2020).

Together, the findings of this paper show that deadline extensions simply result in tax filers putting off their tax filing to a later date while being ineffective in encouraging tax filing. As a result, the policy incurs additional costs such as loss of interest revenue due to delayed filing and loss of enforcement credibility of the tax administration in the form of lower compliance with the final deadline, without providing any benefits. This makes it a sub-optimal policy, implying that the government should instead look towards other policy alternatives to broaden the tax base.

This paper contributes to an understanding of tax policy enforcement in developing countries. There is an extensive tax enforcement literature within public finance that has analyzed the effectiveness of different policies aimed at encouraging tax compliance. For instance, a key strand of this literature focuses on the effectiveness of third-party information reporting in tax compliance (Carrillo et al., 2017; Kleven et al., 2011; Naritomi, 2018; Pomeranz, 2015). However, this literature has so far not analyzed the effectiveness of a policy of giving deadline extensions, such as those given out on a regular basis in Pakistan. This paper fills the gap in the tax enforcement literature by quantifying the impact of deadline extensions on the probability of tax filing.

The findings are important because they take a step towards a better understanding of tax broadening by analyzing a unique policy that has been in regular use in a low tax compliance, developing country context. The paper provides evidence that time is not a binding constraint to tax filing in this context, making deadline extensions ineffective in broadening the tax net.

The remainder of the paper is organized as follows. Section 2 describes the institutional context and the dataset used for the econometric analysis. Section 3 explains the empirical methodology along with an extensive discussion of the results. Section 4 tests various underlying mechanisms that help explain the results. Section 5 discusses some of the confounding factors and undertakes multiple robustness checks to ensure that the main findings are consistent. Finally, Section 6 concludes.

[7] I conduct this analysis using a sample of individuals, unincorporated businesses and companies that filed their tax return at least once between 2007-2017. This practically meant converting the unbalanced panel of filed tax returns into a balanced one.

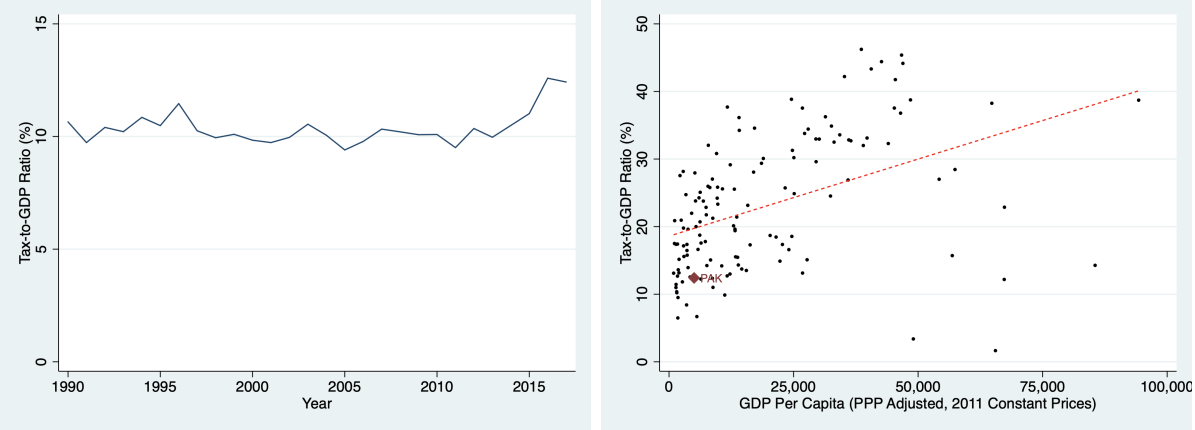
2 Institutional Context and Data

2.1 Tax Compliance and Filing Process in Pakistan

Pakistan's tax administration is broadly organized into two levels - at the federal level and at the provincial levels. Constitutionally, the federal government is responsible for the collection of Income Tax, Sales Tax on Goods and Federal Excise Duty via the Board of Revenue (FBR). To achieve this objective, the FBR has a number of field offices staffed by civil servants, located in major cities across the country.[8]

Pakistan has struggled to improve its tax collection as a percentage of GDP over the last decade, which has stagnated around 10% since 1990 (IMF, 2017). Even when compared to countries with similar GDP per capita, Pakistan collects a lower proportion of taxes as a share of GDP (Figure 1). For instance, India collected 17.76% and Nepal collected 20.57% of GDP in tax revenues in 2017 (IMF, 2017).

Figure 1: Pakistan's Stagnant and Low Tax-to-GDP Ratio



Source: International Monetary Fund and University of Oxford

Digging deeper reveals that Pakistan collects only 3-4% of GDP in income taxes (IMF, 2017). Furthermore, Pakistan has a low income tax base with less than 1% of the Pakistani population filing their income tax return in 2017. This is admittedly a crude measure of tax compliance but provides valuable insights into the structure and administration of income taxes in the country.

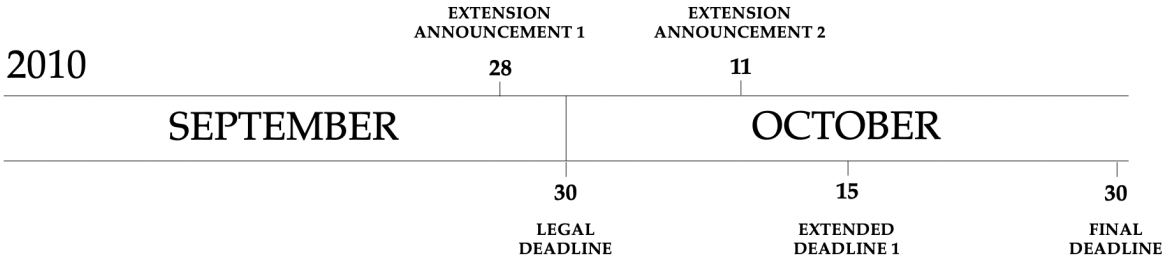
To address this problem, the FBR has experimented with various policies to broaden the tax base.[9] One policy has stood out in the last decade for its consistent and increasingly frequent usage over time: giving extensions to the tax filing deadline with the underlying assumption that time is a binding constraint to tax filing.[10]

[8]For a detailed discussion of the FBR's organizational structure, please refer to Appendix 3.A.

[9]The FBR has been repeatedly criticized for relying on a narrow tax base, especially during fiscal crises in the recent past. For instance, the fiscal crises of 2008, 2013 and most recently of 2018 put the spotlight on the FBR and its inability to create more fiscal space in the country.

[10]The underlying assumption by officials at the FBR was explicitly stated as the justification for the extensions in the official circulars that announced the deadline extensions. The circulars are discussed

Figure 2: Illustration of Deadline Extensions in 2010



Explanation: In the tax year 2010, the original deadline for individuals and AOPs was 30 September 2010. This deadline was extended on 28 September 2010 to 15 October 2010.[11] On the 11 October, the FBR extended the deadline yet again until 30 October, which ended up being the final deadline.

These extensions were given out consistently to two out of three types of tax filers: individuals and Association of Persons (AOPs).[12] However, very few extensions were given to companies. This can be seen from the fact that individuals and AOPs were given an average of 2.82 extensions per year between 2007 and 2017, while companies were only given 0.27. This amounted to an average of 66 extra days for filing the tax return for individuals and AOPs per year, and only 5.5 days for companies. A summary of the total days of extension and number of extensions for different types of tax filers is given in Figure 3.

The Income Tax Ordinance (2001) is the current legislative instrument that governs income tax in Pakistan. Section 114 of the ordinance explains the type of persons that are liable to file the tax return.[13] This section also delegates the design and implementation of tax returns to the FBR.

Based on this, the FBR has explained the exact format of the income tax return as part of the Income Tax Rules (2002). Rule 34 defines the format of the tax return while Rule 73 explains the ways in which it can be submitted. According to Rule 73, the tax return can be submitted by courier, delivered by hand in the tax office or submitted electronically. The tax returns that are submitted by courier or by hand are manual returns while the ones submitted from FBR's online portal are electronic.[14]

Prior to the tax filing, potential filers are required to register with the FBR by submitting verification documents, such as a copy of the national identification card and a copy of a recent pay slip. The FBR verifies these documents and then assigns a unique tax identification number to the registrant.[15] Completing this one-time process makes potential tax filers eligible to file taxes for all future years.

in detail in Section 2.2

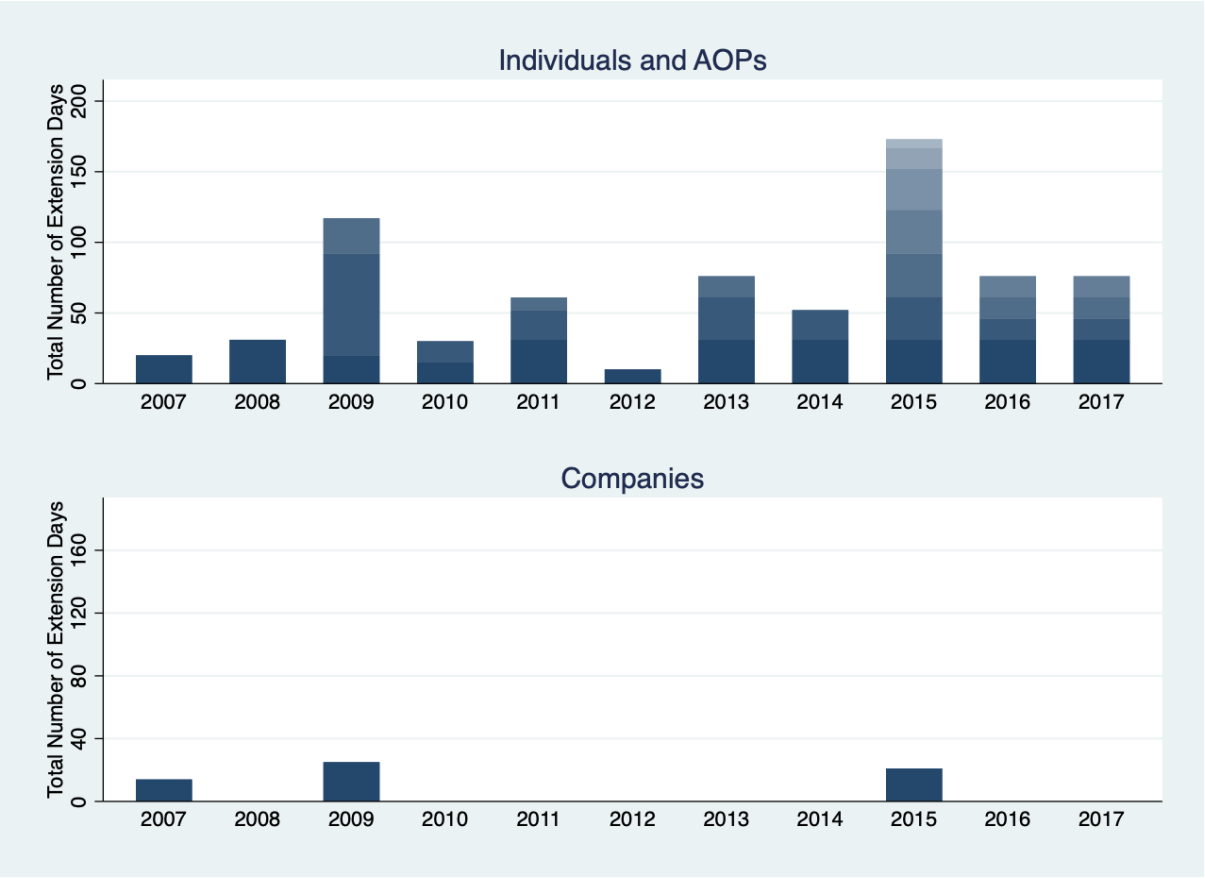
[12]AOPs are unincorporated businesses.

[13]For example, all companies, all individuals with a declared income above the minimum tax threshold and all non-profit organizations are required to file the tax return.

[14]Both manual and electronic tax returns are of the same format.

[15]Recently, this tax identification number was made the same as the national identification number in order to simplify the process. The registration process can be done either manually or electronically.

Figure 3: Extensions Regularly Given to Individuals and AOPs



Notes: The figure shows the total number of extension days given to different types of tax filers across time. It also shows the duration of each extension, shaded by different colors in the figure.

Once the registration process is complete, individuals can file their tax returns. Manual returns are received by the tax office, their date of submission verified by tax officials and then they are keyed into the IT system. Electronic returns can simply be filed on the FBR's online portal and submitted. If the tax filer owes the government income tax after adjusting for all tax credits, then the return cannot be submitted until the money is deposited, and proof of the payment is attached. Some additional technical definitions from the the Income Tax Ordinance (2001) that are used in this paper are given in Appendix 3.B.

2.2 Administrative Tax Data and Extension Circulars

This paper utilizes two sources of data to conduct the empirical analysis. The first of these is an administrative dataset of all tax returns filed from 2007 to 2017. This dataset was acquired after receiving an approval from the federal cabinet of the Government of Pakistan.[16]

[16]To ensure that the dataset did not violate any data privacy laws, the tax identification numbers of tax filers were anonymized. Officials at the FBR replaced all tax identification numbers with dummy numbers and removed all names and residential addresses from the dataset before sharing it. However, the dummy identification number for each taxpayer in the dataset is unique. Hence, this is a panel

The key variable used in the analysis is that of the tax filing date of all returns. This is a system generated date in cases where the tax return is filed electronically, and manually entered date on the tax return that is verified by the tax authorities when the tax return is filed manually. In both cases, the variable represents the date when the FBR receives the tax return. Those who submit their returns later than the official deadline can be penalized based on this date record.

The dataset also contains a variety of other information for each tax return, including the tax filing year, taxable income declared, total income declared, tax paid, tax credits claimed, city of tax filer, the tax office jurisdiction relevant to the tax filer, taxpayer's principal activity and tax filer type (individual, company or AOP).[17] From tax year 2014 onwards, the Government of Pakistan legislated that anyone who files the tax return would also be required to file a wealth statement as per Section 116 of the Income Tax Ordinance (2001). Hence, the dataset also has information on the total asset declaration of a tax filer as per their wealth statement from 2014.

Of the variables mentioned above, the taxpayer's principal activity, that contains information on the main economic activity of the tax filer, is an optional field. This variable is present in 58% of observations in the entire dataset and was not declared in the other 42%. This variable has a detailed disaggregation of the tax filer's economic activity. Where present, the variable is able to identify the broad sector of work in the economy (e.g. agriculture) and follow that up with details about a specific activity (e.g. growing rice).

Each observation in the dataset represents a unique tax return filed by an individual, company or AOP. Hence, by definition, there is only one observation of a tax filer per tax year. In total, the entire dataset consists of 11,362,104 observations and is disaggregated by year in Table 1.[18]

The second source of data is put together from official documents of the FBR which contain announcements of deadline extensions to the tax filing date. These announcements are made through official circulars that are administrative instruments used to communicate changes in policies to the general public.[19] Such circulars are widely used by all government departments in Pakistan to make announcements and are often forwarded to media outlets so that the news can be disseminated.[20] In the past, the FBR has used circulars for multiple purposes such as clarifying the meaning of legal amendments, announcing changes in tax treaties with other countries and explaining administrative procedures.

This dataset was created by extracting information about all deadline extensions in the abovementioned circulars from 2007 to 2017. It contains information such as the date of the announcement of the extension, the new extended deadline, the tax year applicable,

dataset which allows for the incorporation of individual fixed effects in the empirical results.

[17]This information needs to be filled up in the tax return as per Rule 34 of the Income Tax Rules (2002).

[18]For detailed summary statistics of the administrative tax data, please refer to Appendix 3.C.

[19]The FBR has made all circulars publicly available on their website (www.fbr.gov.pk).

[20]The news about the deadline extensions is extensively covered in media outlets. Some examples of the media coverage are Arshad (2016), Daily Times (2016), Dawn News (2008) and Geo News (2016).

Table 1: Pakistan's Administrative Tax Data From 2007 to 2017

Tax Year	Total Observations
2007	914,872
2008	768,113
2009	855,275
2010	826,408
2011	829,100
2012	835,874
2013	936,441
2014	1,115,238
2015	1,264,649
2016	1,431,349
2017	1,584,785
Total	11,362,104

Notes: One observation represents a unique tax return filed by an individual, AOP or company for a particular tax year. An individual, AOP or company can only file the tax return once per tax year.

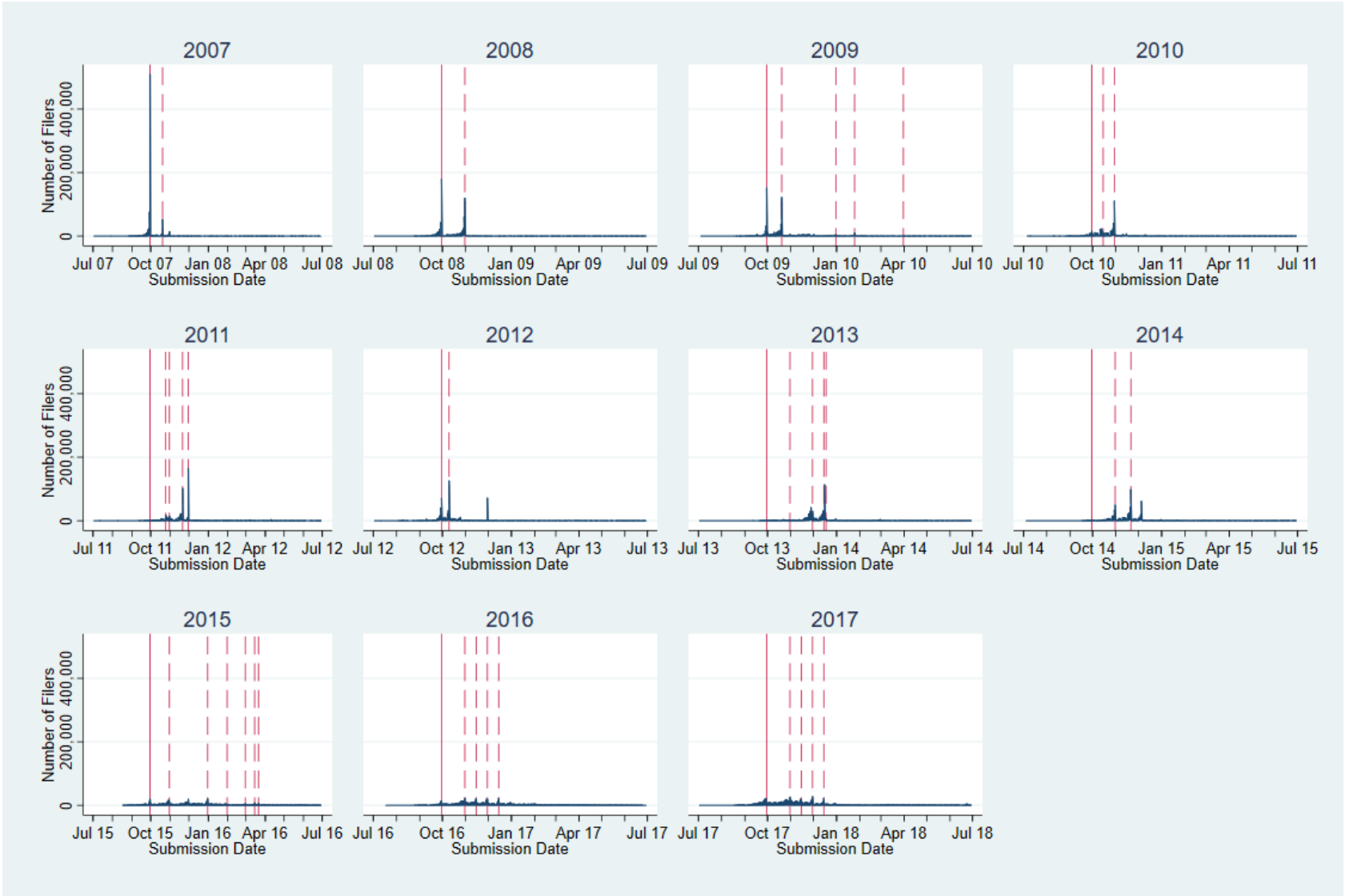
class of taxpayers the extension applied to, number of extensions given in a tax year, number of days the deadline is extended for and the circular reference number.

To make sure that extensions were primarily given only during this period, all circulars from 2001 to 2006 were also analyzed. This exercise showed that there was only one extension given prior to 2007, in the year 2005, where the extension was given under exceptional circumstances as the country suffered from a major earthquake. In total, the FBR gave 31 extensions to individuals and AOPs, and 3 extensions to companies from 2007 to 2017.[21]

Figures 4 and 5 provide a description of daily filing and extensions using a combination of the administrative tax data and extension circulars. These two graphs firstly shows that individuals, AOPs and companies prefer to file their tax returns on or closer to the deadline or extended deadline. This is because most spikes in daily filing are on the date of the deadline or extended deadline. Secondly, companies keep their behavior of filing most tax returns on the date of the legal deadline consistent through time, except when they receive a deadline extension where they file their tax returns on the extended deadline. Thirdly, individuals and AOPs initially also prefer to file most tax returns on the legal deadline. However, as time passes and extensions are given out regularly, daily filing on the legal and extended deadlines drops.

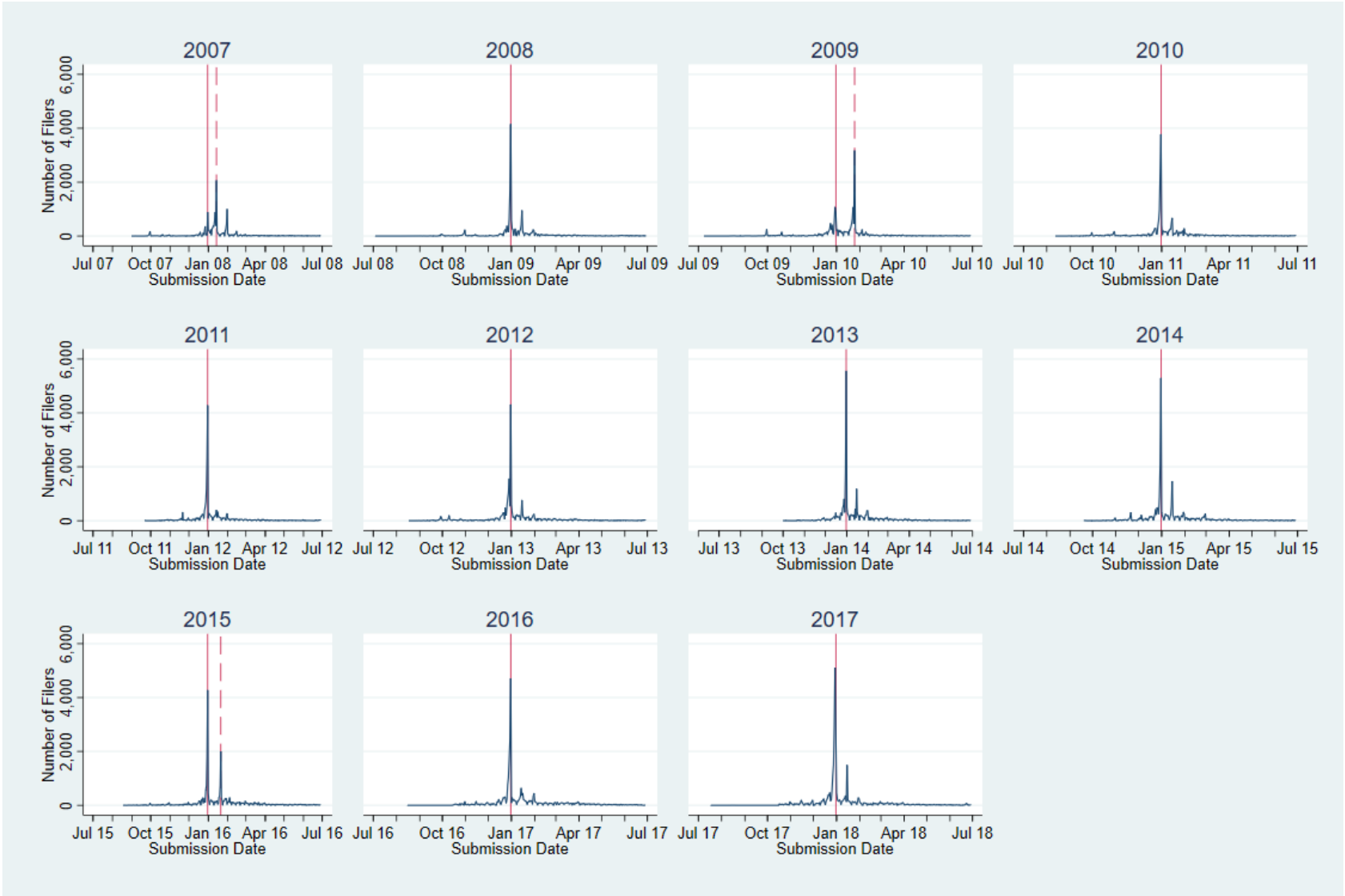
[21]For further details about the extension circulars, please refer to Appendix 3.D.

Figure 4: Daily Tax Filing and Extensions For Individuals and AOPs



Notes: The solid line represents the filing deadline in the tax law and the dotted lines represent extensions

Figure 5: Daily Tax Filing and Extensions For Companies



Notes: The solid line represents the filing deadline in the tax law and the dotted lines represent extensions

3 Methodology and Results

3.1 Extensions Lead to Delayed Filing of Tax Returns

To measure the impact of the deadline extensions on tax filing behavior, I utilize the variation in the number of extensions given out to individuals and companies.[22] As a first step, I quantify the impact of extensions on the probability of filing after the submission deadline defined in the tax law. This would inform us about whether tax filers are likely to delay the filing of their tax returns when they are given a deadline extension. For this purpose, I use a linear probability model with the empirical specification given in Equation 1.[23]

$$Delay_{it} = \phi_0 + \phi_1 Extension_{it} + \phi_2 X_{it} + \delta_t + \gamma_i + \epsilon_{it} \tag{1}$$

Here, $Delay_{it}$ is a dummy variable that is 1 if tax filer i files the return after the legal deadline defined in the tax law for tax year t, and 0 otherwise.[24] $Delay_{it}$ captures the likelihood of a delay in the filing of the tax return.

$Extension_{it}$ is a dummy variable that is 1 if tax filer i is given one or more extensions to file the return in tax year t, and 0 otherwise. For instance, individuals were given 2 extensions in tax year 2010 while companies were given 0. Hence, the $Extension_{it}$ would be 1 for individuals and 0 for companies in tax year 2010. The covariates are represented by X_{it}, the time fixed effect by δ_t, individual fixed effects by γ_i.[25]

Please note that I run all specifications in this paper first with a sample of all individuals and companies, and then with a sample of all AOPs and companies. I present the results for the individual-company and AOP-company comparison separately throughout the paper. Since AOPs and companies are both businesses and are expected to be similar in their behavior, the AOP-company results act as an important check on the individual-company results. Presenting the two analyses separately also has an added advantage of helping us understand the differential response of individuals and unincorporated businesses to extensions. In both of these analyses, companies represent the counterfactual where they only receive extensions in exceptional circumstances.

To measure the magnitude of delay by tax filers when they are given deadline extensions, I change the outcome variable from a binary variable as in the LPM to the number of days after the original deadline as per the tax law that the tax filer submits the return. I also change the independent variable from a binary variable as in the LPM to the number of extensions. The specification is given in Equation 2.

[22] Deadline extensions were regularly given out to individuals and AOPs but not to companies.

[23] I also runs probit and logit specifications in addition to the linear probability model discussed here. The results from the probit and logit specifications are similar to results from the linear probability model and are discussed in Section 5.

[24] The legal deadline for individuals and AOPs is 30 September, while that for companies is 31 December. For further details, please refer to Appendix 3.B

[25] Individual fixed effects control for each unique tax filer in the dataset.

$$DelayDays_{it} = \beta_0 + \beta_1 NumExtension_{it} + \beta_2 X_{it} + \delta_t + \gamma_i + \epsilon_{it} \quad (2)$$

Here, $DelayDays_{it}$ represents the number of days that a person i files the tax return after the original deadline set in the Income Tax Ordinance for tax year t. For instance, if an individual files the tax return for tax year 2010 on 15$^{\text{th}}$ October 2010, while the original deadline set by the law was 30$^{\text{th}}$ September 2010, $DelayDays_{it}$ would be 15. Similarly, if an individual files the tax return for tax year 2010 on 15$^{\text{th}}$ September 2010, $DelayDays_{it}$ would be -15.

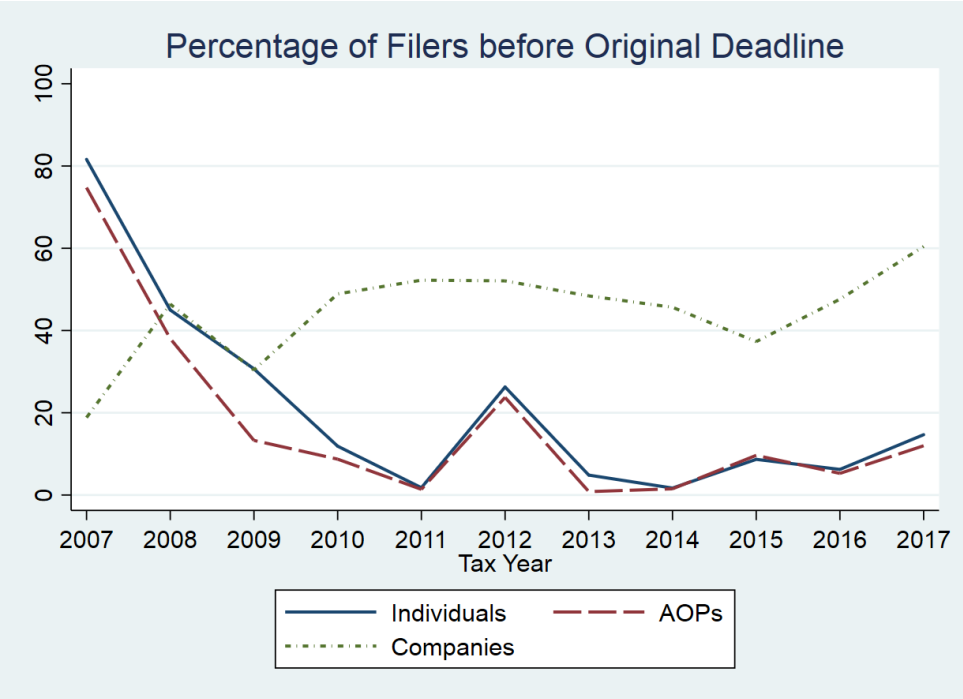
$NumExtensions_{it}$ represents the number of extensions that the government gives to tax filer i in tax year t. For instance, the government gave two extensions to individuals to file their return while it gave none to companies in tax year 2010. Hence, $NumExtensions$ would be 2 for individuals and 0 for companies in tax year 2010.

A visual depiction of how filing behavior changes with extensions over time is given in Figures 6 and 7. Figure 6 shows that the percentage of individuals who file their return before the original deadline legislated in the tax law decreases dramatically with time. Around 80% of individuals and AOPs filed their tax return before the original deadline in 2007 while this number decreased to less than 20% over time. On the other hand, the percentage of companies that file before the original deadline is stable across time. Companies were only given three extensions in 2007, 2009 and 2015. The graph shows that the only case where the share of companies that file before the original deadline dips are for these three years in which extensions were given out to companies. AOPs were given the same number of extensions as individuals and depict very similar behavior over time.

Figure 7 shows the cumulative distributions of tax filing dates for individuals, AOPs and companies for 2007 and 2017 along with the original deadlines and extensions. This figure shows that the cumulative distribution of individuals and AOPs has shifted to the right over time, implying that individuals have increasingly delayed their return filing when extensions were given.[26] In stark contrast, the cumulative distribution of companies has remained stable.

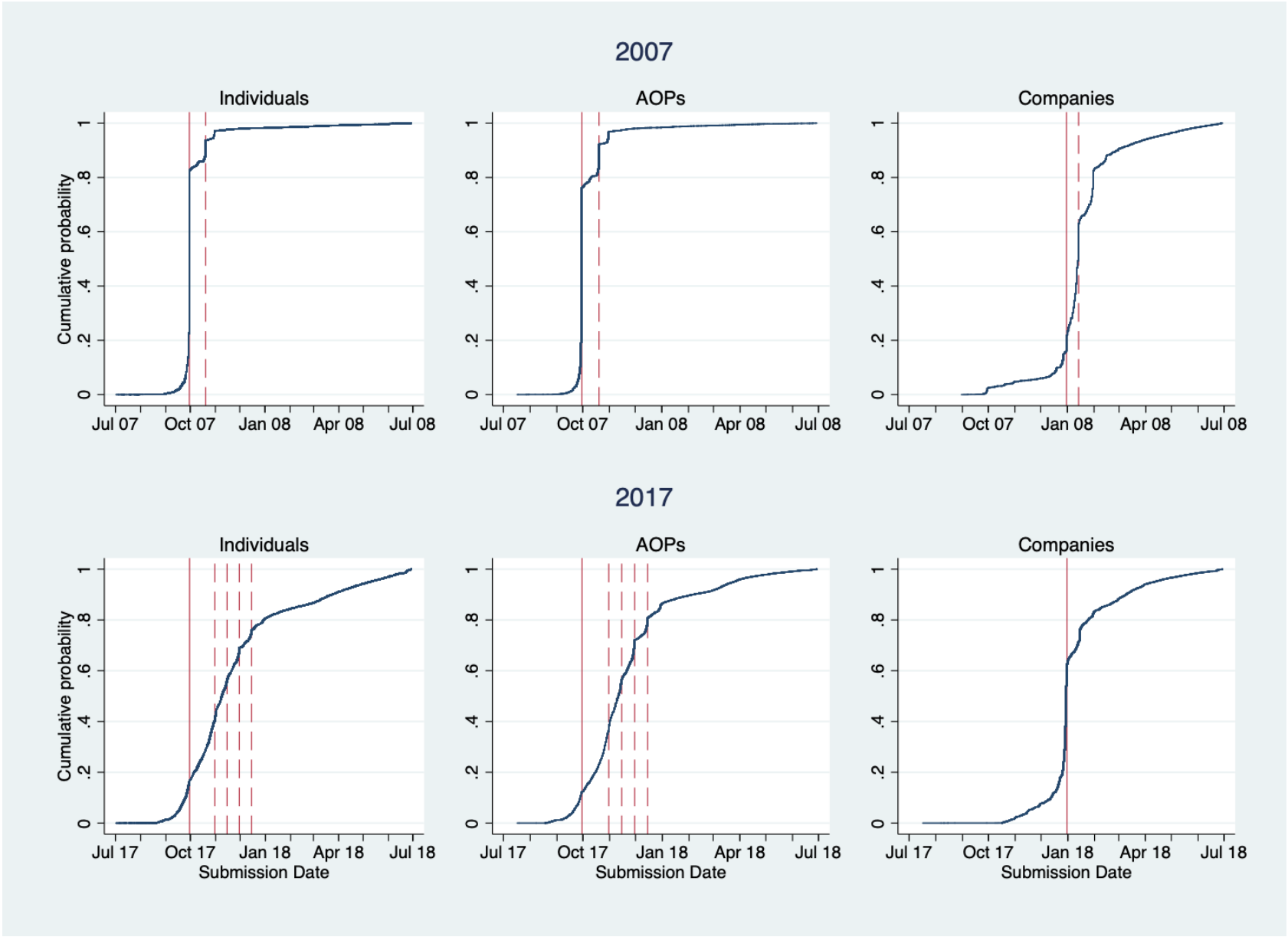
[26]Graphs for each successive year shows a pattern of gradual shift with time. Figure 7 shows the results for 2007 and 2017 that summarize the same pattern with the distribution eventually shifting to the right.

Figure 6: Decreasing Compliance with Original Deadline by Individuals and AOPs



Notes: Companies were given deadline extensions only in 2007, 2009 and 2015. The compliance of companies remained stable apart from these three years when companies also delayed the filing of their tax returns after the deadline set in the tax law.

Figure 7: Delayed Filing by Individuals and AOPs



Notes: The solid line represents the filing deadline in the tax law and the dotted lines represent extensions

The results from the linear probability model are presented in Table 2. Specification (4) of both panels show that one deadline extension is associated with an increase in the probability of individuals and AOPs to file after the legal deadline by 38.3 and 33.5 percentage points respectively. I also run probit and logit models in addition to the linear probability model discussed here and find consistent results.[27]

Table 2: Extensions Increase Probability of Delayed Filing

Panel A: Individual-Company Comparison

Dep Variable: Delay	(1)	(2)	(3)	(4)
Extension Dummy	0.307***	0.313***	0.374***	0.383***
	(0.002)	(0.002)	(0.002)	(0.002)
Observations	10690722	10220544	10220544	10220544
Adjusted R^2	0.012	0.018	0.307	0.292
Controlling for Covariates	No	Yes	Yes	Yes
Time Fixed Effects	No	No	Yes	Yes
Individual Fixed Effects	No	No	No	Yes

Panel B: AOP-Company Comparison

Dep Variable: Delay	(1)	(2)	(3)	(4)
Extension Dummy	0.337***	0.292***	0.385***	0.335***
	(0.002)	(0.002)	(0.002)	(0.002)
Observations	732669	718823	718823	718823
Adjusted R^2	0.121	0.133	0.201	0.093
Controlling for Covariates	No	Yes	Yes	Yes
Time Fixed Effects	No	No	Yes	Yes
Individual Fixed Effects	No	No	No	Yes

Standard errors in parentheses

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Notes: This table uses a linear probability model to measure the impact of providing an extension on the probability of filing after the deadline set in the tax law. Panel A compares the behavior of all individuals and companies while Panel B compares AOPs and companies that filed tax returns from 2007 to 2017. Column (1) conducts a simple OLS regression. Column (2) controls for covariates such as taxable income, city and tax office. Columns (3) and (4) additionally control for time fixed effects and individual fixed effects. Standard errors are clustered at the level of the tax filer.

The results that quantify the magnitude of delay in tax filing are presented in Table 3. Specification (4) shows that giving one extension to tax filers is associated with individuals delaying tax filing by 20.24 days and AOPs by 16.21 days, on average. The average duration of an extension is 23.09 days which means that individuals delay their tax filing by 88% of the extension duration while AOPs delay by 70% of the extension duration. This amounts to a delay of 0.88 and 0.70 day for each extension day for individuals and AOPs respectively. Hence, when individuals and AOPs are given extra time to file their

[27]The results from the probit and logit models are presented in Section 5

returns, they simply put off the filing to a later date.

Table 3: Individuals and AOPs Delay Filing by Most of the Extension Duration

Panel A: Individual-Company Comparison

Dep Variable: Delay (Days)	(1)	(2)	(3)	(4)
Number of Extensions	17.262***	16.403***	15.062***	20.243***
	(0.043)	(0.043)	(0.187)	(0.338)
Observations	10690722	10220544	10220544	10220544
Adjusted R^2	0.020	0.030	0.065	0.073
Controlling for Covariates	No	Yes	Yes	Yes
Time Fixed Effects	No	No	Yes	Yes
Individual Fixed Effects	No	No	No	Yes

Panel B: AOP-Company Comparison

Dep Variable: Delay (Days)	(1)	(2)	(3)	(4)
Number of Extensions	6.319***	5.577***	7.654***	16.214***
	(0.174)	(0.190)	(0.280)	(0.408)
Observations	732669	718823	718823	718823
Adjusted R^2	0.003	0.020	0.033	0.036
Controlling for Covariates	No	Yes	Yes	Yes
Time Fixed Effects	No	No	Yes	Yes
Individual Fixed Effects	No	No	No	Yes

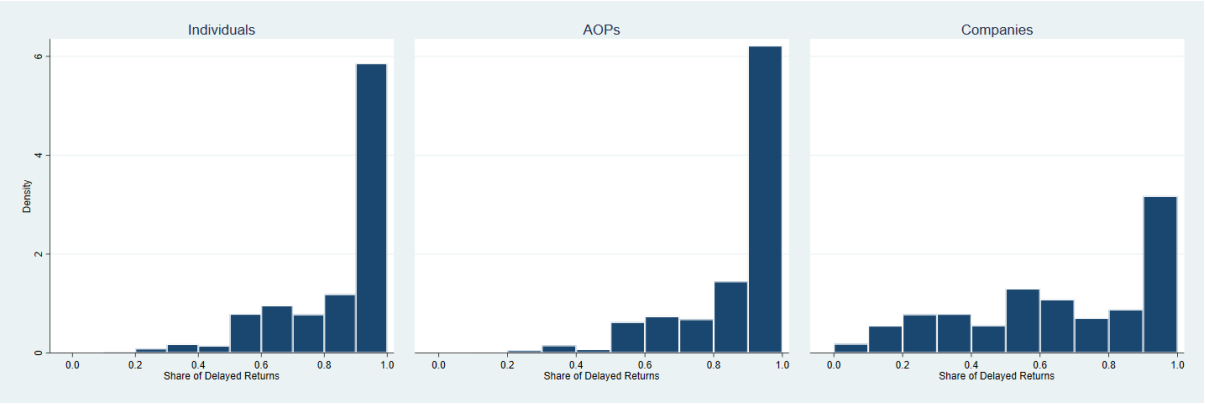
Standard errors in parentheses

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Notes: This table measures the impact of the number of extensions on the number of days the tax return is filed after the deadline set in the tax law. Panel A compares the behavior of all individuals and companies while Panel B compares AOPs and companies that filed tax returns from 2007 to 2017. Column (1) conducts a simple OLS regression. Column (2) controls for covariates such as taxable income, city and tax office. Columns (3) and (4) additionally control for time fixed effects and individual fixed effects. Standard errors are clustered at the level of the tax filer.

Figure 8 shows that distribution of delayed filing for individuals, AOPs and companies. Here, the share of delayed returns for a tax filer is defined as the total number of returns filed by the tax filer after the legal deadline divided by the total number of returns filed by the tax filer from 2007-2017. The figure shows that most individuals and AOPs delay the filing of almost all of their tax returns. This shows that the results are not being driven by a few outliers.

Figure 8: Distributions of Delayed Filing by Tax Filer Type



Notes: The share of delayed returns for a tax filer is defined as the total number of returns filed by the tax filer after the legal deadline divided by the total number of returns filed by the tax filer from 2007-2017.

3.2 Extensions Reduce Compliance With Final Deadline

Repeated extensions might reduce the credibility of the deadline and resultantly reduce compliance with the final extended deadline. To conduct this analysis, I run the linear probability model in Equation 3.

$$DelayFinal_{it} = \beta_0 + \beta_1 NumExtension_{it} + \beta_2 X_{it} + \delta_t + \gamma_i + \epsilon_{it} \tag{3}$$

Here, $DelayFinal_{it}$ is a dummy variable that is 1 if tax filer i files the return after the final extended deadline and 0 otherwise. $NumExtensions_{it}$ represents the number of extensions given out to taxpayer i in tax year t. The covariates are represented by X_{it}, the time fixed effects by δ_t, individual fixed effects by γ_i.

A visual depiction is presented in Figure 9 which shows that compliance of individuals and AOPs with the final extended deadline declines with time, while the trend for companies remains stable. Specifically, the percentage of filers before the final extended deadline drops by 26.77 and 12.09 percentage points respectively for individuals and AOPs from 2007 to 2017. The compliance for companies instead increases by 5.90 percentage points for companies.

The results are presented in Table 4. Specification (4) of both panels shows that one extension is associated with a decrease in the compliance with the final deadline by 4.5 and 1.1 percentage points for individuals and AOPs respectively.

3.3 Extensions Do Not Encourage Tax Filing

The FBR explicitly gave deadline extensions throughout the period of the study under the assumption that it encourages filing behavior and that time is a binding constraint

Table 4: Extensions Reduce Compliance with Final Extended Deadline

Panel A: Individual-Company Comparison

Dep Var: Delay Final	(1)	(2)	(3)	(4)
Number of Extensions	0.018***	0.017***	-0.032***	0.045***
	(0.000)	(0.000)	(0.000)	(0.001)
Observations	10690722	10220544	10220544	10220544
Adjusted R^2	0.005	0.021	0.114	0.096
Controlling for Covariates	No	Yes	Yes	Yes
Time Fixed Effects	No	No	Yes	Yes
Individual Fixed Effects	No	No	No	Yes

Panel B: AOP-Company Comparison

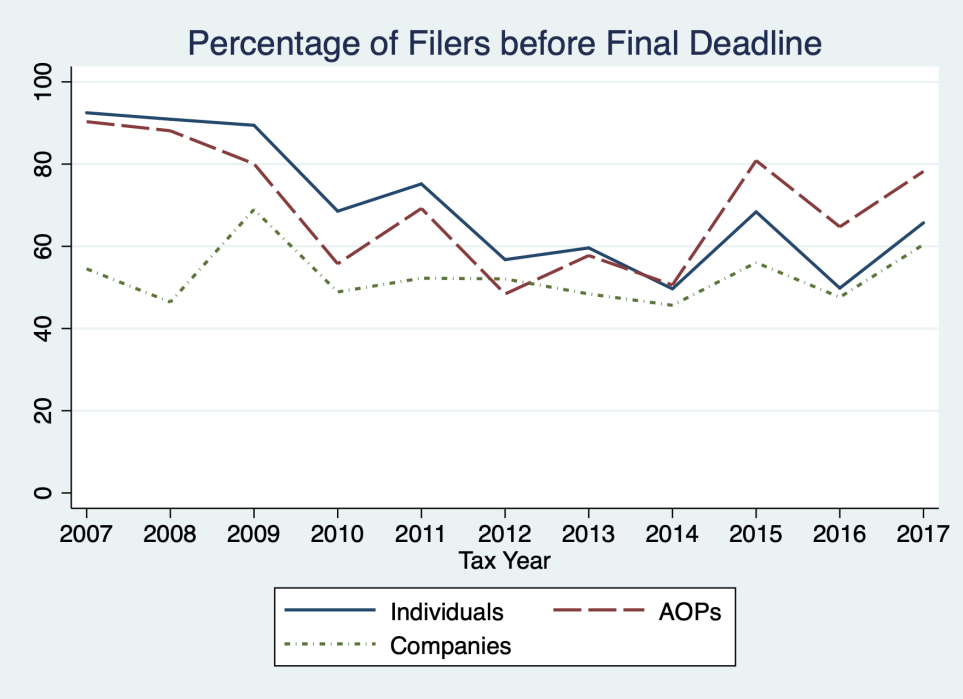
Dep Var: Delay Final	(1)	(2)	(3)	(4)
Number of Extensions	-0.047***	-0.039***	-0.033***	0.011***
	(0.000)	(0.000)	(0.001)	(0.001)
Observations	732669	718823	718823	718823
Adjusted R^2	0.033	0.051	0.076	0.063
Controlling for Covariates	No	Yes	Yes	Yes
Time Fixed Effects	No	No	Yes	Yes
Individual Fixed Effects	No	No	No	Yes

Standard errors in parentheses

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Notes: This table uses a linear probability model to measure the impact of providing an extension on the probability of filing after the final extended deadline. Panel A compares the behavior of all individuals and companies while Panel B compares AOPs and companies that filed tax returns from 2007 to 2017. Column (1) conducts a simple OLS regression. Column (2) controls for covariates such as taxable income, city and tax office. Columns (3) and (4) additionally control for time fixed effects and individual fixed effects. Standard errors are clustered at the level of the tax filer.

Figure 9: Decreasing Compliance with Final Deadline by Individuals and AOPs



to tax filing. To test whether this assumption is true, I convert the panel dataset used in the previous section into a balanced panel where tax filers in a given year were assigned the dummy variable of value 1 when they filed and 0 when they did not. Then, I use the variation in the extensions given out to individuals/AOPs and companies to draw conclusions about the probability of filing. The empirical specification is given in Equation 4.

$$FileProbability_{it} = \theta_0 + \theta_1 NumExtensions_{it} + \theta_2 X_{it} + \delta_t + \gamma_i + \epsilon_{it} \tag{4}$$

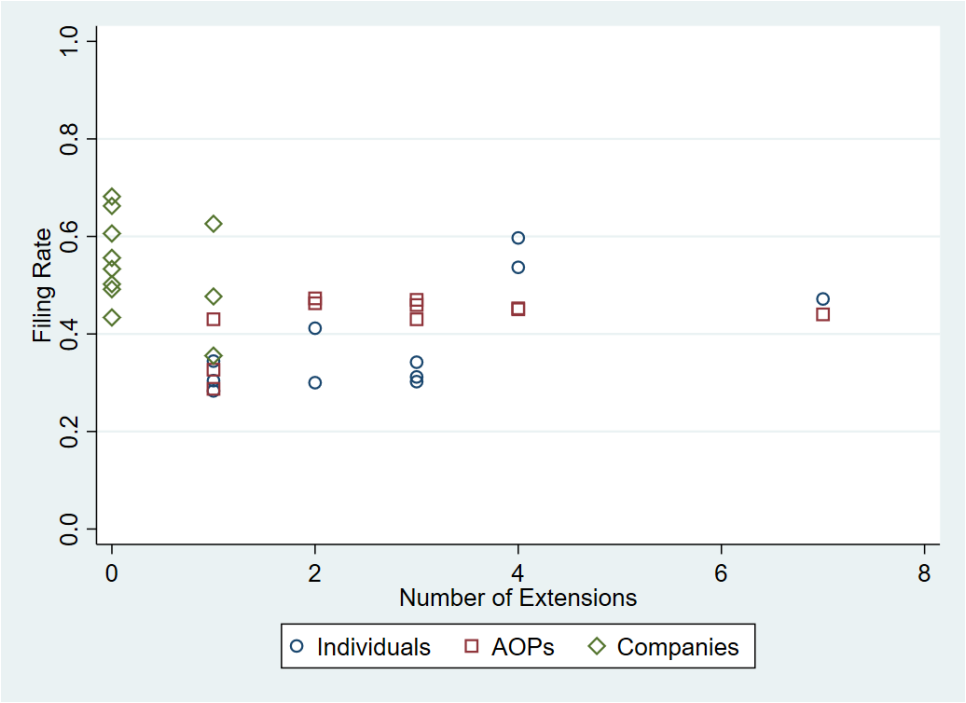
Here $FileProbability_{it}$ is a binary variable that is 1 if taxpayer i filed the tax return in tax year t and 0 otherwise. $NumExtensions_{it}$ represents the number of extensions given out taxpayer i in tax year t.

Figure 10 shows how the filing rates for individuals, AOPs and companies vary with the number of extensions given over time.[28] From this graph, we do not observe an association between extensions and filing rates.

The results are presented in Table 5. Specification (4) shows that the association of extensions with the probability of filing is close to zero for individuals and negative for AOPs. The coefficient size for the individual-company comparison is 0.002, which means that even in the best case scenario, extensions improve the filing probability by 0.2 percentage points. This amounts to only 4,750 additional tax filers per deadline extension where on average 966,031 individuals file their tax returns in the sample. This represents

[28]The filing rate for each individuals is the number of individuals who file in a particular year divided by the total number of unique individuals who filed from 2007-2017. It is similarly calculated for AOPs and companies.

Figure 10: No Obvious Association Between Extensions and Filing Rate



Notes: The filing rate is calculated separately for each type. For instance, the filing rate for each individuals is the number of individuals who file in a particular year divided by the total number of unique individuals who filed from 2007-2017.

a growth of only 0.4% in the tax base per deadline extension. The results for AOPs also depict that deadline extensions do not encourage tax filing. Crucially, the result that deadline extensions do not encourage tax filing behavior for both individuals and AOPs becomes even stronger when we exclude certain time periods from the analysis (Table 6). The FBR introduced tax filing incentives for individuals in 2015 where filers had to pay lower withholding taxes on transactions. Excluding 2015-2017 from the analysis makes the coefficient for extensions negative for individuals and close to zero for AOPs.

Table 5: Deadline Extensions Do Not Encourage Tax Filing

Panel A: Individual-Company Comparison

Dep Variable: File Probability	(1)	(2)	(3)	(4)
Number of Extensions	0.034***	0.039***	-0.029***	0.002***
	(0.000)	(0.000)	(0.000)	(0.001)
Observations	28329692	26122950	26122950	26122950
Adjusted R^2	0.014	0.032	0.067	0.086
Controlling for Covariates	No	Yes	Yes	Yes
Time Fixed Effects	No	No	Yes	Yes
Individual Fixed Effects	No	No	No	Yes

Panel B: AOP-Company Comparison

Dep Variable: File Probability	(1)	(2)	(3)	(4)
Number of Extensions	-0.012***	-0.000	-0.032***	-0.026***
	(0.000)	(0.000)	(0.001)	(0.001)
Observations	1585074	1554836	1554836	1554836
Adjusted R^2	0.002	0.019	0.042	0.031
Controlling for Covariates	No	Yes	Yes	Yes
Time Fixed Effects	No	No	Yes	Yes
Individual Fixed Effects	No	No	No	Yes

Standard errors in parentheses

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Notes: This table measures the impact of the number of extensions on the probability of filing the tax return. Panel A compares the behavior of all individuals and companies while Panel B compares AOPs and companies that filed tax returns from 2007 to 2017. Column (1) conducts a simple OLS regression. Column (2) controls for covariates such as taxable income, city and tax office. Columns (3) and (4) additionally control for time fixed effects and individual fixed effects. Standard errors are clustered at the level of the tax filer.

Table 6: Excluding Time Periods Also Shows that Extensions Do Not Encourage Filing

Panel A: Individual-Company Comparison

Dep Variable: File Probability	(1) No Incentives	(2) Early Years
Number of Extensions	-0.044***	-0.059***
	(0.001)	(0.001)
Observations	18998160	11874954
Adjusted R^2	0.020	0.005
Controlling for Covariates	Yes	Yes
Time Fixed Effects	Yes	Yes
Individual Fixed Effects	Yes	Yes

Panel B: AOP-Company Comparison

Dep Variable: File Probability	(1) No Incentives	(2) Early Years
Number of Extensions	0.004***	0.010***
	(0.001)	(0.001)
Observations	1130726	706700
Adjusted R^2	0.036	0.044
Controlling for Covariates	Yes	Yes
Time Fixed Effects	Yes	Yes
Individual Fixed Effects	Yes	Yes

Standard errors in parentheses

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Notes: This table measures the impact of the number of extensions on the probability of filing the tax return. Panel A compares the behavior of all individuals and companies while Panel B compares AOPs and companies that filed tax returns. Columns (1) excludes the tax years 2015-2017 from the analysis because these years introduced incentives for filing tax returns. Column (2) run the analysis for 2007-2011 when the notifications for deadline extensions had an explicitly stated reason of encouraging tax filing. Standard errors are clustered at the level of the tax filer.

4 Mechanisms

4.1 More Delays with Earlier Extension Announcements

The announcement date of the extension relative to the deadline could be an important mechanism. This is because earlier announcement would provide potential tax filers with more time to change their filing behavior. To test this mechanism, I treat every extension period differently and create an outcome variable that is the number of days after the previous deadline that tax filer files the return. The empirical specification is given in Equation 5.

$$DelayDays_{it} = \alpha_0 + \alpha_1 EarlyAnnouncement_{it} + \alpha_2 X_{it} + \delta_t + \gamma_i + \epsilon_{it} \tag{5}$$

Here, $DelayDays_{it}$ represents the number of days that tax filer i files the return after the previous extended deadline for tax year t. For instance, if the original deadline for an individual for tax year 2010 was 30 September 2010 which was later extended to 15 October 2010 and then again to 30 October 2010, and if the individual filed the tax return on 17 October 2010, the value for the variable be 2 days.

$EarlyAnnouncement_{it}$ represents the number of days prior to the upcoming deadline that the extension announcement is made for person i in tax year t. For instance, using the previous example of an individual filing on 17 October 2010, if the relevant extension availed by the tax filer was announced on the 11 October 2010 with an upcoming deadline of 15 October 2019, the value of the variable for the individual will be 4. The covariates are represented by X_{it}, the time fixed effect by δ_t, individual fixed effects by γ_i.

The results are presented in Table 7. From specification (4) for both panels, we can see that making the extension announcement a day earlier prior to the upcoming deadline, is associated with an additional delay of 0.44 days for individuals and 0.42 days for AOPs. Hence, when extension announcements are made earlier, tax filers delay the filing of their returns more compared to announcements that are made close to the upcoming deadline.

4.2 Past Extensions Predict Future Changes in Behavior

Extensions were consistently given out to individuals and AOPs, which means they could learn over time and change their behavior. To test this mechanism, I run the empirical specification given in Equation 6.

$$\begin{aligned} DelayDays_{it} = \beta_0 + \beta_1 NumExtension_{it} + \beta_2 NumExtensionLag_{it} \\ + \beta_3 NumExtensionLag_{it} * FileLag_{it} + \beta_4 FileLag_{it} + \beta_5 X_{it} + \delta_t + \gamma_i + \epsilon_{it} \end{aligned} \tag{6}$$

Table 7: Announcement Date is an Important Mechanism

Panel A: Individual-Company Comparison

Dep Variable: Delay (Days)	(1)	(2)	(3)	(4)
Early Announcement (Days)	0.284***	0.286***	0.421***	0.442***
	(0.001)	(0.001)	(0.001)	(0.001)
Observations	4649383	4478578	4478578	4478578
Adjusted R^2	0.039	0.042	0.287	0.321
Controlling for Covariates	No	Yes	Yes	Yes
Time Fixed Effects	No	No	Yes	Yes
Individual Fixed Effects	No	No	No	Yes

Panel B: AOP-Company Comparison

Dep Variable: Delay (Days)	(1)	(2)	(3)	(4)
Early Announcement (Days)	0.209***	0.215***	0.387***	0.419***
	(0.002)	(0.002)	(0.003)	(0.003)
Observations	217378	212741	212741	212741
Adjusted R^2	0.028	0.034	0.307	0.337
Controlling for Covariates	No	Yes	Yes	Yes
Time Fixed Effects	No	No	Yes	Yes
Individual Fixed Effects	No	No	No	Yes

Standard errors in parentheses

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Notes: This table measures the relationship between the announcement date of the extension on the number of days the tax return is filed after the deadline set in the tax law. Panel A compares the behavior of all individuals and companies while Panel B compares AOPs and companies that filed tax returns from 2007 to 2017. Column (1) conducts a simple OLS regression. Column (2) controls for covariates such as taxable income, city and tax office. Columns (3) and (4) additionally control for time fixed effects and individual fixed effects. Standard errors are clustered at the level of the tax filer.

Here $NumExtensionsLag_{it}$ represents the lag of extensions for person i. For instance, the government gave 3 extensions to individuals in 2009. Hence, the lag of extensions for individuals in tax year 2010 will be 3. This variable measures whether people learn that the FBR consistently gives extensions and modify their behavior accordingly.

Here, $FileLag_{it}$ is a dummy variable that is 0 if person i did not file the return in tax year $t-1$ and 1 if she did. This variable proxies for familiarity with the tax filing system. $NumExtensionLag_{it} * FileLag_{it}$ is simply an interaction of the two terms defined above. This interaction term seeks to understand how the learning of people who filed their return in the previous year differs from people who did not. I also run the specification with $DelayFinal_{it}$ instead of $DelayDays_{it}$ as the outcome variable.

The results are presented in Table 8. The positive and significant coefficient of 'Extensions Lag' provides evidence that individuals and AOPs learn to change their behavior over time. Specifically, an extension in one year is associated with delayed filing and lower compliance with the final extended deadline in the next year.

Columns (2) and (4) depict variation in learning behavior. Column (2) shows that individuals who file their tax returns and receive an extension in the same year delay their filing less than non-filers while AOPs respond by delaying more than non-filers. Column (4) instead shows that both individuals and AOPs who file their tax returns and receive an extension in the same year reduce their compliance with the final extended deadline less than non-filers in the next year.

4.3 Response to Extensions Similar Across Income and Tax Payments

We might expect tax filers that have to pay taxes along with the submission of the return to delay their filing more because they can make interest income on the tax payment by delaying. Additionally, we might also expect the impact to vary by income. To test this mechanism, I run the empirical specification in Equation 7.

$$DelayDays_{it} = \beta_0 + \beta_1 NumExtension_{it} + \beta_2 NumExtension_{it} * TaxPaid_{it} + \beta_3 TaxPaid_{it} + \beta_4 X_{it} + \delta_t + \gamma_i + \epsilon_{it} \quad (7)$$

Here, $TaxPaid_{it}$ is the amount of tax person i had to pay along with the tax return after adjusting for tax credits in year t. $NumExtension_{it} * TaxPaid_{it}$ is an interaction term that helps understand whether tax filers who pay respond differently to deadline extensions compared to filers who do not have to pay. On average, 10.12% of all tax filers in the dataset pay taxes along with the submission of the tax return. In cases where withholding taxes claimed by the tax filer exceed the final tax liability, they do not have to pay any taxes along with the submission of the return. For instance, most salaried individuals have their tax withheld at source and hence only have to file the tax return.

Table 8: Tax Filers Learn Over Time and Change Their Behavior

Panel A: Individual-Company Comparison

Dep Var:	(1) Delay (Days)	(2) Delay (Days)	(3) Delay Final	(4) Delay Final
Number of Extensions	16.650***	16.793***	0.024***	0.024***
	(0.281)	(0.280)	(0.001)	(0.001)
Extensions Lag	10.652***	25.898***	0.062***	0.082***
	(0.267)	(0.279)	(0.001)	(0.001)
Extensions Lag*Filing Lag		-16.045***		-0.021***
		(0.100)		(0.000)
Observations	10220544	10220544	10220544	10220544
Adjusted R^2	0.073	0.142	0.098	0.127
Controlling for Covariates	Yes	Yes	Yes	Yes
Time Fixed Effects	Yes	Yes	Yes	Yes
Individual Fixed Effects	Yes	Yes	Yes	Yes

Panel B: AOP-Company Comparison

Dep Var:	(1) Delay (Days)	(2) Delay (Days)	(3) Delay Final	(4) Delay Final
Number of Extensions	13.642***	13.868***	-0.005***	-0.004***
	(0.351)	(0.345)	(0.001)	(0.001)
Extensions Lag	8.483***	8.225***	0.053***	0.068***
	(0.325)	(0.531)	(0.001)	(0.001)
Extensions Lag*Filing Lag		1.866***		-0.014***
		(0.475)		(0.001)
Observations	718823	718823	718823	718823
Adjusted R^2	0.037	0.057	0.073	0.080
Controlling for Covariates	Yes	Yes	Yes	Yes
Time Fixed Effects	Yes	Yes	Yes	Yes
Individual Fixed Effects	Yes	Yes	Yes	Yes

Standard errors in parentheses

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Notes: This table shows evidence for learning in behavior. Panel A compares the behavior of all individuals and companies while Panel B compares AOPs and companies that filed tax returns from 2007 to 2017. Standard errors are clustered at the level of the tax filer.

Instead of $TaxPaid_{it}$, I also use $Income_{it}$ which is the taxable income of tax filer i in yeaar t.

The results are presented in Table 9 and shows that filers with different levels of tax payments and income respond in the same way to deadline extensions for both individuals and AOPs.[29]

[29]The coefficient for the interactions terms in columns (1) and (2) of Table 9 are insignificant.

Table 9: Heterogeneities in Response to Deadline Extensions

Panel A: Individual-Company Comparison

Dep Var: Delay (Days)	(1)	(2)
Number of Extensions	20.247***	20.241***
	(0.338)	(0.338)
Extensions*Tax Paid	0.003	
	(0.003)	
Extensions*Income		-0.000
		(0.000)
Observations	10220544	10220544
Adjusted R^2	0.073	0.073
Controlling for Covariates	Yes	Yes
Time Fixed Effects	Yes	Yes
Individual Fixed Effects	Yes	Yes

Panel B: AOP-Company Comparison

Dep Var: Delay (Days)	(1)	(2)
Number of Extensions	16.214***	16.214***
	(0.408)	(0.408)
Extensions*Tax Paid	-0.002	
	(0.002)	
Extensions*Income		0.000
		(0.000)
Observations	718823	718823
Adjusted R^2	0.036	0.036
Controlling for Covariates	Yes	Yes
Time Fixed Effects	Yes	Yes
Individual Fixed Effects	Yes	Yes

Standard errors in parentheses

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Notes: This table shows heterogeneities in behavior. Panel A compares the behavior of all individuals and companies while Panel B compares AOPs and companies that filed tax returns from 2007 to 2017. Standard errors are clustered at the level of the tax filer.

5 Robustness

5.1 Results Remain Robust With Probit and Logit Models

The main results showing that extensions increase the probability of individuals and AOPs to file after the legal deadline use a linear probability model. To test whether the results are sensitive to the type of probability model, I also run probit and logit models. The results are presented in Tables 10 and 11.

These tables show that the results remain robust to the type of model used. Specifically, column (3) in both tables show a similar impact of extensions on delaying behavior as in the main results using the linear probability model.

Table 10: Results for Delayed Filing Remain Robust With Probit Model

Panel A: Individual-Company Comparison

Dep Variable: Delay	(1)	(2)	(3)
Extension Dummy	0.242***	0.245***	0.266***
	(0.001)	(0.001)	(0.001)
Observations	10690722	10220336	10220336
Pseudo R^2	0.009	0.016	0.279
Controlling for Covariates	No	Yes	Yes
Time Fixed Effects	No	No	Yes

Panel B: AOP-Company Comparison

Dep Variable: Delay	(1)	(2)	(3)
Extension Dummy	0.287***	0.244***	0.346***
	(0.001)	(0.001)	(0.002)
Observations	732669	718525	718525
Pseudo R^2	0.098	0.111	0.182
Controlling for Covariates	No	Yes	Yes
Time Fixed Effects	No	No	Yes

Standard errors in parentheses

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Notes: This table uses a probit model to measure the impact of providing an extension on the probability of filing after the deadline set in the tax law. Panel A compares the behavior of all individuals and companies while Panel B compares AOPs and companies that filed tax returns from 2007 to 2017. Results show average marginal effect using margins command in Stata. Standard errors are clustered at the level of the tax filer.

Table 11: Results for Delayed Filing Remain Robust With Logit Model

Panel A: Individual-Company Comparison

Dep Variable: Delay	(1)	(2)	(3)
Extension Dummy	0.228***	0.231***	0.263***
	(0.001)	(0.001)	(0.001)
Observations	10690722	10220336	10220336
Pseudo R^2	0.009	0.016	0.278
Controlling for Covariates	No	Yes	Yes
Time Fixed Effects	No	No	Yes

Panel B: AOP-Company Comparison

Dep Variable: Delay	(1)	(2)	(3)
Extension Dummy	0.279***	0.238***	0.347***
	(0.001)	(0.001)	(0.002)
Observations	732669	718525	718525
Pseudo R^2	0.098	0.110	0.179
Controlling for Covariates	No	Yes	Yes
Time Fixed Effects	No	No	Yes

Standard errors in parentheses

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Notes: This table uses a logit model to measure the impact of providing an extension on the probability of filing after the deadline set in the tax law. Panel A compares the behavior of all individuals and companies while Panel B compares AOPs and companies that filed tax returns from 2007 to 2017. Results show average marginal effect using margins command in Stata. Standard errors are clustered at the level of the tax filer.

5.2 Results Remain Robust to With Restricted Time Sample

The FBR introduced another policy aimed at encouraging filing behavior from 2015 onward. As part of the Finance Act 2014, the government legislated that all tax filers would have a lower amount of income tax withheld from transactions where withholding tax was applicable compared to non-filers. For instance, tax filers who bought a new car would have to pay a lower withholding tax as part of the final price compared to non-filers. This withholding tax can then be adjusted against the final liability in the tax return. Since this policy could potentially impact individuals, AOPs and companies in a different manner, it could be a confounding factor. To address this, I run the preferred baseline specification with a restricted time sample of returns filed prior to 2015. The preferred baseline specification controls for various covariates, time fixed effects and individual fixed effects.

Another confounding factor is that in the later years of the policy, there were concerns that the extensions were given out due to low number of filers close to the original deadline and due to pressure from tax bar associations. This might create a problem of reverse causality and omitted variables. To address this concern, I run the preferred baseline specification with a restricted time sample of returns filed prior to 2011. This is because the extension circulars from 2007 to 2010 explicitly mention tax broadening and facilitation of tax filers as the main justification of giving the extensions. With this clear and explicit purpose of the extensions, this robustness test addresses the concerns of reverse causality and omitted variables.

Since these two robustness checks are both time exclusion tests, they are clubbed together in Table 12 for convenience. The results show that all coefficients are consistent with the main findings.

5.3 Results Remain Robust to Large Company Exclusion

The behavior of large corporations might be different compared to individuals and AOPs.[30] Large corporations also receive more attention from the FBR because they are the largest contributors to income tax revenue. The jurisdiction of these corporations is assigned to Large Taxpayer Units (LTUs) as opposed to the regular Regional Tax Offices (RTOs). LTUs have a higher number of civil servants per tax filer which is related to the extra focus on these large companies. To address this concern, I exclude large companies from the sample by 6 different methods.

The first method excludes companies with a declared income higher than the maximum or lower than the minimum income declared by individual or AOPs for a particular year. For instance, if the maximum income declared by an AOP for the tax year 2007 is PKR 1,000,000 and the minimum is PKR 0, then all companies in the year 2007 that have a declared income above PKR 1,000,000 or lower than PKR 0 are dropped from the

[30] AOPs are usually medium-sized enterprises.

Table 12: Results for Delayed Filing Remain Robust to Time Exclusion

Panel A: Individual-Company Comparison

Dep Var: Delay (Days)	(1) No Incentives	(2) No Incentives	(3) Early Years	(4) Early Years
Number of Extensions	34.196***	27.196***	35.811***	32.791***
	(0.644)	(0.572)	(0.937)	(1.206)
Extensions Lag		41.093***		-0.160
		(0.697)		(1.429)
Extensions Lag*Filing Lag		-22.613***		0.666
		(0.373)		(0.464)
Observations	6168285	6168285	3598456	3598456
Adjusted R^2	0.017	0.047	0.014	0.028
Controlling for Covariates	Yes	Yes	Yes	Yes
Time Fixed Effects	Yes	Yes	Yes	Yes
Individual Fixed Effects	Yes	Yes	Yes	Yes

Panel B: AOP-Company Comparison

Dep Var: Delay (Days)	(1) No Incentives	(2) No Incentives	(3) Early Years	(4) Early Years
Number of Extensions	32.170***	29.241***	39.867***	32.892***
	(0.730)	(0.669)	(1.098)	(1.417)
Extensions Lag		17.555***		4.681*
		(1.401)		(2.247)
Extensions Lag*Filing Lag		1.249		5.753**
		(1.255)		(1.806)
Observations	498533	498533	289732	289732
Adjusted R^2	0.017	0.031	0.017	0.022
Controlling for Covariates	Yes	Yes	Yes	Yes
Time Fixed Effects	Yes	Yes	Yes	Yes
Individual Fixed Effects	Yes	Yes	Yes	Yes

Standard errors in parentheses

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Notes: This table measures the impact of the number of extensions on the number of days the tax return is filed after the deadline set in the tax law with time-restricted samples. Panel A compares the behavior of all individuals and companies while Panel B compares AOPs and companies that filed tax returns from 2007 to 2017. Columns (1) and (2) exclude the tax years 2015-2017 from the analysis because these years introduced incentives for filing tax returns. Column (3) and (4) run the analysis for 2007-2011 when the notifications for deadline extensions had an explicitly stated reason of encouraging tax filing. All columns control for covariates,such as taxable income, time fixed effects and individual fixed effects. Standard errors are clustered at the level of the tax filer.

sample.[31] The paper refers to this method as 'Min-Max'.

The second method excludes companies with a declared income higher than the 90^{th} percentile or lower than the 10^{th} percentile of income declared by individuals or AOPs for a particular year. I refer to this method as '90-10'. The third method excludes companies with a declared income higher than the 80^{th} percentile or lower than the 20^{th} percentile of income declared by individuals or AOPs for a particular year. The paper refers to this method as '80-20'.

While the first three methods drop companies both above a maximum threshold and below a minimum one, the fourth, fifth and sixth methods simply drop companies above a maximum threshold. The fourth method excludes companies with a declared income higher than the 75^{th} percentile of income declared by individuals or AOPs for a particular year. The paper refers to this method as 'Above 75^{th}'. The fifth and sixth methods exclude companies with a declared income above the 90^{th} and 99^{th} percentiles of incomes respectively. I refer to these methods as 'Above 90^{th}' and 'Above 99^{th}'. The preferred specifications for all six methods is shown in Table 13. Together, these different methods of excluding large companies from the analysis address the potential problem posed by large corporations.

Table 13 shows the results from all six methods of excluding large companies in both panels. From this table, we can see that not only are the coefficients across all six methods extremely consistent and stable, but also that the value of the coefficients is very similar to the preferred specification of the main results in Table 3 presented in Section 3. We can conclude that excluding large companies makes no major difference to the findings of the paper and that it does not confound the results.

[31] Please note that losses can also be declared in tax returns.

Table 13: Results For Delayed Filing Remain Robust to Large Company Exclusion

Panel A: Individual-Company Comparison

Dep Var: Delay (Days)	(1) Min-Max	(2) 90-10	(3) 80-20	(4) Above 75^{th}	(5) Above 90^{th}	(6) Above 99^{th}
Number of Extensions	16.712***	16.682***	18.167***	17.277***	17.023***	16.824***
	(0.281)	(0.340)	(0.472)	(0.333)	(0.321)	(0.301)
Extensions Lag	25.779***	26.243***	30.134***	26.658***	26.394***	26.161***
	(0.281)	(0.333)	(0.542)	(0.329)	(0.318)	(0.300)
Extensions Lag*Filing Lag	-16.043***	-15.956***	-15.955***	-15.977***	-15.987***	-16.016***
	(0.100)	(0.100)	(0.101)	(0.100)	(0.100)	(0.100)
Observations	10218248	10156459	10103690	10171393	10180509	10197538
Adjusted R^2	0.142	0.143	0.143	0.142	0.142	0.142
Controlling for Covariates	Yes	Yes	Yes	Yes	Yes	Yes
Time Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Individual Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes

Panel B: AOP-Company Comparison

Dep Var: Delay (Days)	(1) Min-Max	(2) 90-10	(3) 80-20	(4) Above 75^{th}	(5) Above 90^{th}	(6) Above 99^{th}
Number of Extensions	13.900***	14.480***	14.801***	14.890***	14.430***	13.982***
	(0.346)	(0.401)	(0.413)	(0.397)	(0.382)	(0.358)
Extensions Lag	8.219***	8.243***	8.510***	8.741***	8.424***	8.276***
	(0.531)	(0.566)	(0.573)	(0.564)	(0.555)	(0.539)
Extensions Lag*Filing Lag	1.860***	2.693***	2.717***	2.389***	2.348***	2.014***
	(0.475)	(0.483)	(0.484)	(0.482)	(0.480)	(0.476)
Observations	717227	650950	643059	663669	675000	699801
Adjusted R^2	0.057	0.060	0.061	0.059	0.058	0.057
Controlling for Covariates	Yes	Yes	Yes	Yes	Yes	Yes
Time Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Individual Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes

Standard errors in parentheses

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Notes: This table measures the impact of the number of extensions on the number of days the tax return is filed after the deadline set in the tax law. Panel A compares the behavior of all individuals and companies while Panel B compares AOPs and companies that filed tax returns from 2007 to 2017 by excluding large companies from the sample using six different methods. All columns control for covariates, such as taxable income, time fixed effects and individual fixed effects. Standard errors are clustered at the level of the tax filer.

5.4 Results Remain Robust with Eligible Individuals Only

The main results in the individual-company comparison shared in Panel A of Table 3 use a sample of all individuals who filed their tax return from 2007-2017. This includes individuals below the minimum tax threshold who might not be required by the law to file their tax return but nonetheless do file. To ensure that the results are not being driven by individuals below the tax threshold, and purely by people who are required by law to file, I conduct an additional test that excludes all individuals below the minimum tax threshold for each tax year. The results are presented in Table 14, and show the they remain robust with a restricted sample of eligible individuals.

Table 14: Individual-Company Comparison with Only Eligible Individuals

Dep Var: Delay (Days)	(1)	(2)
Number of Extensions	19.199***	15.403***
	(0.341)	(0.283)
Extensions Lag		26.146***
		(0.292)
Extensions Lag*Filing Lag		-13.927***
		(0.140)
Observations	5406185	5406185
Adjusted R^2	0.069	0.129
Controlling for Covariates	Yes	Yes
Time Fixed Effects	Yes	Yes
Individual Fixed Effects	Yes	Yes

Standard errors in parentheses

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Notes: This table measures the impact of the number of extensions on the number of days the tax return is filed after the deadline set in the tax law. It compares the behavior of all individuals above the minimum tax threshold and companies that filed tax returns from 2007 to 2017. All columns control for covariates, such as taxable income, time fixed effects and individual fixed effects. Standard errors are clustered at the level of the tax filer.

6 Conclusion

This paper contributes to the tax enforcement and broadening literature by analyzing the effectiveness of deadline extensions in a low compliance, developing country context. The analysis uses a combination of administrative data of all tax returns filed in Pakistan from 2007-2017 and data extracted from official government documents containing details about deadline extensions. The findings reveal that extensions are associated with individuals and unincorporated businesses delaying the filing of their tax returns, without encouraging tax filing. This shows that time is not a binding constraint to tax filing, making extensions ineffective in broadening the tax base. Back of the envelope estimates using the the average deposit interest rate reveal that this policy is associated

with forgone interest revenue of USD 5 million from 2007-2017, which is equivalent to the entire federal budget for Environment Protection in 2019-2020 (Government of Pakistan, 2020).[32]

While revealing the impact of deadline extensions on taxpayer behavior in detail, the findings lead to two further questions that would add to our understanding. First, a key question is whether the effectiveness of deadline extensions interacts with the enforcement capability of the tax administration in any way. If the enforcement capability of the tax administration is better, regular tax filers might not respond to extensions by delaying their tax filing and individuals who do not usually file might consider the extension as an amnesty scheme.

Second, it is important to know whether deadline extensions could work if they are used in combination with disincentives in the future. If one-off extensions are combined with a future credible commitment to large scale implementation of fines for non-filing, we could observe extensions broaden the tax net. Such a policy of combining carrots and sticks might be effective. Answering these questions would help us understand deadline extensions in more detail and help contribute to the tax enforcement literature.

[32]Individuals approximately pay a total of USD 37 million income tax per year after adjusting for tax credits. We also know that individuals extend their tax filing by an average of 57 days per year due to extensions. Using a daily compound interest rate of 0.0181% from 2007-2017 (International Monetary Fund, 2020), we can estimate the loss in interest revenue from delayed filing. Interest Lost For Individuals= $(37 * (1 + 0.0002)^{57} - 37) * 11 \approx$ USD 4 Million. Similar calculations for AOPs yield a total loss of approximately USD 5 million from 2007-2017.

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Appendix

3.A Structure of the FBR

This appendix describes the structure of the Federal Board of Revenue in more detail and acts as a supplement to the brief discussion about the FBR in the paper. The FBR operates through two types of tax offices namely, Large Taxpayer Units (LTUs) and Regional Tax Offices (RTOs). LTUs are assigned the jurisdiction of the largest corporations in the country. They typically have more civil servants per case compared to RTOs. There are four LTUs in Pakistan, with two in Karachi, one in Lahore and one in Islamabad. Big corporations have head offices based in the biggest cities in the country. Hence, the number of LTUs across different cities reflects this trend. Since Karachi is the largest economic hub of Pakistan, it has two LTUs. Both Lahore and Islamabad also have head offices of large corporations due to which both cities have one LTU each. This can be seen from Table 3.A.1.

RTOs have the jurisdiction of all individuals, AOPs and companies not assigned to LTUs. These offices are spread across big cities in Pakistan. These tax offices also have smaller tax offices in relatively smaller cities referred to as *Mufassil* areas within the FBR. The spread of RTOs across multiple cities across Pakistan is shown in Table 3.A.1.

Table 3.A.1: FBR Field Offices

Type of Tax Office	**City**	**Number**
Large Taxpayer Units	Karachi	2
	Lahore	1
	Islamabad	1
Regional Tax Offices	Karachi	3
	Lahore	2
	Islamabad	1
	Bahawalpur	1
	Faisalabad	1
	Gujranwala	1
	Hyderabad	1
	Multan	1
	Peshawar	1
	Quetta	1
	Rawalpindi	1
	Sahiwal	1
	Sargodha	1
	Sialkot	1
	Sukkur	1

Within these tax offices, a senior civil servant with the title of Chief Commissioner is responsible for the whole office. Below the Chief Commissioner, there is a whole hierarchy

of tax officials that are assigned to different departments, such as withholding taxes, legal and administration. The jurisdiction of tax officials can be divided along functional, geographic and taxpayer type lines.

The FBR headquarter, located in Islamabad, monitors all of these field offices. The headquarter has its own hierarchy headed by the Chairperson, who is responsible for the whole organization. The FBR itself forms one part of the Finance Ministry within the federal government.

3.B Relevant Definitions from Income Tax Ordinance (2001)

Tax Year: This is usually the period from 1 July to 30 June. For instance, Tax Year 2010 means 1 July 2009 to 30 June 2010 (Section 74).

Association of Persons (AOPs): These are unincorporated businesses and partnerships (Section 80).

Filing deadlines: Individuals and AOPs must file their income tax return by 30 September. For instance, the filing deadline for an individual for the Tax Year 2010 would be 30 September 2010. Companies on the other hand must file their returns by 31 December (Section 118).

Tax Payable: This is the tax that must be paid by the filer along with the income tax return. In other words, it is tax chargeable on the taxable income minus any tax credits such as withholding tax already paid (Section 4).

3.C Summary Statistics

This appendix presents the summary statistics from the administrative tax data of all tax returns filed in Pakistan from 2007 to 2017. It supplements Section 2 of the main paper. Table 3.C.1 contains the mean, standard deviation, minimum and maximum values of multiple variables in the dataset. Table 3.C.2 disaggregates this by tax filer type.

Table 3.C.1: Summary Statistics from Tax Data

	Mean	Std. Dev.	Min.	Max.
Taxable Income (PKR)	751,234.80	186,183,120.41	-217,969,772,917.00	101,711,880,998.00
Tax Chargeable (PKR)	383,212.93	38,280,668.88	-95,268,035.00	36,963,745,646.00
Tax Credit (PKR)	328,705.03	33,014,118.04	-11,241,774.00	42,751,050,345.00
Tax Paid (PKR)	14,450.10	2,254,468.04	0.00	3,000,000,000.00
Electronic Filing (%)	0.53	0.50	0.00	1.00
Individual Dummy (1/0)	0.94	0.25	0.00	1.00
AOP Dummy (1/0)	0.04	0.19	0.00	1.00
Company Dummy (1/0)	0.03	0.16	0.00	1.00
Observations	11,362,104			

Notes: This table provides the summary statistics from the dataset of all tax returns filed in Pakistan by any category of tax filer from 2007 to 2017.

Table 3.C.2: Summary Statistics by Tax Filer Type

	Individuals		AOPs		Companies	
	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.
Taxable Income (PKR)	573,835.48	15,581,659.16	343,198.23	172,975,062.45	7,910,684.10	1,143,933,113.33
Tax Chargeable (PKR)	100,956.02	1,752,505.35	683,200.52	43,855,861.55	10,305,261.32	233,379,203.45
Tax Credit (PKR)	76,655.88	1,085,156.19	486,286.74	44,011,709.05	9,359,601.83	199,395,423.86
Tax Paid (PKR)	3,820.02	148,985.13	18,134.50	490,233.63	399,908.96	14,093,878.77
Electronic Filing (%)	0.50	0.50	0.79	0.41	1.00	0.05

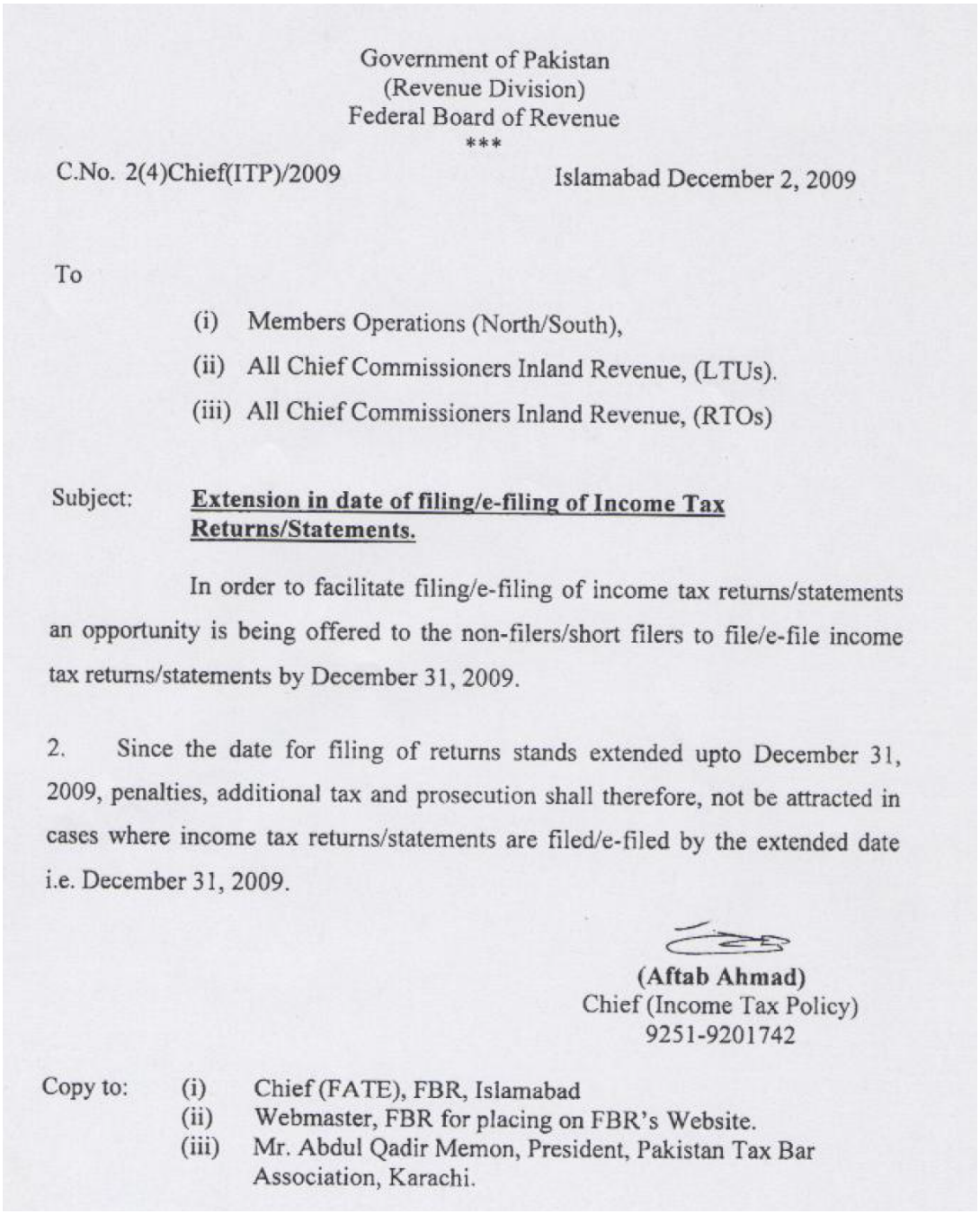
Notes: This table provides the summary statistics from the dataset of all tax returns filed in Pakistan by of tax filer from 2007 to 2017 disaggregated by tax filer type. The income tax law in Pakistan lists three types of tax filers, namely, individuals, Association of Persons (AOPs) and companies.

3.D Extension Circulars

This appendix provides one sample of an extension circular discussed in Section 2 of the paper. To recap, the FBR announced extensions to the tax filing deadline via administrative instruments called official circulars. For the empirical analysis, the paper extracted data from these circulars that are publicly available on the FBR website. This data was later merged with the tax data to conduct the analysis.

Figure 3.D.1 provides a sample of the aforementioned circulars from the year 2009. The circular has multiple pieces of information that were extracted and keyed in manually. The extraction process could not be automated because all circulars were scanned copies. Some examples of the information extracted are: circular reference number at the top left (2(4)Chief(ITP)2009), date of the circular at the top right (2nd December 2009), reason for extension explained in the main body of the circular (Facilitate Filing) and extended deadline (31st December 2009).

Figure 3.D.1: Sample Extension Circular for Tax Year 2009



Government of Pakistan
(Revenue Division)
Federal Board of Revenue
***

C.No. 2(4)Chief(ITP)/2009 Islamabad December 2, 2009

To

(i) Members Operations (North/South),
(ii) All Chief Commissioners Inland Revenue, (LTUs).
(iii) All Chief Commissioners Inland Revenue, (RTOs)

Subject: **Extension in date of filing/e-filing of Income Tax Returns/Statements.**

In order to facilitate filing/e-filing of income tax returns/statements an opportunity is being offered to the non-filers/short filers to file/e-file income tax returns/statements by December 31, 2009.

2. Since the date for filing of returns stands extended upto December 31, 2009, penalties, additional tax and prosecution shall therefore, not be attracted in cases where income tax returns/statements are filed/e-filed by the extended date i.e. December 31, 2009.

(Aftab Ahmad)
Chief (Income Tax Policy)
9251-9201742

Copy to:
(i) Chief (FATE), FBR, Islamabad
(ii) Webmaster, FBR for placing on FBR's Website.
(iii) Mr. Abdul Qadir Memon, President, Pakistan Tax Bar Association, Karachi.