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Taxes, informality and income shifting: Evidence from a recent Pakistani tax reform☆

Mazhar Waseem

Department of Economics, University of Manchester, Arthur Lewis Building, Oxford Road, Manchester, United Kingdom

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ABSTRACT

This paper examines firm behavior to taxation in a low enforcement and large informality setting. Using quasi-experimental variation created by a tax reform, which increased taxation of partnerships substantially relative to firms of other legal form, and the population of income tax returns filed in Pakistan in 2006–11, I document that treated firms report significantly lower earnings, migrate into informality, and switch business form in response to the increase in tax rate. The revenue loss caused by these behavioral responses is so large that by the third year after the reform the government was collecting less revenue than it would have without the tax increase. This implies that the new tax rate was on the wrong side of the Laffer curve and would not have been optimal under any social preferences. The richness of the data and tax variation permits me to decompose the observed responses into real and evasion margins and to identify fiscal externalities created by the reform on other tax bases. The welfare cost of the reform increases by around 40% once these externalities are taken into account.

1. Introduction

The presence of large informal sector constrains taxation capacity of developing countries in two important ways.[1] First, there is a direct effect as taxation base is limited to a narrow set of formal taxpayers. Second and more subtle is the indirect effect: governments in these countries tend to keep tax rates low fearing that increased taxation might unravel the already thin formal sector.[2] Whether such fears are justified depends on the elasticity of the tax base, in particular on how likely the taxpayers are to exit into informality in response to a tax increase. There is quite a large literature that estimates the sensitivity of the tax base to the marginal tax rate using administrative tax return data (Saez et al., 2012), but unfortunately most of this literature is set in rich countries and the corresponding evidence for developing countries is limited. In fact, to my knowledge there is no micro-based study that takes into account the movements into and out of informality, which arguably is a more important margin of response to taxation in a developing country setting. This paper fills the gap by presenting evidence on the responsiveness of earnings, formality and business organization choices of agents to personal income taxation in Pakistan.

For this purpose, I exploit a natural policy experiment created by an income tax reform introduced in the country in 2009. Before the reform earnings of noncorporate firms – sole proprietorships and partnerships – were taxed lightly relative to earnings of corporations, and it was felt that the distortion was preventing the incorporation of new firms. The reform raised the income tax rate on partnership earnings to a flat 25%, thus neutralizing largely a partnership's incentive to stay unincorporated. As an unintended consequence, however, it created a large tax rate variation within noncorporate firms: partnerships experienced on average a greater than five-fold increase in tax rates from 2009, while rates applicable to sole proprietorships remained unchanged in 2009 but reduced slightly from 2010 when their tax schedule was revised.[3] These differential changes in tax rates over time and across very similar firms create an almost ideal experiment to study firm behavior to taxation in a low enforcement-capacity setting.

One other interesting feature of the reform is that it was given a retroactive effect. The tax increase was announced on June 6, 2010, but it was made applicable from the beginning of the tax year *i.e.* from July 1, 2009. Thus, by the time firms learnt the tax change 94% of the tax year 2009 had already elapsed. Generally, behavioral responses to taxation conflate real and evasion margins and there is no satisfactory way to separately identify the two. The retroactive applicability,

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E-mail address: mazhar.waseem@manchester.ac.uk.

[1] According to a recent survey (Fuest and Riedel, 2009), informal sector on average constitutes one-third of the official economy in developing countries.

[2] The starting income tax rate, for example, in Pakistan during 2006–2009 was just 0.5%.

[3] Because the tax schedule is not indexed to inflation, such revision, involving the movement of bracket cutoffs, is needed every three to four years to avoid bracket creep.

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however, allows me to disentangle tax evasion and real response in a transparent manner: while the post-2009 response to the reform could encompass both margins, the 2009 response would comprise tax evasion mainly. This interpretation rests on the assumption that the reform was not known before its official announcement. Tracking the entry of treated and untreated firms over time, I provide a comprehensive test confirming that the reform indeed was not anticipated.

I use administrative data from the Federal Board of Revenue, Pakistan (FBR), which comprise the population of income tax returns filed in 2006–11 and a set of firm characteristics. To guide the empirical analysis, I set up a simple model of firm behavior, characterizing the revenue and welfare implications of the tax change in terms of estimable behavioral elasticities. The empirical strategy, motivated by the differential changes in tax rates across firms and over time, compares the evolution of partnership outcomes with that of sole proprietorship and corporate outcomes in event-study research designs. The claim here is not that a firm's organizational form is randomly assigned; it is rather that the outcomes would have evolved similarly had the tax rates not changed.

In the initial set of empirical results, I provide nonparametric evidence cataloging four important impacts produced by the reform. First, following the tax increase the number of formal partnerships declined dramatically: by 41% in 2009, by another 27% in 2010, and by an additional 15% in 2011. This means that within three years of the tax increase, the number of partnerships in Pakistan had declined to 36% of the baseline level. Second, partnerships which did not exit reported considerably lower income: the average within-firm earnings growth, which consistently averaged around 8% in periods leading up to the reform, dropped by more than 50 percentage points in 2009. Third, there was significant income shifting towards the sole proprietorship business form: the number of partnership owners reporting positive sole earnings went up by 18% in 2009. Fourth, there was no discernible income shifting towards the corporate business form as only a few partnerships became corporations even after the tax disadvantage of doing so was largely removed. Using the research designs, I translate these responses into behavioral elasticities and compute the welfare cost of the reform. The responses created by the reform are so large that by the third year of its introduction the government was collecting less revenue than it would have without the tax increase. This implies that the new, flat tax rate of 25% was on the wrong side of the Laffer curve and would not have been optimal under any social preferences.

Exploiting retroactive applicability, I characterize the nature of the observed responses. I argue that the predominant mechanism underlying the intensive margin response – the tax-driven changes in reported earnings conditional on participation – was tax evasion. It is because the 2010–11 responses, which potentially conflate both real and evasion margins, were not different from the 2009 response, which captures tax evasion mostly. I am, however, less certain whether the extensive margin response – the tax-driven changes in the number of tax-paying firms – captures firms exiting into informality or firms shutting down completely. It is because the two extensive margin choices I observe in the data – firms reporting zero earnings or disappearing completely after the reform – are potentially consistent with both explanations. However, considering the structure of social insurance in Pakistan, in particular that the owners of the exited firms would not be eligible for any government assistance and would have to work to finance consumption, it is highly likely that the extensive response in large part reflects exit into informality.[4]

One key assumption underlying the sufficient statistics approach commonly used for welfare analysis in the tax responsiveness literature (Feldstein, 1999; Chetty, 2009b; Saez et al., 2012) is that the tax change does not generate significant externalities such as income shifting. In contexts where this assumption is unreasonable, it is necessary to either estimate the consequences of the tax change on other bases directly or to adjust the welfare measure on the basis of some assumption on these consequences. This paper takes the former approach. The Pakistani context permits simultaneous identification of earnings responses and fiscal externalities arising out of the tax increase. I, therefore, estimate one negative – spillover effects on the value-added tax base – and two positive – income shifting towards sole proprietorships and corporations – externalities created by the reform separately, and incorporate them into the welfare computations directly.

This paper contributes to three different strands of literature. First, it adds to the literature that estimates behavioral responses to taxation using administrative tax return data (see Saez et al., 2012 for a recent survey). Most of the existing studies in this literature focus on only one margin of response. This paper represents perhaps the first effort that identifies all important margins of firm response to taxation together. Uncovering the anatomy of response, especially its decomposition into intensive and extensive margins, is particularly important in developing countries because policies to mitigate tax evasion and encourage formalization do not necessarily overlap (see Bruhn and McKenzie, 2014 for evidence on policies to encourage firm formalization in developing economies). In addition, using retroactive applicability of the tax reform I am able to separate the real and reporting margins. Such separation is generally not feasible unless special tax variation is available (Carrillo et al., 2017 and Bachas and Soto, 2017 are two other recent studies that separate the real and reporting responses). On the methodological standpoint, this study has the advantage that the tax variation created by the reform is not correlated with the prereform earnings, and consequently it does not face the principal identification challenge faced by other studies in this line of literature, that is mean reversion (see Saez et al., 2012; Kopczuk, 2012 for a discussion on this issue).

Second, another important strand of literature estimates tax evasion and studies its relationship with the marginal tax rate (Andreoni et al., 1998; Slemrod and Yitzhaki, 2002). Due to the well-documented difficulties, only a handful of studies (such as Fisman et al., 2004; Marion and Muehlegger, 2008; Kleven et al., 2011; Best et al., 2015; Waseem, 2017) are able to identify tax evasion cleanly. Even more difficult is to pin down its relationship with the tax rate: the comparative statics of evasion with respect to the marginal tax rate are highly sensitive to modeling assumptions (Slemrod and Yitzhaki, 2002), and both the sign and magnitude of the effect are open empirical questions (Kleven et al., 2011). This paper identifies tax-driven evasion cleanly and demonstrates that at least for risk-neutral agents in a low-enforcement setting it responds positively to the marginal tax rate.

Finally, this paper is related to studies that examine the impact of taxes on business organization choice of firms (see for example Gordon and MacKie-Mason, 1997; Goolsbee, 2004; Gordon and Slemrod, 2000). None of the existing studies, however, looks at the question from a developing country perspective, where returns to different business forms could radically be different from those in rich countries.

The rest of this paper is organized as follows. Section 2 develops conceptual framework, Section 3 provides an overview of the context and data, Section 4 describes the research design, Section 5 reports the empirical results, Section 6 computes the welfare costs of the reform, and Section 7 concludes.

2. Conceptual framework

This section develops a simple model of firm behavior under imperfect enforcement to highlight the channels through which taxation affects welfare in a developing country setting. The model captures key elements of the tax environment, illustrating that increased taxation can induce firms to *(i)* reduce output, *(ii)* increase tax evasion, *(iii)*

[4] It is particularly true because I am able to show that migration within the formal sector – income shifting to sole proprietorships, corporations, and wage-earning sectors – is swamped by migration out of the formal partnership sector.