

Can Specialized Tax Software Reduce Tax Compliance Costs in Developing Countries?



The World Bank Group conducted a study, using data from a number of surveys of businesses in developing countries, to investigate the association between the use of specialized tax software and total tax compliance costs. Most empirical data from both developed and developing countries show that use of tax software is associated with higher tax compliance costs. However, since larger and more sophisticated businesses are likely to both have higher tax compliance costs and use tax software, it is necessary to control for these and other firm characteristics. Regression analysis shows that it is indeed possible for tax software to reduce tax compliance costs, holding other variables constant, but the results are weak and often mixed. Many taxpayers apparently “over-use” the software in attempting to optimize their tax liabilities.

At first glance, it might be assumed that the availability and use of specialized tax software for tax compliance would tend to reduce taxpayers’ compliance costs (in addition to other benefits such as reduction in errors), compared with the alternative of making manual calculations involving relatively large amounts of data. However, available empirical evidence seems to show that taxpayers using such software spend more time, on average, than those not using it. For example, DeLuca et al. (2007) provide data showing that self-preparers in the United States with no software spend an average of 161 to 164 hours per year in tax compliance while those with software spend an average of 234 to 287 hours per year. On a “per return” basis, Guyton et al. (2003) estimated an average of 18.2 hours per return for “self-preparation

without software” and 40.1 hours per return for “software preparation.”¹

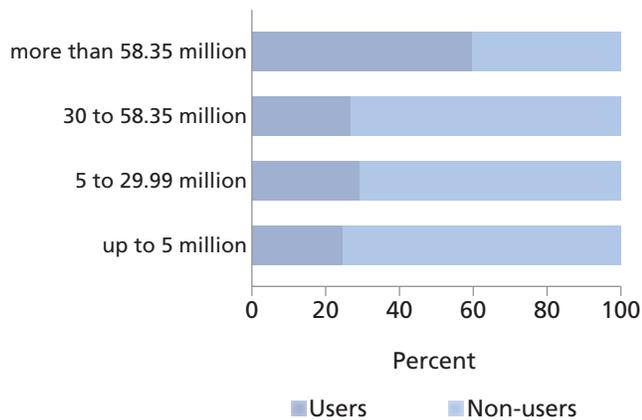
Some of the difference may result from the simple matter of selection bias: An earlier article (Coolidge 2012) which documents findings from developing countries reveals that relatively larger and more complex businesses are likely to have higher tax compliance costs due to the sheer volume of relevant transactions, and they are also more likely to be computerized, have skilled labor, and therefore invest in specialized tax software. The difference may also exist as a result of the relative ease of using the software to help with more “tax planning” (for example, running several simulations of different scenarios based on different categorizations of expenses or timing of realization of losses). It is not unlikely that tax staff

may spend substantial amounts of time in experimenting with different scenarios for the sake of minimizing the tax bill. Nevertheless, these are general assumptions, and they warrant more rigorous scrutiny to gain a better understanding of the details of tax compliance costs in developing countries.

Specialized tax software packages are designed to help firms with computing their tax bills. They are often complementary to bookkeeping or accounting software packages. General accounting software packages (mainly for bookkeeping, such as Quicken™ in the United States) are used to keep track of business activities including daily sales, inventories, payroll, and so on. Firms then transfer all the final balances (profits, sales, and costs) to tax accounting software which could be specialized (such as Turbo Tax™) or non-specialized (such as Excel™) to compute the final tax bill payable to the government. These software packages may be free (or easily pirated) in some countries or come at a cost in others (for instance, about \$150 for TurboTax™ for small business federal income tax in the United States²). Nevertheless, the cost of learning and adopting the software may be more important than the cost of purchasing the software (appropriately amortized) in affecting tax compliance costs.

Previously, it was assumed that using specialized tax software packages may decrease tax compliance costs because they make the computation process fairly easy for firms, helping them avoid

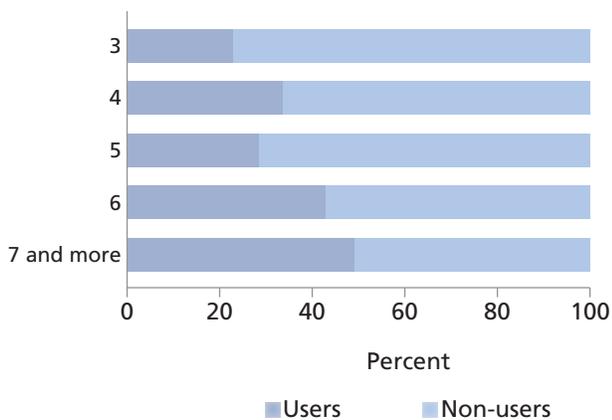
FIGURE 1: PERCENTAGE OF ARMENIAN FIRMS USING TAX SOFTWARE BY TURNOVER (IN ARMENIAN DRAMS)



Source: IFC 2011 [Armenia].

Note: At the 2009 exchange rate, one U.S. dollar was equal to 363.28 Armenian drams.

FIGURE 2: PERCENTAGE OF ARMENIAN FIRMS USING TAX SOFTWARE BY NUMBER (OF TAXES PAID)



Source: IFC 2011 [Armenia].

computational errors which could be very costly, especially taking into account the higher likelihood (and costliness) of audits that might result from such errors (which are not included in this analysis). Overall, the costs and benefits of using tax software depend on the purchase price of the software, how it is adopted, and how accounting staff are educated and become proficient in its usage (for instance, the degree of tax planning or productivity of the accountants) over time, including short-run versus long-run effects. Consequently, it is not clear whether one should expect a negative or positive association—if an association exists and is large enough to capture statistically—between tax software usage and tax compliance costs.

The study conducted by the World Bank Group focused on the effect of using specialized tax software on tax compliance costs for small and medium enterprises in developing countries. In particular, is a reduction in tax compliance costs associated

with tax software usage likely to appear as a benefit for firms? The first step was to divide the main research question into two parts: (i) Which firms are most likely to adopt tax software?, and (ii) How much do tax compliance costs differ between tax software users and non-users?

What types of firms are most likely to use specialized tax software?

The results of the analysis outline several patterns in tax software usage and firms' characteristics (Yilmaz and Coolidge 2013). The firms more likely to adopt tax software are located in relatively more developed (urbanized) regions of a country, larger in size (measured by turnover or total employment), established under more complex legal forms, paying more types of taxes, operating in relatively more capital-intensive industries, and doing most of their tax compliance in-house. Sample data from Armenia³ are illustrative, as shown in Figures 1 and 2.

Survey findings on firms' perceptions of the business environment shed light on how important perception indicators are in shaping firms' decisions with respect to tax software usage in tax compliance. The most important indicators include:

- how costly it is to keep records for tax purposes;
- how hard is it to find workers with proper skills and education;
- actual education and occupation (as a proxy for productivity) of the "most knowledgeable person" about tax compliance in a firm (that is, who was asked to respond to the questions in the survey); and
- formality in business activities (approximated by the percentage of turnover transacted via bank accounts).

Results show that firms that do not find it "difficult" to keep records for tax purposes are more likely to use tax software than those who report finding it difficult. This may alternatively imply that firms who use tax software face less difficulty in keeping records for tax purposes. As firms report less difficulty in finding skilled workers, they become more likely to use tax software to help them comply. In most cases, the education and occupation of the tax staff (the most knowledgeable person in tax accounting in each firm) are highly and positively correlated with the usage of tax software, as shown in Figure 3. Finally, firms that are more formal in their business activities (that is, those that transact a higher percentage of their turnover via bank accounts) are also more frequent users of tax software.

Do tax compliance costs differ between specialized software users and non-users?

For each country, the study compared total tax compliance costs of software users with that of non-users (in terms of money and time separately) and then looked at different variables that influence both the decision to use tax software and the level

of tax compliance costs. The results from this simple analysis show that specialized software users generally pay higher tax compliance costs. The difference is quite large and economically important. However, this difference cannot be attributed to tax software usage alone, without controlling for all important firm characteristics. In a comparison of the tax compliance costs paid by tax software users and non-users in the same turnover group, the difference was much smaller. In one case (Armenia), the study found that tax software users on average face lower tax compliance costs than non-users, for firms in the same turnover band. However, the difference was not statistically significant.

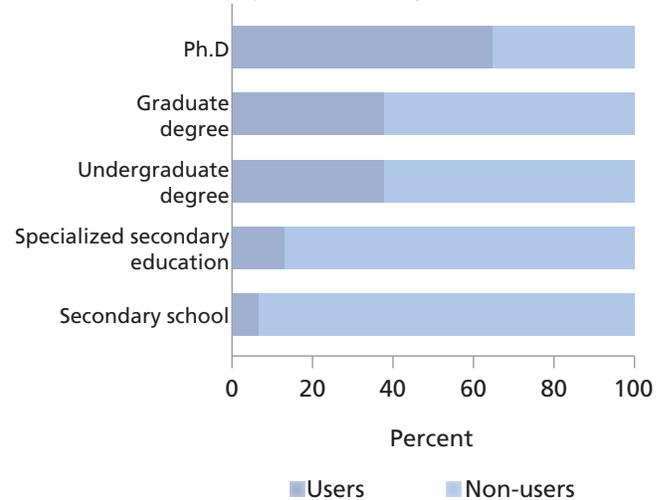
Thus, determining whether tax compliance costs differ between software users and non-users is not simple. Because the decision to adopt tax software is not exogenous, any analysis must control for the main firm characteristics (to overcome selection problems) before inferences about the association between tax software and compliance costs can be made.

Do firms using specialized tax software have lower tax compliance costs than similar firms that do not use it?

This analysis held various firm characteristics constant. In the case of Nepal, and focusing on the firms that do all tax compliance fully in-house (that is, not outsourcing any work to external tax preparers), tax software usage is not associated with any reduction in compliance costs in monetary terms. However, software usage was associated with a significant reduction in time spent for tax compliance. This implies a reduction in effort using tax software is possible, but the reduction in cost is lost once tax staff salaries are considered. This finding in turn suggests the possibility of higher salaries being associated with the skill set requirements of the position (for example, highly skilled accountants, who can use tax software, command higher salaries). Firms reporting obstacles with “finding skilled workers” are subject to about a 5 to 7 percent increase in tax compliance costs.

In Armenia, the results show that tax software usage is associated with a 47 to 63 percent increase in tax compliance costs (in local currency) and a 27 to 47 percent increase in time spent to comply. However, these results were not robust enough to allow for considering different sub-samples of firms. More importantly, depending on “who undertakes tax compliance and uses the tax software,” firms experience net gains or losses from using software. In general, certified accountants with graduate degrees using tax software spend less time for tax accounting than non-certified accountants spend. Yet, in terms of the monetary cost of tax accounting incurred by firms, certified accountants with graduate degrees using tax software cost more than non-certified accountants with the same degree using software. This may be attributed to their experience and education with tax compliance as well as certification that in turn render higher payments to the highly educated, certified accountants.

FIGURE 3: PERCENTAGE OF ARMENIAN FIRMS USING TAX SOFTWARE (BY EDUCATION)



Source: IFC 2011 [Armenia].

Note: Education is based on that of the most knowledgeable person in the firm regarding tax compliance.

Other control variables generally had predictable results in the analysis. Firm size, paying value-added or profit tax, and the number of types of taxes paid were each associated with a significant increase in tax compliance costs. This finding was statistically significant and robust. Moreover, more experienced firms using tax software pay less for compliance and such benefits decrease over time; experience with tax compliance in the first few years after the registration is very valuable, but firms learn incrementally less every year.

Summary of research findings

The study's main results indicate that a reduction in tax compliance costs associated with tax software usage is indeed possible, but it is only likely to be realized in certain cases. For instance, in the case of Nepal, estimates differed between negative 6 and negative 46 percent depending on how firms were grouped (for example, only firms that do all tax compliance in house, only firms above the value-added tax threshold, only computer users, and so on). Yet, most of the estimates are statistically insignificant and not very robust to checks with the most relevant sub-samples. The statistically significant estimates, although weakly significant, suggest a 30 to 46 percent reduction in compliance costs may be associated with tax software usage in Nepal.

Results with respect to Armenia are more pronounced because the data provides more detail. The survey contains information on the occupation and education of the “most knowledgeable person” on tax compliance who also did the tax compliance work in the relevant fiscal year covered by the survey. This allowed the analysis to infer the extent to which the productivity of the person who uses tax software can improve the effectiveness of the software in reducing compliance costs.

Furthermore, after utilizing all this information, tax software usage was associated with a 47 to 63 percent increase in tax compliance costs (in monetary terms, taking into account wage rates) and a 27 percent increase in time spent to comply. However, firms that hire accountants (certified or non-certified) with a high level of education (such as a graduate degree) can mostly negate the increase in compliance costs that is otherwise associated with the use of tax software. For instance, in firms that have a non-certified accountant with a graduate degree, using tax software can actually recover all the increase in compliance costs associated with tax software usage.

Thus, the net effect of using software on compliance costs in monetary terms for such a firm will be zero relative to firms where the owner (or other non-accountant staff) does the tax compliance work. When compliance costs in time are considered, the results are slightly different. In firms employing a certified tax accountant with a graduate degree, the use of tax software can actually save 12 to 24 percent of compliance costs (measured in staff-time spent to comply). This figure for non-certified accountants is between 11 and 21 percent (that is, slightly less than for certified accountants). These results highlight the importance of the effective usage of tax software in realizing compliance cost savings for end-users. It is possible that non-accountants might be more likely to waste time fruitlessly running many different “scenarios” (for instance, shifting expense categories or timing of realization of losses) in an attempt to reduce the overall tax bill. By contrast, knowledgeable and experienced accountants might be more likely to make efficient use of tax software and avoid the temptation to waste time with it.

Overall, the study’s estimates show that tax software usage is associated with a reduction in compliance costs in certain specific cases. Yet, the estimates are usually not robust enough to control for different sub-groups of firms. This suggests that a reduction may be expected for certain types of firms, but probably not for all.

Policy implications

Given that specialized tax software is usually a commercial product in most countries (unlike the e-filing software provided by the tax authorities in many countries), there is little to offer in relevant policy advice. Also, the ambiguous findings with regard to the effect of tax software usage on tax compliance costs make it unclear whether policy should encourage the use of software or not. It appears possible that an increase in compliance costs associated with taxpayers’ use of software is balanced by the perceived likelihood of a reduction in the tax bill (which in turn

could imply somewhat lower revenues for the government). It is plausible that the use of tax software might help reduce errors (to the benefit of both taxpayer and government), but the survey data did not allow that hypothesis to be verified.

Notes

- ¹ See also U.S. IRS 2005 1040 Instruction Book, p. 79, showing time and cost for preparing a Form 1040 including Schedule A and other schedules (but excluding Schedule D): self-prepared without software –16.7 hours; self-prepared with software – 22.7 hours.
- ² <http://turbotax.intuit.com/small-business-taxes>.
- ³ The clearest evidence of reductions in tax compliance costs through use of tax software was seen in Armenia among businesses that had skilled and well-qualified accountants in charge of tax compliance, who were probably less prone to “over-using” the software.

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