Impact of Digital Tax Stamps (DTS) on firms' ex-factory prices, sales revenues, and excise tax revenues in Uganda

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- Uganda's Domestic Revenue Mobilisation Strategy identified excise taxes as an area of revenue potential. However, the government lacked a track-and-trace mechanism to ensure that firms correctly reported their sales revenues.
- In FY 2019/20, the Ugandan government introduced Digital Tax Stamps (DTS) on some goods to minimise revenue leakage and under-reporting of excisable goods.
- This policy brief assesses the impact of DTS, finding that in the first year, it had negative effects on firm sales revenues and government excise tax revenues. However, by the second year, the gains, in terms of increased firms' sales revenues, exceeded the firms' behavioural response of decreasing ex-factory prices.
- Given these findings, efforts that can ease the adoption of the new technology and address implementation challenges are recommended.

POLICY BRIEF UGA-22001

MAY 2022

This project was funded by IGC Uganda

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Introduction

Universally, excise taxes are designed to correct for negative externalities associated with the production or consumption of socially costly goods – including “sin goods” and pollutants with high carbon emissions. However, in Uganda, the scope of excisable goods extends beyond cigarettes, beers, spirits, wines, and fuels, to include soft drinks, cement, furniture, confectionaries (sweets, chewing gum, and chocolates), bottled water, juices, motor vehicle lubricants, cosmetics and perfumes, sugar, and cooking oils. The broader scope was largely driven by the need to raise more revenue to meet ever-growing expenditure needs. The effectiveness of the expansion in scope of excisable goods and the impact on firm profits and sales revenues is beyond the scope of this policy brief.

The Domestic Revenue Mobilisation Strategy identified excise taxes as an area of revenue potential. However, there was no clear track-and-trace mechanism that the government could use to ensure that firms were correctly reporting their sales revenues. This consequently undermined the government’s excise policy reforms since firms could possibly underreport their declarations to minimise their tax liability. To minimise revenue leakage and under-reporting of excisable goods, the government of Uganda, in FY 2019/20, introduced Digital Tax Stamps (DTS) on some goods such as cigarettes, beers, spirits, wines, soft drinks, other alcoholic beverages (cider and kombucha among others), and bottled water to improve tax compliance and tax revenue collections. Notably, as of 1 February 2022, the scope of goods required to affix DTS was increased to include sugar, cement, and cooking oil. Table 1 shows the shares of the excise tax revenues from goods on DTS to total tax revenues and Gross Domestic Product (GDP) for the period under study.

TABLE 1: Excise tax revenues from manufacturers of excisable goods on DTS

Financial Year	Total net tax revenue (billions of shillings)	Tax revenue from DTS excisable goods (billions of shillings)	DTS excisable goods’ tax revenues as a share of total tax revenues	DTS excisable goods’ tax revenues as a share of GDP
2017/18	14,506.70	631.16	4.4%	0.53%
2018/19	16,641.96	692.31	4.2%	0.53%
2019/20	17,285.86	533.14	3.1%	0.38%
2020/21	19,697.78	760.99	3.9%	0.51%

At an exchange rate of USD 1 to UGX 3,600, in FY 2020/21, the government of Uganda collected USD 5.47 billion from excise taxes, of which USD 211 million were from excisable goods that were on DTS. In the same financial year, the total revenue from excisable goods on tax stamps as a share of GDP was about 0.5%.

Table 1 shows that excise taxes from the goods on DTS are an important source of revenue. They contribute about 4% to total tax revenues and are about 0.5% as a share of GDP. It should be noted that total excise duty contributes about 8% to total tax revenues and about 1% of GDP. This implies that goods on DTS account for half of the excise tax from the manufacturers of all excisable goods.

The objectives of introducing DTS were to protect government revenues, combat trade in counterfeit goods, enhance fair competition in the market, and provide real-time statistical data for both tax policy and administration. However, digital tax stamps can only be effective as a means of protecting tax revenues and curbing illegal trade if the technology is embraced and adopted by firms in a timely manner. In addition, the technology has to be fairly priced to encourage compliance and minimise illicit consumption of the targeted goods. Resistance from the manufacturers can arise if firms are required to incur a significant capital expenditure to install stamping machines, which can lead to significant losses to both the government – in terms of lower tax revenues and firms' lower sales revenues. In this case, the government of Uganda covered the cost of tax stamps in the first year post-introduction and the firms were required to meet the cost from the second year post-implementation of DTS. The cost of the stamps is not uniform but rather varies depending on the excisable good. According to the responsible government authorities, the justifications for the differentiated unit costs included: different products react differently to increases in prices (price elasticity); given that different products attract different excise tax rates, a flat unit cost could have been higher than some tax rates; and the unit cost of stamps follows the excise tax principle of correcting for negative externalities. The higher the assumed externality, the higher the cost of the stamp. Differentiated unit rates may not be justified, but the authorities believe that the different pricing structure enables the firm that provides the DTS solution to recover its initial investment faster.

Furthermore, introducing tax stamps and shifting the cost directly to the taxpayer may be equivalent to an increase in excise tax rates and could, in the short term, increase the cost of compliance for taxpayers. The extra cost imposed on firms by the policy may force them to alter their behaviour by declaring relatively lower ex-factory prices. This partly passes the cost to the government in the form of lower tax revenues since the ex-factory price is the taxing point for most excisable goods. In addition, firms might respond to DTS by increasing the price of the final products, which may force consumers to switch to relatively cheaper options (the substitution effect of a price change) or to stop consuming the goods because they have relatively less money (the income effect of a price change). Any of these behavioural responses will result in relatively lower sales revenue in response to price increases to accommodate the cost of DTS. It is, therefore, important that the stamped goods remain affordable so as to minimise the consumption of illicit goods.

Digital Tax Stamps are physical paper stamps or direct markings that are fixed on excisable goods or their packaging. The DTS contains security features and codes to prevent counterfeiting and tampering, and they have track-and-trace capabilities. Using these features, the traders and manufacturers can track the product movement, and the government can monitor firms' compliance. The quick response code (QR code) allows the government, distributors, retailers, and consumers to use an app on a smartphone to verify the authenticity of excisable goods on DTS. These apps include: Kakasa Inspector, used by the tax authority officials to verify that excisable goods required to affix DTS have authentic tax stamps, as well as Kakasa App and Kakasa Validator, used by Consumers and firms, respectively, to verify the authenticity and legitimacy of excisable goods and avoid consuming or trading counterfeits. Notably, these apps cannot do mass validation; their capabilities are so far limited to validating one good at a time, which may increase delivery time for businesses.

In addition, the physical paper stamps have to be manually activated for the track-and-trace function to work. Therefore, even if excisable goods on the market have the appropriate stamps, the tax authority officials may be unable to track and trace the goods if an employee does not activate the stamps. According to the officials at the Uganda Revenue Authority, this challenge makes the process of tracing goods difficult, failing the track-and-trace mechanism on which the DTS initiative is premised. Nonetheless, efforts are being made to automate the process of activating the tracking features of the physical paper stamps.

Monthly excise tax return data from FY 2017/18 to FY 2020/21 are used to estimate outcome variables, including the effect of DTS on firms' ex-factory prices, sales revenues, and government excise revenues. The outcome variables of excisable goods manufacturers, whose goods were designated to affix DTS – referred to as the treated firms – are compared with the outcome variables of excisable goods manufacturers whose goods were not required to affix stamps as a comparison group. The estimates are obtained while allowing for non-parallel linear time trends, taking into account time-invariant, firm-specific, unobserved characteristics and changes in excise tax rates.

Summary of findings

The goal of the study was to assess the impact of DTS on firms' ex-factory prices, sales revenues, and government excise revenues. Three findings from the study are summarised below:

1) Treated firms' (manufacturers of excisable goods on which tax stamps were to be affixed) excisable sales revenues decreased by 24.9% for the time that the government paid for DTS (first year post-DTS). They increased by 30.7% when firms paid for DTS (second year post-DTS), relative to the comparison group.
2) Treated firms' ex-factory prices decreased by 5% when the government paid for DTS, relative to the comparison group firms. The effect is more pronounced, with a decrease of 17.4% when firms paid for the stamps (second year post-DTS). The ex-factory price is the taxing point for most excisable goods; a decrease in the ex-factory price implies lower excise tax revenues. To that effect, a decrease in ex-factory prices implies that firms respond to DTS by shifting part of the cost of the stamps to the government.
3) Excise tax revenues for treated firms decreased by 24.8% for the time that the government paid for DTS (first year post-DTS); and increased by 29.3% when firms paid for DTS (second year post-DTS), relative to the comparison group.

The findings above are represented in Figure 1 below:

FIGURE 1: Effects of DTS on firms' ex-factory prices, sales revenues, and government excise tax revenues

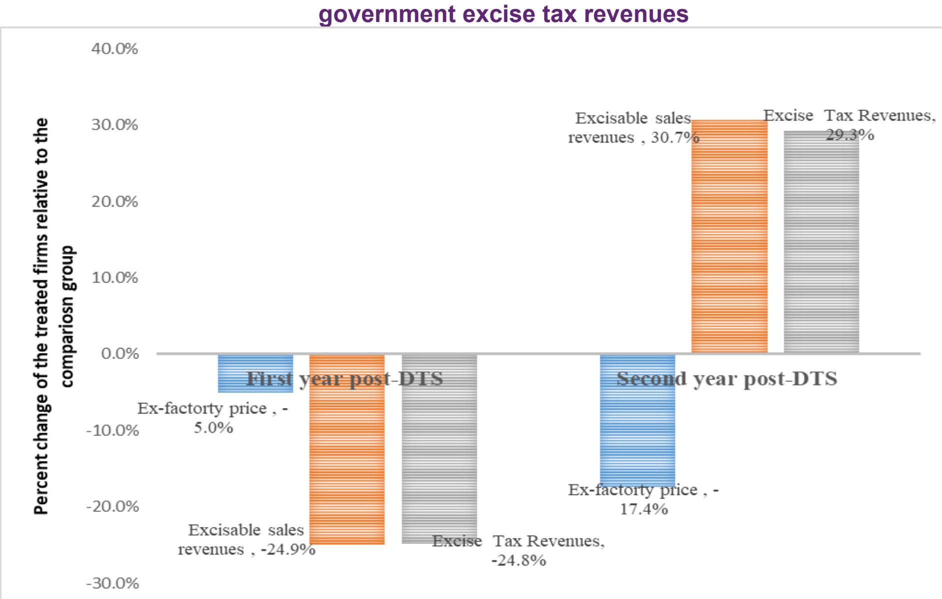

Figure 1 summarises the main findings of the study, and the coefficients can be interpreted as the effect of DTS on outcome variables for treated firms relative to the comparison group.

The findings summarised above suggest that DTS had negative effects on firm sales revenues and government excise tax revenues in the first year post-DTS. According to the tax administration officials, this was mainly due to implementation challenges and delays in embracing the new technology. The delays in adopting the technology are largely attributed to the protracted negotiations between the tax administration and the contractor who provides the DTS solution on the pricing structure. However, in the second year post-implementation, the gains, in terms of increased firms' sales revenues, exceeded the firms' behavioural response of decreasing ex-factory prices. This resulted in an increase of 29.3% in excise tax revenues for treated firms, relative to the comparison group. These results provide evidence that firms and the tax administration may take time to embrace and adopt new technologies, but eventually, such policy interventions tend to improve tax revenue mobilisation efforts.

Policy recommendations

Based on the findings of the paper, Digital Tax Stamps are working, prompting the following recommendations:

1. Deliberate efforts should be made to ease the adoption of the new technology by renegotiating much lower and uniform prices for DTS. This mitigates firms' tax avoidance responses and will still ensure that the service provider recoups their investment over a relatively longer period of time.
2. Implementation challenges need to be urgently resolved to maximise the gains from DTS. Some of the actions required from the tax administration side include:
    a. Automating the activation process of the tracking features on physical paper stamps; otherwise, the stamps are as good as non-existent.
    b. Increasing enforcement to mitigate circumventing behaviour by firms. This can be done through increased reconciliations to ensure that produced volumes match declared sales.
    c. Launching and marketing the Kakasa App to discourage the consumption of goods without DTS.
    d. Modifying the Kakasa Validator to carry out mass validation of tax stamps to decrease delivery time for businesses.