



INPUTS FINANCE BILL 2025

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1 Introduction

The policy notes in this document are compiled based on guidance from the National Treasury and key stakeholders in the GOK-AERC-UCPH-DERG Collaborative Research Project including members of the steering committee. Some policy notes are reflective of research undertaken in both year 1 and year 2 of the project. Those policy notes that stem directly from a single research project (i.e. Policy Note 3.2 regarding the excise tax on petroleum products) are identified by their project identifying number. Other policy notes contained in this document are compiled with a view to responding to the requests from the National Treasury for input on specific questions relating to various projects in the collaboration. It is important to note that research contained in these policy notes is preliminary, much of it is based on theoretical considerations, qualitative evidence and literature reviews, and further data analysis is necessary to produce full technical papers. Accordingly, these policy notes should be seen as guiding documents for ideas/debates and discussion in policy and research spheres but not as policy *proposals* or technical papers.

2 Value-Added Tax (VAT)

2.1 Should the VAT threshold be changed?

Related research projects:

- Title: Reforming Value-Added Tax (Project 2.1)
- Research objective: Explore paths to reforming the Kenyan VAT system.
- Current evidence base: The discussion in this note uses analysis from the Year 1 paper available here: [A Comprehensive Analysis of the Kenyan VAT System](#).

Background: The VAT registration threshold is a critical determinant of the VAT base in the design of the VAT system. The purpose of the threshold is to reduce the costs and administrative burden for both the KRA and for smaller firms which are less able to track and file detailed sales receipts. In this section, we analyse the current threshold and how it impacts VAT revenue.

The threshold was most recently revised in 2007, when it was raised from KES 3 million to KES 5 million. A review of literature and comparisons with neighbouring countries show that Kenya's current threshold level is consistent with regional standards. In the region, Burundi, has set a very high threshold of USD 82,000 and a high general rate at 18%, followed by South Africa with a threshold of USD 55,000 but a lower standard rate of 15%. At the lower end, Uganda has set a low threshold at USD 15,500 followed by Tanzania at USD 17,000. Kenya's threshold lies in the middle, at around USD 40,000.

Evidence: An analysis of tax expenditure due to the threshold, using the most recent Census of Establishments (CoE) data from 2016, reveals that only a small amount of revenue is foregone by exempting firms with turnover under KES 5 million. Considering that there were 138,190 firms in total, we estimate the total turnover for firms under the threshold at KES 203.7 billion and the gross value added (GVA) at KES 55.36 billion. We then apply the 16% tax that would be levied on that amount to get a threshold effect of KES 8.86 billion at 100% compliance and without factoring in exemptions and zero-ratings. Compliance alone, which we estimate at roughly 55%, would lower this figure to KES 4.8 billion, and the exemptions and zero-ratings would further reduce this number. This foregone revenue, compared to forgone revenue in the top firms, is not significant, and further indicates that the current threshold is reasonable and may be beneficial to the KRA and Micro, Small, and Medium Enterprises (MSMEs) by reducing administrative costs. This estimate is for 2016 but can be updated for more recent years with the next publication of the Census of Establishments.

Only a nominal amount of revenue is foregone due to the threshold; thus, it can then be considered whether the threshold can be raised to increase compliance. Inflation has eroded the threshold in real terms by about 50% since it was last set in 2007. In other words, the threshold is about half of what it was in 2007 in real terms. While raising the threshold would reduce the VAT base (and likely decrease revenue), it would also reduce the administrative burden on those firms with turnover above KES 5 million that were previously subject to VAT as well as the administrative costs for the KRA to monitor those firms. It could be beneficial to make periodic adjustments to the threshold or index it to inflation to ensure that its efficacy is not eroded by inflation.

Recommendations:

- Lowering the KES 5 million threshold is unlikely to generate a significant increase in tax revenues and would also increase the administrative burden on the KRA and for businesses.
- Raising the threshold could reduce administrative costs and adjust for the effects of inflation on the threshold, which was last set in 2007. Raising the threshold may also boost tax morale among businesses.

2.2 What are the tax expenditures of Kenya from VAT exemptions and zero-ratings?

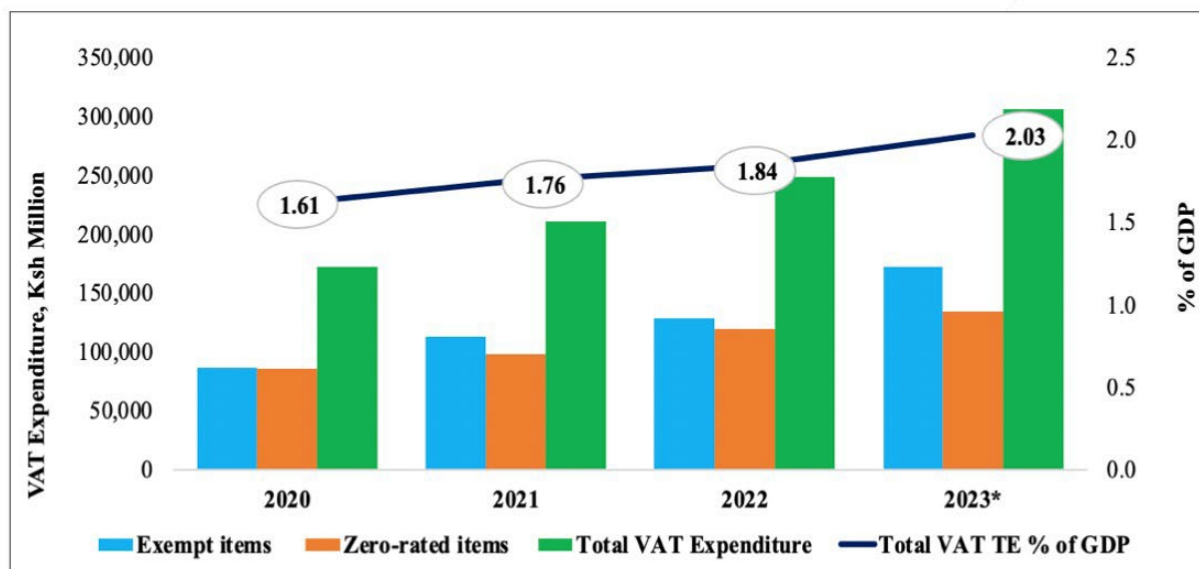
Related research projects:

- Title: Reforming Value-Added Tax (Project 2.1)
- Research objective: Explore paths to reforming the Kenyan VAT system.
- Current evidence base: The discussion in this note uses analysis from the Year 1 paper listed above as well as the Tax Expenditure Report 2024.

Background: Exemptions and zero-ratings are an essential part of a well-designed VAT structure. When used efficiently, they can simplify tax collection and administration, promote social welfare, reduce the costs of certain goods, and encourage exports. Excessive exemptions and zero-ratings, however, can lead to significant foregone revenue for tax administrations, and it is important to periodically revisit the policies to ensure optimality. The following analysis uses information obtained from the 2024 Tax Expenditure Report from the National Treasury and Economic Planning.

Evidence: In Kenya, tax expenditure due to VAT exemptions and zero-ratings has been growing since 2020 in absolute terms and as a share of GDP, as further discussed below. Figure 2.2-1 shows that in 2023 the combined expenditure on domestic VAT amounted to KES 306 billion, or 2.03% of GDP.

Figure 2.2-1: Trend on VAT Expenditure



Source: 2024 Tax Expenditure Report

Expenditure on exemptions amounted to KES 172 billion in 2023, with the highest contributing sectors being: Financial and Insurance Activities Information and Communication, and Transportation and Storage. The Financial and Insurance Activities and Information and Communication sectors are sectors in which it is typically difficult to assess value-added and thus

are often exempted from VAT. While it may not be efficient to remove the exemptions on these sectors, other tax instruments can be implemented to ensure that they are being taxed effectively.

Expenditure due to zero-ratings amounted to KES 134 billion, with the highest contributing sectors being: Manufacturing, Agriculture, Forestry, and Fishing, and Electricity, Oil, Gas. A large portion of the zero-ratings in the manufacturing sector go to the manufacture of food supplies. Additionally, the Finance Act (2023) introduced zero-ratings on certain locally assembled goods which contributed to an 83% increase in expenditure on zero-ratings in the manufacturing sector. Furthermore, the VAT on LPG was moved to 0%, which doubled the expenditure due to zero-ratings in the Electricity, Oil, and Gas sector.

Further analysis from the Year 1 paper: A Comprehensive Analysis of the Kenyan VAT System (2025) found that large firms claim exemptions and zero-ratings on their sales at much higher rates relative to other firms in their sectors. It is important to investigate why larger firms can claim more exemptions and zero-ratings on their outputs, as this represents a significant portion of overall tax expenditure.

The Government of Kenya relinquished approximately KES 306 billion due to VAT exemptions and zero-ratings in 2023. The expenditure to GDP ratio is growing, with two possible explanations: (1) there has been faster growth, relative to GDP growth, in the sales of goods and services with existing exemptions and zero-ratings, (2) the introduction of new exemptions and zero-ratings. This is characteristic of VAT structures, where it is easy to add exemptions and zero-ratings, but their removal can cause price shocks and can be faced with significant backlash.

Recommendations:

- Assess the specific exemptions and zero-ratings within the sectors mentioned above to evaluate whether they are achieving the intended outcomes (see policy note 2.3).
- Examine why large firms are reporting higher rates of exempt and zero-rated sales compared to smaller firms. Identifying and addressing any policies or compliance gaps that benefit larger firms could potentially generate substantial revenue for the government.
- Evaluate the current process for introducing new exempt and zero-rated items to ensure that each policy change has proper justification. The current system could benefit from greater transparency and more guardrails to prevent unjustified exemptions and zero-ratings from being introduced.
- Be intentional and transparent about identifying zero-ratings that actually benefit low-income households as opposed to those that are mostly consumed at the higher end of the income distribution.

2.3 Are exemptions and zero-ratings on food items progressive?

Related research projects:

- Title: Reforming Value-Added Tax (Project 2.1)
- Research objective: Explore paths to reforming the Kenyan VAT system.
- Current evidence base: The discussion in this note is based on academic literature only (Bachas et al. 2024).

Background: A tax policy is progressive if the effective average tax rate (ratio of taxes paid divided by household income) increases with household income. A flat VAT rate has traditionally been viewed as regressive, because low-income households spend a higher share of their income on consumption items. Many governments, including Kenya, have therefore introduced reduced VAT rates on essential goods, such as food. This is meant to lower prices for the final consumer and has traditionally been perceived as highly progressive because food expenditures make up a high share of the total income in poor households. However, exemptions and zero-ratings also create significant foregone tax revenue (see note 2.2 above). The National Treasury is therefore interested in understanding whether exemptions and zero-ratings are justified.

Evidence: Bachas et al. (2024) studies VAT progressivity across 32 developing countries characterized by large informal sectors, like Kenya. Their main finding is that in these settings, a flat VAT rate tends to be *progressive* and reducing rates on food items does not necessarily increase *progressivity*. These findings run counter to traditionally held beliefs. First, the study shows that VAT with a flat rate appears to be *progressive* rather than regressive. This is because poor households tend to buy goods from the informal market, where VAT is not applied. The tax therefore falls disproportionately on rich households buying goods and services in formal markets. Second, zero-rating food items is a much less progressive policy than previously thought and may even be regressive because poor households tend to buy food from the informal markets or engage in home-production. As these food items are not subject to VAT, it may make less of a difference to poor households when formal food items are zero-rated. It is important to stress, however, that reduced rates for these goods will still function as a consumption subsidy, especially for the urban poor that buy these items in formal markets, even in cases where it is not a progressive policy on aggregate.

Recommendations:

When the Government of Kenya exempts or zero-rates certain goods or services, it is incurring a substantial tax expenditure. This should be weighed against the progressivity and incidence of the reduced rates. New evidence for low income countries shows that zero-ratings are much less progressive than assumed by traditional economic thinking based on data from high-income countries, and it may even be regressive. While reduced rates on food items may not be a progressive policy on aggregate, they may still subsidise food consumption of, for example, urban low-income households. This provides a justification for rethinking the trade-off between tax income and progressivity.

2.4 Should the VAT refund budget be increased?

Related research project:

- Title: Revenue consequences of delayed VAT refunds (Project A.1).
- Research objective: To quantify the effects of delayed VAT refunds on subsequent tax receipts.
- Current evidence base: Descriptive analysis and literature review. Still awaiting econometric results on causal effects of delays.

Background: In May 2022 the time to repayment for VAT refunds began rising rapidly. The long repayment times have been the subject of numerous complaints, especially by Kenyan manufacturers and exporters. Recently, repayment times have decreased, but this is in part driven by the introduction of Refund Adjustment Vouchers (RAVs), a policy that appears to be unpopular amongst firms claiming refunds.

Things to consider:

- Strong indicative evidence of the value of timely VAT refunds
 - o Recent evidence from South Africa by Brusco et al. (2024) finds that quicker refund processing increased investment for impacted firms by 31%.
 - o If the real economic benefits of quick VAT refunds are similar, then increasing budgets could be a *win-win* reform, increasing both tax revenues and firm tax morale.
- Restricting refunds to debt-offsets could have negative impacts
 - o For five months in 2023, refunds were only made through offsetting existing debt owed to the KRA. Anecdotal evidence suggests that this encourages firms to stop paying other tax obligations and could as such have strong negative effects on revenue.
 - o The practice may be encouraging firms to delay payments strategically, which could undermine overall compliance and obscure the true size of refund liabilities.
- Kenya has a more restrictive refund policy than comparable countries
 - o Unlike comparable countries¹, Kenya does not allow for refunds for large capital investments, a policy that is known to stimulate investment.
 - o Maintaining timely refunds is a prerequisite for broadening admissible refund types in the future.
- Refund Adjustment Vouchers (RAVs) may prevent some large claimants from ever receiving their full refund
 - o Some large refund claimants receive RAVs that are larger than their total tax liability across all tax bases. This effectively means that the claimants who do not receive their full refunds as part of their RAVs remain perpetually idle.

Recommendations:

- Existing evidence indicates that it may be advisable to consider increasing the budget for direct VAT refunds. While further evidence is required, we believe that this could be a quick win.

¹ Countries in comparison group: South Africa, Rwanda, Uganda & Tanzania.

3 Personal Income Tax (PIT)

3.1 How can the Personal Income Tax (PIT) structure be reformed to make it fair, progressive and internationally competitive?

Related research projects:

1. Assessing the impact of personal income tax reform in Kenya with administrative data: Behavioral responses and distributional implications (Project 4.1)
 - Research objective: Evidence-based analysis of the efficiency and equity implications of PIT reforms, exploiting recent reforms to identify elasticities
 - Current evidence base: [AERC Working Paper](#) which provides the main basis for the analysis below.
2. Horizontal Inequality in Optimal Taxation: Evidence from Kenya
 - Research objective: Identifying stylized insights on optimal personal income taxation in Kenya when specifically accounting for the presence of an informal sector.
 - Current evidence base: Work in progress. Results available from counterfactual simulations based on empirical distributions and elasticity estimates, and very preliminary evidence on social preferences from a pilot survey.
3. The dynamics of personal income (Project 4.2)
 - Research objective: Learn about the dynamics of labour markets and personal incomes in the (formal) Kenyan economy, deriving lessons for tax authorities
 - Current evidence base: Some insights derived from very preliminary analysis based on yearly data from Year 1 project. Waiting for monthly data to proceed.

Background: Kenya's Personal Income Tax (PIT) is levied on an individual's earnings from employment, business, or services, with certain deductions and exemptions such as mortgage interest, pension contributions, personal relief, and insurance relief. The majority of the Kenyan PIT revenue (over 95% between FY 2017/18 and FY 2021/22) is collected through the Pay As You Earn (PAYE) system, where employers deduct tax from salaries. Beyond income tax, employees also contribute to various social programmes, including the Social Health Insurance Fund (SHIF), the National Social Security Fund (NSSF) and the Affordable Housing Levy (AHL), all of which further reduce the take-home pay, increasing the overall tax burden.

A key feature in Kenya's PIT system is its reliance on a small portion of the population, a common issue in many emerging economies where the formal employment sector remains narrow. Additionally, the tax structure provides limited differentiation in tax rates for varying income levels. In other words, the key progressive feature of the system is that lower-income earners are tax exempt in practice, but there is very limited progressivity across formal workers earning above KSh 288,000 a year. This creates the perception of unfairness of the tax structure.

The current PIT structure, after the 2023 reform raised top income rates, is the following:

Annual Taxable Income (Ksh)	Rate
First 288,000	10%*
Next 100,000	25%
Next 5,612,000	30%
Next 3,600,000	32.5%
Over 9,600,000	35%

*The first 288,000 KSh are tax exempt in practice as they are covered by personal relief.

PIT plays an important role for domestic revenue mobilization, as it accounts for over a quarter of the total exchequer revenue. Total tax revenues from PIT have been generally increasing in absolute terms but falling in relative terms between 2017 and 2022, both as a share of total tax revenues and as a ratio to GDP. This is mainly due to reforms that were introduced to cushion income earners during the pandemic – and only partly reverted after that. However, it should also be noted that, under the current structure, growth in PIT revenue is closely linked to the growth of employment income for the higher deciles of the population, who face the highest average tax rates. Therefore, it is natural that PIT revenue growth will not always track GDP growth (which includes many components other than household incomes), and particularly so in the presence of pro-poor economic growth as envisaged by the Bottom-Up Transformation Agenda.

Evidence:

- International perspective:
 - o African countries typically share the key features of the Kenyan tax system: some form of tax exemption for low-income earners, and marginal tax rates (MTRs) increasing in income. Kenya's tax bands are fewer and less progressive than South Africa, which has adopted seven bands with rates ranging from 18% to 45%, and Namibia. Rwanda and Uganda set all tax rates at round numbers such as 10%, 20%, 30% or 40% to promote simplicity.
 - o Kenya collects somewhat more personal income tax than countries with a similar income level, and PIT as a share of GDP only starts rising systematically at much higher income levels.
- Viable strategies to enhance progressivity:
 - o There are essentially two ways to achieve a more gradual progression of tax rates within the large group of taxpayers currently facing MTRs of 25% or 30%: increasing tax rates for the richer among them or reducing them for the lower income earners in this group.
 - o Under the current tax structure, the first type of reform would require lowering the threshold for the 32.5% tax rate. Under more thorough reforms further widening the differences between the tax rates faced by lower-income and higher-income taxpayers, an additional band could be considered. This type of reform would increase progressivity and generate additional revenue.

- The second type of reform could be implemented by lowering MTRs for the first effective taxpayers or by introducing additional tax bands, would increase progressivity and stimulate the economy by easing the tax burden on the middle class.
 - The two types of reform could also be combined to balance their opposing effects on revenue.²
 - We find that private employees reduce their reported gross income substantially more than public employees following tax increases (0.62% and 0.06%, respectively, for each 1% increase of the tax rate). It is thus an encouraging observation for the efficiency implications of these progressivity-enhancing proposals that private workers constitute a substantially larger share of the formal workforce in the income levels where MTR reductions are suggested.
- Personal relief:
- Whilst simple theories of taxation might advocate lowering personal reliefs, our initial findings indicate that the current relief might be close to optimal according to a model incorporating horizontal equity concerns.
 - The reason for this is that while the potential revenue gains from lowering the threshold are quite modest, such a lowering would also impose substantial costs. These costs encompass both the direct administrative costs of attempting to include more workers with low incomes (which hence generate little revenue) in the tax base and social costs arising from tax inequities. The latter is due to people perceiving it as unfair that only the minority of formal workers impacted by a lowering of the relief would actually have to remit taxes while the informal workers with identical incomes could remain unaffected.
- Top income tax rates:
- The revenue potential of further hikes in top marginal tax rates crucially depends on how strongly the incomes of the rich react to them. For instance, higher tax rates may drive avoidance strategies, such as shifting to corporate tax structures (e.g. profit shifting and other blatant tax evasion actions). The small empirical literature for African countries presents a wide range of estimates, and the most pessimistic scenarios point to very limited revenue potential of such measures.
 - We will be in position to provide more solid, Kenya-specific advice once sufficient data is available to evaluate the effects of the 2023 reforms (Year 3 project in 2026).
 - In any case, the effectiveness of top-income rates will be enhanced by enforcement efforts that reduce tax avoidance and evasion possibilities for the rich.

² More detailed analysis of various possible reforms is available in Kanina et al. (2025) and the policy note from project 4.1. See also Ngugi, Tarp and Kedir (2025).

Recommendations:

- The revision of the PIT band structure to enhance progressivity is part of the MTRS. Several possible reform options to achieve this goal exist with varying effects on revenue collection, redistribution and economic efficiency (see above and technical outputs), which policymakers need to balance in a way that aligns best with their priorities.
- Personal relief should not be lowered from Ksh 288,000. A moderate upwards revision above the current level (set in 2020) could be considered to adjust for inflation and prevent excessive tax burdens on middle-class households.
- Promoting economic growth and expanding the middle class are crucial to sustaining a broader tax base, enabling higher revenue generation and more equitable income redistribution.
- Expanding the tax base requires balancing enforcement efforts focused on productive taxpayers with administrative efficiency and taxpayer trust. Encouraging formalisation of establishments can also be beneficial but bringing more economic agents into the tax net should always be accompanied by effective service delivery for them. Otherwise, trust will be eroded as the social contract fails in the presence of poor services to taxpayers. There should be visible signals and evidence of doing so to improve the citizen-state relationship in a setting where widespread DRM is pursued.

4 Electronic Tax Invoice Management System (eTIMS)

4.1 How does e-invoicing affect tax compliance and revenue collection?

Related research project:

- Title: Formalizing firms' supply chains: evidence from Kenya's universal mandatory electronic tax invoice management system (Project 5.2).
- Research objective: Analyse whether the introduction of eTIMS has increased the formalization of firms' supply chains.
- Current evidence base: Analysis has not yet begun. The discussion in this note is therefore based on evidence from academic studies conducted in other countries.

Background: During the past decades, KRA has been digitizing its tax collection to enhance tax compliance and revenue collection: the roll-out of Electronic Tax Registers began in 2005; the Tax Invoice Management System (TIMS) was rolled-out to all VAT registered taxpayers in 2021; and the electronic Tax Invoice Management System (eTIMS) was gradually rolled out to all persons doing business in Kenya from 2023. To understand whether and how KRA should continue to pursue this reform agenda, it is important to understand whether the digitization reforms increased tax collection.

Evidence: The literature indicates that the adoption of ETR machines and e-invoicing can have a sizeable impact on revenue collection.

- Electronic tax registers
 - o Mascagni et al. (2021) study the adoption of electronic sales registration machines on taxpayer compliance in Ethiopia. They find that the adoption increased net corporate income tax by at least 12% and net VAT by 48%. The combined revenue gain was 2.75 million USD in 2012 alone.
 - o Ali et al. (2021) also study the adoption of electronic sales registration machines in Ethiopia and reach similar positive conclusions. Specifically, they find that VAT collections increased by 18–32%, corresponding to a 3.6–6.4% rise in the overall tax revenue in Ethiopia.
 - o Hakizimana and Santoro (2023) study the adoption of a new and updated version of electronic billing machines in Rwanda. They find that the adoption increased VAT due by around 13%, but for first time-adopters of billing machines only. The study finds no effect on adopting the new machines for firms already using the old machines.
- e-invoicing
 - o Fan et al. (2023) study the effect of computerized invoices, a digital invoice encryption made invoice-fraud difficult while facilitating easier transmission of invoices to the revenue authority in China. They find that the reform mandating firms to computerize invoices led to an increase in VAT revenues due to a decline in VAT evasion from exaggerated deductions. Overall, the reform explains 33.4% of the increase in firm VAT over a ten-year period. In the long run, the study also shows

that the reform might have had a negative effect on the real output of treated firms.

- o Kotsogiannis et al. (2025) study the impact of e-invoicing on VAT compliance in Rwanda. They find that e-invoicing yields an average increase in firms' net VAT payments of USD 6-11,000. Since e-invoicing also increases paper trails in audits, the authors find an additional and even larger average effect on tax collection running through better audit yields in firms that have adopted e-invoicing.
- o Bellon et al. (2022) study the effect of VAT e-invoicing in Peru. They find that firms mandated to adopt e-invoicing experience a significant, but modest, increase in VAT payments of 5%.

Recommendation:

- The available results from the literature clearly indicate that the adoption of ETR machines and e-invoicing can have sizeable impacts on revenue collection. This highlights the value of continued commitment to digitizing tax collection in Kenya.

4.2 Should small firms be exempted from onboarding eTIMS?

Related research project:

- Title: Formalizing firms' supply chains: evidence from Kenya's universal mandatory electronic tax invoice management system (Project 5.2).
- Research objective: Analyse whether the introduction of eTIMS has increased the formalization of firms' supply chains.
- Current evidence base: Analysis has not yet begun. The discussion in this note is therefore *not based on evidence* but on our working hypotheses.

Background: From March 2024, every person doing business in Kenya was required to on-board eTIMS to issue electronic tax invoices and transmit them to KRA through the system. With effect from January 2024, any person making deductions for business expenditure such as purchases and other business costs for income tax purposes was also required to support such expenditure with a valid electronic tax invoice. Many small firms complain about the cost of complying with eTIMS and apply to be exempted from onboarding the platform.

Things to consider:

- Arguments against exemptions to small firms
 - o Exemptions could halt business formalization by the simultaneous introduction of eTIMS and the law specifying that input costs are deductible only if supported by a valid electronic invoice. With no exemptions, large formal firms wishing to deduct input costs may "push" their small informal suppliers to register with KRA and transmit valid electronic invoices.
 - o eTIMS will help KRA gather data on the entire formal economy in Kenya. From the tax administration perspective, it is beneficial that all businesses (both with and without VAT obligations) onboard eTIMS as this will give KRA visibility of both business to business (b2b) and business to customer (b2c) transactions. By exempting small firms, KRA may lose out data that can be used to expand the tax base, detect tax fraud, and enhance tax compliance among the smaller firms in Kenya.
 - o eTIMS has made it significantly easier and less costly for firms to comply with their tax obligation compared to the former electronic tax register (ETR) systems. First, taxpayers were required to purchase costly ETR machines under the old system, but with TIMS and eTIMS, they simply install an app on their device. Second, eTIMS makes tax filing easier by ensuring electronic bookkeeping, increasing data accuracy, enabling data validation, and streamlining electronic invoice transmissions. The system is automated and transmits invoice details to the KRA portal in real time, while the old ETR system required manual entry of data and only transmitted data to KRA daily. Finally, the training provided by KRA to small firms onboarding eTIMS, as well as the services provided after onboarding, help improve their record-keeping skills and comply with their tax obligations.
- Arguments for exemptions to small firms
 - o The fixed costs of complying with eTIMS may be significant for smaller firms, ultimately leading to business closures or de-formalization.

- o The fixed cost imposed on firms for compliance makes up a larger share of total income in small firms. It is therefore a regressive requirement.
- o Small informal suppliers may not be cost-competitive, if they formalize. Instead of “pushing” small suppliers to formalize, larger firms may switch to cost-competitive formal firms. On the one hand, this could hurt the small informal firms in the short run. On the other hand, this may increase productivity and growth in the long run.

Recommendations:

- The good practice is to gradually implement electronic invoicing systems while ensuring that the system satisfactorily serves taxpayers' needs.
- While the move from the ETR system to TIMS/eTIMS significantly reduced the fixed costs of compliance for the taxpayers, there is need to review how these costs could be further reduced for small traders so that they will find it cost-effective to onboard and use eTIMS.
- To ensure evidence-based policymaking, it would be advisable not to make any irrevocable decisions before the conclusion of the ongoing study.

5 Audits and machine learning

5.1 Should KRA use machine learning to improve audit case selection?

Related research project:

- Title: Machine Learning to Improve Audit Case Selection (Project A.2)
- Research objective: Test whether KRA can use machine learning to select more productive audit cases.
- Current evidence base: The project has not yet been implemented. Historical data is necessary to train the machine learning model and extraction is not yet finalized. We highlight evidence based on studies from other countries.

Background: During the past decades, KRA has been digitizing its tax collection. KRA is now in possession of vast amounts of data with detailed information about taxpayers, including data on audits and additional assessments. The availability of data makes it possible to use new tools such as machine learning to make more efficient decisions. Audit case selection constitutes an obvious area that may benefit from the use of machine learning. Currently, most cases are chosen by audit officials through a manual process looking at risk-parameters such as tax-to-turnover ratios, sudden changes in filing behaviour, and sector-level risk factors. Leveraging the vast amounts of data at the KRA, it may be possible to train a machine learning model to predict the most productive audit cases using past audit outcomes and taxpayer characteristics.

Evidence: There is scarce literature studying the effectiveness of machine learning on audits, but what is available shows that machine learning may significantly improve audit outcomes.

- Battaglini et al (2024): Data on sole proprietorship tax returns and audits in Italy is utilized. For the 10% least promising and manually selected audit cases, a machine learning model increases the detection of tax evasion by 39%, and evasion that is ultimately paid by 29%.
- Bachas et al. (2025): The paper uses data on tax declarations, third-party reports, and audit outcomes in Senegal. They find that a traditional risk-scoring algorithm performs *significantly worse* than audit inspectors' manual case selection, but they suggest that a machine learning approach could have increased audit revenues by up-to 18%.

Recommendations:

- Our study tests how machine learning can best be used to improve audit case selection in the Kenyan context. If the study finds that the method is effective, there is a need to:
 - Ensure that tax offices are ready (incentivized) to substitute some cases selected via the current manual selection method with cases selected by a machine learning model.
 - Implement the machine learning model across tax offices.
- We believe this is a medium to long-term implementation initiative given the capacity building required.

6 Excise tax on fuel

6.1 What are the short-term impacts of changing the excise tax on petroleum?

Related research project:

- Title: Redesigning the Excise Tax System in Kenya: Taxation of Petroleum Products (Project 3.2)
- Research objective: Assess the current excise rates on petroleum products.
- Current evidence base: The information in this section is based on the ongoing analysis of the impact of excise tax changes on welfare, revenue, and the environment.

Background: The taxation of petroleum products requires careful consideration due to its widespread impact on government revenues, industry productivity, household spending, and the environment. In Kenya, the close relationship between fuel prices and the cost of living makes it a particularly important issue. We centre our analysis on petrol, which is primarily used for private transportation, and diesel, which is used for transport and as an agricultural and manufacturing input. These products are especially important, as they constitute a large portion of petroleum product consumption in Kenya and are integral to many levels of the economy. This makes the task of reforming taxes on these products crucial, as it seeks to strike the right balance between the cost of living and economic growth. In our analysis we analyse, and quantify where possible, the effect of tax changes on government revenues, household budgets, and other economic and social dynamics.

In FY 2022/2023, excise taxes amounted to KES 266 billion, constituting approximately 13% of government revenue in Kenya (KNBS, 2024). Of this, excise on petrol and diesel amounted to KES 70.5 billion (26.5% of total excise collection). While revenues grew from 2018 to 2021, they have since stagnated and declined slightly. Moreover, the percentage of total excise revenues made up by petrol and diesel excise is falling. First, this could be because the excise tax collected on other goods has increased while collection from petrol and diesel has remained the same. Second, it could be that stagnant or slightly reduced demand has reduced collections.

Things to consider:

- Low price elasticity of demand
 - o The low price elasticity of demand for petrol and diesel (see e.g., Havranek et al., 2012; Labandeira et al., 2017), means that moderately increasing the excise tax can yield higher revenues without altering consumption patterns.
 - o Due to limited data availability, it is difficult to precisely estimate the demand elasticity. However, the evidence indicates that it is unlikely that the short-run effect of increasing petroleum taxes is very sizeable.
- Progressivity
 - o Policies that increase fuel prices, or remove fuel subsidies, are progressive in developing countries (Clements et al., 2003; Coady & Arze del Granado, 2010; Coady et al., 2006; Kpodar & Djiofack, 2010; and Solie & Mu, 2015).

- o We find that petrol price increases are indeed progressive, but that for diesel, increases may be regressive. The passthrough rate of diesel to food prices drives the regressivity of its additional taxation, where a higher passthrough rate leads to more regressivity as poorer households spend a larger portion of their budget on food.
 - o Diesel is used as an input to some industrial processes, especially in the agriculture and manufacturing sectors, which could increase consumer prices in these and downstream industries. Our analysis does not capture these second-order effects.
- Other considerations
 - o Substitution: Increased price differentials between petrol and diesel can lead to a fuel-switching effect that encourages use of diesel-powered vehicles. This may lead to shifting demand of fuel types and increased air pollution due to higher consumption of diesel, which is more polluting.
 - o Social Responses to Tax Changes: Large increases in the tax on fuels could be met with discontent from large portions of the public despite their potential progressivity. Therefore, any changes to the tax regime should be small and gradually implemented to avoid any social or economic shocks.
 - o Regional Analysis: Keeping the price of petrol and diesel in Kenya comparable to neighbouring countries will prevent fuel tourism and keep industry competitive.
 - o Long-run Effects: Taxing fuel can have additional long-run effects on GDP growth and economic development that are outside of the scope of this note.
- Environmental implications
 - o While tax changes on diesel and petrol can cause small changes in consumption habits, other policies are far more effective at reducing emissions due to the low price elasticity of demand for these products (Havranek et al., 2012).
 - o Reducing the number of old diesel engines (i.e. reducing old lorries on the road) by implementing emissions testing can be a faster and more effective way to improve air quality and reduce harmful emissions.

Recommendations:

- Small increases to the excise rates on petrol and diesel can yield significant revenues without causing economic distortions. A measured increase in the specific excise rate on petrol is progressive, while an increase to diesel is neutral or regressive. See detailed Policy Note 3.2 for specific recommendations and analysis.
- Aligning government priorities may reveal that other policy changes are more effective for addressing specific questions, especially those related to the environment.

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