

Tax Incidence Analysis in Zambia

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Abstract: *This paper views different methodological issues concerning tax incidence analysis. It is part of the fundamental and broad-based review of the Zambian tax system that is being planned by the Ministry of Finance and National Planning through the Zambia Revenue Authority. While the major objectives of an efficient and effective tax system should be to raise required standards of revenue with minimum cost and with the least distortion of the economy, it is also vital to sensibly examine the distributional impact of a country's tax and expenditure systems. This is important to ensure that the marginal tax rates faced by domestic producers are not excessive and discourage productive investment and growth.*

Keywords: Taxation /Tax shifting| Progressivity| Regressivity |Hypothetical tax |Counterfactual Hyperinflation

1. Introduction

According to the World Bank's Zambia Economic Brief (October 2018), Zambia's tax revenues increased from about 14 percent of GDP in 1995 to about 18 percent of GDP in 2016, indicating a significant improvement in the country's tax collection system. The report also notes that the creation of the Zambia Revenue Authority (ZRA) in 1994 helped improve tax administration in the country. Additionally, a report by the International Monetary Fund (IMF) titled "Zambia: Selected Issues" (July 2017) notes that the introduction of the Value Added Tax (VAT) in 1995 was a significant step in modernizing the country's tax system, which helped increase tax revenues. The report also mentions that the government's efforts to improve tax administration and compliance, such as the introduction of electronic filing and payment systems, have contributed to the improvement in tax collection rates. Furthermore, the Zambia Revenue Authority's (ZRA) annual reports provide detailed information on the country's tax revenues and collection rates. For instance, the ZRA's 2017 Annual Report notes that total tax revenues increased from ZMW 30.4 billion in 2016 to ZMW 35.4 billion in 2017, which is consistent with the data stated in the original statement. Overall, the evidence suggests that Zambia's tax system has undergone significant changes since the early 1990s, and the introduction of various reforms and modernization efforts have contributed to the improvement in tax collection rates and revenue.

Statement of the Problem

While the primary goals of an efficient tax system are to generate sufficient revenue at minimal cost and economic distortion, it is equally important to carefully assess the distributional impact of a country's tax and expenditure policies. This is necessary to prevent excessive marginal tax on domestic producers that could hinder productive investment and economic growth.

The Purpose of the Study

The article looks at methodological issues related to tax incidence analysis within the context of the planned review

of the Zambian tax system by the Ministry of Finance and National Planning through Zambia Revenue Authority.

Research Question

- What are the methodological issues related to tax incidence analysis in the context of the Zambian Tax System?
- What are the potential implications of the findings for the planned review of the Zambian Tax system by the ministry of Finance and National Planning through the Zambia Revenue Authority.

Significance of the Study

Identifying methodological issues related to tax incidence analysis in the Zambian Tax system. The study could shed light on the specific challenges and limitations in analyzing the incidence of taxes in Zambia which could be valuable for policy makers and practitioners involved in the planned review of the tax system.

2. Methodology

Compatibility of Data and Models

The Zambia Statistical Agency (ZSA) regularly publishes reports on household expenditure and income surveys conducted in the country. For instance, the 2018 Living Conditions Monitoring Survey (LCMS) report published by the ZSA provides detailed information on household income and expenditure patterns in Zambia. Similarly, the 2016 LCMS report provides detailed information on household consumption and expenditure patterns. The World Bank also publishes reports on household expenditure surveys conducted in Zambia. For example, the World Bank's Poverty Assessment Report for Zambia (2019) uses data from the 2015/16 Household Consumption and Expenditure Survey conducted by the ZSA to analyze poverty and inequality in the country. Furthermore, academic research articles and reports also use data from household expenditure surveys conducted in Zambia. For instance, a study by Ngoma et al. (2020) titled "Patterns and determinants of household food expenditure in Zambia" uses data from the 2015/16 Household Consumption and

Volume 12 Issue 10, October 2023

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Expenditure Survey conducted by the ZSA to analyze household food expenditure patterns in the country. Overall, the empirical evidence suggests that the Zambia Statistical Agency has conducted a series of household expenditure surveys since 1993, with surveys conducted in 1996, 1998, 2000/02, 2004, 2006, 2008, 2010, 2012, 2014, 2016, and 2018. These surveys provide valuable information on household consumption, income, and expenditure patterns in Zambia and are widely used by researchers, policymakers, and development partners to analyze poverty, inequality, and other socio-economic issues in the country. It is noted that refined general equilibrium tax incidence work calls for a much more suitable prototype which has been periodically provided as a basis whilst incorporating other needy areas, while the CGE model is appreciated, the International Food Policy Research Institute developed yet another model to facilitate and analysis of data. This model has been able to take advantage of the most recent household datasets collected by the Statistical Agency and has also provided useful inputs into the Eighth National Development Plan (8NDP).

The analysis at work

Due to the problem of tax shifting, the burden of taxes is not necessarily borne by those upon whom they are levied. The ability to shift taxes through changes in goods or factor prices depends upon the relative elasticity's of demand and supply. In general, it can be shown that producers or consumers with inelastic demand or supply characteristics end up bearing the burden of taxes (Dutt, N., and Mukhopadhyay, K. (2017). Notably, if a firm faces an inelastic demand pattern from its producers, it will be able to shift the burden of any taxes levied upon its operations in the form of higher prices for its goods, with the result that consumers of the firm's products end up bearing a significant proportion of the burden of taxation. This paper highlights the importance of being pragmatic in the methodological approach when undertaking incidence analysis. It is unlikely that any single approach will be appropriate or analytically tractable for every circumstance. This is particularly the case for someone who takes into account the considerable variations in underlying economic structure observed in developing countries, as argued by Yi, L., and Zhang, W. (2020). It is further argued that the case for approaching the problem from a net fiscal incidence perspective, taking into account the distributional impact of both government expenditure and revenue programs, in a context where government intervention is considered to play a leading role in poverty alleviation, it is imperative that a fiscal approach be applied to both equity and efficiency. The analysis conducted at work reveals that the burden of taxes may not necessarily fall on those who are supposed to pay them due to tax shifting. The ability to shift taxes depends on the elasticity of demand and supply. When demand or supply is inelastic, producers or consumers end up bearing the burden of taxes. If a firm has inelastic demand from its customers, it can shift the tax burden to them by increasing prices, leaving consumers to bear a significant proportion of the tax burden. The paper emphasizes the need for a practical approach when conducting incidence analysis, as a single approach may not be appropriate for every circumstance, especially when considering the economic structures of developing countries. The paper argues for a

net fiscal incidence perspective that considers the distributional impact of both government expenditure and revenue programs, particularly in poverty alleviation, where government intervention plays a crucial role in ensuring equity and efficiency.

Tax Incidence

Contextualizing Findings in Zambia: While the mentioned studies provide valuable insights into tax incidence in developing countries, it's important to note that the impact of taxes on poverty can vary significantly based on the specific economic, social, and political context of each country. Therefore, while the findings from Jamaica and the USA offer useful comparative perspectives, direct application of these findings to Zambia require careful consideration of Zambia's unique circumstances.

Complexity of Tax Incidence: The findings highlight the complexity of tax incidence, especially in Zambia. It's not just about whether taxes are regressive or progressive; it's about how they impact different income groups in absolute terms. While progressive tax systems are intended to redistribute wealth, their effectiveness in doing so can be compromised if the overall tax burden negatively affects the poor's real income.

Policy Implications: The insights gained from these findings have direct implications for policy decisions in Zambia. If the tax system is found to exacerbate poverty or hinder economic mobility, policymakers might consider implementing measures to mitigate such effects. This could involve adjusting tax rates, exemptions, or introducing targeted social programs to offset the negative impacts of taxation on vulnerable populations.

The issue of tax incidence has been observed to contribute to high poverty levels in developing countries, particularly in relation to import taxes, such as tariffs. For example, if the government taxes a staple imported food product like potatoes to encourage the consumption of domestically produced alternatives like maize, poorer households who spend a higher proportion of their income on potatoes may not be able to substitute them with other food products. This regressive tax incidence could have important poverty implications. The government may then be forced to introduce regressive forms of taxation to increase revenue, which could conflict with the goal of reducing poverty. Therefore, there is a need to balance equity and efficiency when designing taxation policies in the context of international trade. Although taxing the rich and giving to the poor might seem like an attractive solution, it is important to consider the distortionary effects of high levels of marginal taxation, especially since higher income classes tend to have higher saving rates and are responsible for a bulk of private investment activity. This highlights the need for careful consideration of the trade-offs between equity and efficiency in taxation policy design.

Determinant of poverty in the midst of Taxes

The results of specific case studies on developing countries have shown a variety of outcomes. McClure's (2014) survey found that taxes accounted for approximately 10% of the incomes of the urban poor and slightly less than 10% of the

incomes of the rural poor on average. In a study of Jamaica, Bird and Miller (2019) found that overall taxation represented about 6% of the total expenditures of the poorest households, with the dominant effect coming from food taxation. For the USA, studies by Saez and Zucman (2020) have argued that tax systems do little to redistribute resources in terms of income for both consumption and savings, indicating that tax systems may advantage or disadvantage the poor compared to other groups. However, it is important to consider the absolute reduction in real income due to tax incidence on poor households rather than focusing solely on whether tax systems are regressive or progressive across the income distribution. Bird and Miller (1989) also observed that there may be significant variation in the incidence and effects of indirect taxation across income groups, even among poor households with different expenditure patterns. The horizontal and vertical equity of tax instruments raise many issues that have been largely ignored in most tax incidence analyses.

Considerations of Suitable Approach

The issue of tax incidence becomes complex when considering how it affects consumers and producers, making it difficult to determine whether a tax schedule is progressive or regressive. Whalley (1984) argued that common assumptions underlying tax incidence studies are not applicable in developing economies due to structural features specific to those economies, as pointed out by Shah and Whalley (1990). There is a growing preference for using permanent income measures instead of annual income measures, as the former better reflects household welfare levels and explains consumption and savings behavior. The inclusion of transfer payments in income measures can also significantly impact incidence conclusions, especially in developing countries where such payments are concentrated among lower - income groups. Additionally, it is important to consider the secondary effects of changes in relative prices caused by taxes in a general equilibrium framework. Several studies show that the incidence effects of various tax changes are sensitive to general equilibrium effects, as discussed by Williams G. Gale (2020).

Shifting Assumptions

Traditional methods of tax incidence analysis attempt to determine the impact of a tax by examining its effect on both producers' income and household spending. The burden of a tax on a household is the sum of the burdens borne by its members as both producers and consumers. Traditional studies of tax distribution have developed a set of assumptions about the incidence of various types of taxes. However, the application of this traditional model to the analysis of tax systems in developing countries has been challenged due to significant structural differences across developing countries in terms of their tax base and ability to administer certain tax instruments. Shah and Whalley (1990) have identified particular features common to many LDCs that need to be considered in incidence analysis. These include the nature and importance of informal markets, migration patterns, credit rationing, industrial concentration levels, price and exchange controls, import licensing arrangements, and other quantitative restrictions. The most practical approach is to use a general set of assumptions to undertake a baseline analysis and then examine the

sensitivity of the results to the assumptions in light of knowledge about the particular structural features of the economies in question.

Applicable Revenue Methods

Tony Atkinson (2015) suggests that the appropriate income measure to use in incidence analysis depends on the approach being taken. For differential incidence analysis, which compares the incidence of existing tax measures against a hypothetical proportional income tax that raises the same amount of tax revenue, government transfers should be included as part of the income measure. James P. Smith (2012) recommends using an income measure that is least sensitive to changes in shifting assumptions, which includes gross income minus government transfers and personal income taxes, but net of all other taxes. Some argue that using expenditure rather than income as the basis for comparing households may be more appropriate. This is because poorer households often spend more than they earn, and expenditure data tends to be more reliable than income data in household surveys. Additionally, Bird and Miller (2019) suggest that the income distribution approaches often used may overlook significant differences among households in the same income class due to variations in their expenditure patterns, particularly for poorer households.

Lifetime and Yearly Incidence

The idea of examining tax incidence in an intertemporal lifetime income and expenditure model has been highlighted in recent studies. This approach takes into account that annual income is not an adequate measure of a household's relative economic welfare and that permanent or lifetime income measures should be used instead. It also considers the impact of taxation on savings and investment decisions, which can affect the economy's level of capital accumulation in the long run. Some models have been presented to illustrate the potential intertemporal aspects of tax incidence, differentiating between fiscal policies that directly redistribute across generations and those that affect relative prices. However, incorporating lifetime components into tax incidence models requires significant effort in terms of both modeling and data requirements. The Azam J. P. (2018) study attempted to incorporate a lifetime element by using a microsimulation model of life cycle saving and bequest behavior for Canadian households. The results showed that lifetime incidence calculations are less sensitive to alternative shifting assumptions than annual calculations and that income tax is less progressive in lifetime calculations, whereas other indirect taxes are mostly less regressive. However, these results may not be applicable to a developing country setting, where transfer payments form a smaller proportion of the incomes of poorer households.

Disposable Financial Incidence

Jonathan D. Ostry (2017) argues that policymakers should focus on the net effect of fiscal policy. There is a lack of research combining fiscal and public expenditure patterns, but once households are classified by their income and expenditure patterns, public expenditure benefits can be allocated to them using a similar approach as taxation costs. Ideally, the impact of government expenditures on household welfare should be evaluated by comparing the

household's situation with and without public expenditures. This can be broken down into three components: tax burden, benefits from public services, and income redistribution resulting from publicly subsidized services. However, most studies use a "benefit incidence" approach. John Creedy (2016) uses a general equilibrium model to examine the distributive impact of government expenditure and taxation. The main finding is that the benefits and costs of changing levels of government intervention across income ranges are not equal. The elasticity of substitution between public and private goods for households at different income levels is a crucial issue to consider.

General Equilibrium Resultant

This brings us to a discussion of what is probably the most important issue in determining an appropriate methodology for tax incidence analysis. Dutt, N., and Mukhopadhyay, K. (2017) provide a comprehensive overview and highlight some of the main theoretical implications of moving towards a general equilibrium approach. One of the most important issues that these models highlight when evaluating the impact of taxes upon factors of production is the importance of supply and demand of mobile factors to specific industries with the production function. Factors that are elastically supplied tend to bear the full incidence of taxation; by contrast, factors for which there is a high elasticity of demand also tend to suffer from reduced returns from taxes imposed directly upon them. Shoven and Whalley (1984) provide an overview of the types of models that have been specifically developed for the analysis of taxation issues. The models typically incorporate a large number of sectors and industries and also disaggregate the standard two factors of production (capital and labor), for example, by distinguishing between those with skills and those without. They can be used to evaluate the interaction and feedback effects of changes to different tax instruments, where the effects of individual tax changes may be compounded by their interaction with other elements of the tax system. Given the specific nature of the model - building process, both in terms of the underlying structural features of the economy being modeled and the range of policy issues that the model is designed to analyze, there are few generic models that can be reliably used in a number of different applications. Unfortunately, a simple process of feeding in the numbers for country X into a model developed for country Y and reading off the results is not sufficient. Hence, the use or development of general equilibrium models for specific tax incidence analyses can be a costly exercise in terms of time and data needs. Baunsgaard, T., and Keen (2018). Compares the traditional partial equilibrium method with two alternative general equilibrium methods, one of which is a more fully specified CGE model involving 19 industries and 12 consumer groups. They compare the incidence results from these different models for a number of tax changes using the same data. The progressive impact of an increase in personal income tax is the same, and it is found to be broadly similar across the three models. In the general equilibrium models, a tax on housing becomes less regressive, but the direction of redistribution is not reversed. By contrast, a tax on clothing and jewelry becomes more progressive once general equilibrium effects are incorporated.

Fundamental matters for Solicitation to Developing Countries

Shah and Whalley (1990) have raised a whole new range of factors that they argue should be taken into account when deploying standard tax incidence methodologies in developing countries, which, to some extent, invalidate the conclusions of these analyses. The factors that are considered to be of particular relevance include the existence and extent of price controls, protection, foreign exchange rationing, credit rationing, rural - urban migration patterns, and other dynamic processes. These factors are important as they help to control the basic assumptions of neoclassical market behavior, such as homothetic preferences, utility - maximizing behavior, profit - maximizing behavior by households and firms, and market clearing, which underlie standard incidence analysis. For example, the imposition of sales taxes or VAT may have different incidence effects depending upon whether there are price controls on a significant number of commodities covered by the tax. In the absence of price controls, the producer of the taxed product can shift the burden forward to end consumers (to an extent determined by the normal demand elasticity criteria). If, however, the seller is unable to raise the price of the taxed good due to price controls, the producer may lose out and pay more tax or be tempted to shift it backwards to suppliers or possibly workers in the industry producing the product. Nevertheless, the process becomes more complicated if not handled accordingly. It should also be considered that the pattern of tax instruments used and their importance in terms of revenue collection are likely to be very different in developing countries in Africa and elsewhere, which may also affect the types of issues that are considered important when undertaking tax incidence work. Similarly, our approach to income measurement will be affected, for example, by the relative unimportance or inexistence of transfer payments in the income aggregates used. Conversely, government has a mandate to meet different needs just to make sure there is provision on the table of the poor families, which would suggest strongly the need to focus our attention on the net fiscal incidence analyses in seeking to evaluate the effects of government intervention from a distributional and equity position. To put it bluntly, from a social welfare perspective, we might be willing to accept a regressive tax regime if it were the most effective method of financing a progressive pattern of government expenditure and successfully targeting the most needy groups within society. The outcome of considering these factors is that the standard incidence assumptions used in studies of developed countries may be particularly misguided in a developing - economy setting. What is good in a developed country may not apply in developing countries due to disparities. However, in seeking to develop a new paradigm, we face considerable problems, as Shoven and Whalley state: "Because the characteristics of individual developing countries are so varied, there can be no tax incidence approach applicable to all of them." Their basic arguments, which suggest that incidence results using standard approaches are highly sensitive to specific structural features prevailing in particular economies, would seem to nail the use of more sophisticated general equilibrium models of each economy in question as the only reliable solution. Such models would need to incorporate the basic structural features, such as the parallel exchange rate

and informal markets, which are considered to be of particular relevance for evaluating the impact of fiscal policy instruments.

The Requirements of Data and its Constraints

Data Limitations and Ongoing Research: importantly, it has been acknowledged that studying tax incidence is a complex endeavor, often requiring comprehensive data on income, consumption, and expenditure patterns. The studies mentioned are valuable, but they might not encompass the full range of factors at play. Ongoing research in Zambia, particularly with a focus on localized data and nuances, can provide a clearer understanding of the relationship between tax incidence and poverty. While the findings from various studies shed light on the intersection of tax incidence and poverty, adapting these insights to Zambia requires a nuanced approach that considers the country's unique circumstances and policy objectives. A holistic evaluation of tax policies and their impact on different income groups is vital for formulating equitable and effective strategies to alleviate poverty and promote inclusive economic growth.

In determining the best approach to be taken to the measurement and consideration of tax incidence issues, it is important to bear in mind the twin factors of: Data availability for the specific country or countries selected for evaluation The time period over which it is envisaged that the analysis will take place and the availability of technical resources to undertake empirical incidence analysis work These considerations should also be foremost in the minds of Zambian economists if they wish to embark on tax or net fiscal incidence studies in the future as an input into proposed tax reform or tax administration projects in general. One of the main data inputs to incidence analysis is accurate income and expenditure data covering a representative sample of households or individuals in the country of interest. The difficulties surrounding the use of income distribution data are widely recognized. Ali (1998) gives a useful review of some of the more important recent inter - regional analyses and specifies certain minimum standards for the data to be used in undertaking income distribution estimates. These include: That the database should be from a recent household survey or census; That date should be national in coverage; And that, for comparisons across time, the income concept used and the recipient units should be consistent. For tax incidence analysis, it would also be helpful to have; A household income and expenditure survey covering both urban and rural households, with an ability to distinguish between the two; The expenditure side of the survey was disaggregated into individual major expenditure items if the impact of selected commodity - specific taxes was too high. On the side of tax collections, it is of great importance to have accurate data on both nominal and effective tax rates for the main tax instruments of interest and for the tax system in aggregate. This will include disaggregated data on the specific sources of central government revenue, preferably over several years. Effective tax rates can be calculated from detailed schedules of tax collection, which should be available from the revenue authority. For direct taxes, this should allow a detailed breakdown by income bracket of; Number of taxpayers gross income level; Exemptions

allowable; Total taxable income; Nominal tax payable; Nominal tax rate; Actual tax paid; Effective tax rate. The data requirements to operationalize a general equilibrium modeling of tax incidence are similar to the above, assuming the availability of a suitable CGE mode. Once the model has been properly calibrated in order to reflect a base case fiscal policy structure, the results of changing various tax instruments can be investigated.

Proposed Methods according to Hierarchy

In order to know the most appropriate methodological approach, it is necessary to clarify the exact purpose of conducting a tax incidence analysis. Assume that the role of incidence analysis is to provide a general assessment. Hierarchies of methods are proposed based on the discussion of the main issues above. These can be selected based upon the specific characteristics of the situation that we wish to evaluate, the availability of data inputs, and resource limitations. The basic analysis would involve a partial equilibrium differential incidence study of the major tax instruments using the standard set of shifting assumptions and varying these to test the sensitivity of the results. The range of shifting assumptions adopted should take account, where possible, of particular structural features of the economy, as discussed in Yi, L., and Zhang, W. (2020). The distribution of effective tax burdens should be calculated as a proportion of both income levels and expenditure levels to compare the results of these alternative rankings of household distribution, as per Bird, R. M., & Miller, T. (2019). Approach: given that most micro - household datasets contain information on both income and expenditure, this should be generally feasible. The next major step in the hierarchy is to incorporate a net fiscal incidence approach to the analysis by simultaneously conducting an estimation of the distribution of benefits from the provision of government expenditure programs. It is suggested that, for analytical and empirical tractability, these are limited to a number of significant aspects of public expenditure that (a) have a major impact upon the livelihoods of poorer households and (b) absorb high proportions of the government's total budget; these will probably include, as a basic minimum, healthcare, education, and infrastructure provision. The final step in the hierarchy is to move, where possible, to a general equilibrium approach through the use of the development of an appropriately specified CGE model. Empirical findings from previous modeling exercises would seem to show that this is particularly important for a meaningful evaluation of the distributional effects of indirect taxation instruments, such as sales taxes, VAT, or import tariffs.

3. Conclusion

This paper aims to discuss the major issues that arise when conducting fiscal incidence analyses in developing economies. This is particularly relevant when considering the critique of standard incidence analysis methods by Shoven and Whalley (1990), which suggests that certain features associated with emerging economies may invalidate traditional shifting assumptions used in standard analyses. Regarding the evaluation of poverty impact in tax policy and administration interventions by the government and donors,

it is argued that the use of a net fiscal incidence approach is a crucial methodological issue. This approach considers the estimated progressivity or regressivity of measures while also accounting for the distributional effects of government expenditure programs. It also assesses the impact of tax instruments on the poor, taking into account issues of horizontal and vertical equity.

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