EFFECTS OF VALUE ADDED TAX INCREASE ON HOUSEHOLDS' WELFARE IN SOUTH AFRICA

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ARTICLE INFO

Original Scientific Paper
Received: 30.05.2024
Revised: 30.04.2025
Accepted: 04.06.2025
doi:10.63356/ace.2025.003
UDK
336.226.3:338.22(680)

Keywords: *value added tax, commodity prices, households' welfare, South Africa*.

JEL Classification: H23, H25, D1

ABSTRACT

The South Africa's Value Added Tax increased from 14% to 15% on the 1st of April 2018 because of the compelling need to avoid budget deficits. Value Added Tax increment always leads to consumer price increase with some adverse impacts on consumers' purchasing power. This study evaluated the welfare effects of commodity price changes after the Value Added Tax increase on South African families. The data were from the National Income Dynamics Survey 2018 and the South African Consumer Price Indexes (2017/18 and 2018/19). Price elasticities were obtained from the Quadratic Almost Ideal Demand System Model and the impact of commodity price fluctuations in terms of Compensating Variation were then calculated using price elasticities. The study's conclusions provide an essential basis for an empirical examination to pinpoint the effects on welfare. The paper recommends that instead of having a uniform VAT standard rate, luxury goods should be subject to a higher VAT rate such as expensive watches, yachts and cars. Due to the large percentage of luxury goods being imported, domestic demand may not be negatively impacted, and the balance of payments may even slightly improve. Also, the study endorses that the list of items with a zero rating be expanded to include more products that the poor purchase more frequently, such as all types of bread, soaps, candles and items connected to education (such as school uniforms). Additionally, these findings are a part of a bigger investigation into quantitative evaluations of policy alternatives to guide the nation's VAT reform.

1. INTRODUCTION

Mitigating poverty and redistributing income and wealth to a considerable segment of the citizens are two biggest concerns in South Africa. These cannot be fixed unless the challenges of creating high and sustainable economic growth are addressed. Policies that specifically address these issues can help provide answers to these problems. Thus, measures that could promote employment are required. The uneven income distribution that is a feature of the South African economy could be addressed by reducing unemployment. The economy is not producing enough employment, and unexperienced workforces and youth face the effect of the crisis as firms search for trained people, with youth unemployment rates rising from 39.7% to 51.52% between 2011 and 2015 (Industrial-Development-Corporation, 2019; World-Bank-Group, 2018). At the end of the fourth quarter of 2022 the youth unemployment rate was 39.9% for those between the ages of 25 and 34 and 61% for those between the ages of 15 and 24. In general, the first quarter of 2023 saw an official unemployment rate of 32.7% (Industrial-Development-Corporation, 2023; Statistics-South-Africa, 2022a). Not to mention that over 50% of South Africans are poor (Industrial-Development-Corporation, 2019). South Africa is suffering poor economic development, inactive private investment, growing fiscal and external deficits and a high unemployment rate (Erero, 2015).

According to the Industrial-Development-Corporation (2016), real gross domestic production (GDP) in South Africa fell from 3.6% in 2011, the post-crisis peak, to just 1.9% in 2013. Moreover, in 2015, it fell to 1.3%, the lowest notable growth rate since the 2009 global financial crisis. Likewise, the private growth remained constant in 2014, down from 4.6% in 2011. The budget and account deficits were under increasing strain as a result of the GDP downturn. In 2013–14, the government's gross debt and fiscal deficits were 45.9% and 4.0% of GDP, respectively. Consequently, the government was forced to implement a fiscal adjustment program. The year 2013 saw an expansion in the account deficit to 5.8% of GDP, which was mostly financed by capital portfolio inflows because inflows of foreign direct investment stayed relatively low (Erero, 2015). South African economy expanded by only 0.3% in 2016, because of low output in the agricultural, mining and electricity sectors. However, the GDP increased by 1.3% in 2017. This modest performance was supported by forceful growth in agriculture and by the recovery in the mining output. The transport and finance sectors also made significant contributions. Nonetheless, weak domestic demand kept weighing on the manufacturing sector, resulting in a 0.2% decline in its real GDP in 2017 (Industrial-Development-Corporation, 2018).

In addition, as stated by the Industrial-Development-Corporation (2019), there was a technical recession in South Africa in the first quarter of 2018, and even though there was a rebound in the following two quarters, the GDP growth came to just 0.8% in 2018 as a whole (the rebound was after the VAT rate increase). In February 2018, the South African government proposed to increase VAT by 1%, effective from 1 April 2018, to generate additional revenue. There was a R50 billion tax income gap for the state because of the sluggish economy, which calls for immediate action. It was estimated that in 2018–19, measures to raise income tax and value-added tax earnings would yield R36 billion; a 1% increase in VAT was predicted to contribute the most, at R22.9 billion. Therefore, VAT remains a considerable source of income for the government. Nonetheless, it is crucial to take into account how this may negatively impact the welfare of ordinary individuals (National-Treasury, 2018). It is vital to know that this increase also came at a time when there was a slow growth in private and public incomes, because of the 2018 technical recession among other things. Even though VAT appears to be functioning satisfactorily overall, there are still certain issues that must be considered. Hence, the remainder of this study center on these topics. The recent increase in VAT from 14% to 15% is the driving force behind this study.

Nonetheless, as said by the National-Treasury (2018), to fulfil additional government spending obligations and stop the public finances from further deteriorating, the increase was necessary. However, households in South Africa are facing mounting pressure due to limited income growth compared to living expenses; yet, high levels of debt combined with rising interest rates make it difficult to obtain new credit, and job uncertainty has damaged consumer confidence and impacted household spending, which increased by 1.6% in 2017 (Industrial-Development-Corporation, 2018). Sekwati and Malema (2011) argued that in times where there is a slow growth of households' income, only a few expect a rise in Value Added Tax. This essentially reduces households' consumption. A higher consumption tax could make it more difficult for poor households to buy nutritious food. Since the rise was suggested, concerns have been expressed in Parliament and other forums over how the VAT would affect low-income and impoverished households. The problem of this study is that a rise in Value Added Tax rate is more likely to raise the prices of consumers' goods and services and reduce South African households' consumption. Given that most of the population is poor and low-income earners, poor households' consumption levels will be negatively impacted by this rise. However, certain basic items in South Africa are exempted and zero-rated from VAT to provide a relief to low-income families that offer most of their income on consumption.

These items have no VAT on them (National-Treasury, 2018; Roos et al., 2020). This study focuses on VAT-taxable supplies (commodity items that are subjected to VAT) to compare the relationship amongst them and understand the overall tax system and therefore determine the extent that VAT rate changes have on household consumption. The aim of the study is to investigate how a VAT rise might affect the welfare of South African households.

2. MATERIALS AND METHODS

This research made use of the National Income Dynamics Survey (NIDS) 2018 (wave 5) of South Africa. The survey provides relevant data on family spending on single products by total spending and level of income, which was used to understand the consequence of increased prices for consumers. The survey included four different forms of structured questionnaires, the majority of which were connected to expenditures and included questions about the structure and organisation of the households. Over 28000 participants from 7300 homes nationwide were included in the study's nationally representative sample when it began in 2008. Every two years, the survey is administered to the same household members. Children born to continuous sample member mothers are added to the sample of continuous sample members and are tracked. Furthermore, 2 775 additional household members were included in 2017, resulting in a total of 37 368 people successfully interviewed in this study. The National Income Dynamics Survey only includes expenditure data, not price or quantity purchase data. This is a restriction in terms of estimating consumer demand in South Africa, and it also applies to this research. It was then crucial to assess the prices encountered by households using alternative data collection, the best of which being the price data set gathered and primarily utilised in generating the Consumer Price Index (CPI) by Statistics South Africa. According to Van Oordt (2016), this price information set is gathered by fieldworkers. They are used in field-based collection to record real prices at sample outlets. This collection occurs every month and primarily contains prices for goods, while certain pricing for services is also included. Certain services are collected monthly, while others are collected at other periods.

Prices for a particular good or service gathered from several municipal areas are averaged for each of the provinces of the country for the CPI data set. Following the international classification standard, the NIDS expenditure items were coded using the "Classification of Individual Consumption According to Purpose (COICOP)". The goal is to establish a framework of homogeneous categories of commodities and services within households' consumption expenditures

(United-Nations, 2018). The Consumer Price Index (CPI) capture price increases for commodities and services and it is a measure of prevailing inflation rate. With the COICOP classification approach, consumers' goods were classified into some categories (Statistics-South-Africa, 2017). In this study, households' consumption expenditures were all considered.

Empirical model of welfare of price increment

Compensating Variation (CV)

The welfare effect of consumers' price changes can be evaluated by the money metric indirect utility function. We can calculate the relative welfare of consumers in reaction to alterations in commodity prices by making a comparison between their pre-reform and post-reform utility levels using a set of reference prices. As is customary in this body of literature (Friedman & Levinsohn, 2002; Leyaro et al., 2010; Minot & Goletti, 2000; Niimi, 2005; Vu & Paul, 2011), we define the compensating variation as the welfare impact of consumers' price changes. It measures the additional sum of money required by a person following a price change to regain their initial utility (Leyaro et al., 2010). Using the utility function to express CV, suppose the price of commodities changed from $P^0=(P_1^0,\ldots,P_n^0)$ to $P^1=(P_1^1,\ldots,P_n^1)$, while income remained at M^0 utilities would be maximized at $U^*(P^0, M^0)=U^0$ and $U^*(P^1, M^0)=U^1$ respectively (see (Deaton & Muellbauer, 1980). The amount of money required for the consumer to maintain the utility at U^0 is the CV. The expenditure function can also be used to derive the CV, which is the expenditure that would be required for the first utility level U^0 to be maintained. Note that expenditures will be C (P^0, U^0) and C (P^1, U^0) at price P^0 and P^1, respectively, and the difference between these is the CV. CV will be positive/negative if the welfare following the price shift is less/more than it was during the first time. The quantities consumed to obtain the expression are yielded by the partial derivatives of the lowest expenditure function about price.

$$\Delta \ln C \approx q \Delta \ln p \quad \ldots\ldots 1.$$

Note that q denotes a $1\times k$ row vector for all the commodities, Δp denotes a $1\times k$ column for the price vector, and k is the total number of the commodity groups. Equation 1 can be rewritten as a budget share function, w, and price, $\Delta \ln p$. This will yield

$$\Delta \ln C^h \approx \sum_{i=1}^{k} w_i^h \Delta \ln p_i^h \quad \ldots\ldots 2.$$

In equation 2, *i* is the commodity's subscript for each household (*h*). The budget share is obtained by dividing the amount spent on the item prior to the reform by the overall amount spent by families on all goods. For the price changes to have any meaningful distributional impact, they must result from shifts in the relative prices as well as differences in the families' budget share. The substitution effects could be substantial in South Africa given the price changes in 2018, thus (1) and (2) could not be reliable indicators of household welfare. The second order Taylor series expansion approximation can be used to calculate the welfare difference given households' own and cross-price elasticities. Going back to the minimum expenditure function, this is expanded as.

$$\Delta \ln C \approx q \Delta \ln p + \frac{1}{2} q p^T s \Delta \ln p \quad \text{..... 3.}$$

Where q and $\Delta \ln p$ are commodity groups and price changes vector before and s is a $1 \times k$ matrix of compensated price elasticities. As for (2) we can reformulate this expression in terms of budget shares and proportional price changes as.

$$\Delta \ln C^h \approx \sum_{i=1}^{n} w_i^h \Delta \ln p_i^h + \frac{1}{2} \sum_{i=1}^{k} \sum_{j=1}^{k} C_{ij} \Delta \ln p_i^h \Delta \ln p_j^h \quad \text{..... 4.}$$

C_{ij} contains the Slutsky derivatives *ij* and is defined by the expression.

$$C_{ij} = \frac{P_i S_{ij} P_j}{C^h} \quad \text{..... 5.}$$

C_{ij} can be demonstrated to be equal to $w_i \varepsilon_{ij}$ through algebraic manipulation, where *ij* represents the commodity group *i*'s Hicks compensated price elasticity with regard to price change and group *j*, so (29) turn into (Friedman & Levinsohn, 2002; Leyaro et al., 2010).

$$\Delta \ln C^h \approx \sum_{i=1}^{k} w_i^h \Delta \ln p_i^h + \frac{1}{2} \sum_{i=1}^{n} \sum_{j=1}^{n} w_i^h \varepsilon_{ij} \Delta \ln p_i^h \Delta \ln p_j^h \quad \text{..... 6.}$$

Equation (6) shows that the significance of a commodity in the family consumption basket and the magnitude of price changes both affect the welfare effects. To determine how price changes affected South African families' consumption, the two compensating variation conditions in (2) and (6) were applied. Also, prices, budget shares and family characteristics are needed; the terms $\Delta \ln p_i^h$

(proportionate change in price) and ε_{ij} (compensated price elasticities). The following presents the methods that will be used to measure these.

Proportionate price changes

To derive the percentage change in prices $\Delta \ln p_i^h$ required for the model in the equation (2) and (6), calculations were made to determine the proportionate change in observed prices between the survey and CPI periods.

Estimating consumer response

To estimate the response of consumers in South Africa because of price increases of commodities, we could have adopted the model established by Deaton (1987, 1988, 1990, 1997), the Deaton Unit Value Model. Typically, surveys gather information from a sample of households spread across several geographically separated clusters or regions. Nonetheless, the model requires quantities of commodity items purchased by households which were not available in the NIDS data but only in expenditure data. Therefore, the study used consumer responses obtained from QUAIDS for estimation. The budget share and price logarithm were calculated based on market prices, socio-demographic variables, and the logarithm of total household expenditure per capita using within-cluster (rural vs. urban) information. This was done using price data obtained from the Consumer Price Index. Price elasticities were used to calculate CV and, in this study, the entire demand system was estimated following Ackah and Appleton (2007), Pons (2011) and Attanasio et al. (2013).

The demand models

The Almost Ideal Demand System (AIDS) model developed by Angus Deaton and John Muellbauer (1980) is the method for demand analysis that has been most frequently utilised in the literature over the past decades. In fact, the AIDS model includes a number of desired demand qualities, including the ability to test for homogeneity and symmetry through linear restriction, among others (Barnett & Seck, 2008; Holt, 2002; Taylor, 2014). However, more recently Banks et al. (1997) expanded the AIDS model by demonstrating that the optimal form for some customer preferences is of a quadratic nature as opposed to the linear form in the basic AIDS. The QUAIDS model also keeps the AIDS model's favorable demand characteristics and compatibility with theory.

Formally, the share equations in the Banks et al. (1997) QUAIDS model are:

$$w_i = \alpha_i + \sum_{j=1}^{k} \gamma_{ij} InP_j + \beta_i In\left[\frac{m}{a(p)}\right] + \frac{\lambda_i}{b(p)}\left\{In\left[\frac{m}{a(p)}\right]\right\}^2 + \varepsilon_i \quad \text{..... 7.}$$

Where w_i is a household's expenditure share for commodity *i* defined as $w_i = \frac{P_i q_i}{m}$ and $\sum_{i=1}^{k} w_i = 1$.

Alternatively, the following limitations are necessary for the demand theory:

Adding up: $\sum_{i=1}^{n} \alpha_i = 1 \quad \sum_{i=1}^{k} \beta_i = 0 \quad \sum_{i=1}^{n} \gamma_{ij} = 0 \quad \sum_{i=1}^{n} \lambda_i = 0$ ..... 8.

Homogeneity: $\sum_{i=1}^{n} \gamma_{ij} = 0$ ..... 9.

Slutsky symmetry: $\gamma_{ji} = \gamma_{ij}$ ..... 10.

In this study, the QUAIDS model was implemented while considering sociodemographic factors. Undoubtedly, household behavior, including demand and how much is spent on what, can be influenced by demographic considerations (Polack & Wales, 1981; Sola, 2013). Demographics were taken into account in this study using Ray (1983) 'demographic scaling' approach, as in Poi (2012). This method closes the gap between the effects of changing pricing and changing demography (Polack & Wales, 1981). Using *z* as a vector of *s* household attributes in the most basic situation, the household size is represented by the scalar *z*. Let $e^R(p, u)$ indicate the reference household's spending function for a single adult.

For every home, Ray (1983) uses an expenditure function of the following form:

$$e(p,z,u) = m(p,z,u)^* e^R(p,u) \quad \text{.....11.}$$

Additionally, Ray (1983) breaks down the scaling function as $m_0(p,z,u) = \bar{m}_0(z)^* \varnothing(p,z,u)$

Based on the features of the household, the first term in this case measures the growth in spending in a household, without advocating for alterations to patterns of consumption. The second term adjusts for shifts in comparative prices and specific items purchased. QUAIDS parameterises, in accordance with Ray (1983) are: $\bar{m}_0(z)$ as $\bar{m}_0(z) = 1 + \rho' z$

Where ρ is a vector of parameters to be expected. The following is the equation for the expenditure share expenditure:

$$w_i = \alpha_i + \sum_{j=1}^{k} \gamma_{ij} InP_j + (\beta_i + \eta_i' z) In\left\{\frac{m}{\bar{m}_0(z)a(p)}\right\} + \frac{\lambda_i}{b(p)c(p,z)}\left[In\left\{\frac{m}{\bar{m}_0(z)a(p)}\right\}\right]^2 \quad \text{... 12.}$$

Where $c(p,z)=\prod_{j=1}^{k} p_j^{\eta_i' z}$

The adding-up condition requires that $\sum_{j=1}^{k} \eta_{rj}=0$ for $r=1,\ldots,s$

When allowing for changes in the price of commodity good *j*, the uncompensated price elasticity for the commodity group *i* is:

$$\varepsilon_{ij}=-\delta_{ij}+\frac{1}{w_i}(\gamma_{ij}-\left[\beta_i+\eta_i' z+\frac{2\lambda_i}{b(p)c(p,z,)}In\left\{\frac{m}{\bar{m}_0(z)a(p)}\right\}\right]$$

$$*(\alpha_j+\sum_l \gamma_{jl} Inpt)-\frac{(\beta_j+\eta_i' z)\lambda_i)}{b(p)c(p,z,)}\left[In\left\{\frac{m}{\bar{m}_0(z)a(p)}\right\}\right]^2 \quad \text{..... 13.}$$

For commodity group *i*, the expenditure elasticity is:

$$\mu_i=1+\frac{1}{w_i}\left[\beta_i+\eta_i' z+\frac{2\lambda_i}{b(p)c(p,z,)}In\left\{\frac{m}{\bar{m}_0(z)a(p)}\right\}\right] \quad \text{..... 14.}$$

We use the Slutsky equation to derive the compensated price elasticities:

$$\varepsilon_{ij}^c=\varepsilon_{ij}+\mu_i w_j \quad \text{..... 15.}$$

Note: The parameters that need to be estimated are all the lowercase Greek letters except for α_0. Household size and region are two demographic factors that were employed in this research. As recommended by Poi (2012), iterated feasible generalised non-linear least squares are used to estimate the parameters, which, when applied to this class of problems using Stata's "nlsur" command, are equivalent to the multivariate normal maximum likelihood estimator. It is crucial to discuss two major data issues at the very least after the demand model presentation, which include, establishing commodity categories and group prices in demand systems.

Data problems

In the opinion of Varian (2010), utility maximisation theory indicates that a household allocates its budget to all items while considering its own income, the price of all other commodities, and how much a specific commodity cost. Due to the complexities of experimentally evaluating each consumer's budget allocation on all items, these goods are typically bundled into bigger commodity

groupings. This method also reduces concerns with pricing multicollinearity. The generalised composite commodity theorem, which treats items whose prices rise or fall equally as a single good, is one of two techniques that are commonly used in commodity grouping (Hicks, 1936; Lewbel, 1996). For this reason, according to Angus Deaton and John Muellbauer (1980), since relative prices in fact change so much, the composite commodity theorem is only applicable in empirical research.

The second technique is separability which groups items based on the preferences of the consumer. Angus Deaton and John Muellbauer (1980) pointed out that commodities are classified such that "preferences within a group can be described independently of quantities in other groups". Preferences for particular products are clustered together when they are only weakly separable. Although weak separability can be evaluated empirically, our work did not employ these methods because they are frequently restricted to time series data. Furthermore, Bopape and Myers (2007) pointed out that the effectiveness of these tests is limited by multicollinearity in aggregate pricing data. Thus, weak separability is typically expected, as this study makes the same assumption. This suggests that the possibility of establishing sub-utility functions for every category of commodities is anticipated, and that total utility will be produced by adding the values of these sub-utilities.

One common challenge in evaluating demand systems is the absence of expenditures on commodity groupings of items. Such zero spending commodity groupings result in coefficients that are calculated incorrectly, and excluding households with zero spending on commodity groups causes selection bias. Several strategies for addressing the problem have been presented (for instance, see (Shonkwiler & Yen, 1999)), nevertheless these techniques are not adopted. The study seeks to estimate household demand since household response toward changes in VAT policy is of interest. Households that did not spend on all goods and services for the survey were deleted to solve the zero-spending problem. In addition, those with no food spending were excluded. This technique appears sensible, given that a household is likely to incur some expenses throughout the period of the survey. Furthermore, several weakly separable categories of products with observed zero spending were grouped together, as demonstrated by Blundell and Robin (2000).

Similarly, COOICP commodity groups were reduced from 12 to 8. Communication and information; education; accommodation and restaurants; and recreation, sports and culture commodity groups were removed because of a greater number of zero expenditures observed. These strategies considerably decreased the

amount of zero expenditures that were detected, although it should be noted that more or less zero spending that were still included in the sample place limitations on this work. No further steps were taken in order to prevent selection bias. After addressing the issue of apparent zero expenditures and stating that there is little separability in the grouping of commodities, COICOP items in the National Income Dynamics Survey 2018 were categorised into eight spending categories for the purposes of the full demand system. Last of all, establishing indicative pricing for each of the eight expenditure groups is a methodologically challenging task because prices are absent from the data from South African expenditure surveys (especially as code to simplify this task is unlikely to be produced). The consumer price index data collection includes monthly prices for eight hundred and thirty different goods and services for each province of the country. Prices are given for specific items rather than categories of commodities. It is also feasible to acquire the actual weight of consumable items. Because the data collection approach is not impacted by quality differences, it improves price accuracy. It does, however, increase the technical complexity involved in figuring out group prices.

Data limitations

Only expenditure data, not price or quantity purchase information, is included in the National Income Dynamics Survey. This is a restriction in terms of estimating consumer demand in South Africa, and it also pertains to the investigation discussed in this study. It was necessary to use a distinct set of data, the CPI, to determine the prices that households faced. Likewise, there was a greater number of identified zero expenditures on commodity groups. However, this is a common problem in evaluating demand systems. Such zero spending commodity categories produce incorrect coefficients estimated, and eliminating families with zero expenditure on commodity groups results in selection bias. Nonetheless, several strategies for dealing with these issues were presented, discussed and addressed.

Furthermore, because the data from South African expenditure surveys do not include prices, establishing indicative prices for each of the expenditure groups is a methodologically difficult task. The consumer price index data set comprises prices for distinct commodities. Prices are given for specific items rather than categories of commodities. It is also possible to obtain the actual weight of consumable products. The method of data collection enhances price accuracy because it is not affected by variations in quality. Nonetheless, it adds to the methodological complexity of determining group prices. Also, the welfare consequences of pricing increases are measured based on consumption rather

than production. Due to data availability, we only consider the consumption effect.

3. RESULTS AND DISCUSSIONS

Identifying the effect of prices on consumption of commodity bundles

Using iterated, feasible, generalised non-linear least-squares estimation, Stata 15.1 was utilised to estimate the QUAIDS model's parameters. Throughout the estimation process, the hypothetical constraints of adding up, symmetry and homogeneity were implemented. Using economic theory as a guide, this approach aims to manage residual heteroscedasticity. In the event that commodity group prices exhibit strong multicollinearity, this should only have an impact on the estimates' standard errors and produce less noteworthy findings. At the 5% level of significance, 68 out of the 88 estimated coefficients were found to be statistically significant. For the complete demand system, the estimated coefficients are revealed in Table 1.

The estimates of the QUAIDS model and the pertinent statistics are shown on Table 1. Firstly, the change in real income, $\frac{m}{\overline{m}_0(z)a(p)}$ (equation 20), holding comparative prices constant, will affect all commodity shares (increase or decrease). This is advised by the fact that all the β_i coefficients are statistically significant. Nonetheless, the direction (positive or negative) of the real income effect on commodity shares depends on the nature of the commodities of the sample. Precisely, a rise in the real income, other things being equal, will reduce the expenditure for food and non-alcoholic beverages; clothing and footwear; housing, water, electricity, and other energy sources that are characterised as 'necessities and all other commodity items as 'luxury' items. Secondly, the expenditure shares are, as anticipated, sensitive to price changes. However, a fundamental distinction must be made between the own and cross price effect. Own and cross price effects on expenditure shares depends on the nature of the commodities (i.e., complements vs substitutes). This issue is further discussed in the analysis that follows.

In determining whether the QUAIDS model is preferable to the AIDS model for the data set, the quadratic expenditure term is relevant. As is evident from Table 1, the quadratic expenditure terms (λ's) are all significant at 5% significance level. Consequently, a Wald's test was performed to determine whether the sum of the quadratic expenditure coefficients is significantly different from zero. This test statistic is 61.88 (p-value = 0.0000). As it cannot be accepted that the quadratic expenditure terms are equal to zero, the QUAIDS model is preferred to

the AIDS model for the data set. This means that South African total household expenditure is non-linear

For empirical analysis of indirect tax reforms, expenditure and own and cross-price elasticity of demand are of importance. It should be noted that the elasticities at the household level are required (and were calculated) for accurately estimating welfare consequences because of indirect tax reform. As it is not possible to provide the result for each household here, only the mean results (market demand) are reported here. Table 2 provides the expenditure elasticity for the expenditure categories, and Table 3 and Table 4 provide the uncompensated and compensated own and cross-price elasticity, respectively.

Table 1: QUAIDS: complete demand system coefficients estimated

	Food & non-alcoholic beverages	Alcohol, tobacco & narcotics	Clothing & footwear	Housing, water, electricity & other energy sources	Furnishing, equipment & maintenance	Health	Transport	Miscellaneous goods & services
Price: Food & non-alcoholic beverages	0.0408* (0.0101)*	0.0557* (0.0013)*	0.1694* (0.0155)*	0.0420 (0.0105)	0.1450* (0.0026)*	0.0541* (0.0085)*	0.0223 (0.0178)	0.4262* (0.0023)*
Price: Alcohol, tobacco & narcotics	- 0.0012 (0.0055)	- 0.0298* (0.0102)*	0.0456* (0.0052)*	0.0369* (0.0031)*	0.0376* (0.0042)*	- 0.0031* (0.0002)*	- 0.0460* (0.0004)	- 0.0548* (0.0006)*
Price: Clothing & footwear	- 0.0354* (0.0047)*	- 0.0084 (0.0053)	0.0235* (0.0044)*	- 0.0113* (0.0023)*	0.0010 (0.0006)	- 0.0123* (0.0019)*	0.0284* (0.0034)*	0.0078 (0.0003)
Price: Housing, water, electricity & other energy sources	0.0356* (0.0102)*	0.0156 (0.0142)	0.0146 (0.0085)	- 0.0102 (0.0233)	- 0.0085* (0.0003)*	- 0.0045* (0.0007)*	- 0.0379* (0.002)*	- 0.0163* (0.0004)*
Price: Furnishing, equipment & maintenance	- 0.0238* (0.0047)*	0.0065* (0.0033)*	- 0.0013 (0.0028)	- 0.0143* (0.0062)*	0.0286* (0.0037)*	0.0164* (0.0017)*	0.0102* (0.0025)*	- 0.0357* (0.0039)*
Price: Health	- 0.0219* (0.0030)*	- 0.0059* (0.002)*	- 0.0042* (0.0018)*	0.0133* (0.0039)*	0.0160* (0.0018)*	0.0038* (0.0015)*	0.0194* (0.0067)*	0.0163* (0.0017)*
Price: Transport	0.0219* (0.0092)*	0.0355* (0.0059)*	0.0251* (0.0052)*	-0.0897* (0.0115)*	- 0.0156* (0.0058)*	0.0162) (0.0039)*	- 0.2457 (0.0161)	0.0119* (0.0007)*
Price: Miscellaneous goods & services	- 0.0095* (0.0048)*	- 0.0121* (0.004)*	- 0.0139* (0.0033)*	0.0350* (0.0079)*	0.0038 (0.0030)	- 0.1092* (0.0018)*	- 0.0311* (0.0051)*	- 0.0234* (0.0045)*
Quadratic expenditure	- 00180* (0.0011)*	0.0004 (0.0003	- 0.0036* (0.0006)*	- 0.0062* (0.0010)*	0.0022* (0.0009)*	0.0073* (0.005)*	0.0029* (0.009)*	- 0.0057* (0.0009)*
Urban/rural (region)	0.0003 (0.0008)	- 0.0003 (0.0002)	0.0004 (0.004)	- 0.0011 (0.0009)	0.0003 (0.0007)	0.0007* (0.0003)*	- 0.0011 (0.0006)	0.0008 (0.0006)
Household size	- 0.0053* (0.0001)*	0.0004* (0.0001)*	0.0002* (0.0001)*	0.0037* (0.0001)*	- 0.0004* (0.0001)*	0.0005* (0.0001)*	0.0009* (0.0001)*	- 0.0003* 0.0001*

Note: (1) * indicates statistical significance at 5% level. (2) Estimated standard errors are in parentheses. (3) Prices are in log form

Source: Authors' calculations

Table 2 shows the expenditure elasticities for the commodity groups. As evident, all expenditure elasticities are positive and have nothing to do with inferior items in any of the commodity categories, statistically significant with elasticities between 0 and 1. Only health, furnishing, household equipment and routine household maintenance, transport and miscellaneous goods and services are luxury goods, and are income elastic (with $\mu_i > 1$). Even so, all expenditure groups are related with normal goods. 1% increase in income leads to 1.52% for furnishing, household equipment and routine maintenance, 1.2% for miscellaneous goods and services, 1.1% increase in demand for transport, 1.1% for health, 0.95% for clothing and footwear, 0.84% for food and non-alcoholic beverages, 0.67% for alcohol, cigarette, tobacco and narcotics, and of 0.46% for housing, water, electricity and other energy sources.

Miscellaneous goods and services include many commodity items which include luxury goods (e.g. watches, swimming pool equipment, toys, etc.). With regards to health, most medicines and hospital fees are subsidised by the government through public hospitals and only 32% of households in the survey reported that are affiliates of a medical aid fund. Nevertheless, expenditure on health items is questionable expenditure that is not subsidised by the government and not covered by medical aid. Further, most items that are usually considered to be luxury items are included in the miscellaneous goods and services. In terms of transport, 44% of the households said that they did not make use of public transport, of which 63% of those households mentioned that they made car payments (including petrol, oil, car services etc.), and these items are considered luxury items.

Table 2: Expenditure elasticities

	Expenditure elasticities
Food & non-alcoholic beverages	0.8369
Alcohol, cigarette, tobacco etc.	0.6654
Clothing & footwear	0.9511
Housing, water, electricity & other energy sources	0.4603
Furnishing, household equipment & maintenance	1.5210
Health	1.0663
Transport	1.0950
Miscellaneous goods & services	1.1718

Source: Authors' calculations

However, economic theory demands that all own price elasticities be negative and this condition is supported by the diagonal in Table 3. This indicates that, for expenditure categories in the total consumer demand system, if the price of a category rises, demand will fall. Both the compensated and uncompensated demand's own price elasticities are the right sign $(\varepsilon_{ij}<0; \varepsilon_{ij}^{c}<0)$. The compensated price elasticities are, as predicted, smaller in absolute values than the uncompensated price elasticities, and the majority of them are statistically significant $(|\varepsilon_{ij}|>|\varepsilon_{ij}^{c}|)$. Additionally, the own price elasticities seem reasonable in significance, with food and non-alcoholic beverages; clothing and footwear; and remarkably, housing, water, electricity and other energy sources, being relatively inelastic. Furnishing, household equipment and routine household maintenance; health, transport; and miscellaneous goods and services are comparatively unit elastic, and alcohol, cigarette, tobacco and narcotics is reasonably elastic.

Food and non-alcoholic beverages, clothing and footwear, as well as housing, water, electricity and other energy sources, appear to have inelastic demand, as these products might be claimed to be necessities. The finding that expenditure on housing, water, electricity and other energy sources is inelastic appears to imply that, despite price increases, when it comes to housing, water, electricity and other energy costs, consumers are either unwilling to cut back on their spending on these items or respond to them more slowly. This finding is corroborated by only two South African studies that found housing utilities to be price inelastic (Qeqe et al., 2022; Van Oordt, 2016). The result that health is quite elastic seems to support the conclusion that health is a luxury item, as earlier discussed.

The degree and arrangements of cross-price elasticity visible in the off-diagonal of Tables 3 and 4, which indicate complementary and substitution expenditure groups, appear reasonable. Several cross-price elasticities are near to zero, indicating that the two relevant expenditure categories are independent. The cross-price effect is weak. This is advised by the fact both compensated and uncompensated cross price elasticities of demand are less than one, except for transport and housing, water, electricity and other energy sources. A positive cross-price elasticity, as in the case of housing, water, electricity and other energy sources and food and non-alcoholic beverage, point out substitutes. Negative cross-price elasticities, as with food and non-alcoholic beverages and alcohol, cigarette, tobacco and narcotics, indicate complementarities (Varian, 2010).

Table 3: Uncompensated price elasticities

	Food & non-alcoholic beverages	Alcohol, cigarette, tobacco & narcotics	Clothing & footwear	Housing, water, electricity & other energy sources	Furnishing, household equipment & maintenance	Health	Transport	Miscellaneous goods & services
Food & non-alcoholic beverages	- 0.9608	- 0.0064	- 0.1140	0.1653	0.0065	- 0.0380	0.1127	- 0.0004
Alcohol, cigarette, tobacco etc.	- 0.0097	- 2.0005	- 0.2738	0.6132	0.2581	- 0.1650	1.2549	- 0.3426
Clothing & footwear	- 0.6823	- 0.1445	- 0.6218	0.2789	0.04361	- 0.0357	0.4450	- 0.2265
Housing, water, electricity & other energy sources	0.1795	0.1077	0.0858	- 0.9916	- 0.1340	0.057	- 0.7243	0.1590
Furnishing, household equipment & maintenance	0.1519	0.0988	0.0593	- 1.1052	- 1.1840	0.1280	- 0.1745	0.1610
Health	- 0.3119	- 0.1019	- 0.0466	0.1958	0.1564	- 1.0005	0.2472	- 0.2047
Transport	0.1974	0.2265	0.19100	- 0.7018	- 0.1532	0.0985	- 1.2088	0.2153
Miscellaneous goods & services	- 0.1184	- 0.07881	- 0.0986	0.1787	0.0308	- 0.0735	0.1700	- 1.1820

Note: The entry in row *i*, column *j* of the matrix, indicates the percentage change in the quantity of good *i* consumed for a 1% change in the price of good *j*.

Source: Authors' calculations

Table 4: Compensated price elasticities

	Food & non-alcoholic beverages	Alcohol, cigarette, tobacco & narcotics	Clothing & footwear	Housing, water, electricity & other energy sources	Furnishing, household equipment & maintenance	Health	Transport	Miscellaneous goods & services
Food & non-alcoholic beverages	- 0.6769	0.0184	- 0.0636	0.2798	0.0759	0.0071	0.2249	0.1340
Alcohol, cigarette, tobacco etc.	0.2160	- 1.9807	- 0.2338	0.7057	0.3133	- 0.1290	1.3441	- 0.2356
Clothing & footwear	- 0.3603	- 0.1162	- 0.5645	0.4040	0.1224	0.0156	0.5725	- 0.0736
Housing, water, electricity & other energy sources	0.6750	0.1513	0.1737	- 0.9886	- 0.0130	0.1363	- 0.5286	0.3938

	Food & non-alcoholic beverages	Alcohol, cigarette, tobacco & narcotics	Clothing & footwear	Housing, water, electricity & other energy sources	Furnishing, household equipment & maintenance	Health	Transport	Miscellaneous goods & services
Furnishing, household equipment & maintenance	0.3286	0.1143	0.0907	- 0.0328	- 0.7974	0.1562	- 0.1046	0.2448
Health	0.0497	- 0.0701	0.0175	0.3440	0.2448	- 0.9428	0.3901	- 0.0333
Transport	0.5689	0.2991	0.2569	- 0.5496	- 0.0624	0.1577	- 1.0620	0.3913
Miscellaneous goods & services	0.2790	- 0.0438	- 0.0280	0.3416	0.1280	- 0.0101	0.3271	- 0.9936

Note: The entry in row *i*, column *j* of the matrix, indicates the percentage change in the quantity of good *i* consumed for a 1% change in the price of good.

Source: Authors' calculations

Measuring the effect of VAT increase on households' welfare

In South Africa, satisfying necessities for food products and non-alcoholic refreshments accounts for more than 30% of household budgets, notwithstanding a recent downward trend in the share of food expenditures across income levels and geographic regions (Table 5). Engel's law suggests that this decline represents a rise in household welfare. Chai and Stepanova (2023) support this proclamation. Urban areas have a similar share of food and non-alcoholic refreshments' expenditure as rural areas, and lower for rural dwellers than for urban in the case of alcohol beverages, cigarettes, tobacco and narcotics commodity group. Because of the lower income elasticity of demand for food products and non-alcoholic refreshments than for non-food items, the expenditure shares on this commodity group decline as income rises, in contrast to the increase in overall commodity group expenditure. Changes in price for food products and non-alcoholic refreshments also have an impact on the share of expenditure that goes toward them, as Korir et al. (2018) and Faharuddin et al. (2022) observed.

According to Rossouw (2022), South Africa's average food price inflation has increased dramatically since 2008. Because of the significant inflation of food prices, this caused an appreciation in the proportions of food expenditures. It makes a compelling case for the necessity of keeping food costs low in order to prevent a drop in household welfare and a rise in the poverty rate. In comparison to urban areas, the expenditure share for miscellaneous goods and services is likewise higher in rural areas, as found by Chikobola and Edriss (2016) and Kelly et al. (2018). This is because the commodity group includes many goods and services. For example, personal care products (bath products, cleaning detergents,

feeding bottles, etc.), childcare services and miscellaneous concessions (toilets, seats) to say the least. Many may consider the above-mentioned commodity items to be essential, of which a typical consumer may purchase second along with food consumption.

Table 5: Average expenditure shares by area and poverty status

	Area		Poverty Status		Entire sample
	Rural	Urban	Poor	Non-poor	
Food & non-alcoholic refreshments	0.3406424	0.3383024	0.3607394	0.324512	0.3392427
Alcohol, cigarette, tobacco & narcotics	0.0292129	0.0302129	0.0367696	0.0250521	0.0298110
Clothing & footwear	0.0611864	0.0595410	0.0603388	0.0601088	0.0602022
Housing, water, electricity & other energy sources	0.1357581	0.1411745	0.1061746	0.1614457	0.1389979
Furnishing, household equipment & maintenance	0.0837987	0.0823129	0.1065816	0.066721	0.082910
Health	0.0553362	0.0531719	0.0546935	0.535958	0.0540416
Transport	0.1311016	0.1360311	0.1313532	0.1358947	0.1340502
Miscellaneous goods & services	0.1629638	0.1592532	0.1433492	0.1726408	0.167443

Source: Authors' calculations

Expenditure for furnishing, household equipment and maintenance; health; clothing and footwear is also quite larger. Kelly et al. (2018) support this assertion in their study on "Inflation in a time of inequality: Assessing the Relevance of Cost-of-Living Measures for the Poor". Whereas, for housing, water, electricity and other energy sources; alcohol, cigarette, tobacco and narcotics, and transport, expenditure is greater in urban areas related to rural areas.

Table 6 shows the price and expenditure elasticities that follow. Overall, urban areas have less elasticity in their expenditures for food products and non-alcoholic refreshments than rural regions, as observed by Faharuddin et al. (2022). It is clear that, even in rural homes, the consumption of these goods is still seen as a welfare symbol, meaning that when income levels rise, rural residents will continue to consume more commodities. With the exception of four commodity groups with higher prices - household contents and maintenance, health, transportation, and miscellaneous products and services - the majority of commodity sets have spending elasticity less than 1. Since every spending elasticity is positive, more money would be spent on every set of commodities if income increased. Only four commodity groups, however, had considerably

greater disparities in expenditure elasticity. Household contents and maintenance and miscellaneous products and services are luxury goods, with elasticities greater than 1.2.

Table 6: Expenditure and price elasticity by urban-rural

Commodity groups	Expenditure elasticities			Compensated price elasticities			Uncompensated price elasticities		
	Rural	Urban	Overall	Rural	Urban	Overall	Rural	Urban	Overall
Food & non-alcohol beverages	0.8434	0.8326	0.8369	-0.7333	-0.6499	-0.6769	-0.9994	-0.9324	-0.9608
Alcohol, cigarette, tobacco & narcotics	0.7065	0.6372	0.6654	-2.0750	-1.9355	.1.9807	-2.0961	-1.9545	-2.0005
Clothing & footwear	0.9686	0.9412	0.9511	-0.5406	-0.5789	-0.5645	-0.5989	-0.6356	-0.6218
Housing, water, electricity & other energy sources	0.4367	0.4742	0.4603	-0.9791	-0.9957	-0.9886	-0.9816	-0.9978	-0.9916
Furnishing, household equipment & maintenance	1.5151	1.5304	1.5210	-0.7643	-0.8243	-0.7974	-1.0495	-1.1694	-1.1840
Health	1.0845	1.0509	1.0663	-0.9325	-0.9433	-0.9428	-0.9911	-1.0001	-1.0005
Transport	1.0824	1.1024	1.0950	-1.1641	-0.9823	-1.0620	-1.3091	-1.1201	-1.2088
Miscellaneous goods & services	1.1721	1.1721	1.1718	-0.9972	-0.9926	-0.9936	-1.1857	-1.1810	-1.1820

Source: Authors' calculations

In terms of own-price elasticity, demand theory is supported by the fact that every price elasticity coefficient is negative, which states that demand for food decreases as price increases. Only four spending groups are elastic in rural regions, with elasticity less than one, notably food products and non-alcoholic refreshments, apparel and footwear, housing utilities, and health. Only two groups, however, reveal a significant variation between urban and rural locations (food products and non-alcoholic refreshments and apparel and footwear). Apparel and footwear are price inelastic, which are similar as reported in Li et al. (2023), Zehra et al. (2023) and Zhang and Zhang (2023).

Drawing on the family budget share, actual proportional change in price and expected responses of consumers, we calculate the welfare costs associated with changes in commodity prices in South Africa. This subsection aims to measure the "dynamic" household welfare effect, which takes into account both consumption responses and (static) first order effects in consumption. We further provide estimates using a first-order approximation to the changes in commodity prices for comparison's sake, assuming households are unable to substitutes and maintaining constant consumer behavioral reactions. To achieve that, we compute

the welfare effect of the observed shift in commodity prices using the estimated Hicksian elasticities. In 2018 for the time between 2017/18 and 2018/19, the CV determines how much we would have to provide customers to make them feel as good as they did before to the price adjustment (VAT increase). Table 7 presents welfare effects. First-order effects are shown in Column 2 and are calculated using equation (17). The dynamic effects are thus measured in Columns 3 and 4, which take into account both first-order and consumer response effects in consumption as a share of household food expenditure and total household expenditure in 2017–18, respectively.

Depending on the size of the rise in prices for commodity groups and the percentage of these shares of expenditures for item groups, the effect of growing commodity prices on welfare of households varies. When costs increase and a larger portion of spending is devoted to commodity groups, the effect on the reduction in household welfare grows. Therefore, the price increases for food products and non-alcoholic refreshments; alcoholic beverages, tobacco and narcotics; housing utilities; and other miscellaneous items and services have the greatest effect on household welfare. Except in the case of miscellaneous goods and services, three of the four groups had lower income elasticities in addition to larger expenditure shares.

The rise in prices of these commodity sets causes a decline in welfare by 3.64%, 1.67%, 2.01% and 5.03%, respectively. In order to compensate for changes in the cost of food and non-alcoholic beverages, households with lower incomes will need to spend more. This is supported by the findings of Wassiuw (2017) in Ghana. The investigation only considered the impact of price changes on consumption, not household output, which may explain why the rural poor are disproportionately affected. Recent estimates (Bila, 2021) indicate that rural areas have a high poverty headcount ratio in the region of approximately 81.3%, compared to urban areas where it hovers at 40.7%. This raises concerns for food security and poverty reduction initiatives. Likewise, urban households will spend more on alcoholic beverages, cigarette, tobacco and narcotics. This is simply because these commodity items are consumed more in urban areas than in rural regions, as Peer et al. (2013) observed on tobacco and Pengpid et al. (2021) observed on alcohol and drugs use.

Even though the government provides affordable housing for most South Africans, the nation's impoverished and needy continue to face severe housing issues, such as corruption, mismanagement of housing projects and unemployment to mention a few (Manomano et al., 2016). More than 80% of South African households, according to Statistics-South-Africa (2023), reside

in formal housing, the majority of which receive electricity and water from the municipality. These families, including those in informal housing, use other energy sources like gas and paraffin. As was previously said, rising prices and ongoing high levels of inequality, poverty and unemployment will make it harder for low-income families to maintain their homes since they will have to pay more for housing, water, electricity and other energy sources. In terms of miscellaneous goods and services, most of the items are consumed by well off families, even so, the commodity group includes expenditure items which one may consider a necessity such as bath soaps and cleaning detergents (refer to (United-Nations, 2018)).

Table 7: Compensating Variation (%)

Commodity group	First order effects as a proportion of household expenditure	Second order effects as a proportion of household expenditure	Second order effects as a proportion of total household expenditure
Food & non-alcoholic refreshments	3.097	4.291	3.638
Alcohol, cigarette, tobacco & narcotics	1.695	1.874	1.667
Clothing & footwear	0.756	0.501	0.640
Housing, water & other energy sources	1.820	2.241	2.011
Furnishing, household equipment & maintenance	1.008	0.922	0.969
Health	0.771	1.037	0.892
Transport	0.154	0.215	0.181
Miscellaneous goods & services	5.984	3.887	5.025

Source: Authors' calculations

The larger the price rise, the bigger the proportion of CV reduction. The slightest effect on households' welfare is the price rise of household contents and maintenance; health; apparel and footwear; and transportation - with a drop in welfare by 0.97%, 0.89%, 0.64% and 0.18%. Household contents costs are increasing but not at an extreme rate in South Africa (Statista, 2024b). Similarly, the Consumer Price Index (CPI) for apparel and footwear has exhibited a modest growth (Statista, 2024a). Also, in the views of, Statistics-South-Africa (2022b), Statistics-South-Africa (2024), Wolhuter (2022) and Kelly (2025), the trajectory of transport costs in South Africa has been uneven; some measures point to a slowdown in inflation, while others point to ongoing pressures. Fuel prices, a major factor in transportation expenses, have varied over time, rising and falling at different times. However, healthcare expenses typically rise at a rate exceeding normal inflation, with medical aid rates frequently surpassing the

Consumer Price Index (CPI) (Statistics-South-Africa, 2019). These commodity groups have the least impact on welfare, and because South Africa is a welfare state, families will continue to pay more for them. Therefore, those who are poor and vulnerable will bear the brunt of the consequences.

5. CONCLUSIONS

Based on the South African VAT rise, this study calculated the welfare effects of changes in commodity prices. We determined the expenditure, own-price and cross-price demand elasticities for each of the eight commodity groups that South African families consume using the QUAIDS model. The results showed that the demand for food and non-alcoholic refreshments, housing utilities, and apparel and footwear, in South Africa are inelastic. Whereas, the demand for alcohol, cigarettes, tobacco and narcotics is elastic, as is the demand for furnishing, household contents and maintenance, health, transportation, and miscellaneous goods and services. Furthermore, disadvantaged households are typically the ones most impacted by price increases. The outcomes of this paper revealed that South African households suffered welfare losses resulting from commodity price changes. These findings are significant because it will be challenging to create effective policies without a complete grasp of the many ways in which various household types in various locations are impacted by changes in commodity prices and how responsive they are. With this knowledge, decision-makers in developing nations like South Africa will be able to enact more targeted and effective measures to combat poverty and inequality. Nevertheless, data limitations continue to be a significant issue, despite the fact that this research is crucial for developing nations.

ACKNOWLEDGEMENTS

A special thanks goes to North-West University for granting access to resources, facilities and a conducive environment, and the financial support provided towards completion of the Masters dissertation from which this article had been drafted is gratefully acknowledged. Additionally, we appreciate the financial support provided by the National Research Foundation (NRF) for the research.

Conflict of interests

The authors declare there is no conflict of interest.

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УТИЦАЈ ПОВЕЋАЊА ПРЕЗА НА ДОДАТУ ВРИЈЕДНОСТ НА ДОБРОБИТ ДОМАЋИНСТАВА У ЈУЖНОАФРИЧКОЈ РЕПУБЛИЦИ

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САЖЕТАК

Порез на додату вриједност (ПДВ) у Јужној Африци повећан је са 14% на 15% 1. априла 2018. године због хитне потребе да се избјегну буџетски дефицити. Повећање ПДВ-а увијек доводи до раста цијена, што има негативан утицај на куповну моћ потрошача. Ова студија је процијенила ефекте промјене цијена робе након повећања ПДВ-а на добробит јужноафричких породица. Подаци су коришћени из Националне динамичке анкете прихода 2018. године и Јужноафричких индекса потрошачких цијена (2017/18. и 2018/19). Еластичности цијена добијене су моделом квадратичног готово идеалног система потражње (Quadratic Almost Ideal Demand System Model), а затим је уз помоћ еластичности цијена, израчунат утицај флуктуација цијена робе

у смислу компензационе варијације (Compensating Variation). Закључци студије пружају важну основу за емпиријско испитивање са циљем прецизног утврђивања утицаја на добробит. Рад препоручује да уместо једнаког ПДВ стандарда, луксузна добра треба да буду подложна већој стопи ПДВ-а, као на примјер скупи ручни сатови, јахте и аутомобили. Због великог удјела луксузне робе која се увози, домаћа потражња можда неће бити негативно погођена, а платни биланс може чак и благо да се побољша. Такође, студија подржава проширење списка производа са нултом стопом опорезивања како би се укључили производи које сиромашније становништво чешће купује, као што су све врсте хљеба, сапуни, свијеће и предмети повезани са образовањем (као што су школске униформе). Поред тога, ови налази су дио ширег истраживања о квантитативним процјенама алтернативних политика које треба да помогну у реформисању ПДВ-а у земљи.

Кључне ријечи: *порез на додату вриједност, цијене робе, добробит домаћинстава, Јужноафричка Република*