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Title:

Economic investigation of zero-rating of VAT on meat: Implications for the meat value chain in South Africa

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1. Introduction

Rising international and domestic food market prices have culminated in what is now commonly referred to as an “International Food Crisis”. This has prompted many governments to react with a diverse range of policies to shield food consumers, especially the poor, against high food prices. Such policies range from export bans/taxes in, for example, Argentina, India and Russia to reduction in tariffs in, for example, Morocco and Nigeria, to price controls on prices for “strategic” staples in, for example, China, Russia and Venezuela. Many of these policy responses are short term in nature, but there is a general acknowledgement that longer term responses are a requirement to bring about long run sustainable solutions. Such responses by governments will undoubtedly influence the manner in which food chains operate in future, both internationally and within countries’ borders.

In South Africa, the government has clearly indicated that the current food price crisis should be addressed urgently. Furthermore, government is pressurised to respond by means of policy and a selection of possible programmes by different stakeholders, e.g. COSATU, consumer groups, NGO’s, etc. In an effort to deal with the high food prices government has established an Inter-Ministerial Committee to explore and find solutions to deal with high food prices in South Africa. Possible responses by government can be short run in nature, which could alleviate the plight of many of the poor almost immediately (at least in theory), while it is also acknowledged that long run sustainable solutions are needed. In terms of short run responses, the social grant system managed by the Department of Social Development and the school food programme managed by the Department of Education are examples. Various long run solutions have been discussed, for example increased investment in research and development and infrastructure, increased support to farmers (especially small-scale and emerging farmers) and zero-rating of Value Added Tax (VAT) on food items.

This study deals with the latter issue with specific reference to meat. Currently all meat attracts a 14 % VAT rate. Meat also constitutes an important source of protein for all households, but the consumption of different types of meat between poor and affluent households differ substantially. Therefore the impact of increases in prices of different types of meat will also affect households differently. Similarly, a reduction or zero rating VAT on meat will affect different households differently.

The key objectives of this study are to:

- Provide an overview of price trends in the meat industry;
- Provide an overview of spending patterns of consumers on meat;
- Quantify the aggregate impact of reducing VAT on meat to zero; and
- Quantify the impact of reducing VAT on meat to zero on household expenditure for different income groups.

The outline of this paper is as follows: In Section 2 background is provided on price trends for meat, spending patterns by consumers on meat and how VAT is applied on food in South Africa. Section 3 provides a brief overview of the methodological approaches used. Sections 4 and 5 discuss the results of the aggregate and household level impacts of reducing VAT on meat. Section 6 provides a summary and conclusions.

2. Background

2.1 Food and meat price trends in South Africa

Figure 1 illustrates that changes in the CPI for food and the CPI for meat in South Africa followed similar trends in 2001, 2002, 2003 and for most parts of 2004 and 2005. Both

indices peaked at 19.80 % and 24.16 %, respectively, in October 2002. By the end of 2003 and the beginning of 2004 the CPI for meat entered a short period of deflation, but rebounded towards the end of 2004. The CPI for food moved more or less sideways during 2004 and 2005, while the CPI for meat fluctuated more, but within reasonable bounds. From December 2005 both indices started to increase, with the CPI for food increasing at a slower rate until July 2007. The CPI for food closed at 13.52 % in December 2007, while the CPI for meat closed at 7.37 % in the same month. In April 2008 the CPI for food closed at 15.66 %, while the CPI for meat closed at 8.07 % in the same month (NAMC, 2008).

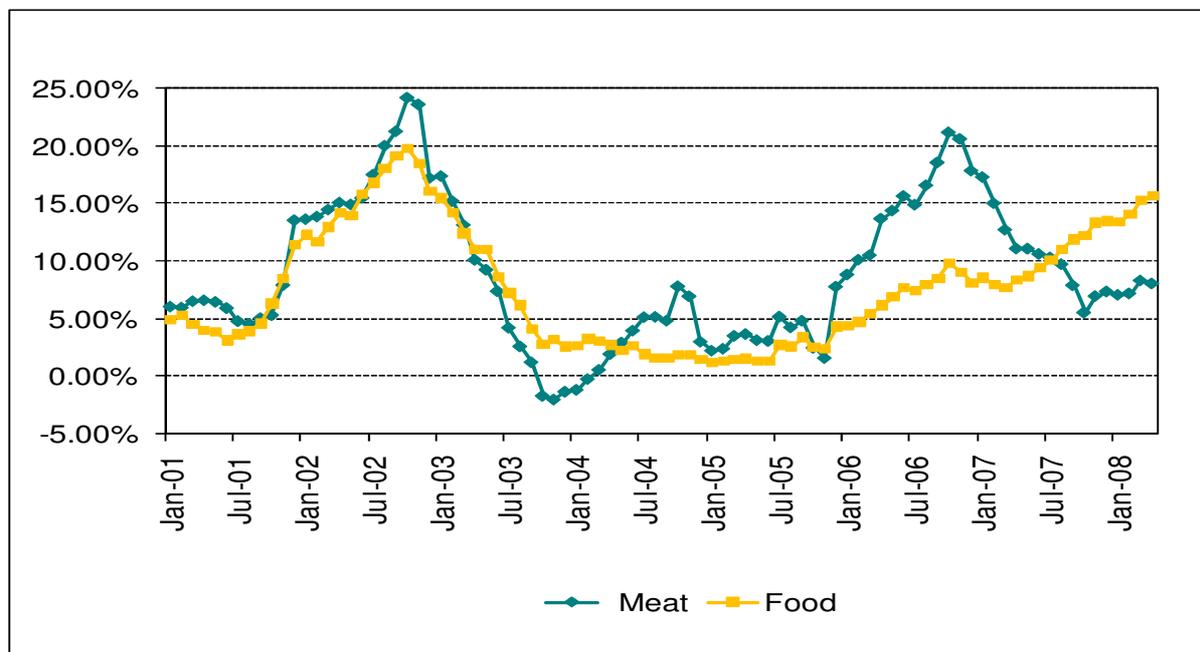


Figure 1: Change in CPI's for food and meat: 2001–2007

Source: Stats SA, 2008a

Tables 1 and 2 show the price, and price changes for, selected processed and fresh meats for the period December 2006 to December 2007. According to the NAMC (2008), picnic ham and pork sausage experienced double digit inflation of 16.91 % and 13.01 %, respectively over the abovementioned period. Polony is the only product that experienced a price decline (5.07 %). On average, processed meat experienced a 7.47 % increase during the same period. During the second half of 2007 processed meat experienced a price decline of 2.14 %. With the exception of beef chuck and rump steak, all fresh meat products experienced double digit inflation between December 2006 and December 2007. On average fresh meats experienced 12.50 % inflation. During the second half of 2007 the price of pork chops, brisket and chicken portions increased by more than 10 %. The prices of other meat products increased at a rate of between 5.68 % and 9.34 %. On average, the price of fresh meat products increased by 8.53 % during the second half of 2007.

Table 1: Processed meat

Processed meat	Price level					Percentage change	
	Dec-06	Mar-07	Jul-07	Oct-07	Dec-07	Jul-07 to Dec-07	Dec-06 to Dec-07
Meatballs in Gravy 400g*	9.23	9.68	9.34	9.35	9.70	3.79 %	5.04 %
Picnic Ham 300g*	15.05	16.54	17.91	17.77	17.59	-1.76 %	16.91 %
Polony 1 kg	17.15	17.24	17.90	18.99	16.28	-9.05 %	-5.07 %
Pork sausage 500g *	13.98	15.56	16.05	15.86	15.80	-1.52 %	13.01 %
Average						-2.14 %	7.47 %

Source: NAMC as calculated from Stats SA, 2008b, and AC Nielsen data, 2008

Note: * AC Nielsen data

Table 2: Fresh meat

Fresh meat	Price level					Percentage change	
	Dec-06	Mar-07	Jul-07	Oct-07	Dec-07	Jul-07 to Dec-07	Dec-06 to Dec-07
Bacon 250 gram	14.93	15.40	16.33	17.15	17.30	5.94 %	15.87 %
Pork Chops 1kg	41.61	41.46	43.26	45.20	47.85	10.62 %	15.00 %
Lamb Chops 1kg	62.86	63.22	63.78	65.57	69.74	9.34 %	10.95 %
Brisket 1kg	35.80	34.56	35.75	37.37	39.39	10.18 %	10.02 %
Beef chuck 1kg	38.28	37.08	38.96	39.46	41.18	5.68 %	7.57 %
Rump steak 1kg	65.60	62.37	64.07	63.78	69.28	8.13 %	5.61 %
Chicken - Whole Fresh 1kg	21.89	22.21	23.72	24.71	25.63	8.06 %	17.10 %
Chicken portions 1kg	27.82	28.29	29.72	30.21	32.80	10.34 %	17.88 %
Average						8.53 %	12.50 %

Source: NAMC as calculated from Stats SA, 2008b, and AC Nielsen data, 2008

Table 3 and 4 show the price, and price changes for, selected processed and fresh meats for the period December 2006 to December 2007. A comparison of Tables 1 and 2 with Tables 3 and 4 illustrates that meat prices have increased even more on a year-to-year basis in 2008.

Table 3: Processed meat

Processed meat	Price level			Percentage change	
	Jul-07	Mar-08	Jul-08	Mar-08 to Jul-08	Jul-07 to Jul-08
Meatballs in Gravy 400g*	9.34	9.91	10.77	8.75 %	15.30 %
Picnic Ham 300g*	17.91	18.28	20.06	9.71 %	12.03 %
Polony 1kg	17.90	19.12	20.82	8.89 %	16.31 %
Pork sausage 500g*	16.05	16.51	17.48	5.90 %	8.94 %
Average				8.31 %	13.15 %

Source: NAMC as calculated from Stats SA, 2008b, and AC Nielsen data, 2008

Note: * Data from AC Nielsen

Table 4: Fresh meat

Fresh meat	Price level			Percentage change	
	Jul-07	Mar-08	Jul-08	Mar-08 to Jul-08	Jul-07 to Jul-08
Bacon 250 gram	16.33	17.73	18.65	5.19 %	14.21 %
Pork Chops 1kg	43.26	48.97	49.76	1.61 %	15.02 %
Lamb Chops 1kg	63.78	70.68	76.45	8.16 %	19.86 %
Brisket 1kg	35.75	40.54	41.24	1.73 %	15.36 %
Beef chuck 1kg	38.96	41.93	43.35	3.39 %	11.25 %
Rump steak 1kg	64.07	na	72.85	na	13.70 %
Chicken - Whole Fresh 1kg	23.72	26.45	26.35	-0.38 %	11.10 %
Chicken portions 1kg	29.72	31.33	34.73	10.85 %	16.85 %
Average				0.20 %	14.67 %

Source: NAMC as calculated from Stats SA data, 2008b

Na = not available

2.2 Household expenditure patterns on meat

This sub-section presents a profile of the South African consumer market for meat, based on the following data sources:

- The Households Income and Expenditure Survey (IES) of 2005/2006 (Stats SA, 2008c), ***based on expenditure data reported by households***, where the population is divided into ten income deciles, each representing 10 % of the total South African population¹.

- Detailed food expenditure data, based on expenditure data reported by households, for the various LSM groupsⁱⁱ in South Africa in 2005 developed by the Bureau of Market Research (Martins, 2006).

It is important to note that the expenditure data reported in this section is based on households' reported grocery spending on meat and does not include food-away-from-home meat spending; hence the spending patterns described do not provide an overall view of total spending on meat. This data is, however, the only official statistics on household spending patterns that are available.

Figure 2 illustrates the food and meat expenditure for different LSM groups based on grocery expenditure data reported by households and expressed as a share of national aggregate figures. The largest contribution to national household level grocery food spending is by LSM groups 7 to 10 (47 %), followed by LSM groups 4 to 6 (39 %). In terms of national level grocery spending on meat, LSM groups 7 to 10 dominates with a 43 % contribution, followed by LSM groups 4 to 6 (42 %). Bearing in mind that middle class households in LSM groups 4 to 6 earn less per household than LSM groups 7 to 10, this implies that the middle class is actually spending a larger share of their grocery food budget on meat when compared to the wealthy consumers in LSM groups 7 to 10.

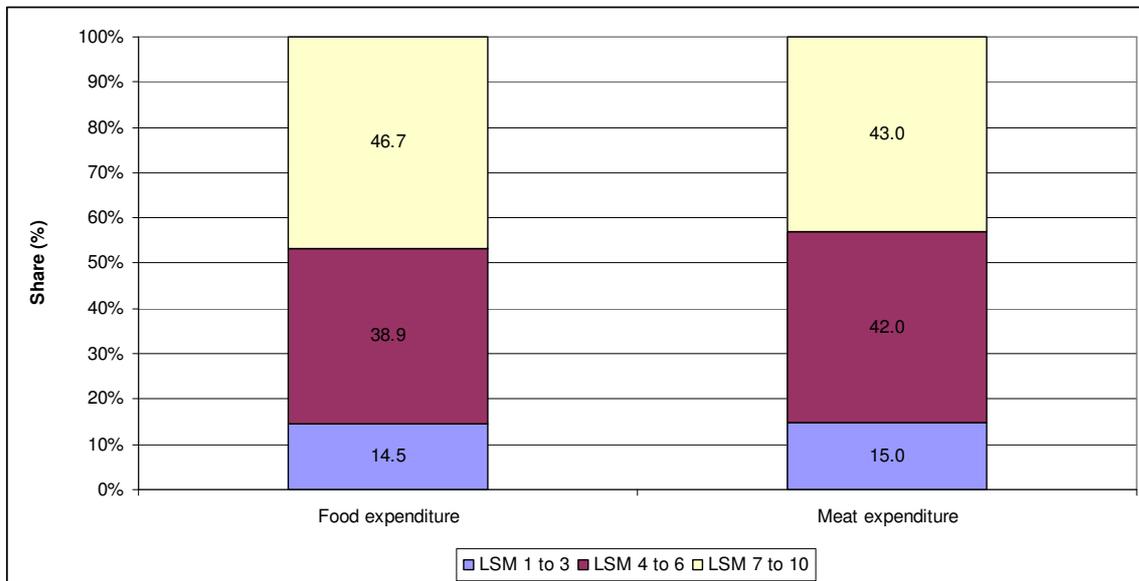


Figure 2: Food and meat expenditure, based on grocery expenditure data reported by households and expressed as a share of national aggregate figures for different LSM groups

Source: Martins, 2006

Figure 3 illustrates the expenditure on specific meat types by different LSM groups, based on grocery expenditure data reported by households and expressed as a share of national aggregate figures for the various meat types. The middle class (LSM groups 4 to 6) dominates the grocery spending on beef and poultry, contributing 49 % and 40 % to total national expenditure on these meat types, respectively. The contribution of LSM groups 7 to 10 to spending on beef and poultry is slightly lower at 35 % and 38 %, respectively, but they dominate the spending on mutton/lamb and pork. Looking at marginalised consumers in LSM groups 1 to 3 and comparing their spending on different types of meat, it is clear that they spend most of their income on poultry followed by beef, mutton/lamb and then pork.

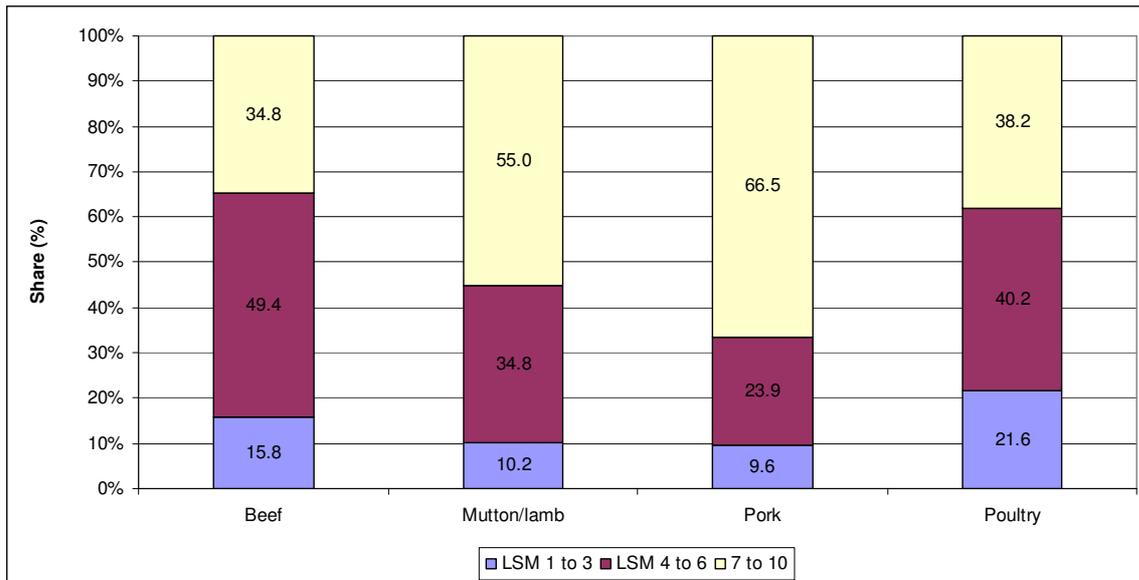


Figure 3: Expenditure on specific meat types by different LSM groups

Source: Martins, 2006

According to Armstrong *et al.*, (2008), based on Stats SA IES 2005/06, the incidence of poverty is much higher in the rural areas of South Africa. Poverty rates of households and individuals in rural areas are 54.2 % and 67.7 %, respectively, compared to 21.9 % and 32.7 % for urban consumers. Figure 4 illustrates the composition of a typical daily meat 'basket' of rural consumers (typically lower income consumers) and urban consumers (typically higher income consumers), based on the National Food Consumption Survey (Nel and Steyn, 2002). Chicken and offal dominate the diet of rural (poorer) consumers, contributing 51 % of their daily meat intake in terms of quantity consumed, followed by beef at 44 %. The daily meat intake of urban (wealthier) consumers is dominated by beef with a 45 % contribution to daily meat intake, followed by chicken at 35 %.

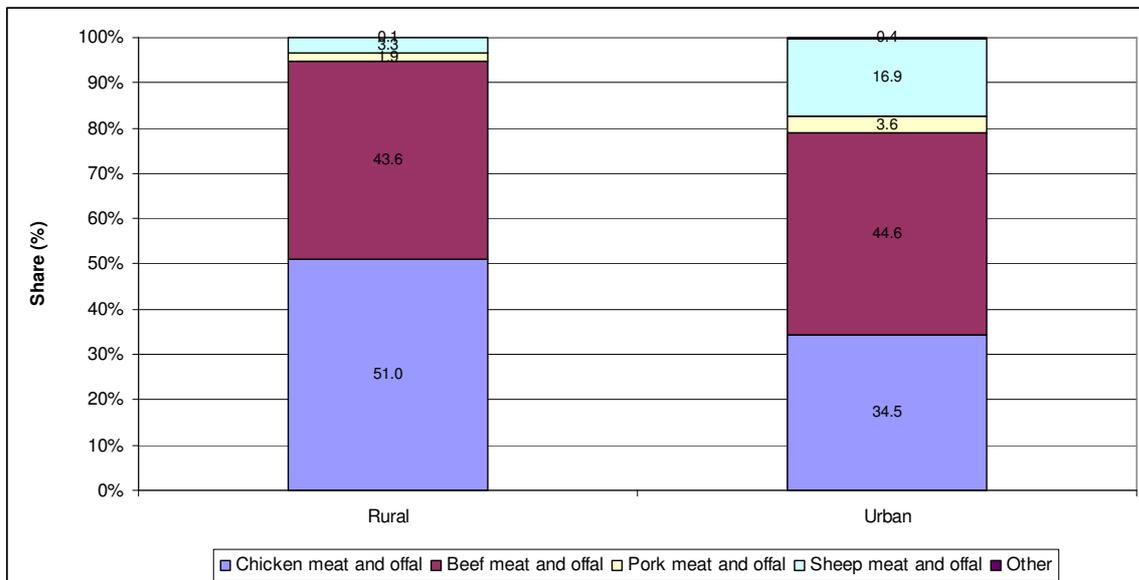


Figure 4: The typical meat consumption of rural consumers (lower income) and urban consumers (higher income).

Source: Nel and Steyn, 2002

2.3 Background to VAT

Since General Sales Tax (GST) was replaced by VAT in 1991, the original statutory 10 % rate was raised once to 14 % two years later. Shortly after the introduction of VAT, 19 food commodities (see Table 5) were zero-rated based on their qualification as basic or staple foods (SA Tax, 2001: Schedule 2 Part B). Calcaterra and Kirsten (2003) define a basic food as a product that undergoes minimal processing to render it edible to the final consumer while maintaining certain nutritional properties, and a staple as a product that traditionally forms an important part of the diet of a community or population.

Table 5: List of zero-rated foodstuffs in South Africa

Brown bread	Maize meal	Samp
Mielie rice	Dried mielies	Dried beans
Lentils	Pilchards	Milk powder and other dairy powder blends
Milk and cultured milk	Rice	Unprocessed vegetables and fruits
Vegetable oil	Eggs	Brown wheaten meal
Edible legumes		

VAT in South Africa is a tax paid by the final stage consumer, thereby a consumption tax, with rebates for intermediates and investment purchases by a registered producer or service provider. Input VAT is paid by registered VAT vendors on production inputs and can be claimed back when such inputs are used to produce taxable supplies. Output VAT, in turn, is levied by registered VAT vendors on products/supplies they make and sell. Therefore, a registered VAT vendor pays (claims) the net output VAT over to (from) the South African Revenue Service (SARS) when output VAT exceeds input VAT (where input VAT exceeds output VAT) in a given tax period.

Alderman and Del Ninno (1999) explain that a single rate VAT system is the easiest to administer and is distributionally neutral, i.e. the same rate applies to all consumers. Cognisance should, however, be taken that Kearney (2003) explains that VAT is regressive in nature (i.e. imposing a greater financial burden on the poor), unless specific steps like zero-rating essential foodstuffs are taken. Due to the regressive nature of a single VAT system governments often choose varying VAT rates (including zero) or even exemption to reduce the impact on low-income consumers. According to Alderman and Del Ninno (1999), an alternative method to address the regressive nature of a single rate VAT system, without incurring efficiency losses by introducing variable VAT rates, is to introduce targeted income transfers.

3. Methodology

Two different approaches are followed in this study to provide complimentary empirical evidence in order to understand the possible impact of the zero-rating of meat. The **first** is an aggregate approach, where the general impact on the meat sector is illustrated through the use of a stochastic multi-commodity partial equilibrium model that incorporates regime-switching modelling techniques to accommodate various equilibrium pricing conditions. All the commodities that are included in this model are simulated within a closed system of equations. This implies that any shocks in the livestock sector are transmitted to the grain and oilseed sector and *vice versa*. It also implies that the model takes the dynamic interaction between the various meat industries into account. This means that if, for example, a shock is only imposed on the chicken industry, the beef, lamb and pork industries will also be affected. The model incorporates the most important elements of demand and supply and solves for a market-clearing (equilibrium) price.

Once an exogenous shock is imposed in the model, it solves for a new equilibrium where total demand has to equal total supply and a new price is formed. Figure 5 provides a diagrammatic explanation of the modelling framework employed by the Bureau for Food and

Agricultural Policy (BFAP), which is used annually to produce a baseline that presents one possible outlook of agricultural commodities markets over the next ten years under a certain set of assumptions and macro economic projections for South Africa.

The most important assumptions and macro-economic projections that drive the sector model are illustrated in Figure 5. These include world prices, the exchange rate, interest rates, rainfall and economic growth. The baseline therefore serves as a benchmark to which various scenarios can be compared.

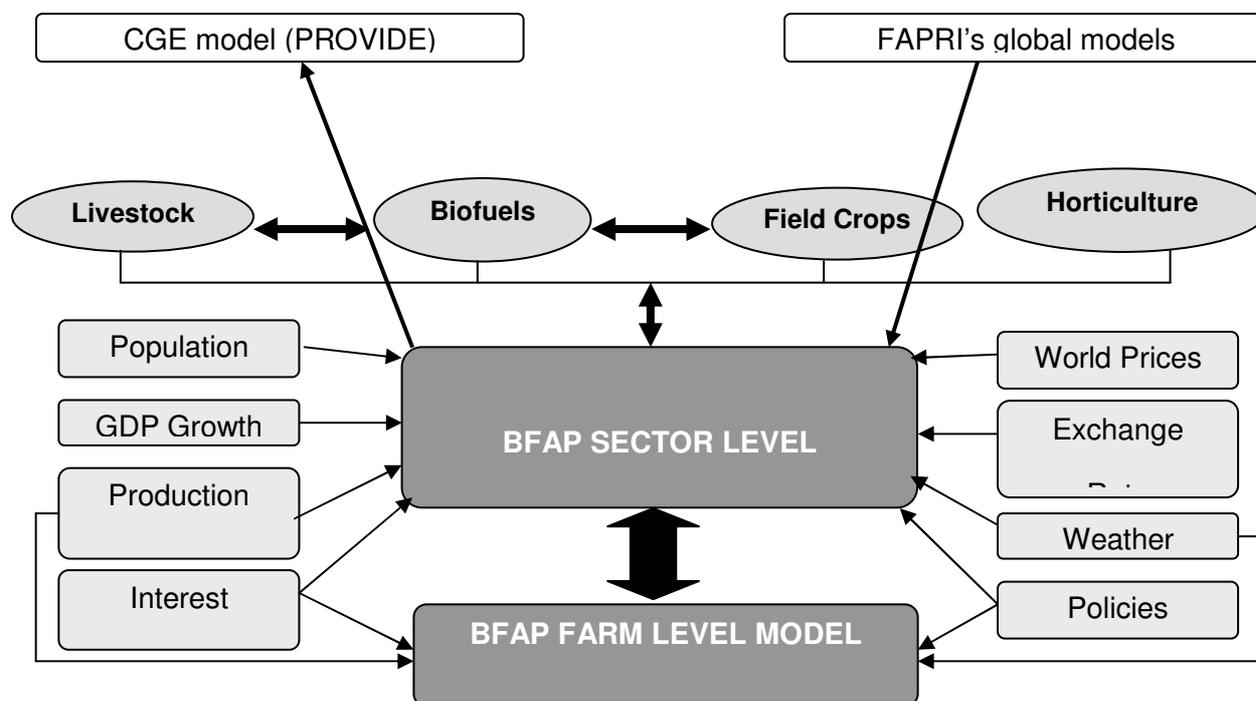


Figure 5: Basic structure the BFAP modelling framework

The **second** approach uses a micro/household level model to measure the impact of the zero-rating of meat at household level.

The main reason for using two different approaches is due to the nature of the data employed. On the one hand, the stochastic multi-commodity partial equilibrium model uses national data pertaining to overall consumption and production of meat and national average prices, without distinguishing between different derived meat products. With the second approach the household level analysis uses household data to derive the household impacts of the zero-rating of meat. The household level data is used to enrich the results of the aggregate level analysis by providing more information for specific households.

4. Results: Aggregate level

This section presents the empirical results of the BFAP sector model used to simulate the possible economic impact of the zero-rating of meat on the different meat sub-sectors in South Africa. For the purpose of this study, two possible exogenous shocks are imposed in the BFAP model independently. These results are then compared to the BFAP baseline 2008. The exogenous shocks can be defined as follows:

- Zero-rating of VAT is applied to all categories of meat.

- Zero-rating is only applicable to chicken. The reason for this shock is that earlier indications from government suggested the possible zero-rating of chicken, as it is the most widely consumed meat product by low income households.

For the purpose of this study a 30 % gross margin is assumed on top of all producer prices¹ for meat. For example, the beef carcass annual average gross margin price including VAT for 2008 equals R 33.49/kg (R 22.60 x 1.3 x 1.14 =R 33.29/kg), while that of chicken (fresh whole bird) during the same period equals R 21.52/kg. These prices are referred to as the baseline (Bsl) prices. In order to shock the model the Bsl prices are divided by 1.14. This implies that in order to simulate the impact of VAT on the various meat industries, the prices in the model are initially reduced by 12.28 %. In the case of chicken, for example, this implies that the model starts the simulation at an initial shocked price of R 18.88/kg, which is 12.28 % below the baseline price of R 21.52/kg.

Table 6 presents the results of a once off, static, shock that is introduced into the model. The approach followed in this study can basically be split into three steps: Firstly, the calculation of gross margin prices, secondly the introduction of VAT exempted prices in the model, and thirdly the simulation of a new equilibrium in the model.

Government's projected revenue from VAT on total meat sales is also presented in Table 6. It is calculated by multiplying the difference between the gross margin price including VAT and excluding VAT by the baseline consumption levels for 2008. Government's total VAT revenue for 2008 is projected at R 8 billion. This is the annual amount of income that government would forfeit if zero-rating was to be applied to all meats in 2008. This is, however, a very simplified representation of VAT when taking the complete meat value chain into consideration. This calculation only represents the VAT component on the gross margin value of a carcass and does not take into consideration the VAT output paid to government, and the VAT input claimed from government, at various levels in the chain.

Table 6: Government VAT revenue

Meat	Price category	Model	Avg prices 2008 (R/kg)	Consumption (000 tons)	Gov VAT revenue (R million)
Beef	Basic price excl VAT		22.60	652.74	2.685
	Gross margin price incl VAT	Bsl	33.49		
	Gross margin price excl VAT	Shock	29.38		
Chicken	Basic price excl VAT		14.52	1479.94	3.912
	Gross margin price incl VAT	Bsl	21.52		
	Gross margin price excl VAT	Shock	18.88		
Mutton/Lamb	Basic price excl VAT		35.80	160.55	1.046
	Gross margin price incl VAT	Bsl	53.06		
	Gross margin price excl VAT	Shock	46.54		
Pork	Basic price excl VAT		15.05	160.25	439
	Gross margin price incl VAT	Bsl	22.30		
	Gross margin price excl VAT	Shock	19.56		
Total VAT revenue					8.081

¹ The historic producer prices were obtained from the South African Poultry Association (SAPA), the Red Meat Abattoir Association (RMAA) and the South African Feedlot Association. All producer prices for 2008 were generated by the BFAP sector model.

If it is assumed that markets will not respond to a 12.28 % drop in prices and consumption of meat therefore stays exactly the same as in the baseline, then no further analyses would be required to calculate a static once-off impact of the zero-rating of meat on the meat industry.

However, markets do respond to changes in price. If meat suddenly becomes 12.28 % cheaper consumers will respond by consuming more. Increased consumption will in turn lead to changes in prices, so equilibrium prices will not be 12.28 % below the original prices of meat including VAT. Hence, in order to properly measure the impact of the zero-rating of meat, the price effects, income effects and cross-substitution effects need to be considered. The BFAP sector model is used to simulate these effects and presents the possible dynamic impact of the zero-rating of meat on the industry and consumers. The model basically simulates for a new equilibrium with a new level of prices and volumes of demand and supply. The specific results for the different meat sub-sectors are expressed in the form of absolute and percentage deviations from the baseline. The results of the aforementioned analysis are discussed in the following two subsections.

4.1 Zero-rating of all meats

The simulated equilibrium price changes resulting from the zero-rating of all meats are shown in Figure 6. The new equilibrium prices for beef and chicken are 6.46 % and 8 % lower than the baseline prices, respectively. These price decreases are less than the initial shock of 12.28 % introduced into the model. This clearly illustrates the dynamic interaction between demand, supply and prices simulated by the sector model. The compensated/marginalised decrease in prices is caused by the projected increase in consumption levels as a result of the initial decrease in prices due to the exemption of VAT.

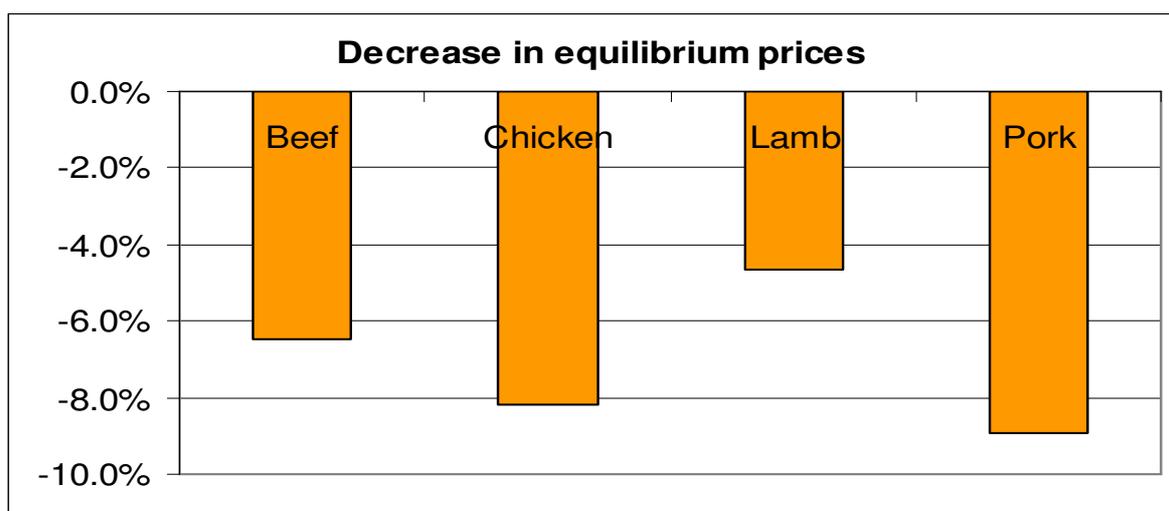


Figure 6: Percentage decrease in equilibrium prices – zero-rating of all meats

The dynamic consumption shocks are illustrated in Figure 7. It is important to note that the consumption shocks are much smaller than the price shocks. The price, income and cross price elasticities determine the relative shifts. For example, where beef prices are projected to decrease by 6.46 %, average annual beef consumption is projected to increase by only 2.43 % in the first year (2008) that VAT is exempted. This equals 15 800 tons in absolute terms. In the case of chicken, prices are projected to decline by 8 %, and in response consumers will increase consumption of chicken by 1.24 %. This amounts to 18 400 tons of increased chicken consumption per year.

The impact on the consumption of pork and lamb is far less in absolute percentage terms. For example, although the pork price is projected to decrease by 8.9 %, the consumption of pork will only increase by 0.58 % (920 tons). In the case of lamb, consumers will increase consumption by only 0.20 % (340 tons).

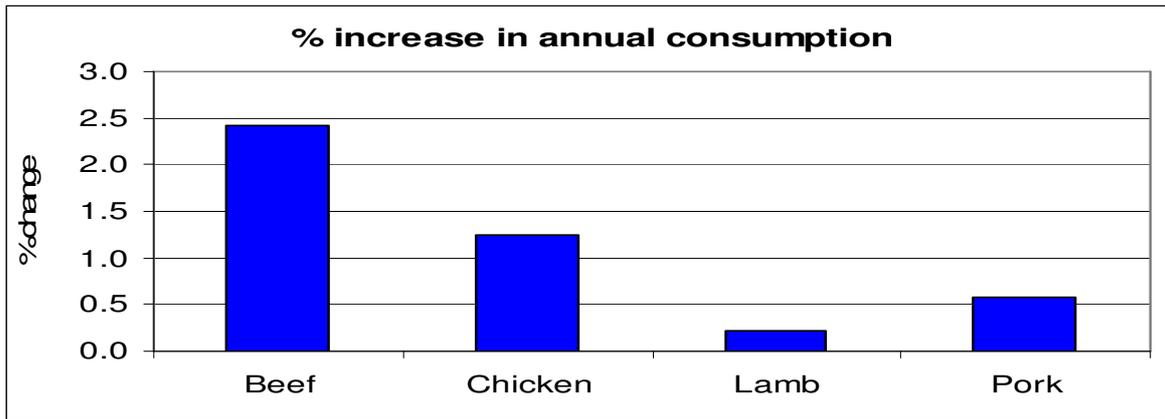


Figure 7: Percentage increase in annual consumption – zero-rating all meats

The next step is to analyse the impact of zero-rating on all meat on aggregate consumer expenditure. The modelling results suggest that prices are projected to decrease, and that annual meat consumption in South Africa is projected to increase by 35 500 tons. Total consumer expenditure on meat is derived from consumption and price. The results depicted in Figures 6 and 7 show that the decrease in prices is larger than the increase in consumption levels. The result is that consumer expenditure on meat decreases when zero-rating is applied to all meats. Figure 8 illustrates the decrease in consumer expenditure on the different types of meat. Overall, consumers will spend R 3.8 billion less, despite an increase in volume consumed of 35 500 tons.

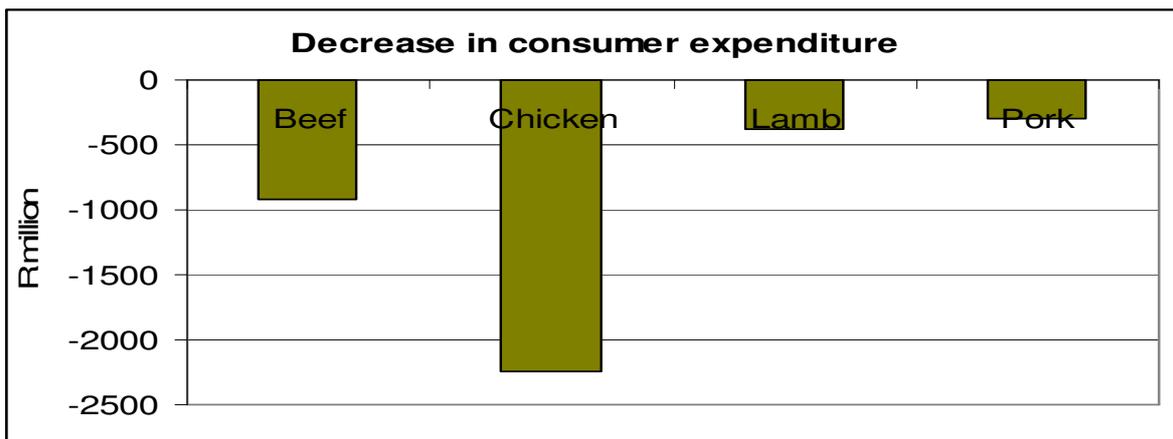


Figure 8: Decrease in annual consumer expenditure – zero-rating of all meats

Table 7 summarises the overall impact on the meat industry and the impact per meat sub-sector if zero-rating is applied to all meat categories. Zero-rating VAT will benefit the industry.

The beef industry's turnover, for example, decreases from R 21.8 billion to R 20.9 billion, but from the first turnover an amount of R 2.6 billion in VAT has to be paid over to government. Therefore, the turnover excluding VAT is R 19.1 billion, which is R 1.7 billion lower than the turnover of the industry when VAT is exempted.

The chicken industry will gain R 1.6 billion and the mutton/lamb and pork industries will gain R 669 million and R 139 million, respectively.

Table 7: Increase in producer turnover

Meat type	Item	Avg prices R/kg	Consumption (000 tons)	Change (000 tons)	Turn-over Incl VAT (R million)	VAT (R million)	Turnover Excl VAT (R million)
Beef	Basic price excl VAT	22.60					
	Mark-up price incl VAT	33.49	652.74		21.861	2.684	19.176
	Mark-up price excl VAT	31.32	668.63	15.88	20.939	-	20.939
	Gain by beef industry						
Chicken	Basic price excl VAT	14.52					
	Mark-up price incl VAT	21.52	1479.94		31.854	3.912	27.942
	Mark-up price excl VAT	19.76	1498.36	18.42	29.614	-	29.614
	Gain by chicken industry						
Mutton/lamb	Basic price excl VAT	35.80					
	Mark-up price incl VAT	53.06	160.55		8.518	1.046	7.472
	Mark-up price excl VAT	50.60	160.88	0.34	8.141	-	8.141
	Gain by mutton/lamb industry						
Pork	Basic price excl VAT	15.05					
	Mark-up price incl VAT	22.30	160.25		3.573	439	3.134
	Mark-up price excl VAT	20.31	161.17	0.92	3.273	-	3.273
	Gain by pork industry						
Overall impact				35.56			4.242.74

4.2 *The zero-rating of chicken only*

When only chicken is exempted from VAT the interrelationships between the various types of meat play a critical role. Figure 9 illustrates that if a 12.28 % price shock is applied only to chicken all other meat prices will also change, but the impact on prices is less when compared to a situation where zero-rating is introduced for all meat categories. It is projected that the price of chicken will decrease by 5.8 %, while beef prices will decline by about 2.5 % and pork prices by just over 3 %. Mutton/Lamb prices will drop marginally.

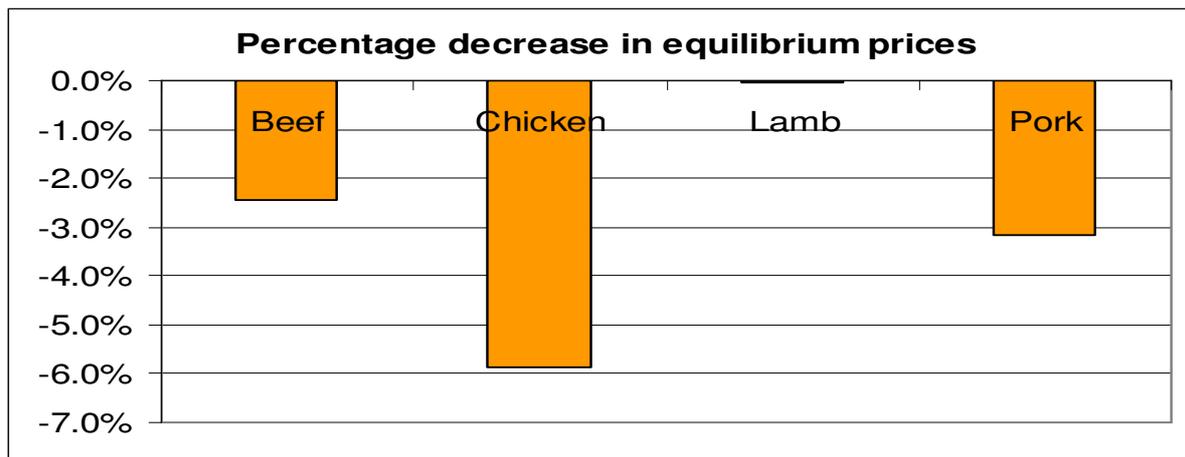


Figure 9: Percentage decrease in equilibrium prices – zero-rating of chicken only

Figure 10 illustrates that annual chicken consumption will increase by 0.78 %, which is equal to 11 600 tons in absolute terms compared to 18 400 tons in the first simulation, where all meat categories were zero-rated. The opposite is true for the other meat types depicted in Figure 10, i.e. consumption of beef, lamb/mutton and pork actually declines. Beef consumption is expected to decrease by 1 400 tons, mutton/lamb by 670 tons and pork by

900 tons. The net outcome of this scenario is that meat consumption will increase by 8 600 tons because chicken increases by 11 600 tons.

Moreover, in a situation where only chicken is zero-rated all other meat types will experience a decline in both prices and consumption, while chicken prices will decrease but consumption will increase. This is due the fact that chicken becomes relatively cheaper than all the other meats and consumers tend to eat more chicken and less beef, pork and lamb.

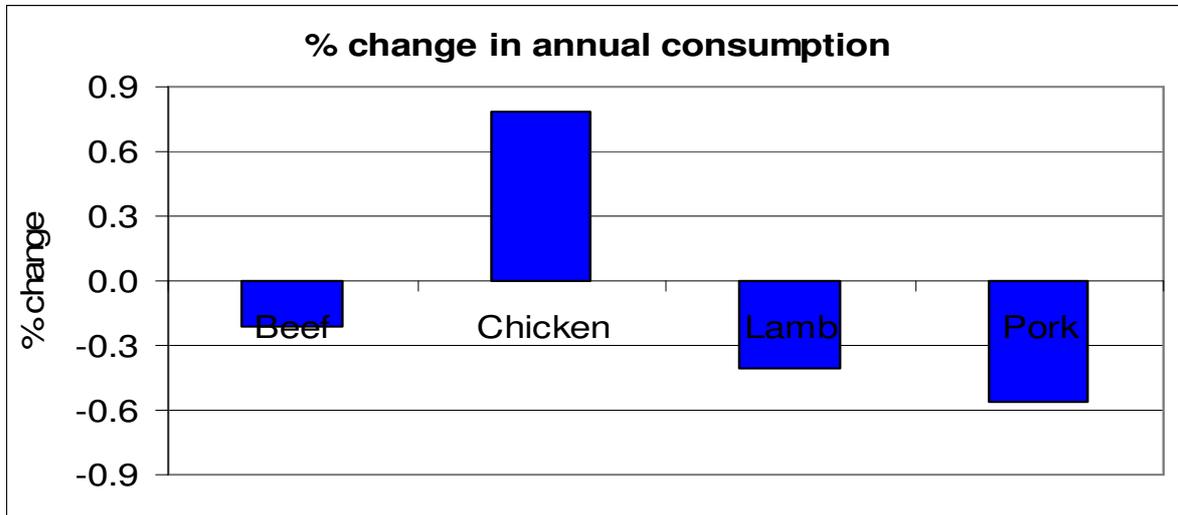


Figure 10: Percentage change in annual consumption – zero-rating of chicken only

Figure 11 presents the decrease in consumer expenditure as a consequence of the zero-rating of chicken. South African consumers will spend R 2.3 billion less on meat, with their biggest saving on chicken being more than R 1.5 billion.

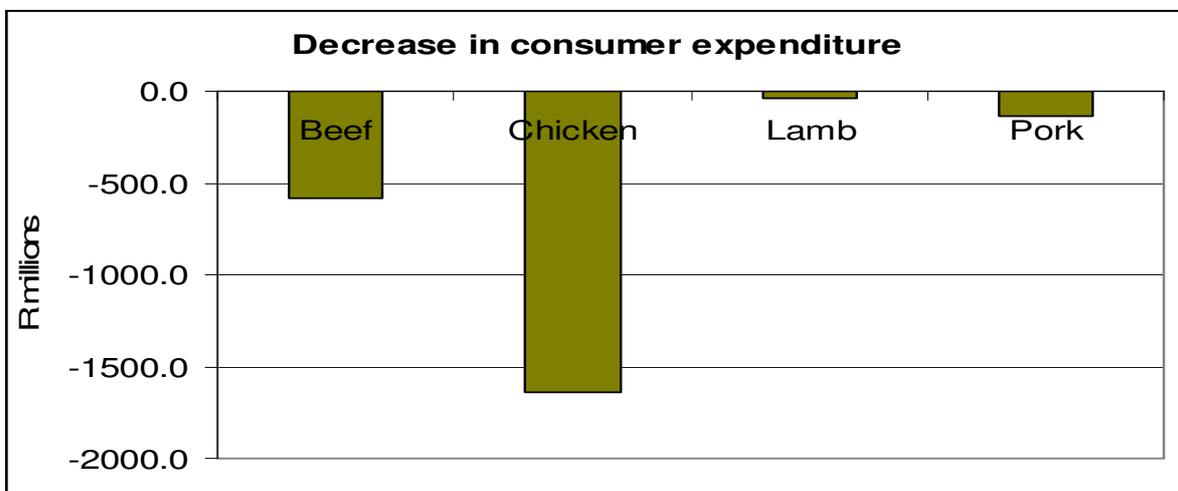


Figure 11: Change in annual consumer expenditure – zero-rating of chicken only

Cognisance should be taken that when all meats are zero-rated all meat sub-sectors will benefit from higher turnover, but when only chicken is zero-rated only the chicken sub-sector will benefit, i.e. turnover excluding VAT will increase by R 2.27 billion. Turnover in the beef, mutton/lamb and pork sub-sectors will drop by R 510 million, R 34 million and R 116 million, respectively (See Table 8).

Table 8: Change in sub-sector turnover – zero-rating only chicken

Meat type	Item	Avg prices R/kg	Consumption (000 tons)	Change (000 tons)	Turnover Incl VAT (R million)	VAT (R million)	Turnover Excl VAT (R million)
Beef	Basic price excl VAT	22.60					
	Mark-up price incl VAT	33.49	652.74		21.861	2.684	19.176
	Mark-up price excl VAT	32.67	651.34	-1.40	21.280	2.613	18.666
	Loss by beef industry						
Chicken	Basic price excl VAT	14.52					
	Mark-up price incl VAT	21.52	1479.94		31.854	3.912	27.942
	Mark-up price excl VAT	20.26	1491.55	11.61	30.214		30.214
	Gain by chicken industry						
Mutton/Lamb	Basic price excl VAT	35.80					
	Mark-up price incl VAT	53.06	160.55		8.518	1.046	7.472
	Mark-up price excl VAT	53.03	159.87	-0.67	8.479	1.041	7.437
	Loss by mutton/lamb industry						
Pork	Basic price excl VAT	15.05					
	Mark-up price incl VAT	22.30	160.25		3.573	439	3.134
	Mark-up price excl VAT	21.60	159.35	-0.90	3.441	423	3.019
	Loss by pork industry						
Overall impact				8.64			1.612.08

4.3 Long-term impact of the zero-rating of meat

The aforementioned discussions in sections 4.1 and 4.2 illustrated the possible annual impacts of the zero-rating of meat for 2008 only. Figure 12 illustrates the projected change in chicken prices over the next decade under the assumption that zero-rating is applied to all types of meat. The results clearly show that the initial shock will be the largest in the first year in which zero-rating is applied and that prices will return to long run equilibrium within a relatively short period of time (2 years). However, if zero-rating is applied to only one specific type of meat, then this meat will always have a more competitive footing with respect to retail prices when compared to other meats.

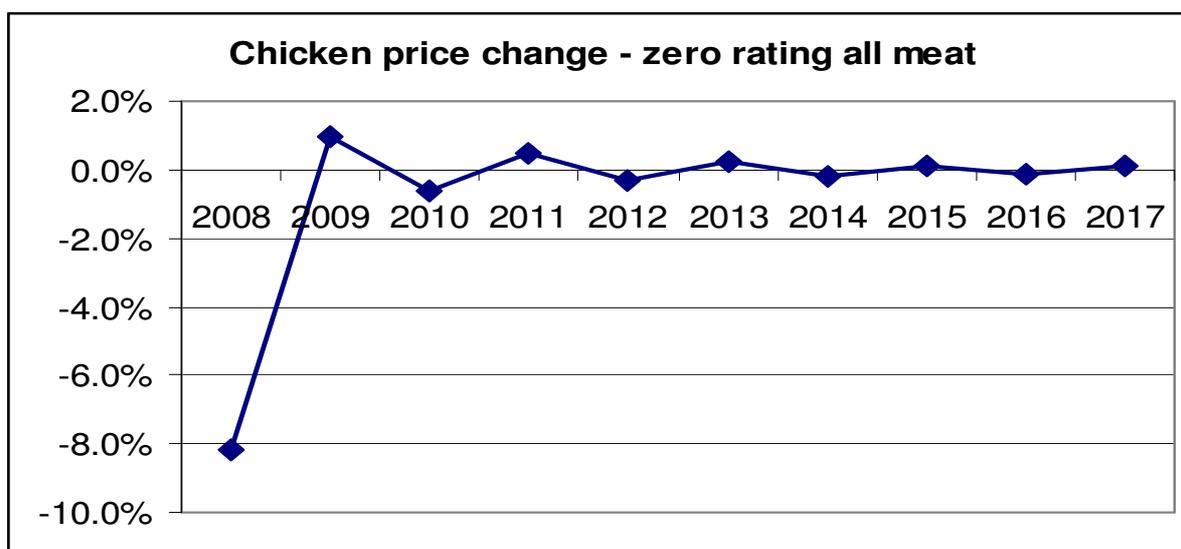


Figure 12: Projected chicken price change – zero-rating all meat

4.4 Summary

This section has provided the empirical evidence of the possible impact of the zero-rating of meat on a national level. No distinction was made between different household income levels and what the possible impact of zero-rating would be on household food expenditure and nutrition. The following section draws on the profile of the South African consumer meat market discussed in section 2.2 and uses a household expenditure model to provide more detail on the impact of the zero-rating of meat at household level.

5. Micro/household level results

To estimate the potential impact of the zero-rating of meat on household disposable income a detailed (static) household food expenditure model was developed based on the two data sources described in section 2.2. The 'Income & Expenditure of households survey of 2005/2006' released in 2008 by Stats SA illustrates the food expenditure of the South African population on major food categories. It further divides the population into ten income deciles, each representing 10 % of the total South African population. This division is used to investigate the impact of the zero-rating of meat on different income groups (See Appendix A).

The second data source used is the detailed food expenditure data of the South African population in 2005 developed by the Bureau of Market Research (Martins, 2006)². The food expenditure model was constructed according to the food basket used by the NAMC to monitor food prices.

To calculate the impact of historical inflation on household disposable income, and to adjust the model to estimated April 2008 expenditure levels, food expenditure was inflated with the year-on-year inflation figures for March 2006 to March 2007, followed by April 2007 to April 2008 (as published by the NAMC in the Food Price Monitor press releases of May 2007 and May 2008). Household income was increased by the average increase in household disposable income, as reported by the South African Reserve Bank from 2006 to 2007 (11.9 %).

As discussed in section 4 above, due to the dynamic nature of the simulations when a zero VAT rate is applied to all meat, price is reduced by less than the VAT rate, as illustrated in Figure 6. Thus, in order to estimate the impact of the zero-rating of meat, the price reduction illustrated in Figure 6 was applied to meat expenditure by different income deciles in April 2008. These results are discussed in section 5.1.

5.1 Impact of the zero-rating of meat on different income deciles in South Africa

Estimated reduced consumer grocery meat spending due to the zero-rating of meat is shown in Table 9. The associated potential saving is the largest for wealthier consumers, with an estimated annual household saving varying from R 165 for income decile 7 to R 276 for income decile 10 (i.e. 2.2 % and 2.1 % of the respective deciles' current total food expenditure, as is shown in Table 10).

The potential impact on poor consumers is significantly smaller, with estimated savings of R 73 and R 92 per household per year in income deciles 1 and 2, respectively (representing about 1.7 % of the deciles' current total food expenditure as shown in Table 10).

² Provided detail of expenditure on more specific sub-categories within the main food categories.

Table 9: Estimated reduced grocery meat spending – VAT removal on meat

Meat type	Estimated saving of income decile (R/household/year):									
	1	2	3	4	5	6	7	8	9	10
Pork	R 23	R 29	R 34	R 42	R 50	R 35	R 39	R 46	R 50	R 64
Lamb	R 8	R 10	R 11	R 14	R 15	R 20	R 22	R 25	R 46	R 61
Beef	R 18	R 23	R 27	R 33	R 39	R 48	R 54	R 63	R 54	R 69
Chicken	R 20	R 26	R 31	R 38	R 45	R 31	R 35	R 41	R 40	R 52
Canned meat	R 1	R 1	R 1	R 1	R 1	R 1	R 1	R 1	R 2	R 4
Polony/viennas	R 1	R 1	R 2	R 2	R 2	R 5	R 6	R 7	R 11	R 14
Pork sausage	R 2	R 3	R 3	R 4	R 4	R 7	R 8	R 9	R 9	R 12
TOTAL: MEAT	R 73	R 92	R 109	R 133	R 157	R 149	R 165	R 192	R 213	R 276
TOTAL: RED MEAT	R 52	R 66	R 78	R 95	R 112	R 118	R 130	R 151	R 173	R 224

The estimated impact of zero-rating on chicken in the context of grocery spending varied from R 20 per household per year for decile 1 to R 52 per household per year for decile 10. Zero-rating lamb will only have a significant impact on reducing household expenditure for income deciles 9 and 10, i.e. wealthier consumers. It is interesting to note that the impact of zero-rating processed meat has a relatively small impact when compared to fresh meat.

Table 10: Estimated reduced grocery meat spending expressed as a share of total food expenditure within the various income deciles – VAT removal on meat

Meat types	Estimated saving of income decile (as share of income) (%)									
	1	2	3	4	5	6	7	8	9	10
Pork	0.54	0.55	0.59	0.62	0.69	0.50	0.52	0.54	0.50	0.48
Lamb	0.19	0.19	0.20	0.20	0.21	0.28	0.29	0.30	0.46	0.45
Beef	0.43	0.43	0.46	0.48	0.53	0.68	0.71	0.74	0.54	0.52
Chicken	0.49	0.50	0.53	0.56	0.62	0.44	0.46	0.48	0.40	0.39
Canned meat	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.03
Polony/viennas	0.02	0.03	0.03	0.03	0.03	0.07	0.08	0.08	0.11	0.11
Pork sausage	0.05	0.05	0.05	0.05	0.06	0.10	0.10	0.11	0.09	0.09
TOTAL: MEAT	1.73	1.76	1.87	1.96	2.17	2.09	2.19	2.26	2.12	2.07
TOTAL: RED MEAT	1.24	1.26	1.34	1.40	1.55	1.65	1.73	1.79	1.72	1.68

6. Summary and conclusions

The key findings of this study can be summarised as follows:

Aggregate approach:

- The government's projected VAT income on all meats for 2008 is R 8 billion. This is the annual amount of income the government will forfeit if zero-rating is applied to all types of meat. If zero-rating is applied to chicken only, the government's income from VAT will decrease by R 3.9 billion.
- When zero-rating is applied to all meats the decrease in market prices after price effects, income effects and cross substitution effects have been taken into consideration is less than the initial decrease due to the exemption of VAT.
- The percentage decrease in equilibrium prices is larger than the percentage increase in consumption levels. Therefore, in the case of the first simulation, consumer expenditure is expected to decrease by R 3.8 billion despite an increase in national meat consumption of 35 500 tons. Meat producers and processors are better off due to higher volumes produced, processed and sold and their total turnover excluding VAT increases by R 4.2 billion. Consumers are better off since they get to spend less and consume more, and government loses R 8 billion in VAT income.

- For the second simulation, where zero-rating is applied to chicken only, consumer expenditure is projected to decline by R 2.3 billion and national consumption of meat will increase by 8 600 tons. However, it is important to note that only the consumption of chicken will increase (11 600 tons). The consumption of beef (1 400 tons), lamb (670 tons) and pork (900 tons) will decrease as chicken becomes relatively cheaper. Under this simulation the chicken producers and processors are better off and the beef, lamb and pork producers and processors are worse off since they lose market share. The consumers of all meats are better off since they spend less on meat.

Micro/Household approach

- As illustrated in Figure 7, the wealthier consumers in LSM 7 to 10 and the middle class in LSM 4 to 6 have similar contributions to national aggregate meat expenditure (43 % and 42 % respectively). However, since LSM 4 to 6 represents about 44 % of the South African adult population and LSM 7 to 10 only 28 % of the adult population, the implication is that the per capita meat expenditure is highest among the middle class. The food purchasing behaviour of wealthier consumers is typically characterised by increased health awareness and the prevalence of a more diverse food basket due to a larger food budget.
- With zero-rating the households in the high income brackets will experience the largest benefit in terms of monetary savings, since they have the largest meat expenditure among all the various income brackets. However, the aggregate modelling results show an increase in consumption and, since it can be assumed that in the higher income bracket consumers have satisfied their demand for meat and can afford a more diverse food basket, it can be argued that the increase in meat consumption (as simulated in the BFAP sector model) due to the zero-rating of meat will occur in the lower and middle LSM groups. This does not imply that the impact of zero-rating on poor households is so large that households can shift to the next income bracket (bracket creep), but it does imply that the nutritional status of the poorest of poor consumers could improve if the saving due to zero VAT on meat is utilised to purchase additional staple food or some nutritionally diverse food types.

The results obtained in this study are largely confirmed by Calcaterra and Kirsten (2003), although they used a different methodology and approached the issue under consideration from a different angle. They analysed, firstly, the effect that the introduction of VAT on food had on consumption patterns, and secondly, whether or not the introduction of VAT made consumers more sensitive to changes in food prices and their disposable incomes. This was done by comparing budget shares spent on food before and after the introduction of VAT and by estimating demand relations (elasticities) by means of an Almost Ideal Demand System (AIDS), respectively. They explain that the introduction of VAT did indeed have an effect on food consumption patterns. They further conclude that VAT had a distorting effect on consumers' budget shares, not only by the indirect reduction of disposable income resulting from higher prices, but also by the reallocation of their budget shares. They also found a decrease in the consumption of beef and red meat in general resulting from the introduction of VAT. The loss in revenue to farmers in 1996 was estimated at R 1.258 billion (Calcaterra and Kirsten, 2003).

The analysis conducted in this study only focused on the meat industry. However, it is also worthwhile to explore the broader context of zero-rating foodstuffs. Several other studies investigated the use of VAT as an instrument by government to generate income. Some of the major findings by these studies are summarised below:

- Alderman and Del Ninno (1999) investigated how well targeted VAT exemptions have been and review the impact of exceptions (both current and proposed) on household food consumption. By employing a matrix of demand parameters they

analysed 31 food categories (including meat as a combined category), 13 non-food categories purchased on a regular basis and 13 non-food categories purchased occasionally for both rural and urban consumers in South Africa.

The results from this study confirmed the logic of VAT exemption for maize, based on both efficiency and equity. Despite the government revenue forgone by zero-rating maize, nutrition in both rural and urban areas increases, and thereby equity also. However, the revenue foregone by government by the zero-rating of meat is far greater than with any other commodity. The savings by poor households are estimated to be R 111 million less than is the case with maize. However, the leakage in terms of government revenue foregone via meat is seven times greater than with maize. Alderman and Del Ninno (1999) therefore specifically conclude that: "VAT exemption for meat (in aggregate) in South Africa is not justified either in terms of equity or nutrition".

- Go, Kearney, Robinson and Thierfelder (2005) analysed the welfare and income distributional effects of possible VAT reforms in South Africa by means of a Computable General Equilibrium (CGE) model based on 2001 data. This was done specifically to investigate means in which the equity impact of VAT can be improved while maintaining its strong revenue features. Go *et al* (2005) conclude, amongst others, that VAT is the most efficient instrument for generating government revenue. They also argue that it is possible to restructure the VAT system to make it less regressive or even progressive.
- According to Boeters, Böhringer, Büttner and Kraus (2006) many countries apply VAT reductions to goods consumed in larger proportions by low-income households to address distributional concerns. By applying an Applied General Equilibrium (AGE) model, they analysed the distributional and efficiency effects of structural VAT reforms in Germany. In their analysis, they found that VAT differentiation is a rather ineffective redistribution policy. Instead, their results show that the abolition of reduced VAT rates, together with reductions in the marginal income tax rate or cuts in social security contributions, provide significant gains in overall welfare. They further argue that reduced VAT is found to be industry specific subsidies.

In conclusion, although the results of this study indicate significant gains for the meat industry (i.e. if all meat is zero-rated), additional evidence at a more macro level suggests that there will also be losers, most significantly government. If only chicken is zero-rated the result will be significant distortions in the meat industry, where the chicken industry will accrue significant benefits and the red meat value chain will be disadvantaged; this result is particularly important in the light of the potential socio-economic contribution of the emerging red meat sector in South Africa. In addition, the distributional effect of the gains will not be equal amongst households, resulting in further distortions in purchasing patterns with significant implications for all meat value chains, and possibly other food value chains.

7. References

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APPENDIX A

Table A.1: The distribution of household income in South Africa, 2005/06

Income decile	Share of total household income within specific income decile:	Mean household income (Rand/household/month):	Calculated estimated daily per capita income (Rand/person/day):
1	0.2 %	R 360	R 4.22
2	1.2 %	R 799	R 7.96
3	2.2 %	R 1 108	R 9.59
4	2.9 %	R 1 469	R 10.98
5	3.5 %	R 1 915	R 13.40
6	4.7 %	R 2 545	R 17.07
7	6.4 %	R 3 632	R 25.96
8	10.3 %	R 5 795	R 43.30
9	17.8 %	R 10 737	R 92.90
10	50.9 %	R 33 804	R 308.71
TOTAL	100.0 %	R 6 216 (population average)	R 53.78 (population average)

Source: Stats SA, 2008c

* Each income decile represents 10 % of the South African population.

ⁱ Stats SA (2008c) data provided monthly household expenditure data for the following main food categories: Bread & cereals; Vegetables; Fruit; Fats & Oils; Dairy products & Eggs; Meat; Fish; Sugar foods; and hot beverages.

ⁱⁱ South Africa is a diverse nation with a wide variety of wealth groups and cultural denominations spread over urban and rural areas. The South African Advertising Research Foundation (SAARF) developed a market segmentation tool - the Universal Living Standard Measures (SU-LSM) - based on the socio-economic status of an individual or group. Consumers of least socio-economic status form the segment LSM 1 and those of the highest status LSM 10. The majority of South African consumers fall within the middle class, namely LSM groups 4 to 6 (44.3 % of the total South African adult population in 2007), followed by established consumers in LSM groups 7 to 10 (28.1 %) and marginalised consumers in LSM groups 1 to 3 (27.6 %) (SAARF, 2008).