



**Urban Consumption Patterns of Livestock Products in Zambia and
Implications for Policy**

by

Munguzwe Hichaambwa

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The Indaba Agricultural Policy Research Institute (IAPRI) is a non-profit company limited by guarantee and collaboratively works with public and private stakeholders. IAPRI exists to carry out agricultural policy research and outreach, serving the agricultural sector in Zambia so as to contribute to sustainable pro-poor agricultural development.

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Any views expressed or remaining errors are solely the responsibility of the authors.

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EXECUTIVE SUMMARY

Background

Rapid urbanization in Zambia means that increasingly heavy demands are being placed on urban food marketing systems. Investment in these systems has been woefully inadequate for many decades, creating supply bottlenecks and health hazards that work against the interests of both farmers and consumers. Understanding urban food expenditure patterns is a first step in addressing these problems. The Food Security Research Project (FSRP) which is now the Indaba Agricultural Policy Research Institute (IAPRI) has conducted considerable work on urban consumption patterns of staples and fresh produce as part of on-going research and outreach work in the respective value chains¹. However, no work has yet been done on livestock products and thus this study seeks to understand urban consumption and purchasing patterns of livestock products and how these vary by income level and across key cities of the country. Key questions that it addresses are:

- 1) What is the share of livestock products in urban consumer budgets, and how does it vary by income level? and
- 2) What is the importance of various retail channels in satisfying the livestock products purchases of urban consumers? For example, what is the share of the “traditional” or “informal” marketing sector (open air markets, street vendors, shops) for different types of livestock products, and income levels, and how does this compare to the “modern sector” (independent and chain supermarkets)?

Answers to the first question are fundamental to designing investment programs that improve marketing capacity in cities and better link these cities with key rural production zones. Those to the second set of questions are fundamental to understanding the rate and direction of change in Zambia’s food system. Such understanding is a pre-requisite to designing policies and investment programs to ensure smallholder access to dynamic markets and a steady supply of quality food at affordable prices to consumers.

Data and Methods

The primary source of data for this study is the Urban Consumption Survey (UCS) of 2007/8 which was carried out by the Central Statistical Office (CSO) and the Ministry of Agriculture and Livestock (MAL) in collaboration with the then Food Security Research Project (FSRP). The survey was conducted in four cities of Zambia: Lusaka, Kitwe, Kasama, and Mansa. These four cities were purposively selected to be representative of most consumers in the heavily populated cities of Zambia, and also of two cities in the northern area of the country where cassava is a key staple. In total, 140 urban Standard Enumeration Areas (SEAs) were enumerated and the total number of households interviewed in August 2007 and re-interviewed/or replaced in February 2008 to capture seasonality effects was 2,160. It should, however, be noted that the sample was designed to be representative of each city alone and all the four cities together. In addition to the household interviews, prices of various selected

¹ See Hichaambwa and Tschirley 2010a; Hichaambwa and Tschirley 2010b; Hichaambwa 2011a; Hichaambwa 2011b; Hichaambwa 2011c; Hichaambwa 2011d; Kabaghe, Hichaambwa, and Tschirley 2009; Hichaambwa et al. 2009; Jayne et al. 2010; Mason and Jayne 2009a; Mason and Jayne 2009b; Tschirley and Hichaambwa 2010; Tschirley 2010.

commodities were collected from different types of retail outlets in all the four cities to aid with price analysis.

During the survey, the households were asked how much of each item, out of list of 118 items if consumed, they consumed in the past 30 days, how much of the consumption came from gifts, own production and purchases. For the food purchases, households were further asked from which type of retail outlet they mostly purchased the item as well as how many times they purchased it within the past 30 days, and the distance from the household to the retail outlet. The survey was conducted in August 2008 and February 2008 in order to capture seasonality. August in Zambia is part of the dry season after most rainfed crops have been harvested and are being marketed while February is in the rain season when most crops are growing and food is scarce as well as when open air traditional markets are predisposed to muddy unhealthy conditions.

Most of the analysis is disaggregated by both city of residence, in order to discern city differences, and household income group. The household income group was derived by ranking total annual household expenditure per adult equivalent into terciles resulting into the low expenditure tercile or low income group, the middle expenditure tercile or middle income group and the high expenditure tercile or high income group.

Findings and Policy Implications

- 1) Livestock products and fish form an important component of urban households' diet in Zambia together accounting for almost one third of households' monthly budgetary expenditure on food. The share of food budgets on livestock products increases with affluence as measured by both household income and level of urbanisation of city of residence. The opposite is true for fish.
- 2) While rich households consume relatively well balanced shares of the different types of livestock products (including fish) ranging from 27% for meats to 19% for dairy items, poorer households predominantly consume fish (37% share) and much smaller shares of meats, poultry (24% and 22% respectively), and especially dairy items (11%). The budget shares of eggs were found to be more or less the same regardless of household income group.
- 3) Butcheries and the informal market, with market share of 66% and 22% respectively, are the major retail outlets for meats while supermarkets account for only 8% market share. The butcheries have the largest market share regardless of household income group but the share tends to be smaller among poorer households whose market share for the informal sector tends to be much larger. The supermarket is more frequently used by the rich and its market share among rich households is 2 to 20 times more than among poor ones.
- 4) The informal market has the highest share for chicken and other poultry (73% in Lusaka and 48% to 51% in the other cities) and is followed by private households whose market share tends to be more pronounced in the less urbanised cities of Mansa and Kasama. The supermarket share of chickens and other poultry is only 6% to 12% across all cities. It is highest among rich households (11% to 19%) though its share still ranks second (in Lusaka) or third (other cities) after the informal sector and private households. The informal market share is largest among poor households.
- 5) The informal market accounts for almost all the retail market share of dry fish and the largest share for fresh fish accounting for more than 90% in Kasama, 70% to 80% in Lusaka and Mansa and slightly below 50% in Kitwe. The informal market share of fresh

fish is more pronounced among poor households where it more than 90% in all cities except Kitwe where considerable purchases are made from butcheries. The supermarket share for fresh fish is highest among rich households but still ranks second at 17%, 19%, and 5% market share in Lusaka, Mansa, and Kasama respectively and fourth in Kitwe at 11%.

- 6) All in all, the supermarket share of livestock products and fish is quite low at less than 10% in any of the study cities. Even among rich households, the market share only ranges from 14% to 22% depending on the type of product. Quantitative analysis (probit model) has shown that the likelihood of rich households purchasing meats, chicken/poultry, and fresh fish from supermarkets is higher than that of poor ones by only 3% to 8%. This concurs with Tschirley et al. (2010) who found the overall food market shares of supermarkets to be low and sales heavily depending on upper income customers, and locational convenience as one of the key determinants of use. These workers concluded that while it is likely that supermarket shares will grow across the continent over time, and while this growth may at some point be rapid in selected countries, the overall rate of growth is likely to be much slower than was once expected in some circles in reference to the supermarket revolution in Latin America. This means that the so-called traditional marketing system is likely to be a dominant centre of livestock products marketing, though to a lesser extent than that of fresh produce, across the continent for decades to come.
- 7) While informal market channels offer poor consumers opportunities to purchase products at relatively lower price and in smaller quantities, they pose serious health challenges especially for perishable products like meats, dressed chicken and fresh fish.
- 8) These findings suggest that private investment in modern, integrated supply chains cannot be relied upon to meet the ever increasing challenges of supplying quality and healthy perishable livestock products to cities. The rising urban population growth means that a rapidly rising share of the population will be subject to challenges of city food supply. This calls for increased investment in small butcheries and supermarkets and/or minimarts which require relatively smaller investment outlays and incur less overhead running costs and can profitably sell to the poorer consumers at relatively lower prices in public market areas as well as neighbourhood business centres but well linked to rural and/or production supply chains. Kitwe, which showed the lowest market share of the informal sector, had the highest concentration of butcheries in neighbourhood public market areas at 42% compared to 30% or less in the other cities. The role of the Government and/or indeed City Authorities is that of ensuring that the design of these structures allow for proper handling of perishable food products according to recommended environmental and health standards.

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LIST OF ACRONYMS

CSO	Central Statistical Office
FAO	Food and Agriculture Organisation of the United Nations
FSRP	Food Security Research Project
IAPRI	Indaba Agricultural Policy Research Institute
MAL	Ministry of Agriculture and Livestock
P ⁿ	n th Percentile
sd	Standard Deviation
SEAs	Standard Enumeration Areas
SSA	Sub-Saharan Africa
UCS	Urban Consumption Survey
Zmk	Zambian Kwacha

1. INTRODUCTION

1.1. Importance of Livestock Products in the Human Diet

The human body as a very complex machine is constantly changing, evolving, and adapting to the circumstances it is put through in everyday life. Physicist have since 1953 proved that the human body changes or replaces 98% of its atoms within one year², that means that the molecules forming the body at any time are not the same as they were a year previously. Though people might feel they have not changed, their body cells, tissues, and organs are made up out of entirely new atoms a year later, for example. Growth and development are the most obviously evident forms of the human body changing. In this process of the human body constantly changing, protein plays a crucial role, as it is what the body uses to build additional and replace damaged or dead cells within it. All that protein comes from the food that people eat, hence the saying "*You are what you eat*". The smallest protein units are called Amino acids, which are the *bricks* that make up the protein blocks.

Of the different types of food consumed by humans including carbohydrates, vitamins and minerals, proteins are the most important with regard to growth and development. These proteins are made up of multiple amino acids linked together. There are 20 essential amino acids required for the human body to grow. From these 20 basic amino acids, tens of thousands of different protein blocks can be formed. Just like bricks are used to create different building structures (walls, roads, chimneys, ovens, etc.), amino acids are used to create proteins designed for different purposes within the human body. Amino acids can be divided into essential and non-essential amino acids. The human body is able to manufacture 11 out of the 20 amino acids; these are referred to as *Non-essential* amino acids. The remaining nine amino acids are called *Essential* amino acids as the body needs to be provided with them because it cannot manufacture them.

When people eat food, the body utilizes the amino acids that the food contains in order to manufacture the proteins required for its different metabolic processes, when one or more of the non-essential amino acids are missing however, the body has to manufacture them within the liver. To avoid the body breaking down its own protein, you need to provide it with foods that contain all 20 amino acids. These food sources are called *Complete Proteins*. Most of these proteins come from animal sources such as meat, milk, fish, and eggs. Vegetables, legumes, and grains are considered *Incomplete Proteins* because they are missing one or more essential amino acids. For example, beans are very high in protein, but they are missing the essential amino acid *Methionine*. Therefore human consumption of animal proteins, through livestock products (complete proteins), is particularly important in order to provide the body with the needed essential amino acids.

Animal protein consumption the world over has been increasing with increasing income and this increase is compounded by rapid population growth and urbanisation especially in the developing countries. According to the United Nations News Service, the world population is expected to grow to about nine billion in 2050³ with most of the increase taking place in the developing world. Incomes are increasing, especially in Asia and even in Sub-Saharan Africa (SSA), as is urbanization. Anecdotal evidence shows that people tend to eat more livestock products as their income increases. The Food and Agriculture Organisation (FAO) projects that annual per capita consumption of meat in SSA (excluding South Africa) will increase by

² http://www.archive.org/stream/annualreportofbo1953smit/annualreportofbo1953smit_djvu.txt

³ www.un.org/apps/news/story.asp?NewsID=13451

43% to 13.4 kg⁴ by the year 2030. Nutreco⁵, an international animal and fish feed production and marketing company expects global animal protein consumption to double in the next half century, and there is no reason why a similar situation cannot be expected in Zambia as in the rest of the world.

1.2. Market Access Challenges for Livestock Products

Before livestock products⁶ can be available for urban consumption, they need to be moved through various marketing channels or supply chains which form important linkages between the rural production areas and the urban consumption ones. Marketing of livestock products has also long been an essential pathway for income generation for the poor smallholder farmers.

Livestock markets in the developing world are growing rapidly as consumer demand for livestock products increases due to population, income, and urban growth and changing patterns of food consumption in cities. These trends provide real opportunities, but also significant challenges, for participation of the smallholder farmers, and any strategies aimed at improving smallholder livestock products marketing need to take into account the urban consumption and purchasing trends. Key to ensuring market access is developing pro-poor value chains for smallholders' livestock products to provide the *pull*, and delivery of inputs and services to provide the *push* as farmers intensify their production to meet market opportunities.

1.3. Problem Statement and Objectives of the Study

Rapid urbanization in Zambia means that increasingly heavy demands are being placed on urban food marketing systems. Investment in these systems has been woefully inadequate for many decades, creating supply bottlenecks and health hazards that work against the interests of both farmers and consumers. Understanding urban food expenditure patterns is a first step in addressing these problems. In addition, government food security policy in Zambia is based on assumptions about consumption patterns that may or may not remain valid. Specifically, the country's very heavy focus on production incentives for maize is based on the historically high share of income spent on this crop by rural and urban consumers; yet these policies and programs have been quite expensive to government and have also accentuated the economy's reliance on maize. If consumption patterns have changed over the course of more than a decade of economic reform, government policy needs to reflect this.

The FSRP which is now the IAPRI has conducted considerable work on urban consumption patterns of staples and fresh produce as part of on-going research work in the respective value chains⁷. No work has yet been done on livestock products and thus this study seeks to understand urban consumption patterns of livestock products and how these vary by income level and across key cities of the country.

⁴ www.fao.org/DOCREP/005/AC911E/ac911e05.htm

⁵ <http://www.nutreco.com/?option=hugin&Itemid=527&task=view&id=1247898>

⁶ Livestock products, henceforth, in this report include fish unless specified otherwise.

⁷ See Hichaambwa and Tschirley 2010a; Hichaambwa and Tschirley 2010b; Hichaambwa 2011a; Hichaambwa 2011b; Hichaambwa 2011c; Hichaambwa 2011d; Kabaghe, Hichaambwa, and Tschirley 2009; Hichaambwa et al.; 2009; Jayne et al. 2010; Mason and Jayne 2009a; Mason and Jayne 2009b; Tschirley and Hichaambwa 2010; Tschirley 2010.

Key questions that it addresses are:

- 1) What is the share of livestock products in urban consumer budgets, and how does it vary by income level? Answers to this question are fundamental to designing investment programs that improve marketing capacity in cities and better link these cities with key rural production zones; and
- 2) What is the importance of various retail channels in satisfying the livestock products purchases of urban consumers? For example, what is the share of the *traditional* or *informal* marketing sector (open air markets, street vendors, shops) for different types of livestock products, and income levels, and how does this compare to the *modern sector* (independent and chain supermarkets)? Answers to these questions are fundamental to understanding the rate and direction of change in Zambia's food system; such understanding is a pre-requisite to designing policies and investment programs to ensure smallholder access to dynamic markets and a steady supply of quality food at affordable prices to consumers.

Tschirley et al. (2010) reviewed the supermarket revolution in SSA with respect to fresh produce and showed that, contrary to earlier perceived views that the supermarket revolution that took place in Latin America would be replicated in Africa, there is broad consensus that development of supermarkets in this part of the world will proceed much more slowly. This study explores the situation with regard to livestock products in selected key urban cities of Zambia.

2. DATA AND METHODS

The primary source of data for this study is the UCS of 2007/8 which was carried out by the CSO and the MAL in collaboration with the then FSRP. The survey was conducted in four cities of Zambia: Lusaka, Kitwe, Kasama, and Mansa. These four cities were purposively selected to be representative of most consumers in the heavily populated cities of Zambia, and also of two cities in the northern area of the country where cassava is a key staple. In total, 140 urban Standard Enumeration Areas (SEAs) were enumerated⁸ and the total number of households interviewed in August 2007 and re-interviewed/or replaced in February 2008 to capture seasonality effects was 2,160. In each city, SEAs were stratified into low cost residential areas and medium/high cost residential areas (see Hichaambwa et al. 2009 for details on the survey concepts and design⁹). It should, however, be noted that the sample was designed to be representative of each city alone and all the four cities together. In addition to the household interviews, prices of various selected commodities were collected from different types of retail outlets in all the four cities to aid with price analysis.

Lusaka is a metropolitan city and Zambia's national capital with diverse manufacturing and service industries providing formal employment to a significant proportion of its population. The informal sector in the city is also very big and diverse especially in informal trading more so after the demise of quasi government companies following privatization in the early 1990s. Some small-scale and commercial agriculture takes place in the city. Kitwe is the biggest city on the Copperbelt and located at its hub. The main economic activity of mining received a boost when mining companies were rejuvenated following injection of new foreign capital after the Government sold the majority of its shareholding to private enterprises. The mining activities have currently picked after suffering from the decline in world metal prices. Different types of manufacturing activities take place mostly to provide supplies for the mines and provide considerable formal employment to residents. Service activities and informal employment including small-scale and commercial agriculture also take place.

Mansa and Kasama are what can be considered as rural cities. Both are provincial capital cities (for Luapula and Northern Province respectively) but are smaller and have less industrial activities. Actually most of the formal employment in these cities is provided by the public service, very few manufacturing companies (trading forms the better part of the private sector), and non-governmental organizations. Agriculture is conducted on a larger scale and the cities are located in cassava consuming belts.

In order to estimate consumption of various commodities, the households during the survey were asked how much of each item, out of list of 118 items if consumed, they consumed in the past 30 days, how much of the consumption came from gifts, own production and purchases. For the food purchases, households were further asked from which type of retail outlet they mostly purchased the item as well as how many times they purchased it within the past 30 days, and the distance from the household to the retail outlet. The survey was conducted in August 2008 and February 2008 in order to capture seasonality. August in Zambia is part of the dry season after most rainfed crops have been harvested and are being marketed while February is in the rain season when most crops are growing and food is

⁸ SEAs are the lowest geographical sampling units used by CSO and were the primary sampling units in the UCS. An SEA typically contains 100-200 households.

⁹ <http://www.aec.msu.edu/fs2/zambia/wp43/index.htm>

scarce as well as when open air traditional markets are predisposed to muddy unhealthy conditions. The different options for types of retail outlets available for respondents were¹⁰:

1. Market stand or market stall vendor;
2. Mobile vendor (someone walking, truck or van that moves each day);
3. Street vendor – no market infrastructure;
4. Ka table (small table by a street or within a homestead);
5. Kantemba (rudimental structure built as a kiosk);
6. Ka shop (kiosk);
7. Retail grocery/general dealer/shop (retail only);
8. Wholesale/retail grocery/general dealer/shop (wholesale or wholesale and retail);
9. Mini-Mart (has both personal service and self-service);
10. Small supermarket (mostly self-service; may not have complete line of goods);
11. Large supermarket – independent (i.e., there is only one store like this);
12. Large supermarket – chain store outlets (e.g., Spar, Shoprite, Melissa);
13. Butchery;
14. Bakery;
15. Milk Bar/Container;
16. Restaurant;
17. Bar/Tavern;
18. Private household; and
19. Custom grain mill/Hammer mill/Grinding mill.

For the purposes of this study, outlet types 1 to 6 were classified as informal markets and/or vendors, 7 and 8 as grocery shop, 9 to 12 as supermarket; 13 as butchery; 18 as private household, and the rest as other outlets.

The households were also asked to state the location of outlets they made their purchases. The available locations were central business district, main public market area (normally located near the main business district), neighbourhood public market area, neighbourhood shopping mall area, neighbourhood stand alone or strip mall area, neighbourhood and outside the city. This was meant to control for locational convenience in the consumer preference of retail outlets.

The study uses annual household per capita expenditure as a proxy for income and affluence. Based on the above description of the cities as well as the mean total annual household per capita expenditure Lusaka is the most affluent followed by Kitwe, Mansa, and then Kasama though the difference between the last two is quite small as shown in Table 1 below. Another important thing to note is that while Lusaka has an array of small supermarkets and minimarts and quite a number of large independent supermarkets as well as chain supermarkets, these exist only to a lesser degree in Kitwe while Mansa and Kasama boast of only one supermarket market chain with very few small supermarkets and/or minimarts.

Study findings are presented in the next chapter in three sections. Section 3.1. is a descriptive analysis of the urban households' consumption patterns of livestock products based on shares on households' total food expenditure per adult equivalent; Section 3.2. gives a descriptive analysis of the market shares of the main retail outlets classified as informal (traditional markets, street/mobile vendors and all informal traders), grocery shop, supermarkets

¹⁰ For detailed description see http://www.aec.msu.edu/fs2/zambia/UCS_Round2_EnumeratorTraining_Manual.pdf (pages 10-12)

Table 1. Estimated Total Annual Expenditure Zambian Kwacha (Zmk) per Full-time Adult Equivalent by City

District	Mean	Median	Weighted sample size
Lusaka	5,790,676 ^a	3,893,386	267,934
Kitwe	4,184,971 ^b	2,739,401	78,398
Mansa	2,696,665 ^c	1,787,884	9,305
Kasama	2,509,831 ^d	1,774,565	20,769
Total	5,198,729	3,400,688	376,406

Source: CSO/MAL/IAPRI Urban Consumption Survey, 2007-8 and author's computations.

Note: the superscripts a, b, c, and d denote ranking of means with significant difference at the 0.01 level of probability.

(including minimarts), butchery, private household, and other outlets; Section 3.3. is a quantitative analysis using probit models of the determinants of choice of purchases from informal, supermarket, and butchery for meats (including pork), chicken (and other poultry), and fresh fish. These products are selected because they are some of the most consumed and, their perishable nature and consequent human health implications in the different supply channels; and Section 3.4. is a comparative analysis of the prices of these three commodities in the different types of retail outlets.

Most of the analysis is disaggregated by both city of residence, in order to discern city differences, and household income group. The household income group was derived by ranking total annual household expenditure per adult equivalent into terciles resulting into the low expenditure tercile or low income group, the middle expenditure tercile or middle income group and the high expenditure tercile or high income group.

The study ends in Chapter 4 with a summary of key findings and highlights of policy implications.

3. FINDINGS

3.1. Descriptive Analysis of Consumption Patterns

This section examines the share of livestock products (meat, eggs, dairy items) and fish in urban consumer budgets, and how it varies by city and household income. Insights into these issues are fundamental to designing investment programs that improve marketing capacity in cities and better link these cities with key rural production zones. First and foremost, analysis of survey data has shown that livestock products form an important and significant part of the Zambian urban households' diet. Table 2 shows urban households' consumption patterns of broad food categories, including livestock products and fish, expressed as per cent share in the total monthly household food expenditure per adult equivalent in the four survey cities. Overall, livestock products have the second highest expenditure share (21%) after cereals and staples (25%) while fish ranks fourth together with sugar and oils (8%) after fruits and vegetables (18%) in third place. Examining the shares by city shows that livestock products rank second to cereals and staples while fish ranks fifth in the more urbanised and affluent Lusaka and Kitwe but rank third after fruits and vegetables in second position and the fish share increasing to fourth rank in the less urbanised and affluent Mansa and Kasama.

The expenditure share of livestock products in Mansa and Kasama is only 14% and 16% respectively, much less compared to that of the other two cities, which follows the notion that consumption of livestock products increases with affluence. However, the share of fish in these cities is also considerably higher and this is attributed to the fact that these cities have readily available fish supplies from natural water bodies such as Lake Mweru, Lake Tanganyika, Lake Bangweulu, Luapula River, Chambeshi River and other numerous perennial streams. Cattle production in the areas surrounding these cities is very limited.

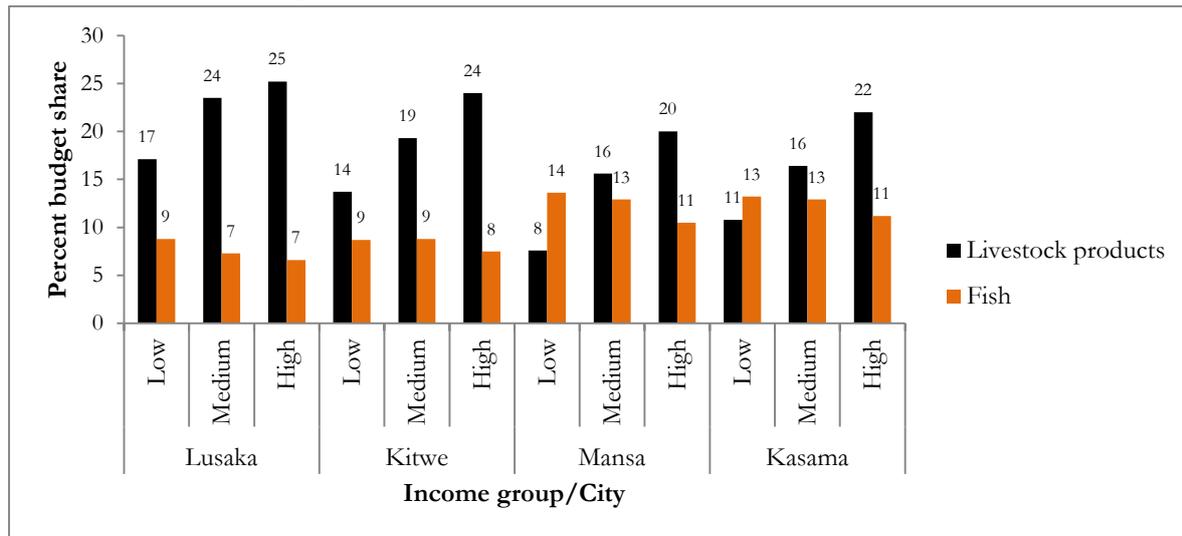
Consumption patterns of livestock products have also shown to be influenced by household affluence defined as the low, medium, and high expenditure terciles or income groups. Figure 1 shows that the expenditure share of livestock products increases with affluence while the opposite is true for fish. Within each city, the expenditure share of livestock products increases from the low to the high income group while it marginally decreases in the case of fish.

Table 2. Food Budget Shares of Broad Food Categories by City

Food Items	% of Total Monthly Food Expenditure by City				Total
	Lusaka	Kitwe	Mansa	Kasama	
Cereals & staples	24.0	27.2	27.9	27.1	24.9
Meat/eggs/dairy items	21.9	19.0	14.4	16.4	20.8
Fruits and vegetables	17.2	18.9	15.1	18.2	17.5
Sugar & oils	7.9	8.9	8.5	8.7	8.1
Fish	7.6	8.3	12.3	12.4	8.1
Legumes	3.7	3.3	3.7	3.7	3.6
Food away from home	7.8	4.8	6.9	3.5	6.9
Tobacco & alcohol	5.3	4.8	6.3	4.0	5.2
Other foods	4.6	4.8	4.9	6.0	4.9
Total	100.0	100.0	100.0	100.0	100.0

Source: CSO/MAL/IAPRI Urban Consumption Survey, 2007-8 and author's computations.

Figure 1. Relative Expenditure Shares of Livestock Products by City and Income Group



Source: CSO/MAL/IAPRI Urban Consumption Survey, 2007-8 and author's computations.

Within the livestock products (excluding fish), considerable variation with respect to the expenditure shares of the different types exists across the cities. Overall, the expenditure share of chickens and other poultry is the largest (32%) followed by that of red meats (30%), dairy items (22%), eggs (11%) and pork (5%). Figure 2 shows that this is also the pattern exhibited by households in Lusaka while the patterns in the other cities are slightly different in that:

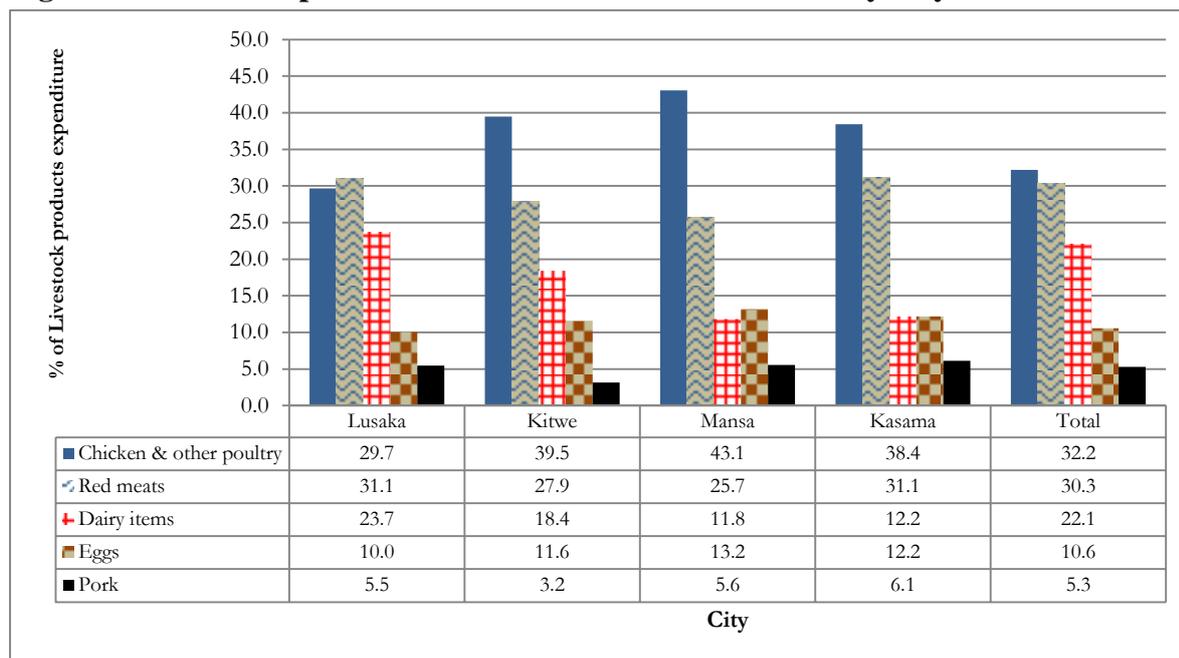
- 1) The expenditure share of red meats in Lusaka is slightly higher than that of chicken and other poultry (31% compared to 30%); and
- 2) That of dairy items in Mansa and Kasama is lower than in the other two cities and is comparable to that of eggs within the cities.

While consumption patterns have been shown to be influenced by household affluence that of eggs remains more or less constant (7% to 8% across the three income groups). Figure 3 shows that households in the high income group exhibit a distinct pattern of relatively well balanced expenditure shares of the different types of animal proteins ranging from 27% for meats to 19% for dairy items, while the households in the low income group, on the other hand, show unbalanced shares with slightly smaller shares of expenditure going to meats and chicken/poultry (24% and 22% respectively) and unusually large expenditure share of fish (37%) and significantly smaller share of dairy items (11%). This means that fish is the main source of animal protein for the poor households in these cities and it will be shown later that fresh fish is significantly cheaper than beef or chicken.

Fish in this study includes fresh fish (frozen or unfrozen), dry fish, *kapenta* and *chisense*¹¹ the later three of which are much more expensive than meat and chicken, but can be purchased in very small quantities. The characteristics of the households in the middle income group fall in between the two extreme groups.

¹¹ Kapenta and chisense are small fish species which are the size of fingerlings when fully grown.

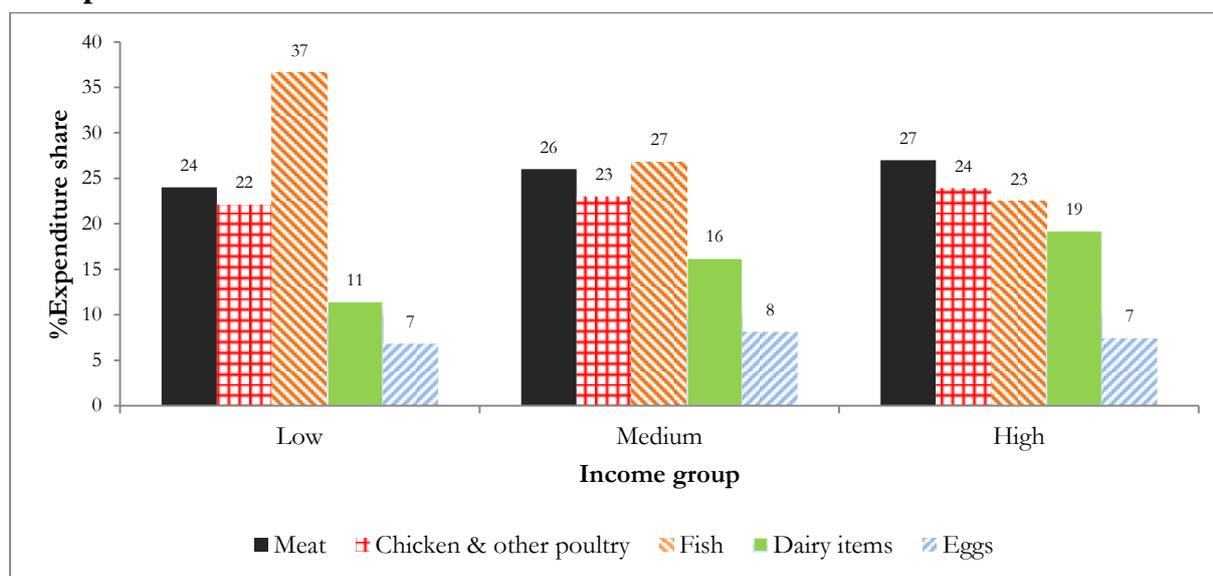
Figure 2. Relative Expenditure Shares of Livestock Products by City



Source: CSO/MAL/IAPRI Urban Consumption Survey, 2007-8 and author's computations.

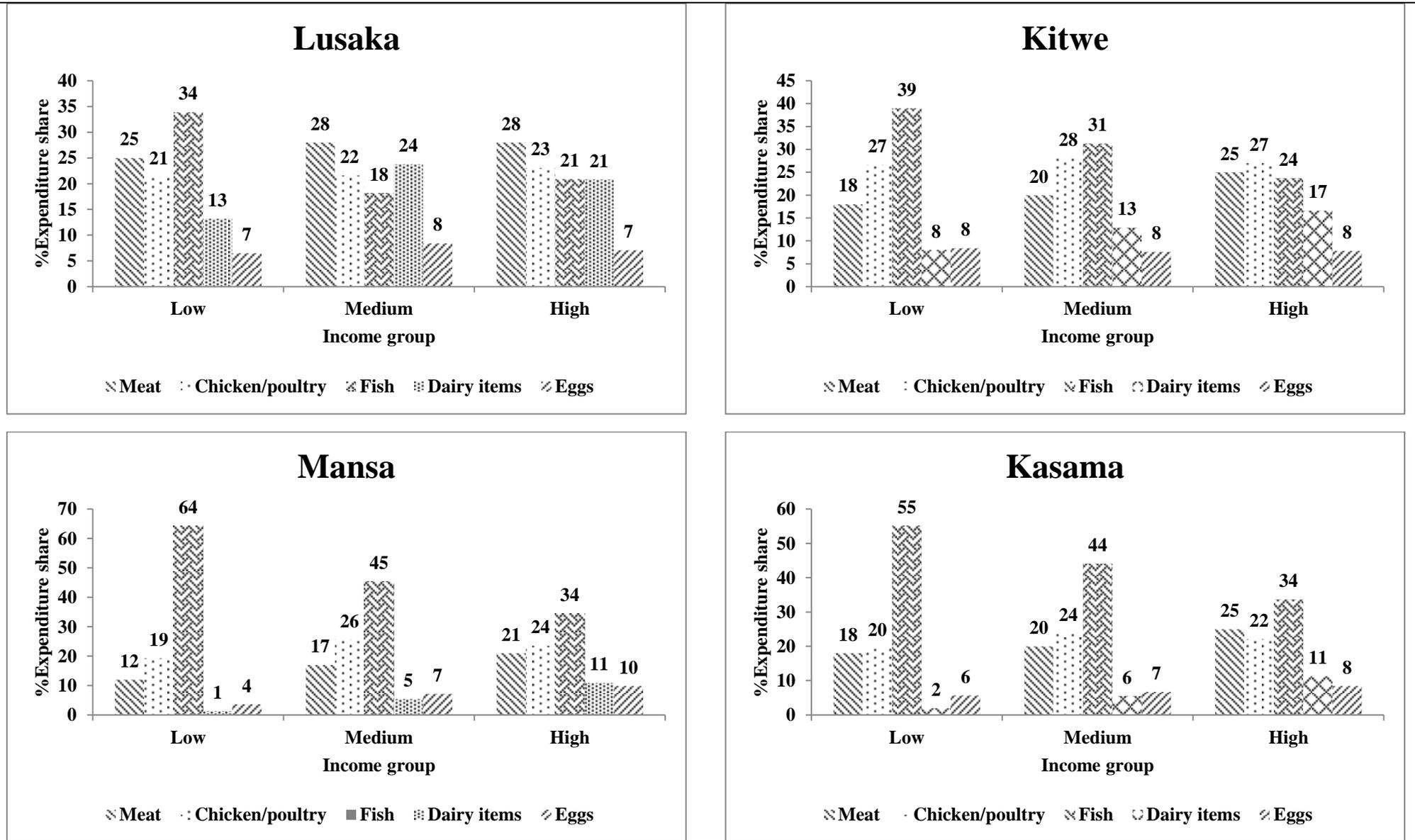
Examining these consumption patterns on per city basis shows a similar pattern for Lusaka and Kitwe though to a lesser extent for the later city as is shown in Figure 4. In the case of Mansa and Kasama, fish is the most consumed animal protein regardless of household income group though it is much more so for households in the low than high income group. While fish accounts for 34% of the animal protein consumed by households in the high income group in these two cities it accounts for 55% to 65% for those in the low income group.

Figure 3. Relative Expenditure Shares of Livestock Products by Household Income Group across All Cities



Source: CSO/MAL/IAPRI Urban Consumption Survey, 2007-8 and author's computations.

Figure 4. Relative Expenditure Shares of Livestock Products by Household Income Group and City



Source: CSO/MAL/IAPRI Urban Consumption Survey, 2007-8 and author's computations.

3.2. Descriptive Analysis of Main Retail Market Channels

Having examined the share of livestock products in urban households' food consumption budgets and its variation by especially household income, this section assesses the importance of various retail channels in satisfying the purchases of these products by urban consumers. For example, what is the share of the *traditional* or informal marketing sector (open air markets, street vendors, shops) for different types of these products, and income, and how does this compare to the *modern sector* (supermarkets). These insights are fundamental to understanding the rate and direction of change in Zambia's food system; such understanding is a pre-requisite to designing policies and investment programs to ensure smallholder access to dynamic markets and a steady supply of quality food at affordable prices to consumers. An example of issues that would greatly benefit from these insights is the recent widespread press coverage of the alleged importation of dressed chicken by certain supermarket chains in Zambia which was opposed by a number of stakeholders and ultimately the MAL distanced itself from having issued any permits for such importation¹².

The different types of livestock products are described separately in sub-sections due to importance and, in certain cases, some degree of uniqueness in marketing characteristics. The products discussed are meats (red meat and pork), chicken and other poultry, eggs and liquid milk, and fish.

3.2.1. Meat

Table 3 shows the retail market shares of meats (including game meat) among urban households in the study cities.

Four points stand out.

- First, the butchery has the largest market share across all the cities (66%) and it is only in Mansa where its market share is less than 50%;

Table 3. Retail Market Shares of Meat by City

Retail outlet	Per cent market share by city				
	Lusaka	Kitwe	Mansa	Kasama	Total
Butchery	63.9	76.6	47.4	58.5	65.6
Informal	25.1	9.2	17.4	23.0	22.1
Supermarkets	8.1	6.2	19.8	4.4	7.7
Grocery shop	2.2	4.9	9.2	2.2	2.8
Household	0.4	2.2	6.1	11.6	1.4
Other	0.3	0.9	0.1	0.3	0.4
Total	100.0	100.0	100.0	100.0	100.0

Source: CSO/MAL/IAPRI Urban Consumption Survey, 2007-8 and author's computations.

¹² www.lusakatimes.com/.../permit-shoprite-stores-import-chickens-...; www.ukzambians.co.uk/.../thousands-of-poultry-jobs-at-risk-as-pf-all..; www.daily-mail.co.zm/index.php/.../4374-beware-chicken-lovers; www.zambianwatchdog.com/.../farmers-upset-with-pf-for-allowing

- Second, the informal sector comes second in rank with about 22% market share although its share is particularly low in Kitwe (9%). Most urban consumers in Kitwe (more than three quarters) source their meat from butcheries while the market share of butcheries for meats in Lusaka, for example, is only 64% while it is much less in Mansa and Kasama;
- Third, the market share of supermarkets is quite low (less than 10%) except in Mansa where it is almost 20% and the share of butcheries is less than 50%; and
- Fourth, the market share of private households is quite high in Kasama and Mansa (12% and 6% respectively) and this is attributed to relatively higher consumption of game meat in these cities which is often sold through private households.

Examining the market shares by income group (Table 4) shows that:

- 1) The butchery has the highest market share among all households regardless of income group in all the cities. The share is relatively higher among households in the medium and high than low income groups, though the share of the medium income group is slightly higher in the more urbanized cities of Lusaka and Kitwe;
- 2) The informal sector market share is prominent among households in the low and to a lesser extent those in the middle income group in all cities; and
- 3) The market share of supermarkets is much more among households in the high than low income group; about 17 times in Lusaka, thrice in Kitwe, twice in Mansa and 20 times in Kasama. The share is second to that of butcheries among the rich households in all the cities except Kasama. The supermarket share of households in the middle income group is more aligned to that of poor households in the more urbanized cities of Lusaka and Kitwe and the rich ones in the less urbanized cities of Mansa and Kasama.

Plate 1. Informal Retailing of Meat, Chicken, and Fish in Lusaka



Table 4. Retail Market Shares of Meat by Income Group and City

City	Retail outlet	%Market share by income group		
		Low	Medium	High
Lusaka	Butchery	55.8	69.6	64.4
	Supermarkets	1.1	3.1	18.4
	Informal	41.1	24.6	13.4
	Grocery shop	1.8	2.1	2.6
	Household	0.0	0.2	0.8
	Other	0.2	0.4	0.4
	Total	100.0	100.0	100.0
Kitwe	Butchery	69.1	81.4	77.0
	Supermarkets	3.7	2.7	10.6
	Grocery shop	5.9	3.3	5.7
	Informal	17.1	9.2	4.5
	Household	2.8	2.6	1.6
	Other	1.4	0.8	0.6
	Total	100.0	100.0	100.0
Mansa	Butchery	40.7	45.0	51.8
	Supermarkets	10.0	21.8	22.0
	Grocery shop	1.5	6.8	14.0
	Informal	30.8	21.2	9.2
	Household	17.0	5.2	2.7
	Other	0.0	0.0	0.3
	Total	100.0	100.0	100.0
Kasama	Butchery	46.6	51.7	69.9
	Informal	30.9	26.9	15.7
	Supermarkets	0.3	5.0	6.3
	Household	20.1	15.3	4.2
	Grocery shop	2.1	0.6	3.4
	Other	0.0	0.5	0.5
	Total	100.0	100.0	100.0

Source: CSO/MAL/IAPRI Urban Consumption Survey, 2007-8 and author's computations.

3.2.2. Chicken and Other Poultry

Table 5 below shows the retail market shares of chicken and other poultry as accessed by urban households in the four cities. First and foremost, it is clear that the informal market system has the largest market share in all the cities with the share being highest in Lusaka at 73% while it ranges from 48% to 51% in the other three cities. Secondly, it can also be noted that private households also play an important role in urban households' purchases of chicken and other poultry having the second largest market share in all the cities. Its market share is least in the most urbanized/affluent city of Lusaka (11% compared to a range of 28% to 42% in the other cities). The share of supermarkets only ranges from 6% to 12% and it is smaller than that of butcheries in Kitwe at 6% compared to 14%, though it's higher than that of the butchery in the rest of the three cities.

Table 5. Retail Market Shares of Chicken and Other Poultry by City

Retail outlet	Per cent market share by city				
	Lusaka	Kitwe	Mansa	Kasama	Total
Informal	72.7	49.7	50.7	47.6	66.5
Household	11.1	27.5	34.1	42.0	16.1
Supermarkets	8.3	6.4	12.1	6.6	7.9
Grocery shop	4.0	2.2	2.2	2.3	3.6
Butchery	3.9	14.1	0.9	1.3	5.9
Other	0.0	0.1	0.0	0.2	0.0
Total	100.0	100.0	100.0	100.0	100.0

Source: CSO/MAL/IAPRI Urban Consumption Survey, 2007-8 and author's computations.

Further analysis shows (Table 6) that the market shares are also affected by household affluence or income group as follows:

- 1) The informal market share is largest among for all household income groups in all cities except Kasama where its share is more or less the same as that of private households (43%);
- 2) The informal market share is largest among low than income households especially in the more urbanized/affluent cities of Lusaka and Kitwe (share among low income households in Lusaka and Kitwe is about one and half times that of the high income group, while that of the low income group in Mansa and Kasama is almost the same as that of the high income group);
- 3) The supermarkets share is largest among high income households in all the cities, although it ranks third after the informal sector and private households in all the cities except Lusaka where it ranks second to the informal market. Its share among the households in the high income group ranged from 9% in Kasama through 11% and 15% in Kitwe and Mansa respectively to 19% in Lusaka;
- 4) Just like was the case with the informal market share, though in the opposite direction, the difference in the market share between the low and high income households increases with increasing city urbanization and/or affluence (while the supermarket share of households in the high income group was only about twice that of the low income group in Mansa and Kasama, it was 5 and 15 times in Kitwe and Lusaka respectively); and
- 5) The private households' market share was more or less the same in all the three income groups in the less urbanized cities of Mansa and Kasama, but increased with income/affluence in the more urbanized cities of Lusaka and Kitwe. The market share of private households in the high income group was about thrice and twice that of the low income group in the Lusaka and Kitwe and respectively.

Table 6. Retail Market Shares of Chicken and Other Poultry by Income Group and City

City	Retail outlet	%Market share by income group		
		Low	Medium	High
Lusaka	Informal	85.4	81.5	54.6
	Supermarkets	1.3	3.0	18.8
	Household	6.8	7.7	17.5
	Grocery shop	4.0	3.1	4.9
	Butchery	2.5	4.7	4.2
	Other	0.	0.0	0.0
	Total	100.0	100.0	100.0
Kitwe	Informal	58.9	53.4	39.3
	Household	23.4	23.7	34.2
	Butchery	13.5	15.8	12.9
	Supermarkets	2.2	5.2	10.6
	Grocery shop	1.9	1.7	2.8
	Other	0.1	0.2	0.2
	Total	100.0	100.0	100.0
Mansa	Informal	56.9	48.4	50.4
	Household	30.9	39.2	31.4
	Supermarkets	9.8	8.5	15.3
	Grocery shop	0.0	2.9	2.4
	Butchery	2.4	0.9	0.5
	Other	0.0	0.1	0.0
	Total	100.0	99.9	100.0
Kasama	Household	42.4	40.1	43.2
	Informal	52.0	52.5	42.9
	Supermarkets	5.6	3.7	9.0
	Grocery shop	0.0	1.9	3.2
	Butchery	0.0	1.4	1.7
	Other	0.0	0.4	0.0
	Total	100.0	100.0	100.0

Source: CSO/MAL/IAPRI Urban Consumption Survey, 2007-8 and author's computations.

3.2.3. Eggs and Liquid Milk

Table 7 shows the retail market shares of eggs and liquid milk by city. For both eggs and milk, the informal market has the largest share in all the cities, and this is followed by the grocery shop and supermarket in all the cities except Mansa where the supermarket share is significantly larger than in the other cities and comes second to the informal market share. Disaggregating the analysis by household income group shows that (Table 8) the informal market share for both eggs and milk is larger for lower income households while that of grocery shop is more or less the same across income groups and that of supermarkets is significantly higher among the high income households.

Table 7. Retail Market Shares of Eggs and Liquid Milk by City

Product	Retail channels	Per cent market share by city				
		Lusaka	Kitwe	Mansa	Kasama	Total
Eggs	Informal	69.8	78.3	48.8	58.4	70.6
	Grocery shop	19.4	10.3	22.5	25.1	17.8
	Supermarkets	5.5	3.7	26.6	11.6	5.8
	Household	4.5	4.6	1.7	3.0	4.4
	Butchery	0.8	3.1	0.4	1.9	1.4
	Other	0.0	0.0	0.0	0.0	0.0
	Total	100.0	100.0	100.0	100.0	100.0
Liquid milk	Informal	51.7	62.8	35.0	43.8	53.2
	Grocery shop	32.9	19.7	27.7	32.5	30.3
	Supermarkets	9.4	7.6	33.7	16.2	9.7
	Household	2.9	3.5	1.2	2.3	3.0
	Butchery	2.0	4.5	2.4	4.6	2.6
	Other	1.1	1.9	0.0	0.6	1.2
	Total	100.0	100.0	100.0	100.0	100.0

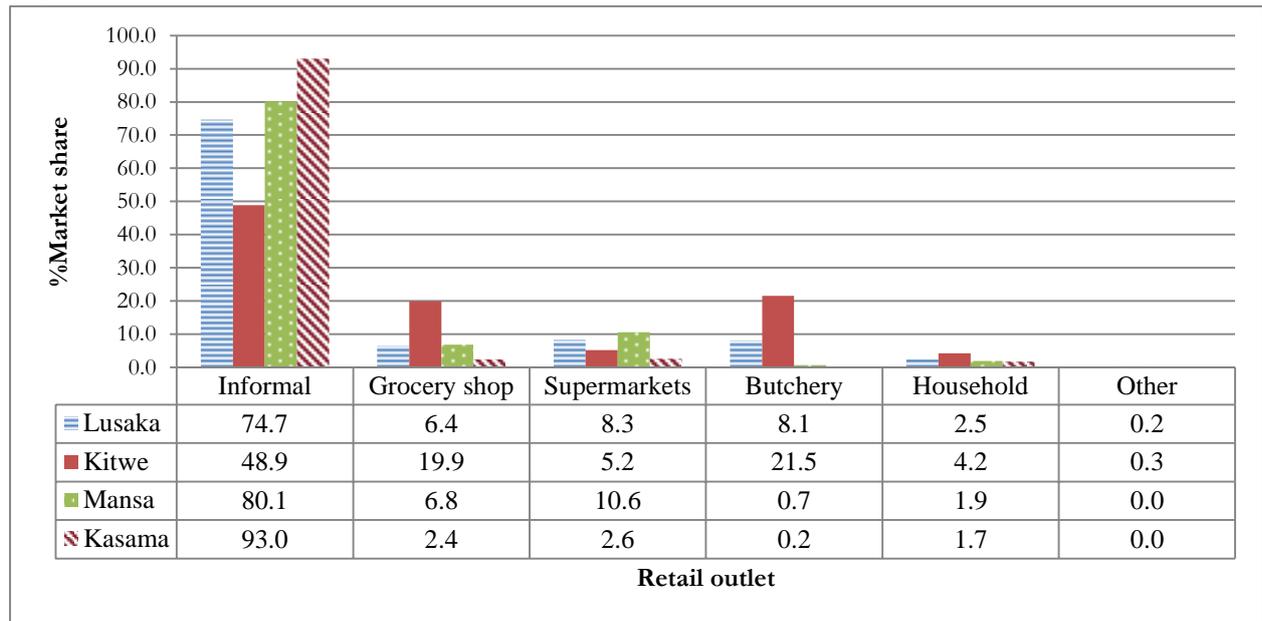
Source: CSO/MAL/IAPRI Urban Consumption Survey, 2007-8 and author's computations.

Table 8. Retail Market Shares of Eggs and Liquid Milk by Income Group

Product	Retail outlet	Per cent market share by income group		
		Low	Medium	High
Eggs	Informal	76.5	75.3	61.9
	Grocery shop	17.0	17.6	18.5
	Supermarkets	0.3	1.1	14.3
	Household	5.7	4.4	3.4
	Butchery	0.5	1.6	1.8
	Other	0.0	0.0	0.1
	Total	100.0	100.0	100.0
Liquid milk	Informal	59.8	58.1	44.4
	Grocery shop	32.2	32.3	27.4
	Supermarkets	1.0	3.5	21.1
	Butchery	1.3	2.7	3.4
	Household	4.7	2.8	2.0
	Other	1.0	0.6	1.7
	Total	100.0	100.0	100.0

Source: CSO/MAL/IAPRI Urban Consumption Survey, 2007-8 and author's computations.

Figure 5. Retail Market Shares of Fresh Fish by City



Source: CSO/MAL/IAPRI Urban Consumption Survey, 2007-8 and author's computations.

3.2.4. Fish

Analysis has shown that urban households in the four study cities predominantly buy their dry fish from the informal market which accounts for 97% to 98% of the retail market share. With regard to fresh fish, Figure 5 shows that the informal market share is also the largest across all cities accounting for over 90% in Kasama, between 70% and 80% in Lusaka and Mansa, and below 50% in Kitwe. Significant market share of fresh fish in Kitwe is taken up by butcheries (22%) and grocery shops (20%). The supermarket share is highest in Mansa (11%) followed by Lusaka (8%), Kitwe (5%) and lastly Kasama (3%).

Analysis of the retail market shares by income group (Table 9) further shows that the informal vendors have a share of over 90% for households in the low income group in all the cities except Kitwe, where the market share is just a little above 50% with considerable share going to grocery shops and butcheries. The market share of the informal sector is much lower for households in the high income group which allocates more shares to supermarkets, butcheries, and grocery shops. The extent to which the market shares were distributed to other retail outlets among this group of households differed according to city with Lusaka having the greatest difference between the informal sector share among the low and high income households. The market share among the low income households is 1.6 times while it ranged from 1.1 to 1.4 times that of the rich in the other cities.

The supermarket share among households in the high income group is quite high though it ranked second to the informal market share at 17%, 19%, and 5% in Lusaka, Mansa, and Kasama respectively while it ranked fourth in Kitwe at 11%.

Table 9. Retail Market Shares of Fresh Fish by Income Group and City

City	Retail outlet	%Market share by income group		
		Low	Medium	High
Lusaka	Informal	91.0	80.2	57.4
	Supermarkets	0.8	4.8	17.1
	Butchery	3.3	8.9	10.8
	Grocery shop	3.1	5.0	10.1
	Household	1.8	1.1	4.2
	Other	0.0	0.0	0.4
	Total	100.0	100.0	100.0
Kitwe	Informal	55.7	51.9	41.3
	Butchery	17.4	22.5	23.5
	Grocery shop	20.6	19.2	20.1
	Supermarkets	1.8	2.1	10.5
	Household	4.1	4.1	4.4
	Other	0.2	0.2	0.2
	Total	100.0	100.0	100.0
Mansa	Informal	94.4	84.8	66.9
	Supermarkets	2.8	6.9	18.7
	Grocery shop	2.8	3.9	11.6
	Household	0.0	2.9	2.3
	Butchery	0.0	1.5	0.5
	Other	0.0	0.0	0.0
	Total	100.0	100.0	100.0
Kasama	Informal	98.1	97.4	86.5
	Supermarkets	0.0	1.4	5.3
	Grocery shop	0.7	0.6	4.9
	Household	1.2	0.6	2.8
	Butchery	0.0	0.0	0.5
	Other	0.0	0.0	0.0
	Total	100.0	100.0	100.0

Source: CSO/MAL/IAPRI Urban Consumption Survey, 2007-8 and author's computations.

3.3. Factors Influencing the Probability of Purchases from Different Outlets

Tschirley et al. (2010) used regression analysis of the factors influencing the probability of purchasing an item in a supermarket chain and this helped shed light on the reasons for the chains' low market shares. They ran a probit model predicting whether a household purchased a specific food item primarily in a supermarket chain, controlling for general food category (meat, processed staples, other staples, processed dairy, other dairy, chicken, Irish potato, vegetables, fruit, pulses, other processed food items, other food items) and for the income, asset, demographics, distance to market characteristics, and city.

Marginal effects showed that as expected income, owning a car, owning a refrigerator, and having a more educated household head all positively influence the likelihood of shopping in

a supermarket chain. In addition the results showed that households headed by a female are more likely to use supermarket chains while larger households are less likely to use a supermarket. Families with younger heads were also found to be more likely (as hypothesized) to use a supermarket chains. These results generally agreed with those of Neven et al. (2005) in Kenya, highlighting the importance of income, education, and the ability to shop less frequently in driving use of supermarkets. Their analysis also strengthened findings from earlier research by showing that, for a given food category, processed items are more likely than unprocessed to be purchased in a supermarket chain.

Specifically looking at meats, chicken and other poultry, and fresh fish because of their importance in diet as well as significant health implications in their supply chain handling this study uses three probit models to assess factors influencing the purchases of these products from informal market (including grocery shops), supermarkets (including minimarts) and butcheries controlling for household income and other demographic characteristics, season, type of product, location of retail outlet and city. The descriptive statistics of the quantitative variables used in the models are given in Table 10 while the probit model summary and marginal effects after probit predicting purchases from different outlets are shown in Table 11 and 12 respectively.

The marginal effects after probit show that the probability of households purchasing these products from different outlets are influenced by household income, education, season, locational convenience and city as follows, keeping all else constant in each case:

- 1) *Household income*: medium and high income households are 10% and 15% respectively less likely to purchase these products from the informal market (including grocery shops); but they are 8% and 3% respectively more likely to purchase them from butcheries, and the high income households are 1% more likely to purchase from supermarkets.

Table 10. Descriptive Statistics of the Quantitative Variables Used in the Probit Model

Variable	Count	Mean	sd	Minimum	p25	Median	p75	Maximum
Value of purchases (Zmk'00,000)	8,390	0.52	0.54	0.01	0.18	0.36	0.68	6.00
Distance to retail outlet (km)	8,390	2.11	2.96	0.00	0.30	0.78	2.34	15.00
Frequency of purchases	8,390	2.84	2.90	1.00	1.00	2.00	4.00	30.00
Household adult equivalents	8,390	4.86	2.28	0.68	3.14	4.60	6.33	15.54

Source: CSO/MAL/IAPRI Urban Consumption Survey, 2007-8 and author's computations.

Table 11. Probit Model Summary

Parameter	Retail outlet		
	Informal/Grocery	Butchery	Supermarket
Number of observations	8,368	8,368	8,368
Pseudo R ²	0.421	0.412	0.542
Percent yes=1	49	9	32

Source: CSO/MAL/IAPRI Urban Consumption Survey, 2007-8 and author's computations.

Table 12. Marginal Effects after Probit Predicting Meat, Poultry, and Fresh Fish Purchases from Different Outlets

Variable	Informal/Grocery		Butchery		Supermarket	
	dy/dx	Std. Err.	dy/dx	Std. Err.	dy/dx	Std. Err.
<i>Household income groups (0/1 variables)</i>						
Low (excluded)	--	--	--	--	--	--
Medium	-0.103***	0.026	0.079***	0.022	0.003	0.002
High	-0.151***	0.031	0.033**	0.026	0.011***	0.004
Value of purchases (Zmk'00,000)	-0.175***	0.028	0.084***	0.017	-0.001	0.001
Distance to retail outlet (km)	-0.014***	0.004	0.001	0.001	0.000	0.000
Frequency of purchases	0.023**	0.004	-0.011***	0.003	-4.60e-4**	0.000
Household adult equivalents	-0.008	0.006	0.008*	0.004	0.000	0.000
Household head is female	0.014	0.024	-0.016	0.019	0.003	0.002
Season is wet compared to dry	-0.037**	0.019	0.011	0.015	-0.000	0.001
<i>Age group of head (0/1 variables)</i>						
Young – mean 28 years (excluded)	--	--	--	--	--	--
Medium – mean 38 years	0.022	0.024	-0.012	0.019	0.001	0.001
Old – mean 54 years	-0.012	0.027	-0.017	0.021	0.004**	0.002
<i>Education level of head (0/1 variables)</i>						
Primary level (excluded)	--	--	--	--	--	--
Secondary level	-0.061**	0.024	0.048**	0.019	0.002	0.001
Tertiary level	-0.073**	0.031	-0.011	0.024	0.007**	0.003
<i>Livestock products (0/1 variables)</i>						
Meat (excluded)	--	--	--	--	--	--
Chicken and other poultry	0.488***	0.017	-0.415***	0.011	0.019***	0.005
Fresh fish	0.538***	0.015	-0.357***	0.011	0.009***	0.003
<i>Cities (0/1 variables)</i>						
Lusaka	0.082***	0.029	0.160***	0.021	-0.009***	0.003
Kitwe	-0.156***	0.029	0.381***	0.030	-0.005***	0.001
Kasama	-0.070**	0.032	0.197***	0.032	-0.003***	0.001
Mansa (excluded)	--	--	--	--	--	--
<i>Outlet location (0/1 variables)</i>						
Main public market (excluded)	--	--	--	--	--	--
Neighbourhood public market	-0.159***	0.033	0.045*	0.027	-0.005	0.003
Neighbourhood	-0.444***	0.027	-0.133***	0.024	-0.002	0.002
Neighbourhood commercial centre	-0.549***	0.021	0.382***	0.039	0.118***	0.039
Central Business District	-0.552***	0.016	0.234***	0.033	0.272***	0.060
Neighbourhood shopping mall/centre	-0.596***	0.010	-0.083**	0.037	0.766***	0.069

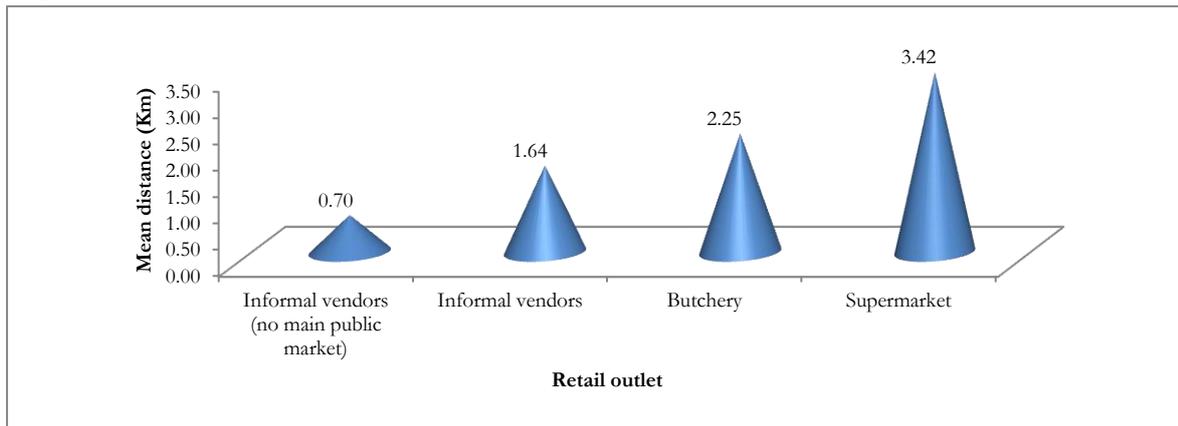
Source: CSO/MAL/IAPRI Urban Consumption Survey, 2007-8 and author's computations.

Note: dy/dx is for discrete change of dummy variable from 0 to 1.

*, ** and *** denotes significance at 0.10, 0.05, and 0.01 levels of probability respectively.

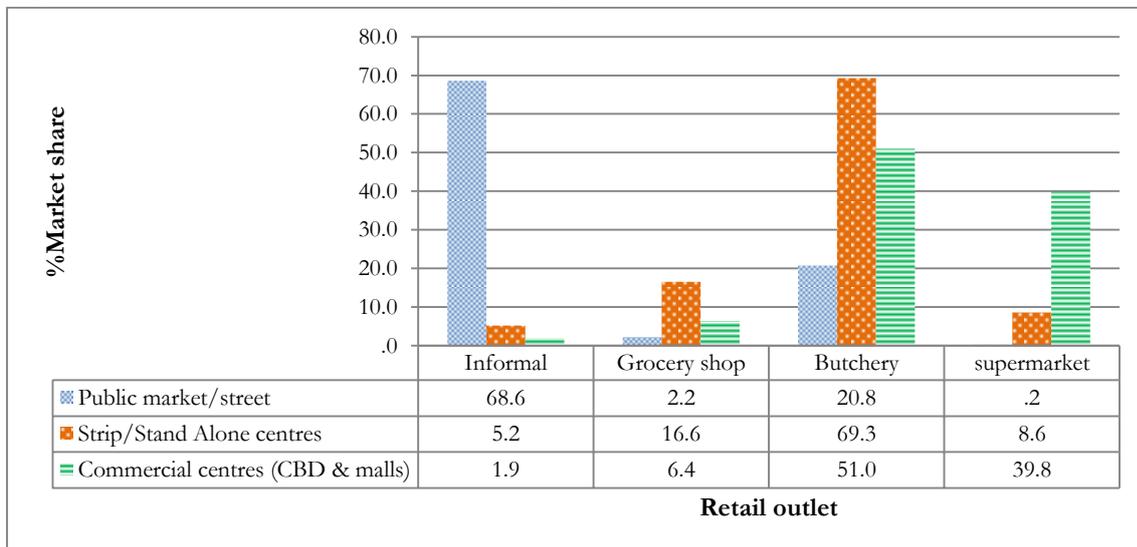
- 2) *Value and frequency of purchases:* related to household income and well-being is the value and frequency of purchases. The value of purchases decreases the likelihood of purchasing from informal markets by 18% but increases that of butcheries by 8%. The frequency of purchases increases the likelihood of purchases from the informal sector by 2% but reduces that of purchases from butcheries and supermarkets by 1% and 0.4% respectively. Thus poor urban households are more likely to buy their meat, chicken and other poultry and fresh fish from the informal market in smaller quantities more frequently.
- 3) *Distance to retail outlet:* informal retail outlets are closely associated with proximity to the households. Distance to the retail outlet reduces the likelihood of purchasing from the informal sector by 1.4% but has no effect on likelihood of purchases from the butcheries and supermarkets. As a matter of fact, Figure 6 shows that the mean distance to informal vendors excluding those at the main public markets which are located near the central business districts is less than a kilometre (about one and half when these are included) while the mean distance to a supermarket is more than 3 km. Figure 7 emphasises how the modern retail outlets (supermarkets and to some extent butchery) tend to be located in well developed areas in central business districts or shopping malls while informal vendors are concentrated in public markets and streets.
- 4) *Education:* as expected, households with heads who have attained secondary and tertiary level of education are 6% and 7% respectively less likely than those who have gone only up to primary level to purchase these items from informal markets; but households headed by heads who have gone up to secondary school are 5% more likely to purchase from butcheries while those headed by persons with tertiary education are 1% more likely to purchase from supermarkets.
- 5) *Season:* it is encouraging to note that the likelihood of purchasing in the wet season compared to the dry season is 4% less from the informal markets when hygienic conditions are at their worst. However, anecdotal evidence shows that there is reduced informal trading in fresh fish during this period because most of the country's natural fisheries are closed in order to enhance breeding from November to March each year.
- 6) *Type of product:* the purchasing of either chicken/poultry or fresh fish is 49% to 54% more likely than that of meat in the informal markets but is 42% and 36% respectively less likely in butcheries, and 1.9% and 0.9% respectively more likely in supermarkets.
- 7) *City:* purchasing from the informal sector is least likely to be done in Kitwe where the purchases are most likely to take place from butcheries. Purchasing from the informal market is most likely in Lusaka where purchasing is also least likely from supermarkets but at least more likely than the other two cities from butcheries.
- 8) *Location of outlet:* Figure 8 shows that purchases from supermarkets are more likely to occur at the neighbourhood shopping mall/centre followed by the central business district and then the neighbourhood commercial centre (stand-alone strip mall) while those from butcheries are most likely to occur at the central business district and neighbourhood commercial centre (stand-alone strip mall). These are the locations where purchases from informal vendors are least likely.

Figure 6. Mean Distance to Different Retail Outlets



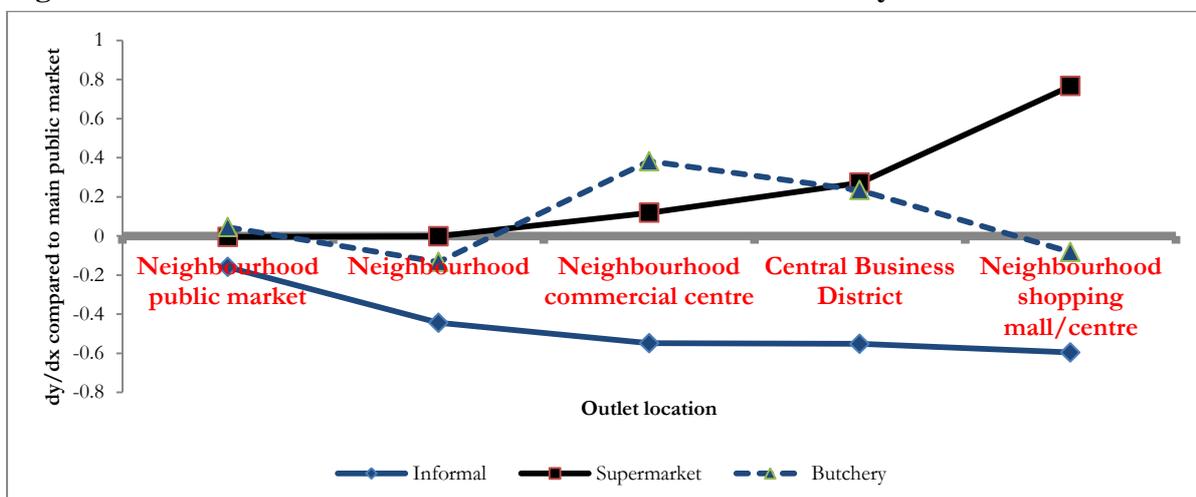
Source: CSO/MAL/IAPRI Urban Consumption Survey, 2007-8 and author's computations.

Figure 7. Retail Outlet Market Shares by Location



Source: CSO/MAL/IAPRI Urban Consumption Survey, 2007-8 and author's computations.

Figure 8. Likelihood of Purchases from Outlets As Associated by Location



3.4. Comparative Analysis of Retail Prices

Concurrent with the UCS data collection in the sampled SEAs was retail price data collection for selected commodities from different types of outlets covered as described in the section on data and methods. Relevant to this study, prices collected were of beef (standard mixed cut), medium size fresh bream (fish), dressed and/or frozen chicken, and live broiler chickens (per live weight) which are the most commonly sold type from public markets. Data were collected from outlets in central business districts, neighbourhood shopping malls, neighbourhood stand-alone strip malls, and public markets as well as neighbourhoods in the sampled SEAs. Table 13 is a summary of the mean and median prices of these commodities in the different outlets based on actual prices in Zmk at the time of the survey. The table shows that:

- 1) Meat is significantly cheaper in the informal market and butcheries compared to supermarkets. It thus makes sense that poor households tend to prefer buying their meat from the informal market in small quantities while middle income households look at the butcheries to purchase their supplies in relatively larger quantities;
- 2) Although the informal market is the most popular for poor households to buy chickens, it is significantly the most expensive. A number of theories can be put forward to explain this anomaly:
 - a) Locational convenience as public markets and other informal vendors tend to be located in or near low or middle income neighbourhoods;
 - b) The desire of consumers to choose their bird while it is still alive and then later ensure that the offals (head, crop, legs, intestines, liver, kidney, heart) after slaughter at home are also consumed, thus increasing the number of meals that the household can have from one chicken;
 - c) Fear of rumours that commercial entities that supply broiler chickens to supermarkets use genetically modified birds or use growth enhancing chemicals which reduces the quality or tastiness of the birds. Furthermore, the consumers may not know for how long the chickens have stayed frozen in the supermarket and the tastiness tends to decrease with time the carcass is kept frozen; and
 - d) Informal markets are the major (almost the only) source of traditional village chickens which are very tasty and command a relatively higher price. Data in the household consumption survey did not distinguish between these types of the chickens and the modern breeds though the price collection restricted data collection to the broiler chicken for practical purposes.
- 3) There is no significant difference in the price of fresh fish from the informal market and supermarkets, but that of butcheries is significantly higher.

Table 14 shows how these prices vary when disaggregated by city while Table 15 shows that fresh fish is the cheapest across all retail outlets and the cities and it is no wonder that it is the most consumed animal protein among poor households.

Table 13. Livestock Products Mean and Median Prices by Retail Outlet

Retail outlet	Product mean and median price (Zmk/kg) of by retail outlet								
	Meat			Chicken			Fresh fish		
	Mean	Median	Count	Mean	Median	Count	Mean	Median	Count
Informal	14,749 ^b	15,000	41	18,661 ^a	20,000	139	11,982 ^b	10,673	60
Grocery shop	17,350 ^a	17,750	21	16,404 ^b	15,000	58	12,467 ^b	12,000	30
Supermarket	18,224 ^a	17,900	51	15,944 ^{bc}	14,400	77	12,956 ^{ab}	12,850	29
Butchery	15,546 ^b	15,000	242	14,500 ^c	14,000	157	13,871 ^a	14,000	62
Total	15,942	16,000	354	16,356	15,500	431	12,865	12,500	181

Source: CSO/MAL/IAPRI Urban Consumption Survey, 2007-8 and author's computations.

Note: the superscripts a, b, and c denote ranking of means; means with the same letter are not significantly different at the 0.01 level of probability.

Table 14. Livestock Products Median Prices by Retail Outlet and City

Product	Outlet	Median price (Zmk/Kg) and number of observations by city									
		Lusaka		Kitwe		Mansa		Kasama		Total	
		Median	Count	Median	Count	Median	Count	Median	Count	Median	Count
Meat	Informal vendors	14,350	28	16,000	12	--	0	12,000	1	15,000	41
	Shop or grocery	20,000	4	17,000	15	--	0	12,000	1	17,750	20
	Supermarket	17,900	38	20,000	7	18,400	2	12,950	4	17,900	51
	Butchery	15,000	115	16,500	92	16,000	10	12,000	25	15,000	242
Chicken	Informal vendors	18,000	64	20,000	54	20,000	6	20,000	15	20,000	139
	Shop or grocery	16,000	33	15,000	21	--	0	20,500	4	15,000	58
	Supermarket	14,545	63	13,000	7	11,930	2	12,000	5	14,400	77
	Butchery	13,500	80	14,600	63	11,890	2	11,500	12	14,000	157
Fresh fish	Informal vendors	12,404	36	13,382	12	--	0	9,386	12	10,673	60
	Shop or grocery	12,000	18	15,000	6	12,000	6	--	0	12,000	30
	Supermarket	12,675	22	14,750	4	12,000	1	12,950	2	12,850	29
	Butchery	12,500	32	15,000	30	--	0	--	0	14,000	62

Source: CSO/MAL/IAPRI Urban Consumption Survey, 2007-8 and author's computations.

Table 15. Livestock Products Mean and Median Prices by City

City	Price (Zmk/Kg) by product					
	Meat		Chicken		Fresh fish	
	Mean	Median	Mean	Median	Mean	Median
Lusaka	16,092	15,000	15,968	15,000	12,705	12,500
Kitwe	16,487	16,750	17,104	16,000	14,381	15,000
Mansa	16,150	16,000	16,764	20,000	11,643	12,000
Kasama	12,752	12,000	15,818	18,000	9,087	10,000
Total	15,942 ^a	16,000	16,356 ^a	15,500	12,865 ^b	12,500

Source: CSO/MAL/IAPRI Urban Consumption Survey, 2007-8 and author's computations.

Note: the superscripts a and b denote ranking of means across all cities (total); means with the same letter are not significantly different at the 0.01 level of probability.

4. KEY FINDINGS AND POLICY IMPLICATIONS

Animal proteins play a very important role in the nutrition of the human body and hence in all its processes and development. People the world over including Zambia try as much as possible to include animal proteins in their diets and this has a direct bearing on their well-being. How this is accomplished is subject to a myriad of factors but patterns are bound to differ from one socio-economic environment to another.

With regard to the consumption patterns and purchasing behaviour of livestock products and fish in urban areas of Zambia, this study has shown a number of critical findings.

- First and foremost, it is clear livestock products and fish form an important component of urban households' diet together accounting for almost one third of households' monthly budgetary expenditure on food. The share of food budgets on livestock products increases with affluence as measured by both household income and level of urbanisation of city of residence. The opposite is true for fish.
- Second, while rich households consume relatively well balanced shares of the different types of livestock products (including fish) ranging from 27% for meats to 19% for dairy items, poorer households predominantly consume fish (37% share) and much smaller shares of meats, poultry (24% and 22% respectively), and especially dairy items (11%). The budget shares of eggs were found to be more or less the same regardless of household income group.
- Third, butcheries and the informal market, with market share of 66% and 22% respectively, are the major retail outlets for meats while supermarkets account for only 8% market share. The butcheries have the largest market share regardless of household income group but the share tends to be smaller among poorer households whose market share for the informal sector tends to be much larger. The supermarket is more frequently used by the rich and its market share among rich households is 2 to 20 times more than among poor ones.
- Fourth, the informal market has the highest share for chicken and other poultry (73% in Lusaka and 48% to 51% in the other cities) and is followed by private households whose market share tends to more pronounced in the less urbanised cities of Mansa and Kasama. The supermarket share is only 6% to 12% across all cities. It is highest among rich households (11% to 19%) though its share still ranks second (in Lusaka) or third (other cities) after the informal sector and private households. The informal market share is largest among poor households and the difference between market shares between the poor and rich households increases with increasing city urbanisation.
- And fifth the informal market accounts for almost all the retail market share of dry fish and the largest share for fresh fish accounting for more than 90% in Kasama, 70% and 80% in Lusaka and Mansa respectively, and slightly below 50% in Kitwe. The informal market share of fresh fish is more pronounced among poor households where it is more than 90% in all cities except Kitwe where considerable amount of purchased through butcheries. The supermarket share is highest among rich households but still ranks second at 17%, 19%, and 5% market share in Lusaka, Mansa, and Kasama respectively and fourth in Kitwe at 11%.

In conclusion, the supermarket share of livestock products and fish is quite low at less than 10% in any of the study cities. Even among rich households, the market share only ranges from 14% to 22% depending on the type of product. Quantitative analysis (probit model) has shown that the likelihood of rich households purchasing meats, chicken/poultry, and fresh

fish from supermarkets is higher than that of poor ones by only 3% to 8%. This concurs with Tschirley et al. (2010) who found the overall food market shares of supermarkets to be low and sales heavily depending on upper income customers, and locational convenience as one of the key determinants of use. These concluded that while it is likely that supermarket shares will grow across the continent over time, and while this growth may at some point be rapid in selected countries, the overall rate of growth is likely to be much slower than was once expected in some circles. This means that the so-called traditional marketing system is likely to be a dominant centre of livestock products marketing, though to a lesser extent than that of fresh produce, across the continent for decades to come. While informal market channels offer poor consumers opportunities to purchase products at relatively lower price and in smaller quantities, they pose serious health challenges especially for perishable products like meats, dressed chicken and fresh fish.

These finding suggests that private investment in modern, integrated supply chains cannot be relied upon to meet the ever increasing challenges of supplying quality and healthy perishable food to cities. The rising urban population growth means that a rapidly rising share of the population will be subject to challenges of city food supply. This calls for increased investment in small butcheries and supermarkets and/or minimarts which require relatively smaller investment outlays and incur less overhead running costs and can profitably sell to the poorer consumers at relatively lower prices in public markets as well as neighbourhood business centres but well linked to rural and/or production supply chains. Analysis has shown that the informal sector had the lowest market share in Kitwe because it has a relatively high concentration of butcheries in neighbourhood public market areas than the other cities (42% compared to 30% or less). The role of the Government and/or indeed City Authorities is that of ensuring that the design of these structures allow for proper handling of perishable food products according to recommended environmental and health standards.

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