National Agricultural Marketing Council

Promoting market access for South African agriculture

Markets and Economic Research Centre

Farm-to-Retail-Price-Spreads

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FARM-TO-RETAIL-PRICE-SPREADS
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EXECUTIVE SUMMARY

The farm value share is the value of the farm product's equivalent in the final food product purchased by the consumers. The farm-to-retail-price-spread (FTRPS) is the difference between what the consumer pays for the food product at retail level and the value of the farm product used in that product. Price spreads measure the aggregate contributions of food manufacturing, distribution, wholesale and retail firms that transform farm commodities into final products:

- **Poultry:** The real FTRPS of fresh whole chicken decreased on average by 3.59 %, from August to October 2016. During the same period, the real farm value share of fresh whole chicken increased by 4.84 %. The real farm value share of fresh whole chicken reached 53.16 % in October 2016. From October 2015 to October 2016, **year-on-year**, real FTRPS increased by 4.70 %, while the real farm value share decreased by 3.24 %.

- **Beef:** The real FTRPS of class A2/A3 beef increased by 0.17 % from August to October 2016 and reached R35.90 in October 2016. The real farm value share of beef decreased by 0.24 % from August to October 2016 and reached 45.98 % in October 2016. From October 2015 to October 2016, **year-on-year**, real FTRPS decreased by 2.54 %, while real farm value share increased by 3.63 %.

- **Lamb:** The real FTRPS of class A2/A3 lamb increased by 6.27 % from August to October 2016 and reached R51.06/kg in October 2016. The real farm value share decreased by 4.94 %, on average, from August to October 2016 and reached 48.43 % in October 2016. From October 2015 to October 2016, **year-on-year**, real FTRPS decreased by 0.39 %, while the real farm value share increased by 2.06 %.

- **Pork:** The real FTRPS of pork decreased from R348.13 in August to R339.36 in October 2016 (-2.52 %). The real farm value share increased by 4.53 %, on average, from August to October 2016 and reached 36.52 % in October 2016. From October 2015 to October 2016, **year-on-year**, real FTRPS decreased by 7.04 %, while real farm value share increased by 9.97 %.

- **Milk:** The real FTRPS for full cream milk increased from R7.00/ℓ to R7.13/ℓ (1.85 %), from August to October 2016. The real farm value share decreased, on average, by 1.13 %, from August to October 2016. From October 2015 to October 2016, **year-on-year**, the real FTRPS decreased by 1.10 % while the real farm value share increased by 11.45 %.

- **Maize:** The real FTRPS of super maize meal (5kg) decreased from R2 264.66/ton in August to R1 780.35/ton in October 2016 (-21.39 %). The real farm value share of super maize meal (5kg) was 70.38 % in August and increased to reach 76.20 % in October 2016 (8.27 %). From October 2015 to October 2016, **year-on-year**, the real FTRPS decreased by 21.98 %, while the real farm value share increased by 26.02 %.

- **Wheat:** In October 2016, the real farm value shares reached 19.66 % and 20.25 %, for brown and white bread, respectively. The real FTRPS for brown bread reached R18 099.55/ton of flour in October 2016 and in the case of white bread, R18 594.62/ton of flour. From October 2015 to October 2016, **year-on-year**, real FTRPS increased by 3.67 % for brown bread and by 3.31 % for white bread. During the same period, real farm value share increased by 15.26 % and 15.49 %, for brown and white bread, respectively.

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1. Introduction and Overview

The **farm-to-retail-price-spread (FTRPS)** is the difference between the farm price and the retail price of food, reflecting charges for processing, shipping, and retailing farm goods (sometimes called the marketing spread).

This publication attempts to provide more insight into the factors driving commodity and food price margins. The purpose of this publication is to reflect on food price spreads during the months of August to October 2016.

NAMC compares prices paid by consumers for food with prices received by farmers for corresponding commodities. This data set reports these comparisons for a variety of foods sold through retail food stores such as supermarkets and hypermarkets. The retail costs of these foods are compared with the money received by farmers for the corresponding agricultural commodities.

The margin between farm gate prices and the price the consumer pays for selected food items is a topic that is frequently debated. In order to better understand the difference between farm gate and retail prices, farm values of selected products and the FTRPS are calculated.

2. Background

Food processors, manufacturers, wholesalers, retailers, and foodservice providers transform raw agricultural commodities into convenient food products for consumers to buy. Transportation, processing, and packaging are among the many marketing services provided. Value added to commodities through marketing services accounts for a substantial portion of consumer food prices.

NAMC's goal is to inform policymakers, agriculture, and the general public about the value added to agricultural commodities by the food marketing system.

Farm-to-retail-price-spreads may increase or decrease over time with changes in the mix and prices of services required to transform raw agricultural commodities into consumer food products. Long-run trends therefore reflect a variety of underlying economic conditions, including changes in the technology used to process and distribute food as well as changes in the price of inputs, such as labour and energy.

3. Data Collection

Urban food prices reported on in this media release are obtained from Statistics South Africa (Stats SA). The prices obtained are regarded as being representative of changes in food prices in South Africa for the following reasons:

Stats SA price data on all products are sampled from approximately 800 different data collections points across the country on a monthly basis. Food price data is not collected from all the data collection points since some stores that are sampled do not necessarily sell food. In addition, certain food prices are not sampled in all provinces food price data collection by Stats SA also involves fieldwork where price collectors visit stores to collect data, after which such data undergoes a rigorous process to ensure its integrity. The basket of food products included was derived from the Income and Expenditure Survey of 2010/11 compiled by Stats SA to ensure that the basket is representative of consumer spending on food. For more detailed information on the methodological process involved in the collection of prices visit the Stats SA website: http://www.Stats SA.gov.za/

4. Methodology and Definition

The methodology behind this data series consists of four parts (Food Price Monitoring Committee report, 2003):

Important formulas:
- The farm value is the value of the farm product's equivalent in the final food product purchased by the consumers.
- Retail value is the price or the value of a given product at the retail level of a given commodity value chain.
- The Farm-to-Retail-Price-Spread (FTRPS) = Retail value – Farm Value
- Farm Value Share = Farm Value divided by the Retail Value

a) Wheat-to-bread (white and brown) margins

The different prices in the five main levels in the value chain are: the average producer price that the farmer receives as reported by South African Foreign Exchange (SAFEX); the mill door price; the bakers' wholesale price; and the consumer price. However, in this exercise only the average producer price and the consumer price will be used. As with the maize-to-maize-meal margins, the calculations are based on the following assumptions:

- The producer price (also known as the farm gate price) is derived from the SAFEX spot price minus the average transport differential and the handling costs.
- The transport costs from the farm gate to the silo are calculated as the average SAFEX transport differential to all the major maize silos.
- The handling costs are based on responses from millers about their estimated average handling costs and the storage day tariffs per ton. The input from the millers is therefore crucial in this case.
- It is assumed that the millers are closer to the silos than the farmers.
- There is an approximate 4-month time lag between the monthly average SAFEX spot price and the average monthly retail price.
- The cost of bread flour between the milling and baking divisions can be neglected, as this is an internal transfer within the group and not determined by market forces. Thus, to determine the cost of production of bread there is no separate margin for the milling and baking divisions.
- The extraction rates between brown and white bread differ, thus, the extraction rate from 1 ton of wheat is between 0.85 and 0.89 tons of brown bread flour and between 0.76 and 0.80 tons of white bread flour. Similarly, 1 ton of brown bread flour can produce between 2 151 and 2 198 loaves of brown bread while 1 ton of white bread flour produces between 2 083 and 2 174 loaves (standard 700g loaves). Thus, from 1 ton of wheat, between 1 868 and 1 914 loaves of brown bread or between 1 652 and 1 667 loaves of white bread.

The producer price of wheat is therefore calculated by taking the SAFEX price and subtracting the farmers' transport to the silo, as well as the handling and storage costs.

Farm value is calculated by dividing the farm gate price by the respective extraction rates, thus between 0.76 and 0.80 for white bread and between 0.85 and 0.89 for brown bread, respectively.

Retail value is calculated by multiplying the price of white bread and brown bread by the number of loaves that 1 ton of flour produces, i.e. between 2 151 and 2 198 for brown bread or between 2 083 and 2 174 for white bread, respectively.

The farm value share is the proportion farmers get from the amount consumers spend on the market basket of food purchased in retail grocery stores. This is equal to farm value/retail value.

b) Maize-to-maize-meal (super and special) margins

The prices of the four main nodes in the food chain are the average producer price, the mill door price, the list price, and the consumer price. In this case, only the average producer prices and retail prices will be used to estimate the farm value, farm to retail price spread, retail value and farm value share. The calculations of these items are based on the assumptions that:

- The producer price (also known as the farm gate price) is derived from the SAFEX spot price minus the average transport differential and the handling costs.
- The transport costs from the farm gate to the silo are calculated as the average SAFEX transport differential to all the major maize silos. It is important to note that these differentials are, still, based on railway costs, despite the fact that there has been a gradual shift away from railway towards road transport. Therefore, these costs might not be a true reflection of the actual costs. The transport/distribution costs might be higher.
- The handling costs are based on responses from millers about the estimated average handling costs and the storage day tariffs per ton. The input from the millers is therefore crucial in this case.
- It is assumed that the millers are located closer by the silos than the farmers are.

- There is an approximate 4-month time lag between the average monthly SAFEX spot price and the average monthly retail price. The Food Price Monitoring Committee (2003) report states that this assumption is supported by statistical tests, as well as the general opinion of the industry.
- Specific mill site costs are only available on an annual base. Therefore, the monthly mill site costs are kept constant for every year.

Table 1 below, provides a summary of the extraction rates of the various types of maize meal, as sourced from the Chamber of Milling. It is necessary to make a distinction between the various types of maize meal due to their different extraction rates, which influence the margins and spreads of the millers significantly. More than 40 % of all the maize meal sold in the SA market is super maize meal and this percentage is increasing. Special maize meal sales make up 30 % of total sales. Although an extraction rate of 62.5 % is reported for super maize meal, some industry specialists regard this figure as "conservative". The best-selling super maize meal brands, IWISA and ACE, only have a 55 % extraction rate.

Table 1: Extraction rate of various maize meal types

Type	Extraction rate (%)
Super	62.5
Special	78.7
Sifted	88.7
Un-sifted	98.7

The farm value for one ton super maize meal is calculated by dividing the farm gate price by the average extraction rate (62.5 % for super maize meal). This implies that 1 ton of super maize meal can be produced from 1.6 tons of raw white maize.

The retail value for 1 ton of super maize meal is calculated by multiplying the retail price (R/specific size) by 1 000/that specific size. For example, conversion for 5 kg bag of maize meal (at R20.00/bag) will be done by multiplying 20 by 1 000/5 = (200). This is equal to R4 000/ton.

Farm-to-retail-price-spread is the difference between farm value and retail value (Farm value – Retail value).

The farm value share is the proportion farmers get from the amount consumers spend on the market basket of food purchased in retail grocery stores. This is equal to farm value/retail value.

c) Beef margins

The first assumption defines the average slaughtering weight of one head of cattle as equal to 220 kg. Of the 220 kg: 42.24 kg consist of parts, which do not form part of any direct food related items, and include off-cuts, fat, kidneys and bones. The second assumption relates to allocating certain weights to the different meat cuts: Rump steaks are allocated a weight of 16.72 kg, sirloin steaks 11.22 kg, topside beef 16.94 kg, chuck 23.09 kg and brisket 17.6 kg.

The farm value of beef is thus calculated by firstly determining the average weight of the specific cuts in question. This would mean that from a 220 kg carcass weight, 85.57 kg are made up by cuts specified above. To calculate the farm value, the weight of the cuts, that is 85.57 kg is multiplied with the weighted average monthly slaughter price of A2/A3 quality beef (per kg). **The retail value** of a selected cut is calculated by multiplying its price (R/kg) by its weight. The total retail value of these 5 cuts is obtained by adding their specific retail value.

Farm-to-retail-price-spread is the difference between farm value and retail value (Farm value – Retail value).

The farm value share is the proportion farmers get from the amount consumers spend on the market basket of food purchased in retail grocery stores. This is equal to farm value/retail value.

5. Findings in Price Trends, Farm Values and Price Spreads

The farm value share (measured in percentage terms) of the farm product's equivalent in the final food product purchased by the consumers. The FTRPS is the difference between what the consumer pays for the food product at retail level and the value of the farm product used in that product. Price spreads measure the aggregate contributions of food manufacturing, distribution, wholesale and retail firms that transform farm commodities into final products:

- **Poultry:** The real FTRPS of fresh whole chicken decreased on average by 3.59 %, from August to October 2016. During the same period, the real farm value share of fresh whole chicken increased by 4.84 %. The real farm value share of fresh whole chicken reached 53.16 % in October 2016. From October 2015 to October 2016, **year-on-year**, real FTRPS increased by 4.70 %, while the real farm value share decreased by 3.24 %.

Figure 1: Real farm-to-retail-price-spread and farm value share of poultry
Source: Stats SA, 2016; AMT, 2016 and own calculations

- **Beef:** The real FTRPS of class A2/A3 beef increased by 0.17 % from August to October 2016 and reached R35.90 in October 2016. The real farm value share of beef decreased by 0.24 % from August to October 2016 and reached 45.98 % in October 2016. From October 2015 to October 2016, **year-on-year**, real FTRPS decreased by 2.54 %, while real farm value share increased by 3.63 %.
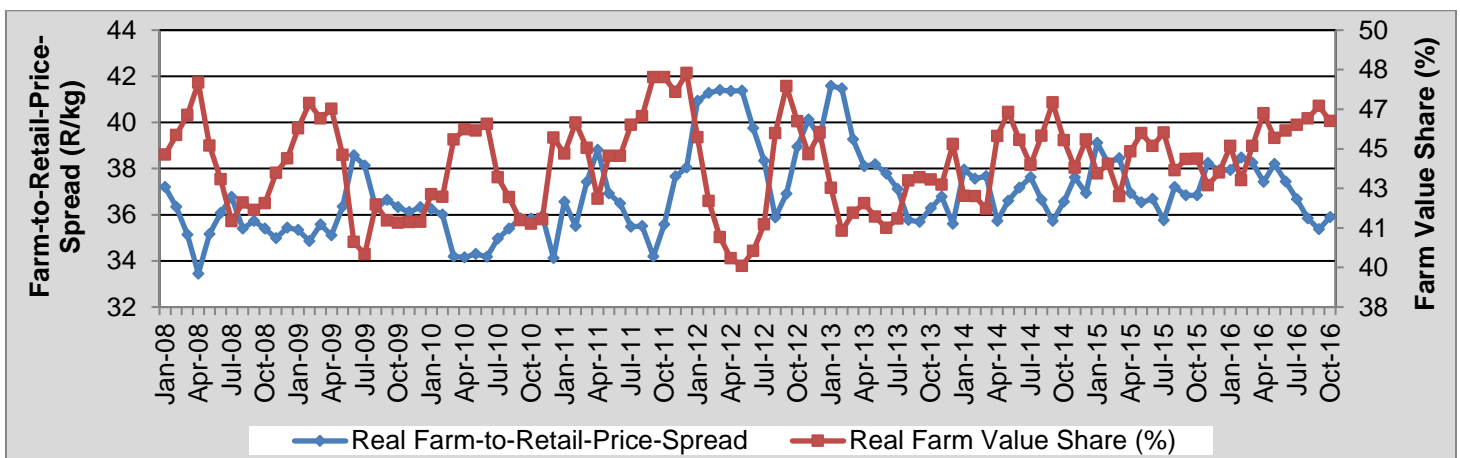
Figure 2: Real farm-to-retail-price-spread and farm value share for beef
Source: Stats SA, 2016 AMT, 2016 and own calculations

- **Lamb:** The real FTRPS of class A2/A3 lamb increased by 6.27 % from August to October 2016 and reached R51.06/kg in October 2016. The real farm value share decreased by 4.94 %, on average, from August to October

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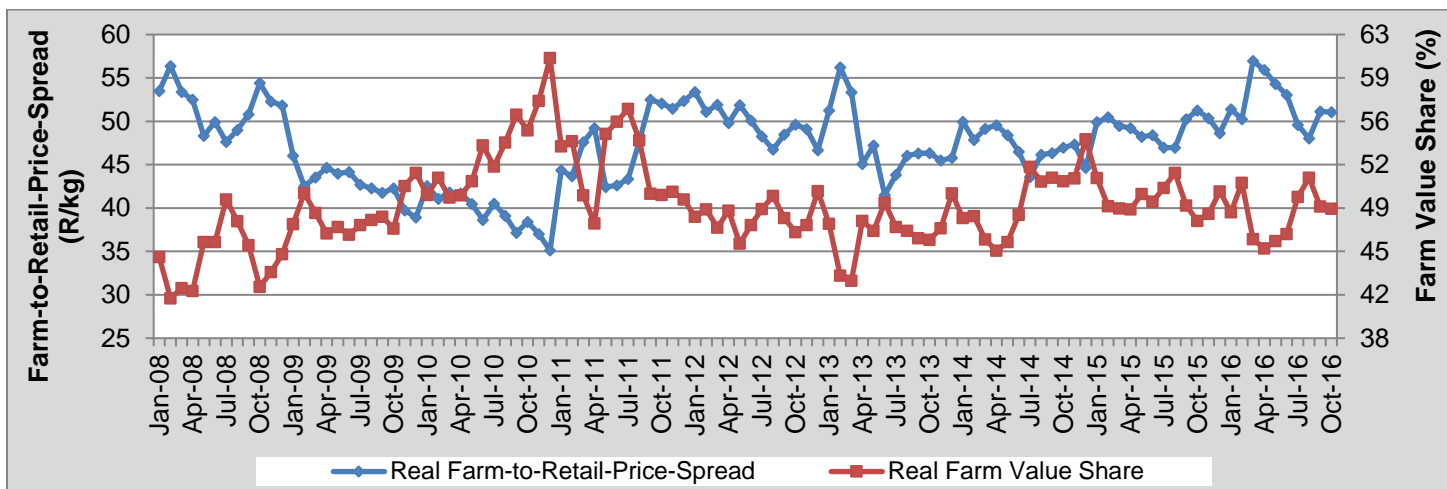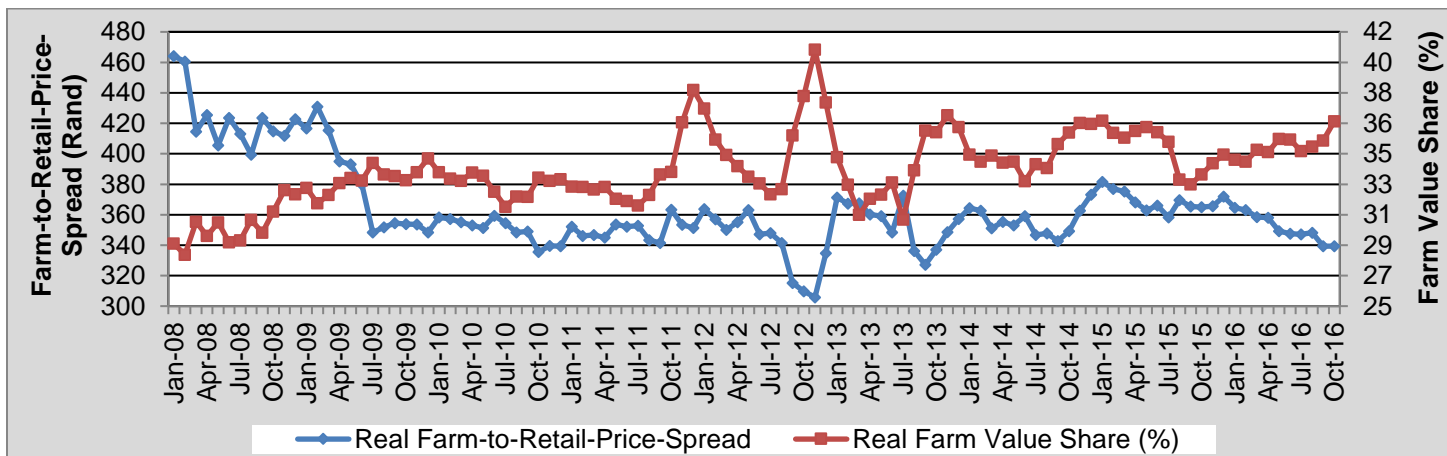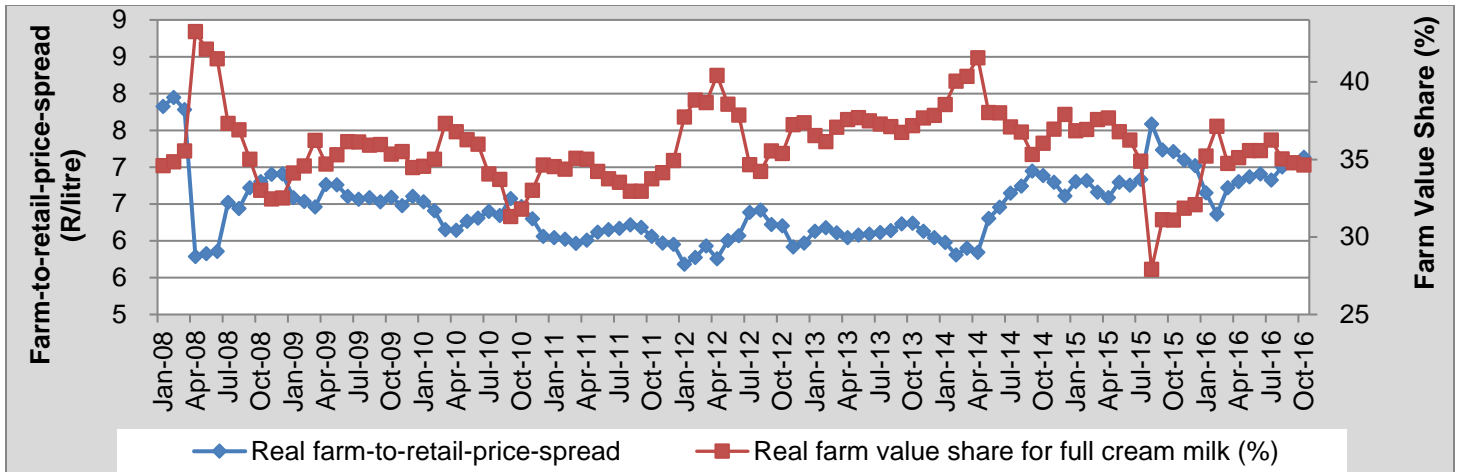

Figure 3: Real farm-to-retail-price-spreads and farm value share of lamb
Source: Stats SA, 2016; AMT, 2016 and own calculations

- **Pork:** The real FTRPS of pork decreased from R348.13 in August to R339.36 in October 2016 (-2.52 %). The real farm value share increased by 4.53 %, on average, from August to October 2016 and reached 36.52 % in October 2016. From October 2015 to October 2016, **year-on-year**, real FTRPS decreased by 7.04 %, whist real farm value share increased by 9.97 %.
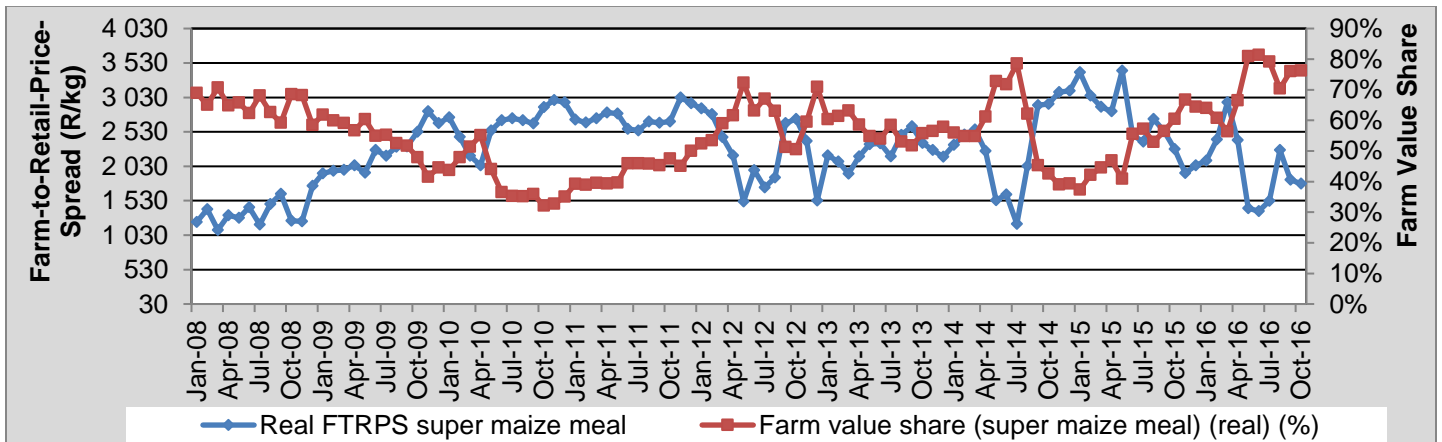

Figure 4: Real farm-to-retail-price-spread and farm value share of pork
Source: Stats SA, 2016; AMT, 2016 and own calculations

- **Milk:** The real FTRPS for full cream milk increased from R7.00/ℓ to R7.13/ℓ (1.85 %), from August to October 2016. The real farm value share decreased, on average, by 1.13 %, from August to October 2016. From October 2015 to October 2016, **year-on-year**, the real FTRPS decreased by 1.10 % while the real farm value share increased by 11.45 %.
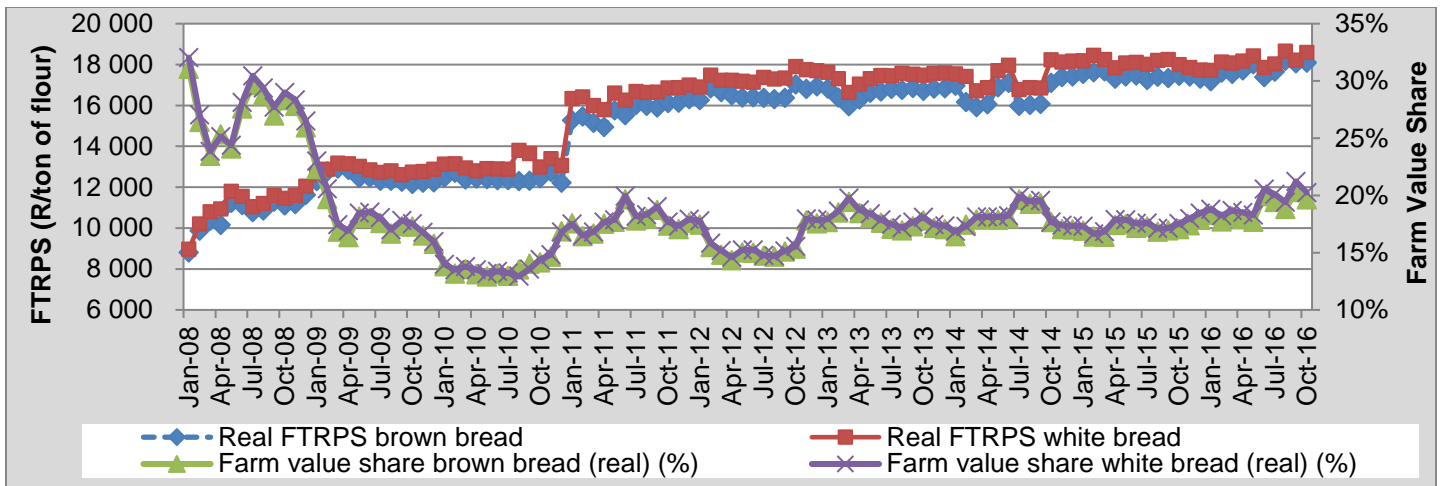
Figure 5: Real farm-to-retail-price-spread and farm value share of milk
Source: Stats SA, 2016; AMT, 2016 and own calculations

- **Maize:** The real FTRPS of super maize meal (5kg) decreased from R2 264.66/ton in August to R1 780.35/ton in October 2016 (-21.39 %). The real farm value share of super maize meal (5kg) was 70.38 % in August and increased to reach 76.20 % in October 2016 (8.27 %). From October 2015 to October 2016, **year-on-year**, the real FTRPS decreased by 21.98 %, while the real farm value share increased by 26.02 %.

Figure 6: Real farm-to-retail-price-spread and farm value share of super maize meal 5kg
Source: Stats SA, 2016; AMT, 2016 and own calculations

- **Wheat:** In October 2016, the real farm value shares reached 19.66 % and 20.25 %, for brown and white bread, respectively. The real FTRPS for brown bread reached R18 099.55/ton of flour in October 2016 and in the case of white bread, R18 594.62/ton of flour. From October 2015 to October 2016, **year-on-year**, real FTRPS increased by 3.67 % for brown bread and by 3.31 % for white bread. During the same period, real farm value share increased by 15.26 % and 15.49 %, for brown and white bread, respectively.

Figure 7: Real farm-to-retail-price-spread and farm value share of wheat
Source: Stats SA, 2016; AMT, 2016 and own calculations