



National Agricultural
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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 1.08 %, from July to October 2015. During the same period, the real farm value share of fresh whole chicken increased by 0.52 %. The real farm value share of fresh whole chicken reached 54.94 % in October 2015. From October 2014 to October 2015, **year-on year**, real FTRPS increased by 0.97 %, while the real farm value share decreased by 2.27 %.
- **Beef:** The average real FTRPS of class A2/A3 beef increased by 3.02 % from July to October 2015 and reached R36.84 in October 2015. The real farm value share of beef decreased by 2.47 % from July to October 2015 and reached 44.38 % in October 2015. From October 2014 to October 2015, **year-on year**, real FTRPS increased by 0.76 %, while the real farm value share decreased by 1.75 %, during the same period.
- **Lamb:** The real FTRPS of class A2/A3 lamb increased by 9.16 % from July to October 2015 and reached R51.26/kg in October 2015. The real farm value share decreased by 5.30 % on average from July to October and reached 47.46 % during October 2015. From October 2014 to October 2015, **year-on year**, real FTRPS increased by 9.12 %, while the real farm value share decreased by 6.32 %.
- **Pork:** The average real FTRPS increased from R358.19 in July 2015 to R365.08 in October 2015 (1.92 %). The real farm value share decreased by 5.74 % on average, from July to October 2015 and reached 33.21 % during October 2015. From October 2014 to October 2015, **year-on year**, real FTRPS increased by 4.52 %, while the real farm value share decreased by 7.28 %.
- **Milk:** The average real FTRPS increased from R6.84/l to R7.30/l (6.73 %), from July to October 2015. From July to October 2015, the real farm value share decreased, on average, by 13.25 %. From October 2014 to October 2015, **year-on year**, real FTRPS increased by 5.98 %, while the real farm value share decreased by 16.02 %.
- **Maize:** The real FTRPS of super maize meal (5kg) decreased from R2 386.31/ton in July 2015 to R2 281.94/ton in October 2015 (-4.37 %). The real farm value share reached 57.20 % in July 2015 and increased to 60.47 % in October 2015 (5.71 %). From October 2014 to October 2015, **year-on year**, the real FTRPS decreased by 22.26 %, while the real farm value share increased by 42.17 %.
- **Wheat:** The real farm value share in October 2015 reached 17.06 % and 17.53 % for brown and white bread, respectively. On average, the real FTRPS for brown bread reached R17 458.68/ton of flour in October 2015. In the case of white bread, the average real FTRPS reached R17 999.71/ton of flour in October 2015. From October 2014 to October 2015, **year-on year**, real FTRPS increased by 2.10 % for brown bread and decreased by 1.24 % for white bread. During the same period, real farm value share decreased by 3.50 % and 0.80 % for brown and white bread, respectively.

Table of Contents

1. Introduction and Overview	1
2. Background.....	1
3. December to February 2015 outlook.....	1
4. Data Collection.....	2
5. Methodology and Definitions.....	2
6. Findings in Price Trends, Farm Values and Price Spreads.....	4

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 July to October 2015.

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 compares the prices paid by consumers for food with the prices received by farmers for their corresponding commodities. NAMC's goal is to inform policymakers, agriculture, and the general public about the value added to agricultural commodities by the food marketing system. This data set reports these comparisons for a variety of foods sold through retail food stores such as supermarkets and hypermarkets.

Farm-to-consumer 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. December to February 2015 outlook

The current question that is thoroughly being explored by the main stream media is how the current drought conditions will affect commodity prices and spill over to the rest of the economy. The exceptionally high maize prices that we have seen over the past few months have not fully transmitted to maize meal prices. Based on historical averages, one would have expected to see maize meal prices close to R21.90 for October 2015. The actual prices, as recorded by StatsSA were in fact approximately 3% lower, trading at R21.30. This could be an indication the certain agents in the maize meal value chain have been absorbing some of the commodity cost increases and one would expect that these cost pressures will gradually be passed onto the consumer over the rest of the outlook period (3 months). Depending on the severity of the prevailing drought, the South African maize crop can decrease to a level of around 7 million tons. Even a mild drought will push maize prices to import parity levels which ultimately expose commodity prices to exchange rate pressures. As a result we could significant upward pressures on maize meal prices over the next three months. Bread prices will also follow and increasing trend. This is driven by wheat prices trading at import parity, along with the significant depreciation of the rand over the past few months. A mitigating factor that could serve to keep the growth prices in bread at bay is the relatively timid growth in fuel costs.

Over the next three months, red meat prices are expected to move sideways. Despite increased slaughtering, as a result of the drought, red meat prices have been resilient. This trend was largely supported by strong exports. Going forward, prices are expected to be supported by a growth in demand over the festive season and inflationary pressures, associated with increased demand will be curbed by increased slaughtering. Chicken meat prices are expected to follow a similar trend to

red meat. Locally supply will be adversely affected by increased production cost. This is however expected to be off-set by relatively low international prices and a weak exchange rate.

Vegetable prices are expected to increase substantially over the next three months. This is due to strong demand in the festive season and drought and heat resulting in a significant decrease in yields. Due to a longer production cycle associated with the majority of fruits one could expect to only see the full effect of the drought and other adverse weather conditions, on prices, during 2016. Fruit product prices destined for export destinations could however be supported by the weak exchange rate which could also spill over to the local market.

Key factors to look out for during the next three months are exchange rate movements and the severity of the drought. The Federal reserve of the United States of America is expected to hike interest rates in December 2015 as part of a restrictive monetary policy drive. This could put significant pressure on the rand.

4. Data Collection

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

StatsSA price data on all products are sampled from approximately 800 different data collection 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. For example, the price of cheddar cheese is collected from Gauteng, Western Cape, Eastern Cape, KwaZulu-Natal, Free State, Northern Cape, North West and Mpumalanga. Food price data collection by StatsSA 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 2005/06 compiled by StatsSA 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: http://www.statssa.gov.za/cpi/documents/CPI_Sources_Methods.pdf.

5. Methodology and Definitions

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

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 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, 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 a 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 0.81 tons of brown bread flour or 0.76 tons of white bread flour. Similarly, 1 ton of brown bread flour can produce 2 275 loaves of brown bread while 1 ton of white bread flour produces 2 135 loaves (standard 700g loaves). Thus from 1 ton of wheat, 1 842 loaves of brown bread or 1 622 loaves of white bread can be produced.

The producer price of wheat is 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 respective extraction rates, thus 0.76 and 0.81 for white bread and brown bread, respectively.

Retail value is calculated by multiplying price of white bread and brown bread by number of loaves that 1 ton of flour produces, i.e. 2 135 and 2 278 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 our 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. How can we best estimate the location of the farmers to the silo?
- There is a 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 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
Unsifted	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.

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

The farm value share is the value 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 1.08 %, from July to October 2015. During the same period, the real farm value share of fresh whole chicken increased by 0.52 %. The real farm value share of fresh whole chicken reached 54.94 % in October 2015. From October 2014 to October 2015, **year-on year**, real FTRPS increased by 0.97 %, while the real farm value share decreased by 2.27 %.

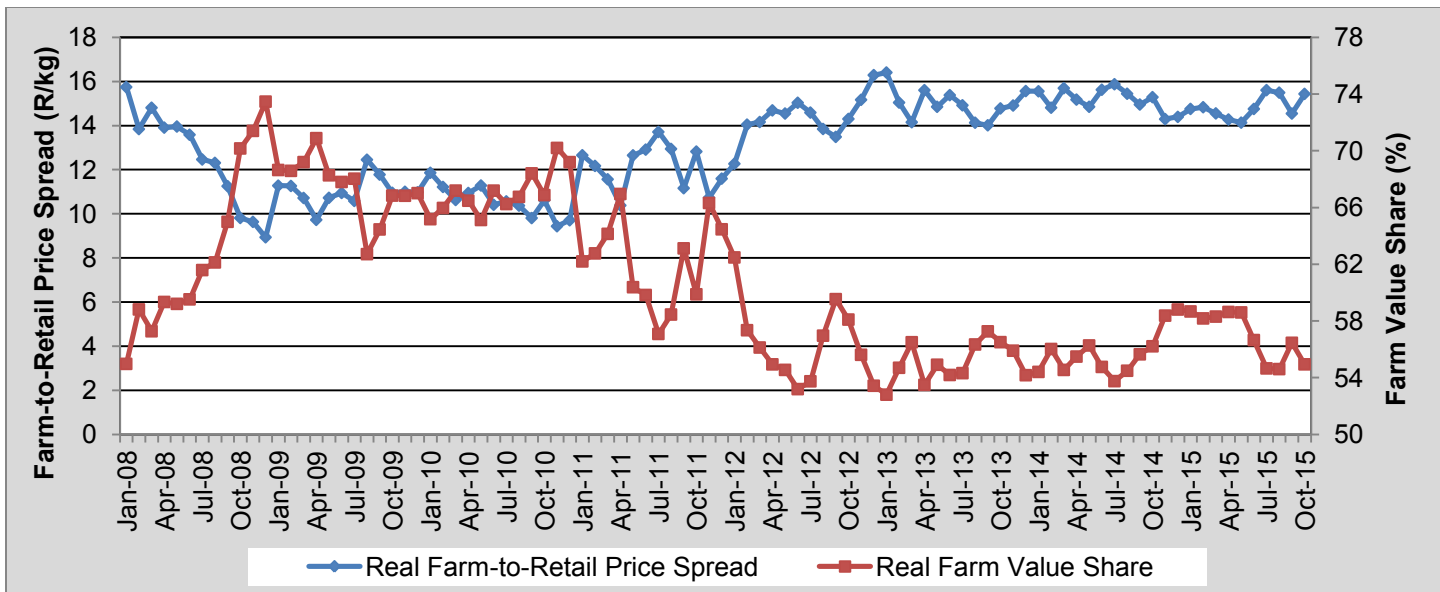


Figure 1: Real farm-to retail price spread and farm value share of poultry
 Source: Stats SA, 2015; AMT, 2015 and own calculations

- Beef:** The average real FTRPS of class A2/A3 beef increased by 3.02 % from July to October 2015 and reached R36.84 in October 2015. The real farm value share of beef decreased by 2.47 % from July to October 2015 and reached 44.38 % in October 2015. From October 2014 to October 2015, **year-on year**, real FTRPS increased by 0.76 %, while the real farm value share decreased by 1.75 %, during the same period.

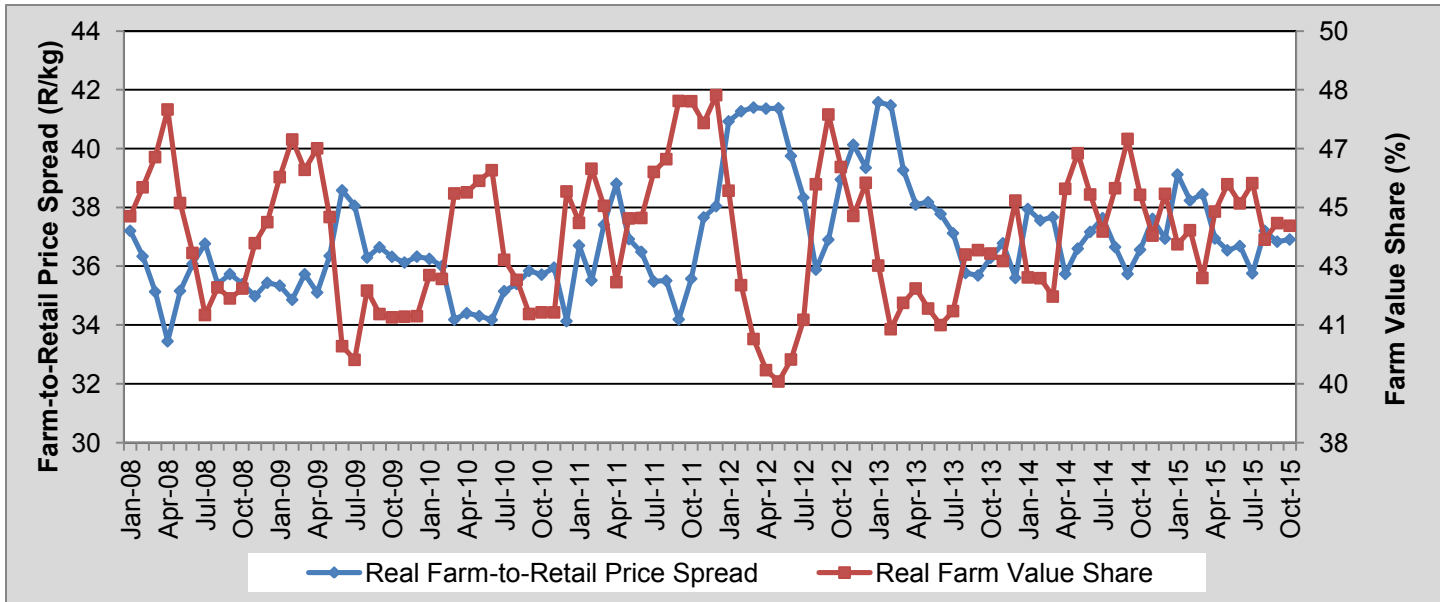


Figure 2: Real farm-to-retail price spread and farm value share for beef
 Source: Stats SA, 2015; AMT, 2015 and own calculations

- Lamb:** The real FTRPS of class A2/A3 lamb increased by 9.16 % from July to October 2015 and reached R51.26/kg in October 2015. The real farm value share decreased by 5.30 % on average from July to October and reached 47.46 % during October 2015. From October 2014 to October 2015, **year-on year**, real FTRPS increased by 9.12 %, while the real farm value share decreased by 6.32 %.

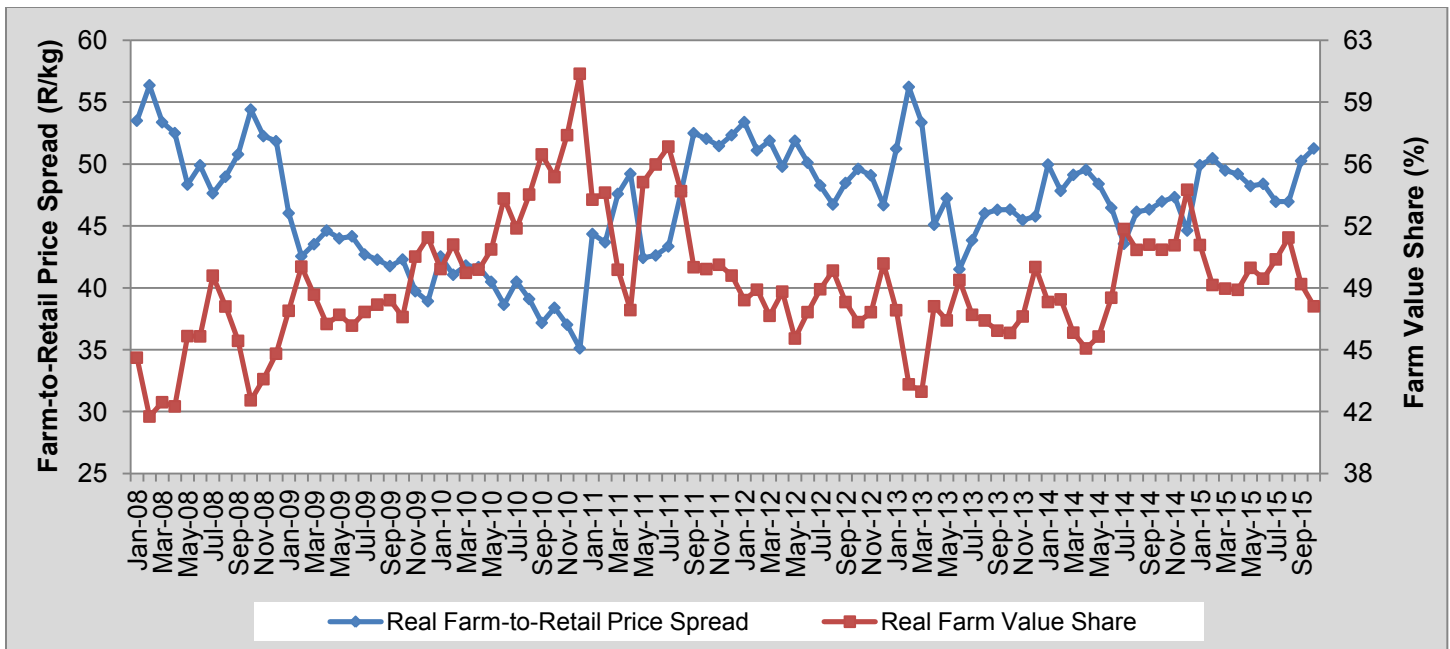


Figure 3: Real farm-to-retail price spreads and farm value share of lamb
Source: Stats SA, 2015; AMT, 2015 and own calculations

- Pork:** The average real FTRPS increased from R358.19 in July 2015 to R365.08 in October 2015 (1.92 %). The real farm value share decreased by 5.74 % on average, from July to October 2015 and reached 33.21 % during October 2015. From October 2014 to October 2015, **year-on year**, real FTRPS increased by 4.52 %, while the real farm value share decreased by 7.28 %.

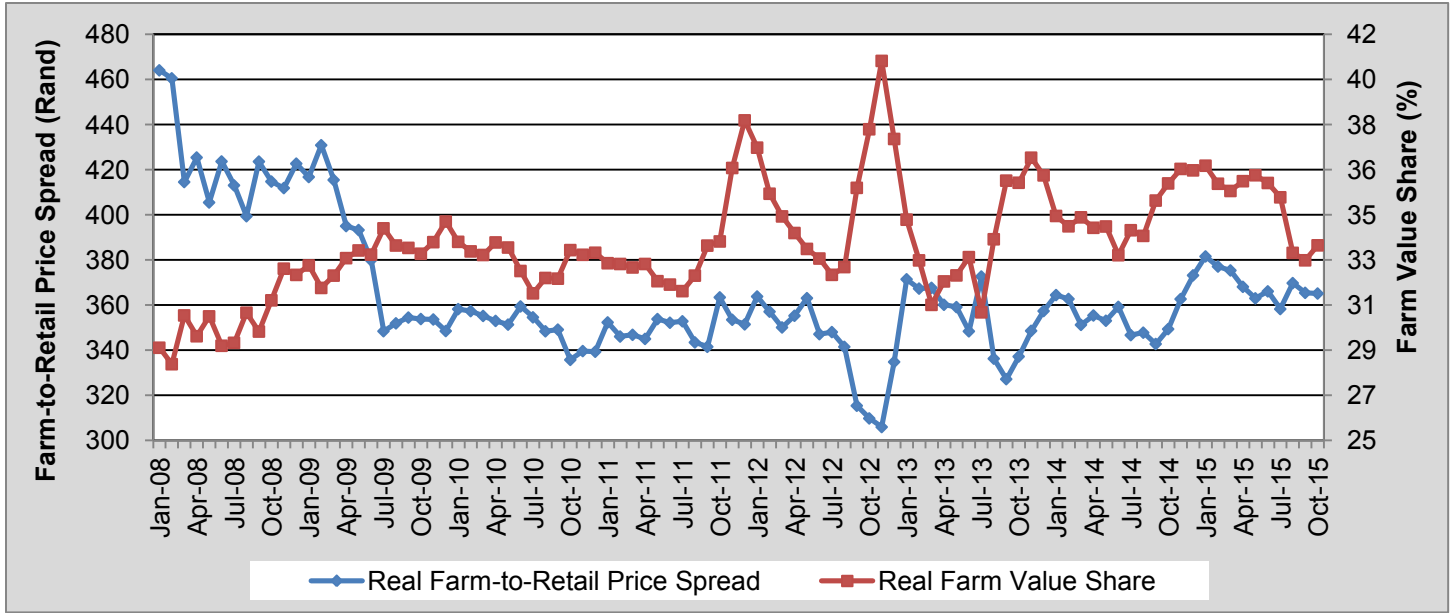


Figure 4: Real farm-to-retail price spread and farm value share of pork
Source: Stats SA, 2015; AMT, 2015 and own calculations

- Milk:** The average real FTRPS increased from R6.84/l to R7.30/l (6.73 %), from July to October 2015. From July to October 2015, the real farm value share decreased, on average, by 13.25 %. From October 2014 to October 2015, **year-on year**, real FTRPS increased by 5.98 %, while the real farm value share decreased by 16.02 %.

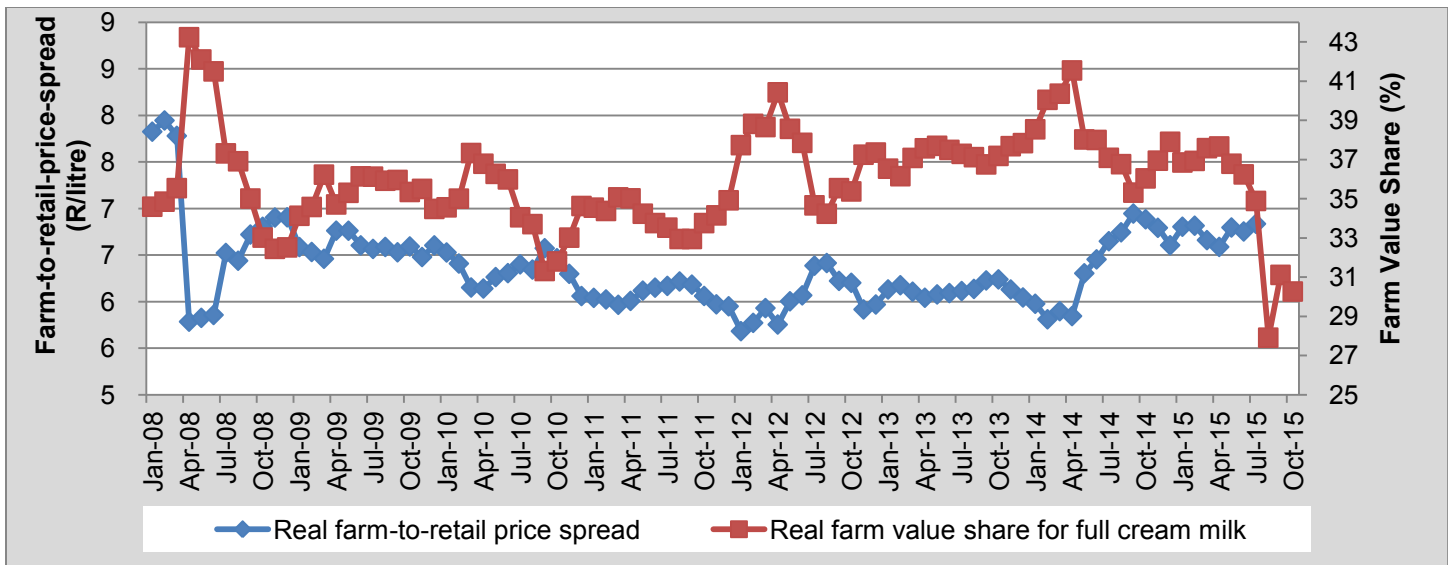


Figure 5: Real farm-to-retail price spread and farm value share of milk

Source: Stats SA, 2015; AMT, 2015 and own calculations

- Maize:** The real FTRPS of super maize meal (5kg) decreased from R2 386.31/ton in July 2015 to R2 281.94/ton in October 2015 (-4.37 %). The real farm value share reached 57.20 % in July 2015 and increased to 60.47 % in October 2015 (5.71 %). From October 2014 to October 2015, **year-on year**, the real FTRPS decreased by 22.26 %, while the real farm value share increased by 42.17 %.

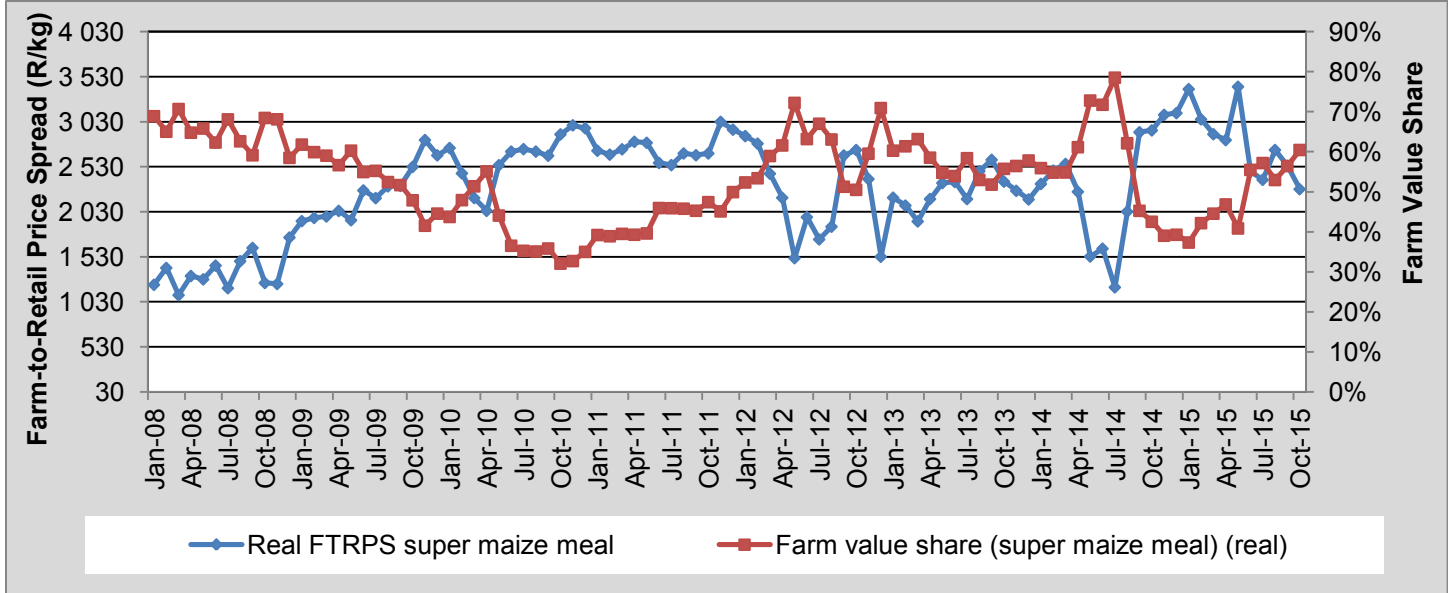


Figure 6: Real farm-to-retail price spread and farm value share of super maize meal 5kg

Source: Stats SA, 2015; AMT, 2015 and own calculations

- Wheat:** The real farm value share in October 2015 reached 17.06 % and 17.53 % for brown and white bread, respectively. On average, the real FTRPS for brown bread reached R17 458.68/ton of flour in October 2015. In the case of white bread, the average real FTRPS reached R17 999.71/ton of flour in October 2015. From October 2014 to October 2015, **year-on year**, real FTRPS increased by 2.10 % for brown bread and decreased by 1.24 % for white bread. During the same period, real farm value share decreased by 3.50 % and 0.80 % for brown and white bread, respectively.

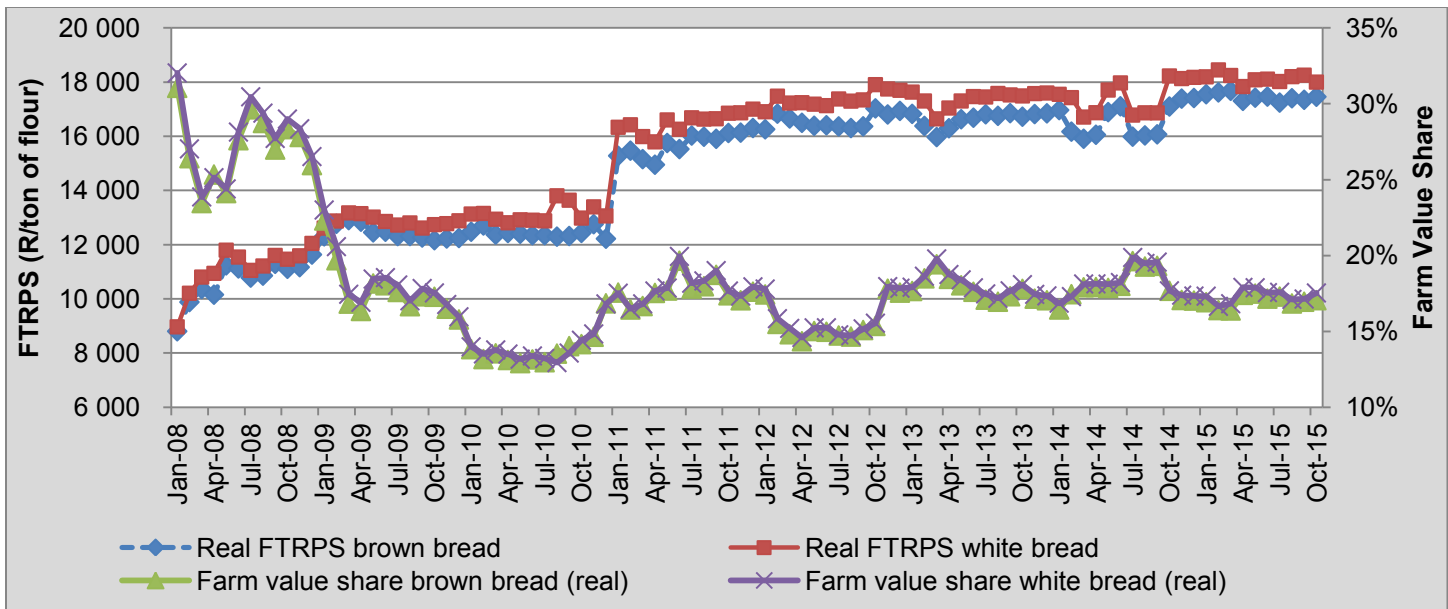


Figure 7: Real farm-to-retail price spread and farm value share of wheat

Source: Stats SA, 2015; AMT, 2015 and own calculations

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