

ANALYSIS OF BASIC BASKET PRICE VARIATION BEFORE AND AFTER THE TRUCKER STRIKE IN BRAZIL IN 2018

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abstract

In May 2018 the Brazilian population experienced an environment of uncertainty with a strike national general called “Truckers Strike”. Nthis scenario, with truck drivers in strike, many foods did not arrive with the same frequency supermarket retailing. OThis article proposes to analyze the price variation of the basic basket before and after the “truckers strike”. Data collection was carried out at supermarket retailers before and after the strike. The methodology is based on the proposal by DIEESE (2009). The result showed an increase of 5.20% in all basic basket. HoweverHowever, according to a comparative analysis with previous years, there was no influence of the strike on the price fluctuation in the basic basket.

Key words:Uncertain scenario; Price evolution; Retail Supermarket.

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Analysis of the Variation in Basic Basket Prices Before and After the Truckers' Strike in Brazil in 2018.

1. Introduction

The study of the basic basket follows the behavior and the evolution of the value of the set of basic foods for the survival of a human being. This study serves as an economic indicator and assists in the strategic decision making of managers and consumers (PAULA et al., 2011).

Price variation is a complex phenomenon and is determined by numerous points. This factor has a great influence on the value of the basket and impacts on the consumer's buying behavior. Some aspects that influence this behavior are, its response in relation to the offer, the brand and the prices, however, the choice of a product is induced by the prices (PAULA et al., 2011).

In addition, the variation in prices is due to factors that impact the cost of the basket, such as changes in the weather, supply and demand, strikes, among others.

In May 2018, the Brazilian population experienced an atmosphere of uncertainty with a strike called the “Truckers' Strike”.

Thus, the strike and its repercussions are important for analyzing the variation in food prices in an environment of uncertainty (CHAVES, 2012). It is also possible to reflect on its impact on the cost of living.

This article proposes to analyze the price variation of the basic basket before and after the “truckers strike” that started on May 21, 2018.

2. Literature review

In this item of the article, the topics necessary to understand the research problem will be discussed. These themes are: the basic food basket, supply and demand, inflation, the strike in Brazil, the strike by truck drivers on May 21, 2018 and the cost of living.

2.1 Basic basket

Basic food basket is defined as a diet compatible with the nutritional requirements of a certain individual (HORN, 1995). Thus, there are different compositions of basic food baskets that will meet the food needs of human beings. Knowledge of the products and prices applied by different regions in their basic food baskets is an important requirement for decision making by the population and managers, taking into account that price decisions are evidently complex and difficult and traditionally the price acts as the main determinant in choosing what to buy (KOTLER; KELLER, 2012). With regard to management, there is a need to record the evolution of the prices of the basic basket in a given region for better decision making. Several authors take the basic basket as an initial premise in the analysis of the poverty rates and income distribution of a given region (HORN, 1995; TOMICH et al., 1998; BELIK, 2003). It is

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important to note that the price variable is important in the process of choosing supermarket retailers (SILVA, et al., 2017).

2.2 Supply and demand

Understanding what supply and demand is helps to understand market behavior and price changes (PINDYCK; RUBINFELD, 2013).

According to Pindyck and Rubinfeld (2013) the offer is the quantity of products offered to consumers by the producers, it depends on the price variable and can also depend on other variables that make up the price, such as production cost, raw material cost, interest rates , among others.

Demand is the quantity that consumers are willing to buy for a particular good depending on the change in its unit price. Demand does not depend only on the price of the product, it also depends on the consumer's income, if the person earns more he spends more (PINDYCK; RUBINFELD, 2013).

The perfect point between these two market variables would be the balance between them, which would mean that the quantity offered and the quantity demanded would be equal. The price changes until both (supply and demand) balance (PINDYCK; RUBINFELD, 2013).

Another way of defining supply and demand, according to Kotler and Armstrong (2015) is to understand demand as human desires and needs, among them the basic need for food, which is satisfied with the market's supply. The offer can be understood as an arrangement of products and services offered to consumers to satisfy their needs.

2.3 Inflation

Inflation is an event linked at changes in general economy prices. There are three types of inflation, they are: demand inflation; cost inflation and inertial inflation. In this article we will deal with demand inflation, which occurs when demand is greater than supply, causing prices to rise (MONTEIRO; SILVA, 2014).

Inflation is a high prices of goods and services and the basic basket survey is a monitoring of the prices of the set of basic foods for a human being, thus, the inflation index is a variable that represents the rise in the prices of the products that make up the basic basket (SOARES et al., 2016; DIEESE, 2018).

2.4 Strike in Brazil

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Law 7,783, of June 28, 1989, provides for the exercise of the right to strike. According to Art. 1 and 2: "The right to strike is ensured, with the workers being able to decide on the opportunity to exercise it and on the interests that they must defend through it"; "For the purposes of this Law, the collective, temporary and peaceful suspension, total or partial, of personal provision of services to an employer is considered a legitimate exercise of the right to strike" (JUSBRASIL, 2018).

Article 10 specifies the essential services or activities, which include: "III - distribution and sale of medicines and food", according to the law, these services must be provided to the community during the strike. Conforme Art.11: "In essential services or activities, unions, employers and workers are obliged, by mutual agreement, to guarantee, during the strike, the provision of services essential to meet the urgent needs of the community" (JUSBRASIL, 2018).

2.4.1 Truckers' strike

The truckers' strike, which started on May 21, 2018, occurred due to the increase in fuel. With the new pricing policy of Petrobras, the idea was to align Brazil with the practices of the international private sector, prices fluctuated sharply due to the increase in the dollar and oil in the international market, which started to serve as a base in 2016 and 2017. frequency of adjustments started to be higher and this did not please and caused the truckers' strike. The strike paralyzed the roads, emptied the shelves of the markets and demonstrated truckers' dissatisfaction with the new pricing policy, the measure taken by Petrobras to follow international private sector prices was not effective and helped to build a crisis (GUEDES, 2018 ; BBC NEWS, 2018).

With the strike it was possible to affirm the dependence on highways in Brazil, also considered a cause of the truckers' strike, most of the goods are distributed on the highways throughout the national territory, that is, with the excess of trucks and reduced circulation of loads due to recession, freight decreased, thus harming transportation companies and truck drivers, when the economy stabilized the diesel price went up and caused truckers revolt, causing them to unite and protest (GUEDES, 2018) .

The shutdown expanded to at least twenty Brazilian states and the first impacts of the strike began to emerge with the reduction in production at the major automakers. On the fourth day the strike had a greater impact for the population, the effects included cancellation of classes at universities, skyrocketing prices at gas stations, empty shelves in supermarkets and others, on the eleventh day of the stoppage the situation was normalized (GUEDES, 2018 ; BBC NEWS, 2018).

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2.5 Cost of living

The cost of living index is a calculation that represents the variation in the cost of a typical basket of goods and services, comparing the current cost of living with the previous cost of living (PINDYCK; RUBINFELD, 2010). This basket involves costs of food, housing, household equipment, transportation, clothing, education, health, recreation, personal expenses and miscellaneous expenses (DIEESE, 2018).

So it can be said that the cost of living is the combination of other costs that are part of the basic needs of human beings (TEEN IBGE, 2017). It is understood that if the prices of these products and services rise, the cost of living increases together, thus affecting the purchasing power of the consumer (ESAG, 2017).

In addition, as stated above, the cost of living is compared with its previous result, so it is possible to analyze how much the products and services have increased or decreased in value (PINDYCK; RUBINFELD, 2013).

3. Methodology

The methodology is strongly based on the methodology proposed by DIEESE, 2009. The products of the basic basket and their respective monthly quantities are different by region and were defined by Decree 399 of 1938, which remains in force. Its structure is shown in table 1, below.

Table 1 - Basic basket products and their monthly quantities in different Brazilian regions.

Foods	Region 1	Region 2	Region 3
Meat (kg)	6	4.5	6.6
Milk (l)	7.5	6	7.5
Beans (kg)	4.5	4.5	4.5
Rice (kg)	3	3.6	3
Flour (kg)	1.5	3	1.5
Potato (kg)	6		6
Tomato (kg)	9	12	9
French bread (kg)	6	6	6
Ground coffee (kg)	0.6	0.3	0.6
Banana (unit)	90	90	90
Sugar (kg)	3	3	3
Oil (ml)	750	750	900

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Butter (kg)	0.75	0.75	0.75
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Region 1: SP, MG, ES, RJ, GO and DF

Region 2: PE, BA, CE, RN, AL, SE, AM, PA, PI, TO, AC, PB, RO, AM, RR and MA

Region 3: PR, SC, RS, MT and MS.

Source: DIEESE, 2009

The composition of the basic basket in the city of Jacareí (products and their respective monthly quantities) is similar to the composition of Region 1. The compatibility with the DIEESE methodology allows comparisons between the cost of the basic basket in Jacareí and the cost of the basket basic education in the 27 capitals of Brazil where DIEESE performs the research. In addition, the minimum wage percentage and the number of hours of work required to purchase a basic food basket in Jacareí are calculated. This required number of hours is calculated for a worker who receives a minimum wage, but it can be extrapolated to those who receive more wages, by doing a simple mathematical weighting.

According to Dieese (2009), the consumer's places of purchase can be grouped into 4 types of commercial equipment. This equipment is: a) supermarkets: supermarkets, hypermarkets, grocery stores, warehouses, emporiums, etc .; b) fairs: street markets, municipal markets, fruit and vegetables, grocery stores, greengrocers, fruit stores, etc; c) butchers: butcher and meat shop; d) bakeries: bakery, confectionery, bread shop, confectionery, etc.

In recent years there has been a shift in the purchase of food products towards supermarkets and hypermarkets (SATO; BESSA, 2000; SILVA; MACHADO, 2005). This distribution channel has made use of several tools that allow the assessment of consumer needs and at the same time offer the convenience of time and place to purchase products. Retailers take responsibility for promoting products and have been a member of the distribution channel to observe and develop actions that meet the requirements of end consumers (SILVA; MACHADO, 2005). Thus, it is possible to concentrate the survey data collection in supermarkets.

After the completion of each collection, the data must be immediately tabulated in the spreadsheets built to calculate the cost of the basic basket. The price of each product must be multiplied by its respective quantity in the basket composition. Adding the average prices of all products (already weighted by brand and multiplied by their respective quantities), we obtain the price of the basic basket for the municipality of Jacareí in that period. After obtaining the total price of the basic basket, the percentage share of each product in the total is calculated, as

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well as the variation in the price of each product in relation to the previous month.

A comparison was made between the first three weeks of May 2018 with the first three weeks of June 2018 to analyze the influence of the strike on the price of food in the basic basket.

4. Analysis of Results

THE price monitoring research allows analyzing their fluctuations, as well as verifying the average percentage and price variations, by product and / or the whole.

Table 2 shows a comparison between the first three weeks of May and the first three weeks of June, it is possible to see how this scenario of uncertainty, in this case the strike, influenced the prices of some foods in the basic basket .

Table 2 - Comparison between May and June 2018

Foods	May	June	Variation
Beef	R \$ 125.69	R \$ 144.67	15.10%
milk	R \$ 22.74	R \$ 27.10	19.17%
Bean	R \$ 16.14	R \$ 16.48	2.06%
Rice	R \$ 8.05	R \$ 8.25	2.53%
Wheat flour	R \$ 4.52	R \$ 5.22	15.47%
Potato	R \$ 17.14	R \$ 19.47	13.61%
Tomato	R \$ 45.51	R \$ 38.01	-16.48%
French bread	R \$ 53.38	R \$ 54.58	2.25%
Coffee	R \$ 10.94	R \$ 10.92	-0.23%
Banana	R \$ 42.40	R \$ 42.61	0.50%
Sugar	R \$ 5.89	R \$ 5.71	-3.06%
Soy oil	R \$ 2.65	R \$ 2.61	-1.69%
butter	R \$ 28.70	R \$ 28.09	-2.13%
Total	R \$ 383.75	R \$ 403.71	5.20%

Source: Research data

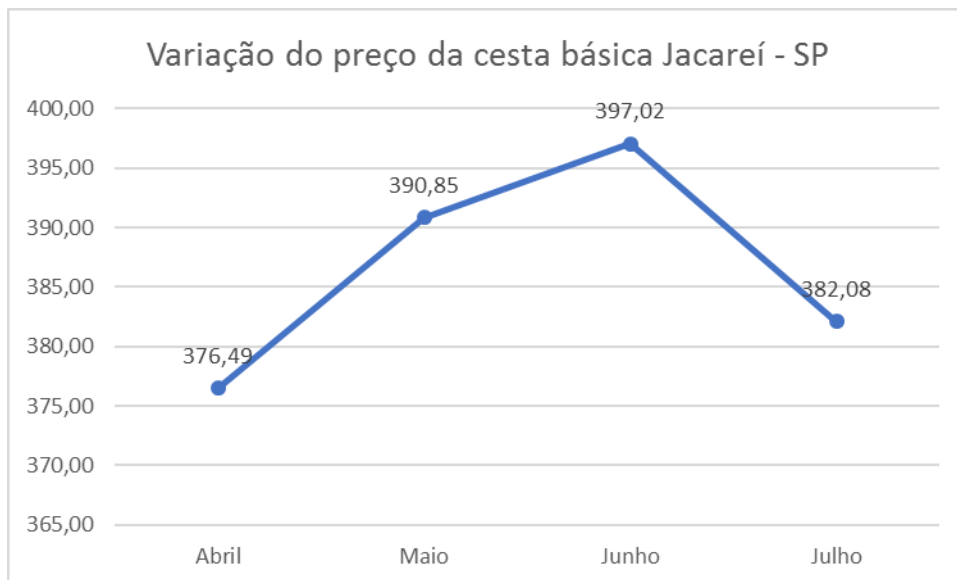
The prices that stand out the most are milk with 19.17% variation, wheat flour with 15.47% variation, meat with 15.10% variation and potato with 13.61% variation .

During the strike, the demand for the products increased due to people's fear of lacking in the markets, as the demand increased, according to the law of supply and demand, pricesFrom products went up.

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The meat obtained a variation of 15.10%, according to CEPEA (2018) the price of the meat was influenced by the strike due to its difficulty of distribution, the loads did not arrive during the strike and the volume in the attacked was reduced which, due to this scenario caused the price to rise.

According to Soares et al. (2016) the behavior of the price of food is linked to the behavior of the price of oil. With the strike, one of the requests was the reduction in the price of fuels, mainly diesel, it can be said that this increase in prices that truck drivers had been facing not only affected them, it affected and affected the cost for products to reach retail supermarket, therefore, the cost of the product made available to the final consumer had a high price, as shown in Graph 1, that Jacareí - SP was discharged three months in a row, one of them during the strike (May), but in the month before the strike (April) already showed high prices.

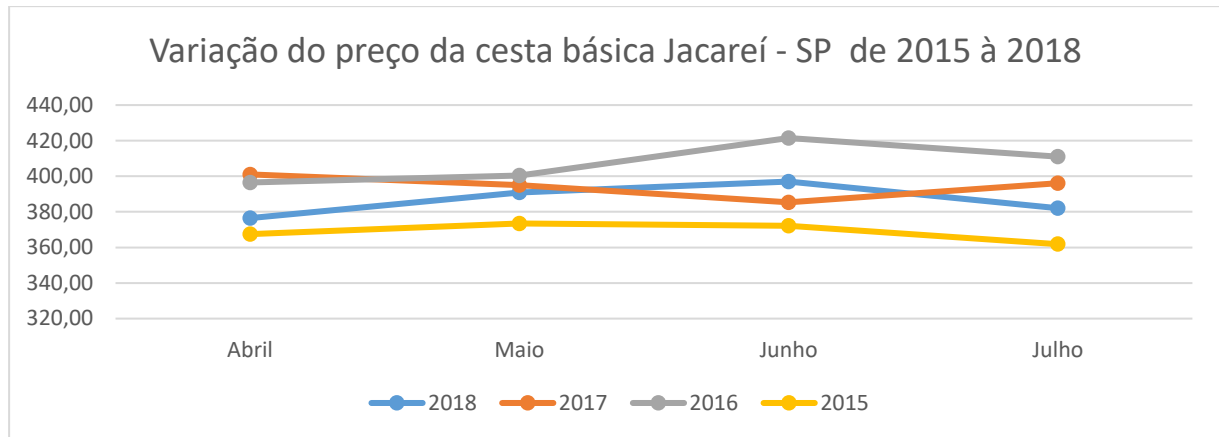


Graph 1 - Variation in the price of the basic basket Jacareí - SP

There are indications that the strike had an influence on the prices of products analyzing only the year 2018, there is also a low inflation of demand, where the demand during the strike was greater than the supply, which influenced the rise of the products, affecting financially the consumer, since the total price of the basket in the first weeks of June represented approximately 42% of the minimum wage (R \$ 954.00).

In graph 2, below, it is possible to observe the price variations of the basic basket in the months of April, May, June and July 2015 to 2018.

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Graph 2 - Price variation of the Jacareí basic basket - SP from 2015 to 2018

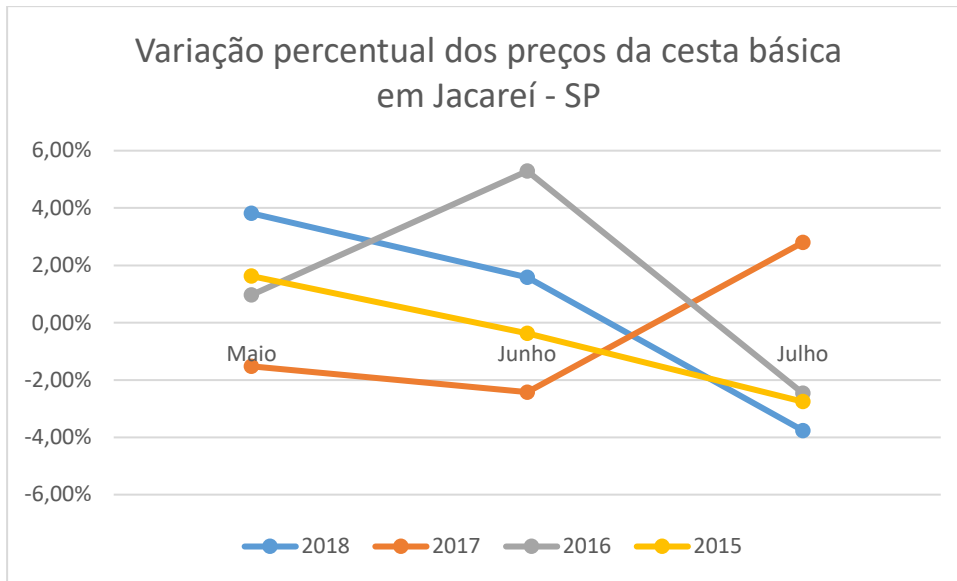
It is observed that in 2015 prices kept the same with low variations from one month to the next, it is noted that in May and June there was an increase in the price of the basic basket but something that is not very significant, which can be explained by the variation in the monthly inflation rate and other factors such as climate problems and changes in supply or demand. In 2016 it is observed that it was the year in which the price of the basket was highest in the compared months, with attention to June, reaching R \$ 420.00 approximately, while in other years, the month of June was on average of approximately R \$ 380.00 in nominal values, in graph 3 below the percentage values can be observed.

In 2017, basket prices rose in April and in May and June they fell followed by an increase in July, whereas in 2018 there was an increase in April, May and June and a fall in July.

Analyzing graph 2, it can be said that the behavior of prices follows a pattern of increase in May and June, with attention for 2017 that had a different behavior registering a drop in price in these two months. Another factor that can lead to higher prices in May is Mother's Day.

In chart 3 below, a comparison was made between May, June and July of the years 2015, 2016, 2017 and 2018 to observe the variation in prices and reach a conclusion about the influence or not of the strike on the behavior of prices.

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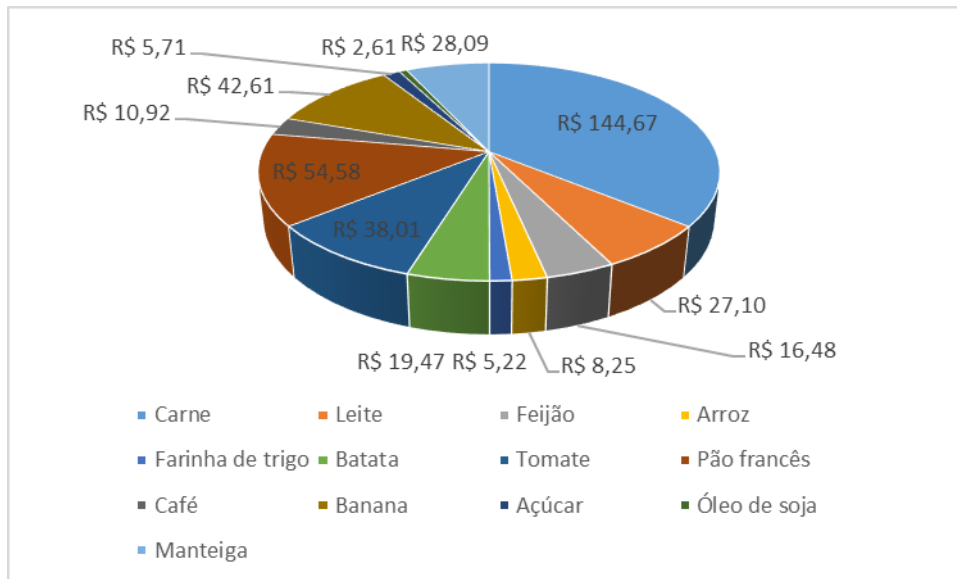
Graph 3 - Percentage change in the price of the basic basket in Jacareí - SP

It can be seen in Graph 3 that in May 2015 the basket had an approximate variation of 1.60%, in 2016 0.90%, in 2017 a negative variation of approximately -1.50% and in 2018 there is an increase variation, of approximately 4%, in June it can be seen low oscillation for 2015 and 2017 and in 2016 high oscillation being almost 6% and 2018 approximately 2%, and observing only 2018, in June there was a decrease when compared to May, and graph 1 shows an increase. In July 2015, 2016 and 2018 there was a low variation in the price of the basket and in 2017 a high variation being approximately 2.10%.

4.1 Relationship with the Cost of Living

Another relevant analysis is how this positive oscillation in the prices of the basic basket influenced the cost of living of the national population. The monetary composition of the basket follows the graph4, below.

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Graphic 4 - Composition of the Basic Basket in June 2018, after the strike.

Perceived in the graph 4 that the products that most represent in the basic basket are: meat, French bread and bananas. These products increased in the post-strike period, which represents a loss in households' purchasing power, thus affecting their cost of living.

4.2 Impacts of the strike

According to Candido et al.(2019) the truckers' strike brought numerous impacts to society, causing difficulties in the economic scenario. Some sectors experienced significant losses due to standstill. Supermarkets, the distribution channel where the basic basket research is concentrated, had a loss of 2.7 billion, the foods that most lost were meat, milk, wheat and others, which are shown in Table 2 that repeat for Jacareí - SP.

The strike had a major impact at the national level, however it is relevant to remember that most distribution centers operate with stock, so relatively smaller cities have not suffered so much loss.

4.3 Post-strike: a comparison between June 2018, 2017, 2016 and 2015

To validate the analysis and have a more accurate result, the T test was performed, table 3, a hypothesis test. The null hypothesis says that the averages come from the same population and the alternative hypothesis says that the averages do not come from the same population.

Table 3 - T test

T Test Table	2018/2017	2018/2016	2018/2015	Result

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P (T <= t) uni-flow	0.390012233	0.183331219	0.164772901	Do not reject null hypothesis
t single-flow critical	1.795884819	1.795884819	1.795884819	
P (T <= t) bi-flow	0.780024466	0.366662438	0.3229545803	Do not reject null hypothesis
t bi-flow critical	2,20098516	2,20098516	2,20098516	

It can be seen in the table that the averages do not reject the null hypothesis, that is, the averages come from the same population, so it can be said that there is no statistically difference between the years and that the strike had no influence on the variation in prices. basic basket in Jacareí - SP, it is possible to affirm the impact of the strike for some foods, which meant loss for their producers, however, according to a comparative analysis with previous years, there was no influence.

5. Conclusions

It is concluded by analyzing and observing the fluctuations in the prices of the products, that the products with the highest increases were milk, wheat flour, meat and potatoes, not only in the city of Jacareí, but also in the capitals.

The factors that influenced the high oscillation of food were several, such as climate problems and supply-demand.

The result showed an increase of 5.20% in the whole basic basket, indicating that the truckers' strike affected the increase in the prices of products, however, in a comparative analysis with the previous three years it was observed that there was no influence of strike in the prices of basic food products.

It is believed that the study of this project should continue, as the average price of the basic basket and the price of the products are important for aneconomic assumptions.

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