

## BRAZILIAN LIVESTOCK MARKETS: PRICE ANALYSIS AND FORECASTS FOR CATTLE AND POULTRY PRODUCTIONS

Rennaly Patricio Sousa (rennalysousa@gmail.com) - Federal University of Ceará;  
Kilmer Coelho Campos (kilmer@ufc.com) - Federal University of Ceará.

### INTRODUCTION

Cyclical fluctuations and/or seasonal of agricultural prices leads instability and possibly production disincentives in periods of low prices, as well as and overproduction in periods of very high prices. In this context, this study aims to evaluate the behavior of prices and prospects that involve the supply and demand for cattle and poultry in the Brazilian scenario, since the importance of these supply chains in agribusiness. The results seek to generate information relevant to the preparation and implementation of policies related mainly with planning the production and marketing of these, aiming at the competitiveness of domestic products that are inserted in a global market.

### MATERIAL AND METHODS

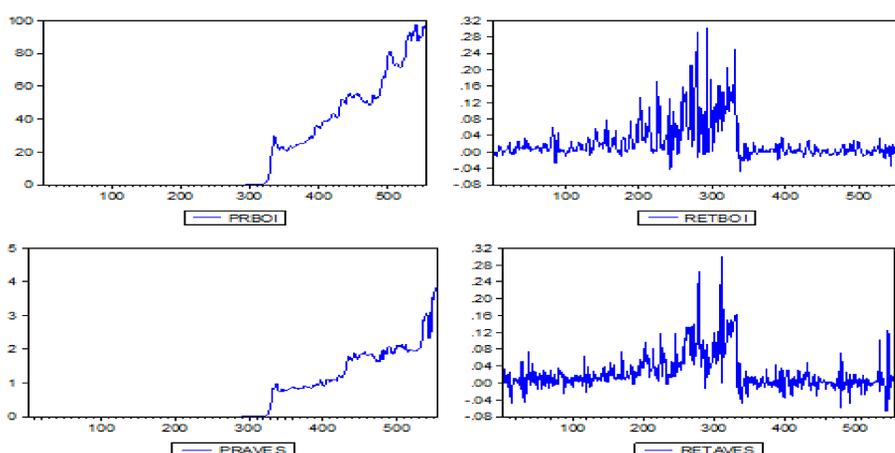
The data used were obtained from Fundação Getúlio Vargas, to characterize and analyze the volatility of the monthly returns series of cattle and poultry in Brazil (1967-2013), and from Instituto Brasileiro de Geografia e Estatística (IBGE) and Instituto de Pesquisa em Economia Aplicada (IPEA), to perform the projections. The software used to estimate the regression data and analysis models was *EVIIEWS 5.0*. To analyze the volatility of the monthly returns series of cattle and poultry in Brazil, it was used the class of models of autoregressive conditional heteroskedasticity (ARCH and GARCH). Based on estimates of geometric growth rates/GGR was possible to make projections of production, supply, exports and imports of bovine and poultry meat.

### RESULTS

#### Analysis of Volatility

The time series analyzed exhibit a behavior to increase prices received by producers, with the presence of some peaks for cattle and poultry prices.

**Figure 1: Series prices and returns for cattle and poultry (period 1967-2013)**



The first procedure was to set an ARMA model AR (1), AR (2) and MA (1) for cattle and a model AR (1), AR (2) and MA (2) for poultry. The estimation of GARCH (1,1) for both series, allowed capture the volatility dynamics in the return series of the products being considered. The conditions noted for the case that the variance is positive and weakly stationary is that the parameters of the regression are positive and greater than zero. For price series analyzed, we observed that the sum of the coefficients for the cattle was equal to 1.039324 and 0.998465 for poultry, indicating high persistence of shocks to the volatility of returns to the products.

#### Current Scenario and Future Prospects

The results shows a negative balance between supply and demand for bovine and poultry meat for the first years of the current and positive scenarios, indicating that producers must reorganize the productive sector, in order to satisfy domestic demand. In this scenario, there is a need to carry out import bovine and poultry meat. The same consideration can be made by analyzing the negative scenario. The years subsequent, exhibit a positive balance, answering the external market demand.

**Table 1: Market balance to bovine and poultry meat (supply-demand) in Brazil for the period 2012-2021(tons / year)**

Years	Bovine Meat			Poultry Meat		
	Negative	Current	Positive	Negative	Current	Positive
2012	-758.66	-603.73	-532.77	-1586.94	-984.66	-905.35
2013	-802.73	-485.92	-344.58	-1676.22	-421.70	-258.99
2014	-848.83	-363.28	-155.06	-1769.65	190.49	438.37
2015	-897.05	-236.08	31.75	-1867.45	855.40	1187.05
2016	-947.50	-104.63	210.65	-1969.81	1576.70	1986.46
2017	-1000.28	30.63	374.99	-2076.97	2358.31	2834.96
2018	-1055.51	169.21	516.39	-2189.14	3204.39	3729.53
2019	-1113.31	310.47	624.33	-2306.59	4119.38	4665.43
2020	-1173.79	453.68	685.70	-2429.55	5107.98	5635.77
2021	-1237.09	597.92	684.25	-2558.3	6175.17	6631.00

### CONCLUSIONS

The results showed that cattle and poultry have presented a persistence of volatility of prices, which makes these activities vulnerable. Therefore, a shock that generates a decline or increase in prices received by producers may imply several periods of intense instability or volatility in the market, generating substantial losses for the sector and the national economy.

The projections warn entrepreneurs and producers about the need to restructure the supply chain in order to increase productivity to meet the domestic demand for meat as well as government institutions for possible interventions in production. Thus, this information guide the national livestock activity which has great growth potential and comparative advantages over other producers countries.