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Analysis of the guava price components in local market of Juazeiro, Northeast Brazil

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Guava (*Psidium guajava* L.) belongs to the Myrtaceae family and is originated from the Americas, finding in Brazil favorable cropping conditions. Northeast and Southeast regions are responsible to 93% of the Brazilian production, based on the 2001-2010 period. In the Southeast Brazil, the state of São Paulo is the largest producer. In the Northeast Brazil, the main producers are the States of Pernambuco and Bahia. The largest guava variety cropped is Paluma. However, São Paulo State produces mainly table fruit and the Pernambuco and Bahia States produce mainly for juice and pulp. This is an important factor on the price difference between these two regions, which is up to three times larger in the Southeast than in the Northeast, even considering that production costs are higher in the Southeast. Hence, this work aims to understand the behavior of the historical price series of guava trading at local market of Juazeiro, Bahia State, in the Lower Middle region of São Francisco River Valley. The data were deflated by IGP-DI and refer to the January 2005 to December 2011 period and are available at the website of the Secretariat of Agriculture, Irrigation and Land Reform (SEAGRI) of the State of Bahia. The component tendency, cycle, seasonality and volatility were analyzed based on estimations of the models ARIMA, ARCH and spectral density. The results of the log-linear regression against time indicate a price growth tendency around 1.8% per month. Analyzing the spectral density function cycles, only 6 and 7 month seasonal cycles were found, what was expected given the possibility of up to two crops within the period of 14 months. Regression using seasonal dummy variables showed that guava prices are much above their historical average in month 5 and below this average in month 8. As for volatility, conditional heteroskedasticity was found in the residues of the model ARIMA (3,1,3), used to describe the behavior of guava prices. Thus, several models of the ARCH family were estimated, and ARCH (1,0) was chosen and no high volatility was found in the series.

Keywords: Tendency, Cycle, Seasonality, Volatility, ARIMA, ARCH, Spectral Density.

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