TIME SERIES ANALYSIS OF THE CORN PRODUCTION IN THE PHILIPPINES

THESIS

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ABSTRACT

MOTAS, JAINA OÑA. Time Series Analysis of the Corn Production in the Philippines Since 1980 – 2015, Undergraduate Thesis. Bachelor of Science in Applied Mathematics (Major in Statistics). Cavite State University, Indang, Cavite, December 2016. Adviser: Prof. Analyn A. Mojica.

The study was conducted to formulate an appropriate forecasting model for the corn production; test the accuracy of the formulated model; and provide the forecast of the Philippines' corn production for the next five years.

The data used in the study were secondary data of the corn production from 1980 – 2015 in the Philippine Statistics Authority (PSA).

Models were selected using the time series analysis. The best models for the corn production were selected considering several criteria: R–squared, Adjusted R–squared, Akaike Information Criterion, Schwarz Information Criterion, Mean Absolute Percentage Error, Mean Absolute Error, and Root Mean Square Error. The selected best model was the ARIMA (3, 2, 3), and the forecasted values for the corn production were computed using the formulated model equations.

The estimated model for the corn production was:

$$\Delta Y_t = -0.591\ \Delta^2 Y_{t-1} - 0.522\ \Delta^2 Y_{t-2} - 0.786\ \Delta^2 Y_{t-3} - 0.695\ \Delta^2 Y_{t-4}$$

$$- 0.170\ \Delta^2 Y_{t-5} - 0.445\ \Delta^2 Y_{t-6}$$

and the forecasted values were 35279.029 million metric tons, 30536.91 million metric tons, 28347.10 million metric tons, 28713.01 million metric tons, 32300.91 in metric tons respectively.

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INTRODUCTION

Next to rice, corn (or maize, *Zea mays*) is an important food crop in the Philippines, a staple food of 20 percent of the Filipino population, primarily in the southern regions of the Visayas and Mindanao. To the estimated 1 million corn farmers in the Philippines, the crop is also economically important as major ingredient of poultry and livestock feeds and as raw material in many industrial products such as starch oil, artificial sweeteners and organic liquids. The total corn production in 2010 was valued at Php70B (US$1.7 billion).

Based on 1990-2005 survey, around 22 percent of the total corn supply in the country was consumed as food, 64 percent as feeds, 13 percent for processing into other food product and 1 percent as seeds. The trend is also true for 2011 figures with 63 percent of total supply used for feeds, 21 percent as food, and 13 percent for processing. (Labios R. V., J. Gerpacio,Labios D, R. V. 2004)