

# The Role of El Niño Southern Oscillation in Commodity Price Movement and Predictability

DAVID UBILAVA\*

*School of Economics, University of Sydney*

## Abstract

The El Niño Southern Oscillation (ENSO) can impact supply and demand of primary commodities worldwide. But how does this affect the dynamic behavior of commodity prices? To account for potentially complex relationships between ENSO and prices, this study applies a time-varying smooth transition autoregressive (TV-STAR) modeling framework to monthly series of the sea surface temperature (SST) anomalies in the Niño3.4 region and 43 primary commodity prices spanning January 1980 – December 2016. Findings confirm expected linkages between SST anomalies and a subset of agricultural commodity prices, particularly vegetable oils and oilseeds as well as beverages. They also uncover relationships between SST anomalies and prices of some non-agricultural commodities, particularly timber and metals. For a subset of commodities, findings point to important benefits of the regime-dependent modeling. Nonlinearities in the ENSO-price relationship are manifested through direction of shocks, as well as their timing. The price effects can be twice-as-large if a shock occurs during the onset of the ENSO cycle (typically characterized by the neutral phase), compared to that during the peak ENSO season (which often involve an El Niño or a La Niña phase). This study thus offers valuable insights to policy makers, particularly those who rely on commodity price forecasts. These findings also carry important welfare implications, especially for developing nations, as their macroeconomic performance has been historically linked to the behavior of primary commodity prices.

**Keywords:** Commodity Prices, El Niño Southern Oscillation, Nonlinear Dynamics, Time-Varying Smooth Transition Autoregression

**JEL Codes:** C51, E31, Q54

---

\*E-Mail: david.ubilava@sydney.edu.au