

## 2009 School Seminar Series

Waikato Management School  
Te Raupapa



# Cointegrating Smooth Transition Regressions with a Stationary Transition Variable

Wednesday, 19 August 2009  
1.10pm – 2:00pm  
MSB.0.01

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### Abstract

Nonlinear regression models have been widely used in practice for a variety of time series applications. For purposes of analyzing univariate and multivariate time series data, in particular, the Smooth Transition Regression (STR) models have been shown to be very useful for representing and capturing asymmetric behavior. However, in most cases STR models have been applied stationary processes where all regressors are weakly exogenous. On the other hand, STR models with nonstationary variables are not yet fully understood as previous studies in the literature considered only cointegrated STR models where the transition variable is also nonstationary. In this paper we study smooth transition cointegrating regressions where the transition variable is stationary. This is important, for instance, to model changing equilibrium over the business cycle. We derive asymptotic results for both static nonlinear least squares (NLS) and dynamic nonlinear least squares (DNLS) estimators.

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