



**AgEcon** SEARCH

RESEARCH IN AGRICULTURAL & APPLIED ECONOMICS

*The World's Largest Open Access Agricultural & Applied Economics Digital Library*

**This document is discoverable and free to researchers across the globe due to the work of AgEcon Search.**

**Help ensure our sustainability.**

Give to AgEcon Search

AgEcon Search

<http://ageconsearch.umn.edu>

[aesearch@umn.edu](mailto:aesearch@umn.edu)

*Papers downloaded from **AgEcon Search** may be used for non-commercial purposes and personal study only. No other use, including posting to another Internet site, is permitted without permission from the copyright owner (not AgEcon Search), or as allowed under the provisions of Fair Use, U.S. Copyright Act, Title 17 U.S.C.*

*No endorsement of AgEcon Search or its fundraising activities by the author(s) of the following work or their employer(s) is intended or implied.*

**Promotion Pass-Through and Consumer Search: An Empirical Analysis**

**Timothy J. Richards**

Arizona State University

trichards@asu.edu

480-727-1488

**Miguel I. Gómez**

Cornell University

mig7@cornell.edu

607-255-8159

**Jun Lee**

Cornell University

jl653@cornell.edu

607-342-8616

*Selected Paper prepared for presentation at the Agricultural & Applied Economics Association's  
2012 AAEA Annual Meeting, Seattle, Washington, August 12-14, 2012*

*Copyright 2012 by Timothy J. Richards, Miguel I. Gómez and Jun Lee. All rights reserved.  
Readers may make verbatim copies of this document for non-commercial purposes by any means,  
provided that this copyright notice appears on all such copies.*

## Background & Motivation

Retail price pass-through is one of the most important issues facing manufacturers of consumer packaged goods. Manufacturers would prefer retailers to completely pass-through trade deals to consumers. At the same time, they would rather retailers not pass-through wholesale price increases to consumers. Asymmetric pass-through between rising and falling wholesale prices (e.g. “rockets and feathers”) is commonly thought to result from retailers exercise of market power, while recent theoretical work argues that this conventional phenomenon may instead be due to consumer search behaviors and retailers rational responses.

Most empirical literature consider retailer response to negative wholesale price change (i.e. trade promotions) and not upward movements in wholesale prices as well. In this study, we offer a treatment of pass-through that is relevant to both wholesale price discounts and price increases.

## Objectives

Our objective is to explain why the pass-through rate for trade promotions and increased wholesale prices tend to be generally less than complete.

We test whether incomplete pass-through is due to consumer search behavior or market power

We apply our test to wholesale and retail breakfast cereal price data for five retailers in the Los Angeles MSA market over a 156 weeks.

## Modeling Approach

We follow Hansen’s (1999) Panel Threshold Error Correction Model (TECM):

$$\Delta p_{i,t}^r = \begin{cases} \alpha_{0,i} + \theta^{(1)}(N_t^r, \eta_t^r) \cdot ECT_{i,t-1}^r + \alpha_1 \Delta p_{i,t-1}^r + \alpha_2 \Delta w_{i,t}^r + \alpha_3 \Delta w_{i,t-1}^r + \varepsilon_{i,t}, & (ECT_{i,t-1}^r \leq \gamma_1) \\ \alpha_{0,i} + \theta^{(2)}(N_t^r, \eta_t^r) \cdot ECT_{i,t-1}^r + \alpha_1 \Delta p_{i,t-1}^r + \alpha_2 \Delta w_{i,t}^r + \alpha_3 \Delta w_{i,t-1}^r + \varepsilon_{i,t}, & (\gamma_1 < ECT_{i,t-1}^r \leq \gamma_2) \\ \alpha_{0,i} + \theta^{(3)}(N_t^r, \eta_t^r) \cdot ECT_{i,t-1}^r + \alpha_1 \Delta p_{i,t-1}^r + \alpha_2 \Delta w_{i,t}^r + \alpha_3 \Delta w_{i,t-1}^r + \varepsilon_{i,t}, & (ECT_{i,t-1}^r > \gamma_2) \end{cases}$$

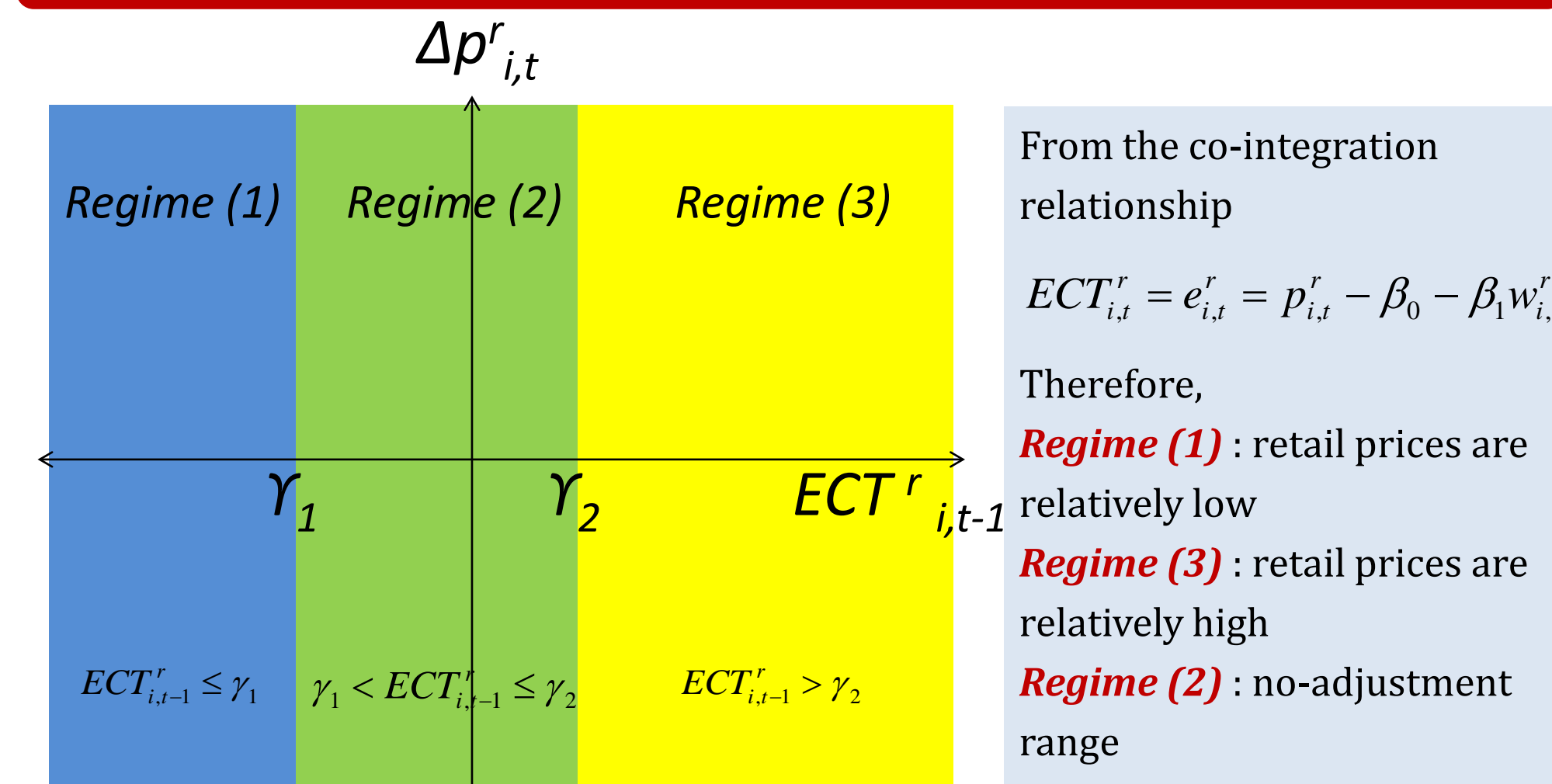
where  $\theta^{(1)} = \phi_{11}N_t^r + \phi_{12}\eta_t^r$ ,  $\theta^{(2)} = \phi_{21}N_t^r + \phi_{22}\eta_t^r$ ,  $\theta^{(3)} = \phi_{31}N_t^r + \phi_{32}\eta_t^r$

$i$ : brand,  $t$ : week, and  $r$ : retailer  
 $p$ : retail price,  $w$ : wholesale price  
 $N$ : number of stock-keeping units (SKUs) of ready-to-eat breakfast cereal  
 (Consumer Search Costs)  
 $\eta$ : the absolute value of the own-price elasticity of demand  
 (Market Power)  
 $\gamma_1$  &  $\gamma_2$ : the threshold parameters

Short-run asymmetries can be incorporated as follows

$$\dots \alpha_2^+ \Delta^+ w_{i,t}^r + \alpha_2^- \Delta^- w_{i,t}^r + \alpha_3^+ \Delta^+ w_{i,t-1}^r + \alpha_3^- \Delta^- w_{i,t-1}^r$$

## Regime-dependant Pass-through Rates



## Data and Time Series Properties

- Weekly price data (03/01/2007-03/31/2010)
- Five retail companies in LA
- Retail prices from INFOSCAN
- Wholesale prices from PROMODATA
- Ten primary brands

### Hadri (2000)’s Panel Unit-Root Test

⇒ For the variables in levels, some panels contain unit roots; For the variables in first difference, all panels follow an  $I(0)$  process

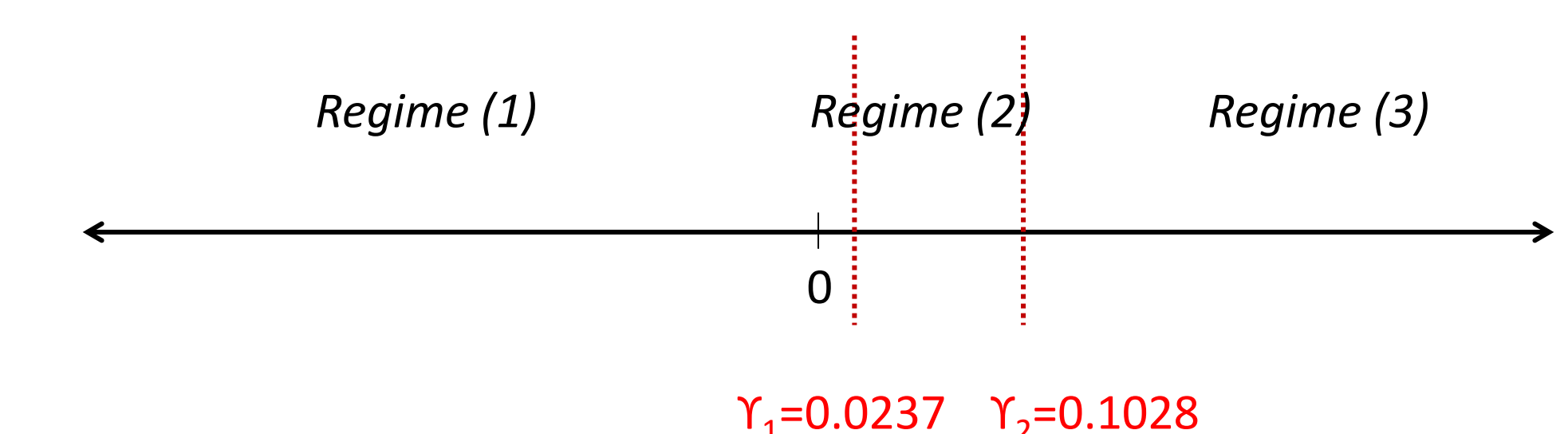
### Pedroni (2000)’s Panel Co-integration Test

⇒ There is a long-run relationship between retail and wholesale prices for each brand and retailers

### Wholesale prices are weakly exogenous

## Threshold Estimates and Hypothesis Tests

# of Thresholds	Estimated Thresholds	LR Statistic	Bootstrap P-Value
1	0.1028	23.39	0.023
2	0.0237 0.1028	23.40	0.047
3	0.0237 0.0354 0.1028	4.59	0.767



## Symmetric & Asymmetric TECM Estimates

	TECM	ATECM
$ECT_{t-1}^{(1)}$	1.3112**	1.3113**
$ECT_{t-1}^{(2)}$	-3.4576**	-3.4586**
$ECT_{t-1}^{(3)}$	-3.4087**	-3.4079**
$N_t^r \cdot ECT_{t-1}^{(1)}$	-1.3145**	-1.3132**
$N_t^r \cdot ECT_{t-1}^{(2)}$	0.7244**	0.7230**
$N_t^r \cdot ECT_{t-1}^{(3)}$	1.7040	1.7002
$\eta_t^r \cdot ECT_{t-1}^{(1)}$	-1.1344**	-1.1345**
$\eta_t^r \cdot ECT_{t-1}^{(2)}$	1.4851**	1.4856**
$\eta_t^r \cdot ECT_{t-1}^{(3)}$	1.1031**	1.1033**
$d\Delta p_{t-1}^r / dECT_{t-1}^{(1)}$	-0.8376	-0.8375
$d\Delta p_{t-1}^r / dECT_{t-1}^{(2)}$	-0.8923	-0.8927
$d\Delta p_{t-1}^r / dECT_{t-1}^{(3)}$	-0.9131	-0.9130
LLF	16,336.89	16,337.07
R <sup>2</sup>	0.65	0.65

## Conclusions

- Our results that are contrary to the conventional wisdom.
  - Market power cause retail prices to fall quickly and rise slowly
  - Consumer search costs cause retail prices to rise quickly and fall slowly precisely the “rockets and feathers” phenomenon
- Deal pass-through can be expected to be higher among more powerful retailers, and those that offer a low search-cost environment.
- Manufacturers and wholesalers interested in improving pass-through performance would be well served to consider ways in which they can reduce consumer search costs.