



# **Market Integration and Agribusiness in the North American Free Trade Agreement:**

## **The Case of Fruits and Vegetables**

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# Background and Objective:

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- NAFTA led to the integration of various spatially separated product markets.
- Formal testing of market integration has not been conducted, particularly in the use of commodity level price data.
- This paper is aimed to fill this gap with particular emphasis on fruit and vegetable sectors.
- Testing the presence and degree of market integration was conducted using panel data analysis proposed by Levin, Lin and Chu (2002) with monthly data from 1989 to 2006.

**Table 1**  
**Panel Unit Root Tests for North American Fruit Markets**

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	US – CAN – MEX		US – CAN		US - MEX	
	Beta	H-L	Beta	H-L	Beta	H-L
<b>Apple</b>						
98 - 06	-0.45 (-16.6)	1.16	-0.44 (-13.2)	1.19	-0.47 (-15.2)	1.09
98 – 02	-0.49 (-11.8)	1.03	-0.46(-8.95)	1.12	-0.47 (-10.1)	1.09
03 – 06	-0.56 (-10.7)	0.84	-0.56(-8.91)	0.84	-0.58 (-9.94)	0.80
<b>Grapes</b>						
98 - 06	-0.76 (-24.9)	0.48	-0.86(-24.6)	0.35	-0.80 (-23.5)	0.43
98 – 02	-0.76 (-16.8)	0.48	-0.84 (-15.0)	0.38	-0.82 (-16.2)	0.40
03 – 06	-0.80 (-15.3)	0.43	-0.91 (-14.8)	0.29	-0.83 (-13.8)	0.39
<b>Oranges</b>						
98 - 06	-0.45 (-15.7)	1.16	-0.47 (-14.4)	1.09	-0.44 (-13.7)	1.19
98 – 02	-0.59 (-14.5)	0.78	-0.61 (-13.1)	0.74	-0.57 (-12.9)	0.82
03 – 06	-0.38 (-7.49)	1.45	-0.43 (-7.71)	1.23	-0.37 (-6.59)	1.50
<b>Strawberries</b>						
98 – 06	-0.67 (-23.9)	0.63	-0.76 (-22.5)	0.48	-0.68 (-21.9)	0.61
98 – 02	-0.67 (-16.9)	0.63	-0.74 (-15.2)	0.51	-0.68 (-15.8)	0.61
03 – 06	-0.72 (-15.2)	0.54	-0.81 (-14.1)	0.42	-0.76 (-14.3)	0.48

**Table 2**  
**Panel Unit Root Tests for North American Vegetable Markets**

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	US – CAN – MEX		US – CAN		US - MEX	
	Beta	H-L	Beta	H-L	Beta	H-L
<b>Onion</b>						
98 - 06	-0.25 (-9.34)	2.41	-0.19 (-6.00)	3.28	-0.29 (-9.00)	2.02
98 - 02	-0.30 (-7.98)	1.94	-0.27 (-4.99)	2.20	-0.32 (-7.68)	1.80
03 - 06	-0.33 (-5.55)	1.73	-0.31 (-3.81)	1.87	-0.32 (-4.72)	1.80
<b>Cantaloupe</b>						
98 - 06	-0.62 (-21.0)	0.72	-0.63 (-17.8)	0.70	-0.70 (-21.24)	0.57
98 - 02	-0.67 (-16.6)	0.62	-0.66 (-13.3)	0.64	-0.76 (-16.18)	0.48
03 - 06	-0.67 (-13.2)	0.62	-0.70 (-11.4)	0.57	-0.75 (-13.15)	0.50
<b>Squash</b>						
98 - 06	-0.73 (-24.6)	0.53	-0.79 (-21.9)	0.44	-0.75 (-22.77)	0.50
98 - 02	-0.74 (-17.2)	0.51	-0.85 (-16.4)	0.36	-0.74 (-15.17)	0.51
03 - 06	-0.76 (-14.5)	0.48	-0.76 (-12.1)	0.48	-0.80 (-13.63)	0.43
<b>Cucumbers</b>						
98 - 06	-0.62 (-20.7)	0.72	-0.66 (-20.3)	0.64	-0.68 (-21.82)	0.61
98 - 02	-0.62 (-15.1)	0.72	-0.65 (-14.3)	0.66	-0.68 (-16.42)	0.61
03 - 06	-0.68 (-13.1)	0.61	-0.69 (-12.7)	0.59	-0.76 (-13.99)	0.48

Table 2: Continued

	US – CAN – MEX		US – CAN		US - MEX	
	Beta	H-L	Beta	H-L	Beta	H-L
Tomatoes						
98 – 06	-0.71 (-25.0)	0.56	-0.75 (-23.7)	0.50	-0.75 (-25.11)	0.50
98 – 02	-0.72 (-17.5)	0.54	-0.77 (-16.7)	0.47	-0.71 (-16.45)	0.56
03 – 06	-0.76 (-14.4)	0.48	-0.80 (-13.4)	0.43	-0.82 (-15.13)	0.40
Peppers						
98 – 06	-0.52 (-17.5)	0.94	-0.56 (-17.5)	0.84	-0.48 (-14.37)	1.06
98 – 02	-0.58 (-14.0)	0.80	-0.62 (-14.0)	0.72	-0.54 (-11.73)	0.89
03 – 06	-0.52 (-10.2)	0.94	-0.54 (-9.98)	0.89	-0.46 (-11.16)	1.12

# Main Results:

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## Econometric Results:

- Estimates of price convergence show moderate to high convergence levels - suggests moderate to high degree of market integration.
- Estimates of half-life are less than one month (most cases).
- Fruit and vegetable markets have experienced deeper market integration in the last few years.

## Impact of Deeper Market Integration:

- Trade flows increased substantially.
- Growth FDI in food processed industry: US in Mexico - \$2.3 bil (1993) to \$51. bil (1999); Mexico in US - \$304 mil (1997) to \$1 bil (1999); US in Canada - \$1.8 bil (1989) to \$5 bil (1999).
- Consumers benefit: lower food prices, greater variety in food products, availability year around.
- Producers benefit: access to potentially cheaper suppliers of inputs and larger markets.

# Main Results: Continued

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## Caveats:

- Producers must adjust production as more competing products enter the markets.
- Income of farmers declined; but some agribusiness firms reaped huge profits .
- Agribusiness firms restructure production activities: mergers – can create market power.

## What's to Follow?:

- Sound policy that facilitates the goal of market integration (Knutson et. al., 2002):
  - policies that facilitate progress, growth, trade and commerce.
  - policies that regulate how business is conducted.
  - policies that intervene with the functioning or distribution of returns.