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## **Law of One Price: International Restaurant Border Pricing**

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### **U.S – Canada Border Restaurants and Consumer Arbitrage Opportunities**

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## Abstract

This study models the article entitled, “Cross-border restaurant price and exchange rate interactions” by Thomas M. Fullerton Jr., Karen P. Fierro, and Emmanuel Villalobos, Department of Economics & Finance, University of Texas at El Paso, TX 79968-0543, USA.

The Law of One Price, in essence, states that a good must sell for the same price in all locations. In efficient markets, when two products are identical, it is intuitive that the two products sell for the same price. However, when these product prices are mismatched, there is an opportunity for the buyer/consumer to arbitrage the mismatching; that is, to take advantage and buy an identical product from another market at a below-equilibrium price.

This concept can be traced back to 1760-1770 France, when economists began to apply this “law” to international markets.<sup>1</sup> But does the concept actually hold true across political borders? According to the Purchasing Power Parity (PPP), the exchange rate between two currencies should adjust so that, when expressed in the same currency, an identical good in two different countries has the same price.<sup>2</sup> For example, if the PPP holds, a product that sells for \$1.50 CAN should sell for \$1.00 USD, if the exchange rate between the countries is \$1.50USD/CAN.

This study provides a snapshot analysis into the pricing activity of five international restaurant franchises on both sides of the United States/Canada border in Port Huron, Michigan and Sarnia, Ontario. Through this analysis, I seek to identify opportunities for consumer cross-border arbitrage.

## Data and Methodology

All data collected is primary data. Menu data (prices) was collected during the final week of each month over a four month period spanning from January 2014 to April 2014. The January 25 & February 28 data collections consisted of a personal trip to Port Huron and Sarnia, physically going and observing the posted prices on the menu. The March 31 & April 24 observations consisted of a phone call, placed by myself personally, to the same locations, gathering information from each of same previously-visited establishments.

The following data gathered January 25 is used as base data:

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<sup>1</sup> Wyld, D. (2010, November 21). *Top Ten Management on The Law of One Price: An Overview of Anti-Arbitrage*. Retrieved May 27, 2014, from [http://www.bukisa.com/articles/400084\\_top-ten-management-on-the-law-of-one-price-an-overview-of-anti-arbitrage](http://www.bukisa.com/articles/400084_top-ten-management-on-the-law-of-one-price-an-overview-of-anti-arbitrage)

<sup>2</sup> Investopedia - Educating the world about finance. Law Of One Price Definition | Investopedia. Retrieved May 27, 2014, from <http://www.investopedia.com/terms/l/law-one-price.asp>

**Table 1**

<b>JANUARY 25, 2014 PRICING COMPARISONS</b>				
Establishment	Item	Menu Price - Canadian Dollar	US \$ Equiv. Price	Menu Price - U.S. Dollar
McDonald's	Big Mac	\$4.99	\$4.43	\$3.99
	Quarter Pounder w/ Cheese	\$4.89	\$4.43	\$3.99
	10 pc. McNugget	\$6.19	\$4.43	\$3.99
Tim Horton's	L Coffee	\$1.71	\$1.89	\$1.70
	Chicken Salad Sandwich	\$3.29	\$3.76	\$3.39
	Tuscan Chicken Sandwich	\$5.29	\$4.76	\$4.29
	L Café Mocha	\$2.43	\$2.38	\$2.15
	Turkey Bacon Club Sandwich	\$4.99	\$4.76	\$4.29
Burger King	Whopper	\$5.19	\$4.20	\$3.79
	Whopper Jr.	\$1.19	\$1.65	\$1.49
	Double Stacker	\$5.19	\$2.22	\$2.00
Taco Bell	Crunch Wrap Supreme	\$3.99	\$2.87	\$2.59
	Nacho Supreme	\$2.99	\$2.43	\$2.19
	Soft Taco	\$1.29	\$1.32	\$1.19
Arby's	Md. Classic Roast Beef	\$3.99	\$4.43	\$3.99
	Md. Beef & Cheddar Classic	\$4.99	\$5.20	\$4.69
<b>\$1 USD =</b>			<b>1.1093</b>	

Source: <http://www.exchangerates.org.uk/USD-CAD-exchange-rate-history.html>

The results of each data collection are posted in the following tables:

**Table 2**

<b>FEBRUARY 28, 2014 PRICING COMPARISONS</b>						
Establishment	Item	Menu Price - Sarnia, ON (CAN)	US \$ Equiv. Price	Menu Price - Port Huron, MI (USD)	% Change* CAN	% Change, USD*
McDonald's	Big Mac	\$4.99	\$4.41	\$3.99	0.00%	0.00%
	Quarter Pounder w/ Cheese	\$4.89	\$4.41	\$3.99	0.00%	0.00%
	10 pc. Nugget	\$6.39	\$4.41	\$3.99	0.03%	0.00%
Tim Horton's	L Coffee	\$1.71	\$1.88	\$1.70	0.00%	0.00%
	Chicken Salad Sandwich	\$3.29	\$3.75	\$3.39	0.00%	0.00%
	Tuscan Chicken Sandwich	\$5.29	\$4.75	\$4.29	0.00%	0.00%
	L Café Mocha	\$2.43	\$2.38	\$2.15	0.00%	0.00%
	Turkey Bacon Club Sandwich	\$4.99	\$4.75	\$4.29	0.00%	0.00%
Burger King	Whopper	\$5.19	\$4.19	\$3.79	0.00%	0.00%
	Whopper Jr.	\$1.19	\$1.65	\$1.49	0.00%	0.00%
	Double Stacker	\$5.19	\$2.21	\$2.00	0.00%	0.00%
Taco Bell	Crunch Wrap Supreme	\$3.99	\$2.87	\$2.59	0.00%	0.00%
	Nacho Supreme	\$2.79	\$2.42	\$2.19	-0.07%	0.00%
	Soft Taco	\$1.29	\$1.32	\$1.19	0.00%	0.00%
Arby's	Md. Classic Roast Beef	\$3.99	\$4.41	\$3.99	0.00%	0.00%
	Md. Beef & Cheddar Classic	\$4.99	\$5.19	\$4.69	0.00%	0.00%
		27-Feb	28-Feb	1-Mar		
		1 USD: 1.1059 CAN	1 USD: 1.1064 CAN	1 USD: 1.1064 CAN		

Source: <http://www.exchangerates.org.uk/USD-CAD-exchange-rate-history.html>

\* = % change from January 25

Table 3

**MARCH 30, 2014 PRICING COMPARISON**

Establishment	Item	Menu Price - Samia, ON (CAN)	US \$ Equiv. Price	Menu Price - Port Huron, MI (USD)	% Change* CAN	% Change, USD*
McDonald's	Big Mac	\$4.99	\$4.41	\$3.99	0.00%	0.00%
	Quarter Pounder w/ Cheese	\$4.89	\$4.41	\$3.99	0.00%	0.00%
	10 pc. Nugget	\$6.39	\$4.41	\$3.99	0.03%	0.00%
Tim Horton's	L Coffee	\$1.71	\$2.08	\$1.88	0.00%	0.11%
	Chicken Salad Sandwich	\$3.29	\$3.75	\$3.39	0.00%	0.00%
	Tuscan Chicken Sandwich	\$5.29	\$4.74	\$4.29	0.00%	0.00%
	L Café Mocha	\$2.43	\$2.38	\$2.15	0.00%	0.00%
Burger King	Turkey Bacon Club Sandwich	\$4.99	\$4.74	\$4.29	0.00%	0.00%
	Whopper	\$5.19	\$4.19	\$3.79	0.00%	0.00%
	Whopper Jr.	\$1.19	\$1.65	\$1.49	0.00%	0.00%
Taco Bell	Double Stacker	\$5.19	\$2.21	\$2.00	0.00%	0.00%
	Crunch Wrap Supreme	\$3.99	\$2.86	\$2.59	0.00%	0.00%
	Nacho Supreme	\$2.79	\$2.42	\$2.19	-0.07%	0.00%
Arby's	Soft Taco	\$1.29	\$1.32	\$1.19	0.00%	0.00%
	Md. Classic Roast Beef	\$3.99	\$4.41	\$3.99	0.00%	0.00%
	Md. Beef & Cheddar Classic	\$4.99	\$5.18	\$4.69	0.00%	0.00%
		29-Mar2	30-Mar	31-Mar		
		1 USD: 1.1061 CAN	1 USD: 1.1054	1 USD: 1.1054 CAD		

Source: <http://www.exchangerates.org.uk/USD-CAD-exchange-rate-history.html>  
 \* = % change from January 25

Table 4

**APRIL 24, 2014 PRICING COMPARISON**

Establishment	Item	Menu Price - Samia, ON (CAN)	US \$ Equiv. Price	Menu Price - Port Huron, MI (USD)	% Change*, CAN	% Change, USD*
McDonald's	Big Mac	\$4.99	\$4.40	\$3.99	0.00%	0.00%
	Quarter Pounder w/ Cheese	\$4.89	\$4.40	\$3.99	0.00%	0.00%
	10 pc. Nugget	\$6.39	\$4.40	\$3.99	0.03%	0.00%
Tim Horton's	L Coffee	\$1.71	\$2.07	\$1.88	0.00%	0.11%
	Chicken Salad Sandwich	\$3.29	\$3.74	\$3.39	0.00%	0.00%
	Tuscan Chicken Sandwich	\$5.29	\$4.95	\$4.49	0.00%	0.05%
	L Café Mocha	\$2.43	\$2.37	\$2.15	0.00%	0.00%
Burger King	Turkey Bacon Club Sandwich	\$4.99	\$4.73	\$4.29	0.00%	0.00%
	Whopper	\$5.19	\$4.18	\$3.79	0.00%	0.00%
	Whopper Jr.	\$1.19	\$1.64	\$1.49	0.00%	0.00%
Taco Bell	Double Stacker	\$5.19	\$2.21	\$2.00	0.00%	0.00%
	Crunch Wrap Supreme	\$3.99	\$2.86	\$2.59	0.00%	0.00%
	Nacho Supreme	\$2.79	\$2.41	\$2.19	-0.07%	0.00%
Arby's	Soft Taco	\$1.29	\$1.31	\$1.19	0.00%	0.00%
	Md. Classic Roast Beef	\$3.99	\$4.40	\$3.99	0.00%	0.00%
	Md. Beef & Cheddar Classic	\$4.99	\$5.28	\$4.79	0.00%	0.02%
		23-Apr	24-Apr	25-Apr		
		1 USD = 1.1031 CAD	1 USD = 1.1027 CAD	1 USD = 1.1039 CAD		

Source: <http://www.exchangerates.org.uk/USD-CAD-exchange-rate-history.html>  
 \* = % change from January 25

## Analysis & Conclusion

As could be anticipated, over the short span of about four months, there was not a large amount of percentage change in menu price cross borders. No more than three fast food items every month changed in either CAN or USD values, and never more than 0.11%.

Perhaps more relevant and interesting are the implications of these prices with respect to the Law of One Price. The Law of One Price, in essence, states that a good must sell for the same price in all locations. Applied internationally and specifically to this study, when the Port Huron, USA price of an item is multiplied by the change rate of that particular day, the equivalent price should be the same as the actual menu price in Sarnia, ON. As shown in the above tables, at no point is that the case. Thus, the Law of One Price was not holding across political borders.

However, there is still an opportunity for consumers to take advantage of these price differences. Canadian consumers are crossing the Blue Water Bridge, the gateway between Port Huron and Sarnia, to take advantage of lower prices in the form of clothing, gasoline, groceries<sup>3</sup>, and various other consumer goods. In fact, there is a Canadian website designed to offer consumers a search tool to find the best opportunities to save money across the border<sup>4</sup>. This fact is crucial to the availability of fast food cross-border arbitrage.

Because fast food is a perishable good, there is no opportunity to cross into Port Huron, purchase fast food, and return to re-sell the good at the Ontario menu price, earning you a profit – consumers are unlikely to purchase a “second-hand” perishable good. By definition, perishable goods lose considerable value if delayed in its transportation. However, when bundled with their time, Canadians can take advantage of the lower fast food prices on the American side of the bridge. That is, should Canadians find themselves in the United States, there is no cost of crossing the border to purchase only this fast food item. Examples of these costs could be bridge tolls and fuel.

These consumer arbitrage opportunities are prevalent in more than just the fast food industry. While crossing back into Port Huron, the border patrol agent who greeted me mentioned the closing of the restaurant Olive Garden in Sarnia, ON. He said the Olive Garden in Port Huron, MI offered lower prices, and actually estimated the savings for a couple to go out to dinner to be around \$30 USD. While this information goes beyond the scope of this study, it speaks to a larger prevalence of cross-border arbitrage opportunities, especially when already coupled with another task, activity, or purpose for crossing the border.

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<sup>3</sup> Canadians flocking to U.S. for deals. (2012, August 22). *The London Free Press*. Retrieved May 2, 2014, from <http://www.lfpress.com/news/london/2012/08/22/20127656.html>

<sup>4</sup> Cross Border Shopping in Port Huron, MI. (n.d.). Cross Border Shopping. Retrieved May 7, 2014, from <http://www.crossbordershopping.ca/shopping/port-huron-mi>

### Footnotes and References

1. Wyld, D. (2010, November 21). *Top Ten Management on The Law of One Price: An Overview of Anti-Arbitrage*. Retrieved May 27, 2014, from [http://www.bukisa.com/articles/400084\\_top-ten-management-on-the-law-of-one-price-an-overview-of-anti-arbitrage](http://www.bukisa.com/articles/400084_top-ten-management-on-the-law-of-one-price-an-overview-of-anti-arbitrage)
2. Investopedia - Educating the world about finance. Law Of One Price Definition | Investopedia. Retrieved May 27, 2014, from <http://www.investopedia.com/terms/l/law-one-price.asp>
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