



Borders and Big Macs[☆]

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HIGHLIGHTS

- I provide new estimates of border frictions for 14 countries using Big Mac prices.
- I show that most of the price variation arises between neighboring locations.
- I find that borders generally introduce only small price wedges.
- Border widths are small in relation to price variations observed across the US.

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ABSTRACT

I provide new estimates of border frictions for 14 countries using local, national, and international Big Mac prices. I find that borders generally introduce only small price wedges, far smaller than those observed across New York City neighboring locations.

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1. Introduction

Economists believe that border frictions are large. In a seminal paper, [Engel and Rogers \(1996\)](#) estimate border frictions on price dispersion across US and Canadian cities. After controlling for distance and other factors, they concluded that the economic impact of crossing the border between the United States and Canada is equivalent to shipping a good 75,000 miles. Numerous subsequent studies estimate even more impressive border frictions. For example, [Parsley and Wei \(2001\)](#) find that border frictions between the United States and Canada are equivalent to shipping a good 101 million miles, and the border between the United States and Japan is equivalent to shipping a good 43,000 trillion miles.

[☆] The views in this paper are my responsibility and should not be interpreted as reflecting the views of the Federal Reserve Bank of Dallas or the Federal Reserve System.

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In this paper, I measure border frictions using local, national, and international Big Mac prices. I show that the bulk of time-series price volatility observed across the United States arises between New York City neighboring locations. Using these data, I provide new estimates of border frictions for 14 countries. I find that borders generally introduce only small price wedges, far smaller than those observed across New York City locations. When expressing these wedges in terms of distance equivalents, I find that border widths are small, and often nonexistent, in relation to price volatility observed across the United States. This suggests that international markets are well integrated through the lens of Big Mac pricing.

Over the years, the iconic Big Mac index has been seen as being representative of the hamburger's international prices. The Big Mac is attractive because it is sold all over the world by one single retailer, McDonald's. Another attractive feature of the Big Mac is its uniform composition. With a few exceptions, the ingredients of the Big Mac are the same everywhere. As Vincent said in the classic movie *Pulp Fiction*: “A Big Mac's a Big Mac”.

Recently, other researchers have explored border frictions with micro-data. Using barcode data on prices across the US and Canada,

Table 1

Big Mac prices (in US dollars).

Source: *The Economist* newspaper.

	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
New York City											
Manhattan	3.13	3.13	3.24	3.24	3.47	3.45	3.26	3.68	3.52	3.68	4.24
Bronx	3.24	3.02	3.24	3.05	3.40	4.09	4.47	4.67	3.89	4.24	4.56
Queens	3.02	3.03	3.13	3.24	3.25	3.57	3.57	3.79	3.79	3.91	4.13
Average	3.13	3.06	3.20	3.18	3.37	3.70	3.77	4.05	3.73	3.94	4.31
United States											
New York (average)	3.13	3.06	3.20	3.18	3.37	3.70	3.77	4.05	3.73	3.94	4.31
Chicago	2.40	2.39	2.51	3.20	3.19	3.03	3.36	3.37	3.35	3.80	4.41
San Francisco	2.69	2.38	2.79	2.81	3.24	3.30	3.47	3.68	3.87	3.99	4.03
Atlanta	2.13	2.13	2.34	2.43	2.45	2.56	2.99	3.20	3.20	3.20	3.51
Average	2.59	2.49	2.71	2.90	3.06	3.15	3.40	3.57	3.54	3.73	4.07
International											
United States (average)	2.59	2.49	2.71	2.90	3.06	3.15	3.40	3.57	3.54	3.73	4.07
Australia	1.52	1.61	1.86	2.27	2.50	2.44	2.97	3.30	3.49	3.86	4.95
Brazil	1.64	1.54	1.48	1.70	2.39	2.79	3.60	4.75	4.16	4.92	6.17
Canada	2.13	2.12	2.21	2.32	2.64	3.14	3.70	4.04	3.48	4.00	5.01
China	1.20	1.27	1.20	1.26	1.27	1.31	1.45	1.83	1.83	1.95	2.28
Germany/Euro	2.30	2.38	2.98	3.28	3.58	3.78	4.16	5.28	4.68	4.34	4.94
Hong Kong	1.37	1.44	1.47	1.54	1.53	1.55	1.54	1.58	1.72	1.90	1.94
Japan	2.37	2.02	2.18	2.33	2.34	2.23	2.30	2.60	3.41	3.69	4.09
Mexico	2.36	2.36	2.18	2.08	2.58	2.57	2.69	3.19	2.43	2.50	2.74
Russia	1.21	1.25	1.32	1.45	1.48	1.77	2.02	2.53	2.11	2.33	2.70
Thailand	1.21	1.27	1.38	1.45	1.48	1.56	1.96	1.85	1.89	2.17	2.35
South Korea	2.26	2.38	2.70	2.72	2.49	2.63	3.15	3.18	2.68	2.82	3.51
Switzerland	3.64	3.80	4.60	4.90	5.05	5.23	5.20	6.26	6.06	6.22	8.06
Sweden	2.33	2.52	3.60	3.94	4.17	4.54	4.86	6.29	5.00	6.58	7.64
United Kingdom	2.85	2.89	3.14	3.38	3.44	3.65	4.00	4.54	3.77	3.49	3.89

Broda and Weinstein (2008) find small border frictions. Their data includes perishable products and other consumer non-durables sold by different retailers. Using different data and a different approach, Gopinath et al. (2011) find that the border matters. Their data include retail prices and wholesale costs from a grocery chain operating in the United States and Canada. Here, I compare prices from a single multinational retailer offering a common good in 119 countries—of which 15 are in my sample.

In a related paper, Gorodnichenko and Tesar (2009) critique the methodology employed by Engel and Rogers, Parsley and Wei, and Broda and Weinstein. They argue that this methodology is not valid because countries are likely to have different price distributions. Since border widths are measured by comparing border coefficients with the within-country price distribution, different within-country price distributions would generate different border widths. In this paper, I have one price for each country outside the United States. Therefore, I can only report border frictions in light of the distribution of prices prevailing in the United States. The takeaway is that border frictions are small, often far smaller than those arising between US neighboring locations.

2. Price volatility across locations

I use annual 2001–2011 Big Mac prices from *The Economist* newspaper. The price survey usually takes place during the summer and prices are collected from the same locations across years. The McDonald's locations include 14 international cities and six US cities, including three New York City boroughs.¹ Unlike other countries, the US price published by *The Economist* newspaper is an

average of four city prices: Atlanta, Chicago, New York City, and San Francisco. In turn, the New York City price is an average of three boroughs: Bronx, Manhattan, and Queens. While the US price is published, I had to ask the newspaper for the national and local breakdowns.

Table 1 shows US dollar Big Mac prices. I use annual survey dates spot exchange rates to translate local currency prices into US dollars. The table shows large price disparities at the local, national, and international level. In 2011, the cheapest Big Mac was \$1.94 in Hong Kong and the most expensive was \$8.06 in Switzerland. In the US, prices range from \$3.51 in Atlanta to \$4.56 in the Bronx. Large price disparities even exist between neighboring New York City locations: A Queens' Big Mac was a bargain at \$4.13, just 9 miles away from the Bronx.

To confirm the extent of price dispersion within New York City observed in *The Economist* newspaper sample, I complement the data with my own survey of Big Mac prices for 40 McDonald's locations across New York City. The restaurants surveyed represent a wide range of locations including airports and train stations, shopping streets, and service roads, etc. The data were collected during the week of July 17, 2011.² Table 2 shows the surveyed location prices and distance from Penn Station. The table confirms that the New York City price disparities reported by *The Economist* newspaper are representative of the various prices observed in New York City. The standard deviation in Manhattan is \$0.20 over an average distance of 2.6 miles from Penn Station. This represents 5% of the Manhattan price in 2011 (\$4.24). The standard deviation over the various New York City suburbs is \$0.34 over an average distance of 9.6 miles from Penn Station. This represents 8% of the average New York City price in 2011 (\$4.31). These price disparities between neighboring locations echo my earlier findings on Big Mac prices in Dallas—see Landry (2008).

¹ The countries (and cities) in my sample are: Australia (Sydney), Brazil (Sao Paulo), Canada (Toronto), China (Beijing), Germany (Berlin), Hong Kong, Japan (Tokyo), Mexico (Mexico City), Russia (Moscow), Thailand (Bangkok), South Korea (Seoul), Switzerland (Zurich), Sweden (Stockholm), and the United Kingdom (London).

² For the 2011 edition, *The Economist* surveyed Big Mac prices on July 7, 2011.

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