

Appendix: Additional Results
Cloud Computing Spot Pricing Dynamics: Latency and Limits to Arbitrage

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Price Differential Regression Results: Alternative Instances Examples

In this set of results, we provide additional robustness checks using alternative instance types. The results reported below across numerous instance types further confirm the significance of latency differentials on west-east price differentials. Below we report the instance types in parentheses corresponding to each set of regression results. Footnotes 7-9 in the manuscript provide a description of Amazon EC2 instance types.

Price Differential Regressions (C1.medium)

	Windows		Linux/Unix	
	Model 1	Model 2	Model 1	Model 2
DLEast	2.9200 (<.0001)	2.0900 (<.0001)	1.8500 (<.0001)	0.9552 (<.0001)
DLWest	2.7300 (<.0001)	1.6300 (<.0001)	1.5500 (<.0001)	0.8602 (<.0001)
DLCentral	0.2515 (0.131)	-0.2964 (0.0799)	-0.0831 (0.0043)	-0.0280 (0.3121)
Micro		-31.8600 (<.0001)		-0.8938 (0.0651)
Singapore		22.7300 (<.0001)		10.4700 (<.0001)
CC		-15.4500 (<.0001)		-0.7770 (0.0022)
Free		15.7500 (<.0001)		0.0671 (0.8304)
CG		9.2600 (<.0001)		-0.0293 (0.9112)
Reduced		14.7200 (<.0001)		0.2209 (0.6499)
Obs	9816	9816	9816	9816

Price Differential Regressions (C1.xlarge)

	Windows		Linux/Unix	
	Model 1	Model 2	Model 1	Model 2
DLEast	15.5500 (<.0001)	7.9900 (<.0001)	3.0000 (<.0001)	3.7300 (<.0001)
DLWest	12.6200 (<.0001)	6.6600 (<.0001)	4.0400 (<.0001)	3.1200 (<.0001)
DLCentral	-1.6100 (<.0001)	-1.0900 (0.0061)	2.6600 (<.0001)	0.1059 (0.8561)
Micro		1.3600 (0.8448)		46.6900 (<.0001)
Singapore		90.2700 (<.0001)		43.4700 (<.0001)
CC		-29.9300 (<.0001)		-48.8800 (<.0001)
Free		-8.2100 (0.0674)		-166.2200 (<.0001)
CG		6.2100 (0.0988)		189.6000 (<.0001)
Reduced		21.7300 (0.0018)		-43.7600 (<.0001)
Obs	9816	9816	9816	9816

Price Differential Regressions (m1.large)

	Windows		Linux/Unix	
	Model 1	Model 2	Model 1	Model 2
DLEast	6.1100 (<.0001)	3.9800 (<.0001)	2.6000 (<.0001)	1.7100 (<.0001)
DLWest	5.0900 (<.0001)	3.3600 (<.0001)	2.6900 (<.0001)	1.6700 (<.0001)
DLCentral	-0.2253 (0.0652)	-0.2020 (0.1006)	0.1215 (0.3481)	0.0391 (0.7641)
Micro		-1.5400 (0.4733)		-2.8000 (0.2192)
Singapore		28.5600 (<.0001)		14.3700 (<.0001)
CC		-16.3500 (<.0001)		-13.0200 (<.0001)
Free		-3.2800 (0.0185)		-0.8720 (0.5535)
CG		1.1100 (0.3402)		20.3100 (<.0001)
Reduced		14.4400 (<.0001)		0.2245 (0.9218)
Obs	9816	9816	9816	9816

Price Differential Regressions (m1.small)

	Windows		Linux/Unix	
	Model 1	Model 2	Model 1	Model 2
DLEast	0.3250 (0.0004)	0.7429 (<.0001)	0.9924 (<.0001)	0.6404 (<.0001)
DLWest	0.2528 (0.0001)	0.1852 (0.0014)	0.5903 (<.0001)	0.3502 (<.0001)
DLCentral	-0.9401 (<.0001)	-0.4153 (<.0001)	-0.4810 (<.0001)	-0.2897 (<.0001)
Micro		-17.7000 (<.0001)		0.5652 (0.0522)
Singapore		-16.4100 (<.0001)		2.5700 (<.0001)
CC		19.1000 (<.0001)		0.9987 (0.0066)
Free		60.3600 (<.0001)		0.3032 (0.3259)
CG		-0.7255 (0.2796)		-1.7800 (0.0019)
Reduced		-33.3900 (<.0001)		0.5652 (0.0522)
Obs	9816	9816	9816	9816

Price Differential Regressions (m2.xlarge)

	Windows		Linux/Unix	
	Model 1	Model 2	Model 1	Model 2
DLEast	7.4100 (<.0001)	4.5000 (<.0001)	5.6000 (<.0001)	0.9614 (0.0048)
DLWest	5.4200 (<.0001)	3.2900 (<.0001)	4.4300 (<.0001)	0.9048 (0.0003)
DLCentral	-1.6600 (<.0001)	-1.0300 (<.0001)	-0.3749 (0.2113)	-0.1705 (0.5784)
Micro		-0.4483 (0.9221)		10.8100 (0.0439)
Singapore		22.3500 (<.0001)		56.3700 (<.0001)
CC		14.2600 (<.0001)		3.0200 (0.2814)
Free		-38.7000 (<.0001)		7.9300 (0.0223)
CG		34.9400 (<.0001)		-9.3200 (0.0014)
Reduced		0.7416 (0.8721)		-24.4800 (<.0001)
Obs	9816	9816	9816	9816

Price Differential Regressions (m2.2xlarge)

	Windows		Linux/Unix	
	Model 1	Model 2	Model 1	Model 2
DLEast	13.4700 (<.0001)	8.2200 (<.0001)	13.6900 (<.0001)	7.7400 (<.0001)
DLWest	14.0900 (<.0001)	8.2900 (<.0001)	9.9400 (<.0001)	5.4300 (<.0001)
DLCentral	2.9300 (<.0001)	1.8400 (0.001)	-2.6000 (<.0001)	-1.7700 (<.0001)
Micro		-158.1600 (<.0001)		1.1400 (0.8126)
Singapore		89.9300 (<.0001)		57.4800 (<.0001)
CC		-6.2000 (0.2247)		13.0100 (<.0001)
Free		155.3700 (<.0001)		-48.1800 (<.0001)
CG		-0.7500 (0.8874)		46.6400 (<.0001)
Reduced		4.7700 (0.6269)		-3.9700 (0.4098)
Obs	9816	9816	9816	9816

Price Differential Regressions (m2.4xlarge)

	Windows		Linux/Unix	
	Model 1	Model 2	Model 1	Model 2
DLEast	34.4600 (<.0001)	17.3700 (<.0001)	26.7300 (<.0001)	14.2700 (<.0001)
DLWest	28.1900 (<.0001)	15.1200 (<.0001)	20.7100 (<.0001)	11.0700 (<.0001)
DLCentral	-2.1400 (<.0001)	-0.5971 (0.2366)	-2.2000 (<.0001)	-1.4800 (0.004)
Micro		-4.6000 (0.602)		1.2800 (0.8873)
Singapore		191.9600 (<.0001)		149.2500 (<.0001)
CC		-19.3800 (<.0001)		-23.6000 (<.0001)
Free		-8.6700 (0.1284)		-5.1700 (0.3747)
CG		0.8298 (0.8623)		-1.2500 (0.7978)
Reduced		15.1900 (0.0866)		6.3200 (0.4852)
Obs	9816	9816	9816	9816

Price Differential Regressions (t1.micro)

	Windows		Linux/Unix	
	Model 1	Model 2	Model 1	Model 2
DLEast	0.2494 (<.0001)	-0.0383 (0.1661)	0.2387 (<.0001)	0.0834 (0.2837)
DLWest	0.1638 (<.0001)	-0.0132 (0.3762)	0.1368 (<.0001)	0.0096 (0.8202)
DLCentral	0.1052 (<.0001)	0.1089 (<.0001)	0.1599 (0.0021)	0.1677 (0.0012)
Micro		0.9824 (<.0001)		0.0000 (.)
Singapore		0.0000 (.)		0.0000 (.)
CC		0.0000 (.)		2.6600 (<.0001)
Free		1.8300 (<.0001)		-0.4338 (0.1483)
CG		0.1308 (0.2207)		0.0000 (.)
Reduced		0.0000 (.)		0.0000 (.)
Obs	9816	9816	9816	9816

(.) – could not estimate indicator effect due to singular matrix.

Price Differential Regressions: Alternative Frequencies

In this set of results, we provide additional robustness checks using alternative measured data frequencies. The results reported below further confirm the significance of latency differentials on west-east price differentials regardless of the measured frequency.

Price Differential Regressions (m1.xlarge) at 60 min level (estimated coefficient*1000)

	Windows				Linux/Unix			
	Model 1	Model 2	Model 3	Model 4	Model 1	Model 2	Model 3	Model 4
DLEast	12.7300 (<.0001)	6.3900 (<.0001)			7.4700 (<.0001)	3.9800 (<.0001)		
DLWest	10.3900 (<.0001)	5.5400 (<.0001)			5.7800 (<.0001)	3.3100 (<.0001)		
DLCentral	-0.8392 (<.0001)	-0.2771 (0.0373)			-1.1200 (<.0001)	-0.1880 (0.3686)		
LD_Newark			2.6000 (<.0001)	1.5700 (<.0001)			1.9300 (<.0001)	1.4500 (<.0001)
LD_SJ			1.6200 (<.0001)	0.8695 (<.0001)			1.0300 (<.0001)	0.6413 (<.0001)
LD_Atlanta			0.3906 (<.0001)	0.0399 (0.6054)			-0.5097 (<.0001)	-0.6156 (<.0001)
LD_StLouis			0.6246 (<.0001)	0.4437 (<.0001)			0.3642 (0.0024)	0.4539 (0.0002)
LD_Seattle			1.6900 (<.0001)	0.9296 (<.0001)			0.8862 (<.0001)	0.5101 (<.0001)
LD_Mesa			1.3000 (<.0001)	0.7123 (<.0001)			0.8640 (<.0001)	0.5967 (<.0001)
LD_SD			3.6300 (<.0001)	2.1400 (<.0001)			1.9900 (<.0001)	1.2800 (<.0001)
LD_Reston			3.0600 (<.0001)	2.0500 (<.0001)			1.8400 (<.0001)	1.2900 (<.0001)
LD_LA			1.9400 (<.0001)	1.4700 (<.0001)			0.9518 (<.0001)	0.6622 (<.0001)
LD_Houston			0.0729 (0.1361)	-0.0583 (0.2002)			-0.2899 (<.0001)	-0.1468 (0.0547)
LD_NY			0.7287 (<.0001)	0.3667 (<.0001)			0.4315 (0.0001)	0.2321 (0.0379)
LD_KC			-0.1630 (0.0086)	-0.2854 (<.0001)			0.1118 (0.2308)	-0.0932 (0.3215)
LD_Philly			2.8300 (<.0001)	1.7200 (<.0001)			1.6600 (<.0001)	1.1500 (<.0001)
LD_Boston			0.7823 (<.0001)	0.4625 (<.0001)			0.7739 (<.0001)	0.5147 (<.0001)
LD_DC			1.2000 (<.0001)	0.5767 (<.0001)			0.6820 (<.0001)	0.3497 (0.0047)
LD_Chicago			0.4902 (<.0001)	0.5493 (<.0001)			0.0602 (0.418)	0.3724 (<.0001)
LD_Dallas			-0.0281 (0.7054)	-0.0714 (0.2766)			0.0315 (0.7775)	-0.0195 (0.8592)
LD_Denver			0.3716 (<.0001)	0.2199 (<.0001)			0.1924 (0.0043)	0.1353 (0.0424)
Micro		0.7720 (0.7401)		1.0300 (0.6357)		9.0600 (0.0132)		8.4800 (0.0198)
Singapore		70.9900 (<.0001)		54.9600 (<.0001)		25.8800 (<.0001)		15.0400 (<.0001)
CC		-2.1900 (0.0721)		-0.4436 (0.6984)		8.9800 (<.0001)		9.6300 (<.0001)
Free		-0.7916 (0.5988)		-0.3511 (0.8004)		-0.5696 (0.8096)		-0.2457 (0.9161)
CG		0.4957 (0.6945)		-1.0800 (0.3587)		-2.1200 (0.2854)		-3.2200 (0.1025)
Reduced		-4.3800 (0.061)		-1.9500 (0.3714)		-4.7800 (0.1932)		-2.5900 (0.4788)
Obs	9816	9816	9816	9816	9816	9816	9816	9816

Price Differential Regressions (m1.xlarge) at daily level

	Windows				Linux/Unix			
	Model 1	Model 2	Model 3	Model 4	Model 1	Model 2	Model 3	Model 4
DLEast	0.01498 (<.0001)	0.01412 (<.0001)			0.0075 (0.0048)	0.00943 (0.0054)		
DLWest	0.00932 (<.0001)	0.01072 (<.0001)			0.00632 (0.0019)	0.00535 (0.0374)		
DLCentral	0.00178 (<.0001)	0.000312 (0.5195)			-0.00133 (0.4393)	0.00122 (0.5829)		
LD_Newark			0.00419 (<.0001)	0.00422 (<.0001)			0.00803 (0.1381)	0.00742 (0.1779)
LD_SJ			0.00121 (0.0003)	0.0012 (0.001)			-0.00141 (0.4096)	-0.00145 (0.4369)
LD_Atlanta			-0.00015 (0.7808)	-0.00029 (0.6193)			-0.01446 (<.0001)	-0.01456 (<.0001)
LD_StLouis			0.00152 (0.0047)	0.00157 (0.0093)			0.00296 (0.2785)	0.00497 (0.1087)
LD_Seattle			0.00198 (<.0001)	0.00206 (<.0001)			-0.000808 (0.7443)	-0.0016 (0.5436)
LD_Mesa			0.00063 (0.3463)	0.00045 (0.5112)			0.00689 (0.0434)	0.00715 (0.0427)
LD_SD			-0.00507 (<.0001)	-0.00434 (<.0001)			-0.00415 (0.358)	-0.00343 (0.4835)
LD_Reston			0.00355 (<.0001)	0.00402 (<.0001)			0.00642 (0.081)	0.0055 (0.1579)
LD_LA			0.00048 (0.0985)	0.00063 (0.0464)			-0.00205 (0.1716)	-0.00208 (0.2018)
LD_Houston			-9.1E-05 (0.2217)	-6.7E-05 (0.4038)			4.91E-05 (0.8972)	0.000157 (0.7033)
LD_NY			-0.00044 (0.3945)	-0.00072 (0.1808)			0.0018 (0.4999)	0.00192 (0.4888)
LD_KC			-0.00011 (0.6746)	-0.00018 (0.5639)			0.000651 (0.6388)	-0.00048 (0.7615)
LD_Philly			0.00606 (<.0001)	0.00591 (<.0001)			0.00378 (0.4935)	0.00232 (0.6831)
LD_Boston			-0.00011 (0.8475)	-3.5E-05 (0.9505)			0.00361 (0.2069)	0.00317 (0.2802)
LD_DC			0.000866 (0.0135)	0.000515 (0.2999)			-0.00022 (0.904)	3.4E-05 (0.9894)
LD_Chicago			0.000924 (<.0001)	0.000913 (0.0002)			-0.00058 (0.4622)	0.000628 (0.6205)
LD_Dallas			0.0011 (0.0522)	0.000863 (0.1344)			0.00228 (0.4296)	0.00244 (0.4096)
LD_Denver			0.00058 (0.1511)	0.00052 (0.1984)			-0.00343 (0.0986)	-0.00353 (0.0924)
Micro		0.00169 (0.5619)		0.00044 (0.8733)		0.01082 (0.4194)		0.01324 (0.3509)
Singapore		0.00191 (0.3555)		0.00281 (0.2042)		-0.01531 (0.1065)		0.000516 (0.9638)
CC		-0.00186 (0.2285)		0.00267 (0.1561)		0.00958 (0.1776)		0.00321 (0.7395)
Free		-0.00361 (0.0569)		-0.00046 (0.7891)		-0.00148 (0.8651)		0.00304 (0.7312)
CG		0.00281 (0.081)		-0.00012 (0.9438)		-0.00055 (0.9402)		-0.00342 (0.7003)
Reduced		-0.00627 (0.0291)		-0.00251 (0.3756)		-0.00619 (0.6381)		-0.00069 (0.962)
Obs	409	409	409	409	409	409	409	409

Additional Outlier Tests

In this set of results, we provide additional outlier robustness checks. The results reported below further confirm the significance of latency differentials on west-east price differentials even after further winsorizing the data for potential outliers.

Additional Outlier Test: Winsorization of the Dataset to the 3% level (3rd and 97th percentiles)

	<i>Windows</i>		<i>Linux/Unix</i>	
	<i>P_{East}</i>	<i>P_{West}</i>	<i>P_{East}</i>	<i>P_{West}</i>
Obs	9816	9816	9816	9816
Mean	0.40016198	0.531780766	0.240983191	0.319482681
Median	0.401	0.53	0.241	0.319
Std. dev.	0.012374141	0.015610465	0.009267971	0.009452582
Max	0.419	0.558	0.28	0.335
Min	0.381	0.508	0.228	0.304

	<i>DL_{East}</i>	<i>DL_{West}</i>	<i>DL_{Central}</i>
Obs	9816	9816	9816
Mean	4.831106	5.648145	0.902995
Median	4.795857	5.5465	0.9526
Std. dev.	0.45179	0.949359	1.404466
Max	5.953714	8.388	7.4666
Min	3.790429	4.011	-0.9898

Additional Outlier Test: Winsorization of the Dataset to the 5% level (5th and 95th percentiles)

	<i>Windows</i>		<i>Linux/Unix</i>	
	<i>P_{East}</i>	<i>P_{West}</i>	<i>P_{East}</i>	<i>P_{West}</i>
Obs	9816	9816	9816	9816
Mean	0.400	0.532	0.240	0.319
Median	0.401	0.53	0.241	0.319
Std. dev.	0.0122	0.0155	0.00925	0.00943
Max	0.418	0.557	0.280	0.334
Min	0.382	0.509	0.229	0.305

	<i>DL_{East}</i>	<i>DL_{West}</i>	<i>DL_{Central}</i>
Obs	9816	9816	9816
Mean	4.8379515	6.0490156	0.6830370
Median	4.795857	5.5465	0.9526
Std. dev.	0.4011660	0.9574035	0.8725274
Max	5.8930000	8.2638000	3.6075000
Min	3.7515714	4.0924000	-0.9508333

Outlier Regression Test: Winsorized Data (3%, 97%) and (5%, 95%)

Windows: Table 6, Models 1-2

	<i>Winsorized (3%, 97%)</i>		<i>Winsorized (5%, 95%)</i>	
	<i>Model 1</i>	<i>Model 2</i>	<i>Model 1</i>	<i>Model 2</i>
DL _{East}	12.790 (<.0001)	6.420 (<.0001)	19.940 (<.0001)	19.280 (<.0001)
DL _{West}	10.390 (<.0001)	5.540 (<.0001)	5.450 (<.0001)	4.660 (<.0001)
DL _{Central}	-0.860 (<.0001)	-0.292 (0.0263)	2.260 (<.0001)	-1.460 (0.0263)
Micro		0.739 (0.7477)		4.700 (0.0056)
Singapore		70.610		11.740

		(<.0001)		(<.0001)
CC		-1.480		-3.800
		(0.1802)		(<.0001)
Free		-0.808		-1.390
		(0.5866)		(0.2061)
CG		2.280		7.050
		(0.0801)		(<.0001)
Reduced		-4.780		-6.310
		(0.0351)		(0.0002)
Tokyo		-4.080		-5.430
		(<.0001)		(<.0001)
Obs	9816	9816	9816	9816

Nonlinear VAR Test with Squared Prices (Table 2 Robustness Check)

In this set of results, we provide an additional robustness check using nonlinear price transformations. The results below show that because of the high correlation between price levels and their squared transformations (0.99 – see the price correlation table below), specifications that include nonlinear price transformations have significant multicollinearity problems. Similarly, specifications with just nonlinear terms yield similar results to Table 2.

	Windows		Linux/Unix	
	P^{East}	P^{West}	P^{East}	P^{West}
$P_{East\,t-1}$	0.981	-0.746	-	0.161 [*]
	(0.267)	(0.489)	1.661 ^{***}	(0.037)
$P_{East\,t-1}^2$	-1.057	0.919	3.862 ^{***}	-0.305 [*]
	(0.339)	(0.495)	(0.000)	(0.032)
$P_{East\,t-2}$	-0.274	1.308	-0.178	-0.0408
	(0.769)	(0.250)	(0.079)	(0.622)
$P_{East\,t-2}^2$	0.367	-1.632	0.441 [*]	0.0562
	(0.753)	(0.252)	(0.020)	(0.717)
$P_{East\,t-3}$	-0.537	0.311	0.338 ^{***}	0.0190
	(0.564)	(0.784)	(0.001)	(0.818)
$P_{East\,t-3}^2$	0.794	-0.381	-0.491 ^{**}	-0.00913
	(0.496)	(0.789)	(0.010)	(0.953)
$P_{East\,t-4}$	1.630	-0.390	-	0.115
	(0.081)	(0.732)	0.615 ^{***}	(0.164)
$P_{East\,t-4}^2$	-2.087	0.480	1.194 ^{***}	-0.195
	(0.074)	(0.736)	(0.000)	(0.208)
$P_{East\,t-5}$	-1.053	1.590	0.252 ^{**}	-0.145
	(0.234)	(0.140)	(0.008)	(0.061)
$P_{East\,t-5}^2$	1.318	-1.997	-0.399 [*]	0.267
	(0.233)	(0.138)	(0.023)	(0.061)
$P_{West\,t-1}$	0.286	-2.177 [*]	-0.378	0.140
	(0.683)	(0.011)	(0.717)	(0.869)
$P_{West\,t-1}^2$	-0.271	2.329 ^{**}	0.560	0.296
	(0.680)	(0.004)	(0.731)	(0.824)
$P_{West\,t-2}$	-1.125	0.234	0.0720	0.107
	(0.146)	(0.804)	(0.950)	(0.909)
$P_{West\,t-2}^2$	1.068	-0.220	-0.106	-0.182
	(0.142)	(0.804)	(0.953)	(0.902)
$P_{West\,t-3}$	0.460	1.176	-0.717	-1.274
	(0.552)	(0.213)	(0.534)	(0.176)
$P_{West\,t-3}^2$	-0.443	-1.064	1.080	2.041
	(0.542)	(0.230)	(0.549)	(0.165)
$P_{West\,t-4}$	0.759	-0.573	-1.130	-0.458
	(0.327)	(0.544)	(0.327)	(0.626)
$P_{West\,t-4}^2$	-0.720	0.511	1.805	0.696
	(0.322)	(0.564)	(0.317)	(0.636)
$P_{West\,t-5}$	0.0177	0.202	-1.198	-0.545
	(0.980)	(0.813)	(0.250)	(0.522)
$P_{West\,t-5}^2$	-0.00399	-0.175	1.894	0.851
	(0.995)	(0.827)	(0.245)	(0.522)
<i>Constar</i>	0.101	0.335	0.958 ^{***}	0.574 ^{**}
	(0.781)	(0.448)	(0.000)	(0.002)
N	9816	9816	9816	9816
adj. R^2	0.030	0.096	0.525	0.110

Correlations between Lagged Price Levels and Nonlinear (squared) Transformations: Windows Platform

	$P_{East_{t-1}}$	$P^2_{East_{t-1}}$	$P_{East_{t-2}}$	$P^2_{East_{t-2}}$	$P_{East_{t-3}}$	$P^2_{East_{t-3}}$	$P_{East_{t-4}}$	$P^2_{East_{t-4}}$	$P_{East_{t-5}}$	$P^2_{East_{t-5}}$	$P_{West_{t-1}}$	$P^2_{West_{t-1}}$	$P_{West_{t-2}}$	$P^2_{West_{t-2}}$	$P_{West_{t-3}}$	$P^2_{West_{t-3}}$	$P_{West_{t-4}}$	$P^2_{West_{t-4}}$	$P_{West_{t-5}}$	$P^2_{West_{t-5}}$
$P_{East_{t-1}}$	1																			
$P^2_{East_{t-1}}$	0.9999	1																		
$P_{East_{t-2}}$	0.139	0.1388	1																	
$P^2_{East_{t-2}}$	0.1389	0.1387	0.9999	1																
$P_{East_{t-3}}$	0.0502	0.05	0.139	0.1388	1															
$P^2_{East_{t-3}}$	0.0502	0.05	0.1389	0.1387	0.9999	1														
$P_{East_{t-4}}$	0.1022	0.1024	0.0502	0.0501	0.1391	0.1388	1													
$P^2_{East_{t-4}}$	0.1022	0.1024	0.0502	0.0501	0.1389	0.1387	0.9999	1												
$P_{East_{t-5}}$	-0.0103	-0.0103	0.1022	0.1024	0.0503	0.0501	0.139	0.1388	1											
$P^2_{East_{t-5}}$	-0.0105	-0.0105	0.1023	0.1025	0.0503	0.0501	0.1389	0.1387	0.9999	1										
$P_{West_{t-1}}$	0.0092	0.009	-0.0046	-0.0046	-0.0002	-0.0003	0.0049	0.0047	-0.0039	-0.0039	1									
$P^2_{West_{t-1}}$	0.0092	0.009	-0.0046	-0.0047	-0.0001	-0.0003	0.0051	0.005	-0.0037	-0.0038	0.9999	1								
$P_{West_{t-2}}$	0.0017	0.0015	0.0092	0.009	-0.0046	-0.0046	-0.0001	-0.0003	0.0049	0.0048	0.3076	0.3075	1							
$P^2_{West_{t-2}}$	0.0017	0.0015	0.0092	0.009	-0.0046	-0.0046	-0.0001	-0.0002	0.0052	0.005	0.3079	0.3079	0.9999	1						
$P_{West_{t-3}}$	0.0116	0.0115	0.0018	0.0015	0.0092	0.0091	-0.0046	-0.0047	-0.0002	-0.0003	0.1034	0.1034	0.3077	0.3075	1					
$P^2_{West_{t-3}}$	0.0118	0.0116	0.0018	0.0015	0.0093	0.0091	-0.0046	-0.0047	-0.0001	-0.0003	0.1036	0.1036	0.308	0.3079	0.9999	1				
$P_{West_{t-4}}$	-0.0095	-0.0098	0.0117	0.0115	0.0018	0.0016	0.0093	0.0092	-0.0046	-0.0046	0.066	0.0659	0.1034	0.1034	0.3077	0.3076	1			
$P^2_{West_{t-4}}$	-0.0096	-0.0099	0.0118	0.0117	0.0018	0.0016	0.0093	0.0092	-0.0046	-0.0046	0.066	0.0659	0.1036	0.1036	0.3081	0.308	0.9999	1		
$P_{West_{t-5}}$	-0.01	-0.0102	-0.0096	-0.0099	0.0116	0.0115	0.0018	0.0015	0.0093	0.0091	0.0092	0.0091	0.0658	0.0657	0.1034	0.1033	0.3076	0.3074	1	
$P^2_{West_{t-5}}$	-0.0102	-0.0104	-0.0097	-0.01	0.0117	0.0116	0.0018	0.0015	0.0093	0.0091	0.0092	0.0091	0.0658	0.0658	0.1036	0.1036	0.3079	0.3078	0.9999	1

Correlations between Lagged Price Levels and Nonlinear (squared) Transformations: Unix/Linux Platform

	$P_{East_{t-1}}$	$P_{East_{t-1}}^2$	$P_{East_{t-2}}$	$P_{East_{t-2}}^2$	$P_{East_{t-3}}$	$P_{East_{t-3}}^2$	$P_{East_{t-4}}$	$P_{East_{t-4}}^2$	$P_{East_{t-5}}$	$P_{East_{t-5}}^2$	$P_{West_{t-1}}$	$P_{West_{t-1}}^2$	$P_{West_{t-2}}$	$P_{West_{t-2}}^2$	$P_{West_{t-3}}$	$P_{West_{t-3}}^2$	$P_{West_{t-4}}$	$P_{West_{t-4}}^2$	$P_{West_{t-5}}$	$P_{West_{t-5}}^2$	
$P_{East_{t-1}}$	1																				
$P_{East_{t-1}}^2$	0.9962	1																			
$P_{East_{t-2}}$	0.6627	0.6826	1																		
$P_{East_{t-2}}^2$	0.6828	0.705	0.9962	1																	
$P_{East_{t-3}}$	0.5645	0.5848	0.6626	0.6825	1																
$P_{East_{t-3}}^2$	0.5852	0.6071	0.6827	0.705	0.9962	1															
$P_{East_{t-4}}$	0.5265	0.5454	0.5644	0.5847	0.6626	0.6825	1														
$P_{East_{t-4}}^2$	0.5441	0.5648	0.5851	0.6071	0.6827	0.705	0.9962	1													
$P_{East_{t-5}}$	0.4773	0.4993	0.5265	0.5453	0.5644	0.5847	0.6626	0.6825	1												
$P_{East_{t-5}}^2$	0.4981	0.5214	0.544	0.5648	0.5851	0.6071	0.6827	0.705	0.9962	1											
$P_{West_{t-1}}$	-0.0054	-0.0056	-0.0054	-0.0069	-0.0105	-0.0106	0.0062	0.0053	0.014	0.0124	1										
$P_{West_{t-1}}^2$	-0.0056	-0.0058	-0.0055	-0.0071	-0.0105	-0.0107	0.0063	0.0054	0.0139	0.0124	0.9999	1									
$P_{West_{t-2}}$	-0.0154	-0.0155	-0.0055	-0.0057	-0.0053	-0.0068	-0.0103	-0.0105	0.0063	0.0054	0.3291	0.329	1								
$P_{West_{t-2}}^2$	-0.0153	-0.0155	-0.0056	-0.0058	-0.0054	-0.0069	-0.0104	-0.0106	0.0064	0.0055	0.3292	0.3292	0.9999	1							
$P_{West_{t-3}}$	-0.0135	-0.0133	-0.0155	-0.0156	-0.0054	-0.0056	-0.0052	-0.0068	-0.0103	-0.0105	0.1088	0.1089	0.3293	0.3292	1						
$P_{West_{t-3}}^2$	-0.0134	-0.0132	-0.0155	-0.0156	-0.0056	-0.0058	-0.0054	-0.0069	-0.0104	-0.0106	0.1089	0.1091	0.3294	0.3294	0.9999	1					
$P_{West_{t-4}}$	-0.0199	-0.0181	-0.0135	-0.0133	-0.0154	-0.0155	-0.0053	-0.0056	-0.0051	-0.0067	0.0608	0.0612	0.1089	0.109	0.3295	0.3294	1				
$P_{West_{t-4}}^2$	-0.0196	-0.0178	-0.0134	-0.0132	-0.0154	-0.0155	-0.0055	-0.0057	-0.0053	-0.0068	0.0611	0.0615	0.1091	0.1092	0.3296	0.3296	0.9999	1			
$P_{West_{t-5}}$	0.0033	0.0039	-0.0197	-0.0179	-0.0135	-0.0133	-0.0154	-0.0155	-0.0053	-0.0055	0.0158	0.016	0.0605	0.0608	0.1087	0.1088	0.3292	0.3291	1		
$P_{West_{t-5}}^2$	0.0036	0.0042	-0.0195	-0.0177	-0.0134	-0.0132	-0.0154	-0.0155	-0.0055	-0.0057	0.0161	0.0163	0.0608	0.0612	0.1088	0.109	0.3293	0.3292	0.9999	1	

Price Differential Regressions with Additional Latency Lags

In this set of results, we add additional latency lags as a further specification robustness check. The results reported below further confirm the significance of latency differentials on west-east price differentials. The additional lags influence the magnitude of the coefficient estimates as it spreads the effects across the coefficient lags, but it does not affect our inferences or overall measured impacts.

	Windows		Linux/Unix	
	Model 1	Model 2	Model 1	Model 2
DLEast	7.83 (<.0001)	6.79 (<.0001)	4.41 (<.0001)	3.97 (<.0001)
DLWest	4.43 (<.0001)	3.86 (<.0001)	2.66 (<.0001)	2.38 (<.0001)
DLCentral	0.390 (0.0074)	0.128 (0.3852)	-0.322 (0.2045)	0.251 (0.3372)
Lag_DLEast	8.28 (<.0001)	7.25 (<.0001)	4.55 (<.0001)	4.11 (<.0001)
Lag_DLWest	4.50 (<.0001)	3.93 (<.0001)	2.88 (<.0001)	2.61 (<.0001)
Lag_DLCentral	0.235 (0.1063)	-0.026 (0.8619)	-0.360 (0.1555)	0.216 (0.4088)
Micro		2.30 (0.2205)		10.26 (0.0021)
Singapore		22.93 (<.0001)		-2.67 (0.2016)
CC		-3.14 (0.0007)		8.91 (<.0001)
Free		-1.59 (0.1905)		-1.06 (0.6222)
CG		6.33 (<.0001)		0.640 (0.7356)
Reduced		-6.42 (0.0005)		-6.95 (0.0341)
Tokyo		-5.92 (<.0001)		-1.67 (0.1949)
Obs	9816	9816	9816	9816

Alternative ECM Specification

In this set of results, we provide an additional specification test for our ECM model whereby we include additional price lags in the ECM framework. The results reported below further confirm the significance of latency differentials on west-east price differentials as well as the estimated partial speed of adjustment.

Panel A: Stage 1, $P_t^{West} = \beta_0 + \beta_1 P_t^{East} + \nu_t$

Variable	Parameter Estimate	Pr > t
Intercept	0.531	<.0001
<i>P^{East}</i>	3.200	0.7826

Panel B: Stage 2, $PD_t = \alpha_0 + \sum_{i=1}^n \alpha_i \Delta X_{it} - \gamma \hat{\nu}_{t-1} + \varepsilon_t$,

Variable	Parameter Estimate	Pr > t
Lag(pd)	0.504	<.0001
Lag2(pd)	0.103	<.0001
DL ^{East}	2.48	<.0001
DL ^{West}	1.33	<.0001
DL ^{Central}	0.085	0.4144
lagres	-0.692	<.0001