## El Niño and commodity prices:

## New findings from partial wavelet coherence analysis

## Xiaojing Cai, Ryuta Sakemoto

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Panel A		Constant	ONI	$\Delta i$	Adjusted	P-value of
					$R^{2}(\%)$	F statistics
Agriculture						
	Monthly	-0.001	-0.000	0.008***	1.7	0.001
		(0.001)	(0.001)	(0.002)		
	Quarterly	-0.003	-0.001	0.009**	2.0	0.091
		(0.004)	(0.004)	(0.004)		
	Annually	-0.010	-0.001	0.028***	8.3	0.034
		(0.016)	(0.014)	(0.010)		
Panel B		Constant	ONI	$\Delta i$	Adjusted	P-value of
					<i>R</i> <sup>2</sup> (%)	F statistics
Beverages						
	Monthly	-0.001	-0.001	0.004	-0.1	0.556
		(0.002)	(0.002)	(0.004)		
	Quarterly	-0.004	0.004	0.002	-0.7	0.862
		(0.006)	(0.007)	(0.007)		
	Annually	-0.016	0.044*	0.003	3.1	0.155

Table A1 Estimated results of regression analysis.

*Notes:* ONI is the value of the Oceanic Niño Index multiplied by (-1).  $\Delta i$  is the first difference in U.S. 3-month Treasury Bill real prices. The numbers in parentheses are the standard deviations. \*,\*\*, and \*\*\* indicate significance level at the 10%, 5%, and 1% respectively.

Table A1	Continued.
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Panel C		Constant	ONI	Δi	Adjusted	P-value of
					$R^{2}(\%)$	F statistics
Food						
	Monthly	-0.001	-0.000	0.010***	1.8	0.001
		(0.001)	(0.001)	(0.003)		
	Quarterly	-0.002	-0.000	0.012**	1.6	0.052
		(0.004)	(0.005)	(0.005)		
	Annually	-0.008	-0.007	0.038***	11.5	0.012
		(0.019)	(0.017)	(0.012)		
Panel D		Constant	ONI	$\Delta i$	Adjusted	P-value of
					$R^{2}(\%)$	F statistics
Raw Materials						
	Monthly	-0.001	0.001	0.002	-0.0	0.410
		(0.001)	(0.001)	(0.002)		
	Quarterly	-0.004	-0.004	0.003	0.1	0.427
		(0.003)	(0.004)	(0.004)		
	Annually	-0.012	-0.013	0.017	1.3	0.260

*Notes:* ONI is the value of the Oceanic Niño Index multiplied by (-1).  $\Delta i$  is the first difference in U.S. 3-month Treasury Bill real prices. The numbers in parentheses are the standard deviations. \*,\*\*, and \*\*\* indicate significance level at 10%, 5%, and 1% respectively.



Fig. A1 ONI and its wavelet power spectrum.

Notes: ONI is the value of the Oceanic Niño Index multiplied by (-1). The black contour in the wavelet power spectrum shows a 5% significance level estimated from Monte Carlo simulations. The color code in the wavelet power spectrum shows the degree of local variance, ranging from blue (low variance) to yellow (high variance). The bold line in the wavelet power spectrum shows the edge effects.



Fig. A2 Figures at the top, middle, and bottom show the time series of prices, returns, and their wavelet power spectrum, respectively for each commodity price index. Notes: The black contour in the wavelet power spectrum shows a 5% significance level estimated from Monte Carlo simulations. The color code in the wavelet power spectrum shows the degree of local variance, ranging from blue (low variance) to yellow (high variance). The bold line in the wavelet power spectrum shows the edge effects.



Fig. A3 Time-varying wavelet coherences (top) and partial wavelet coherences (bottom) across different frequencies.



Fig. A3 Continued.



Fig. A3 Continued.



Fig. A4 Wavelet coherences between commodity prices and ONI. Notes: The black contour shows a 5% significance level estimated from Monte Carlo simulations. The color code shows the degree of coherence strength, ranging from blue (low coherence) to yellow (high coherence). The bold lines indicate the edge effects.



Fig. A5 Partial wavelet coherences between commodity prices and ONI. Notes: The black contour shows a 5% significance level estimated from Monte Carlo simulations. The color code shows the degree of partial wavelet coherence strength, ranging from blue (low coherence) to yellow (high coherence). The bold lines indicate the edge effects.



Fig. A6 Time-varying wavelet coherences (top) and partial wavelet coherences (bottom) across different frequencies.



Fig. A6 Continued.



Fig. A6 Continued.



Fig. A6 Continued.