

The Correlation of Oil and Equity Prices: The Role of Zero Lower Bound

by Deepa Datta, Benjamin K. Johannsen,
Hannah Kwon, and Robert J. Vigfusson

Jing Cynthia Wu
Chicago Booth & NBER

Summary

This is an interesting paper!

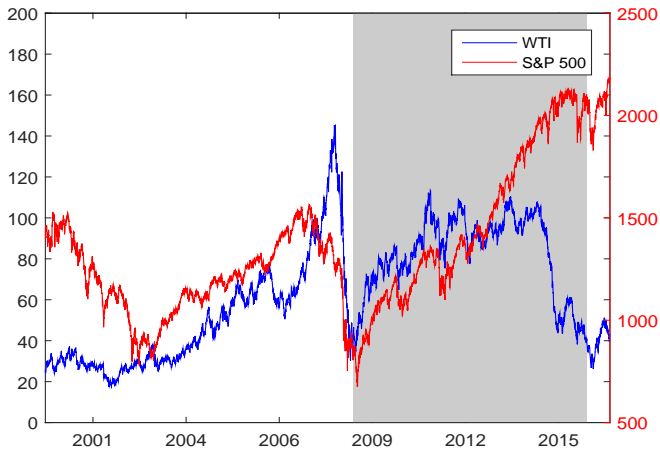
Empirically, since 2008,

- ▶ Oil and equity prices have a stronger comovement.
- ▶ They are more responsive to macro news.
- ▶ Attribute these changes to the ZLB.

Theoretically,

- ▶ Augment a standard New Keynesian model with oil.

Comment 1: is the correlation driven by the ZLB?



blue: WTI; red: S&P 500; shade: ZLB

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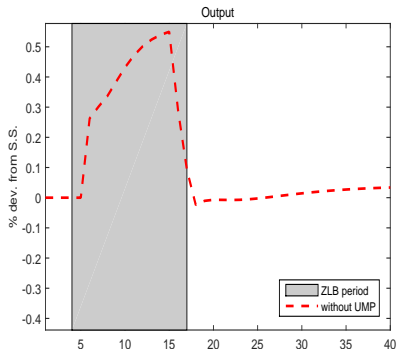
Alternative explanations

- ▶ Financialization: Tang and Xiong (2012)
- ▶ Recession: Hamilton and Wu (2015)

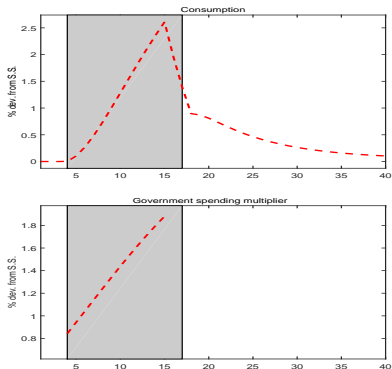
Comment 2: no unconventional monetary policy

ZLB without UMP (normal times)

Negative supply shock



Government spending shock



- ▶ negative supply shock → higher (**lower**) output
- ▶ government spending shock → higher (**lower**) consumption → fiscal multiplier $>$ ($<$) 1

Comment 2: no unconventional monetary policy

Taylor rule

$$i_t = c + (1 + \phi_\pi)\pi_t + \phi_y y_t$$

Fisher equation

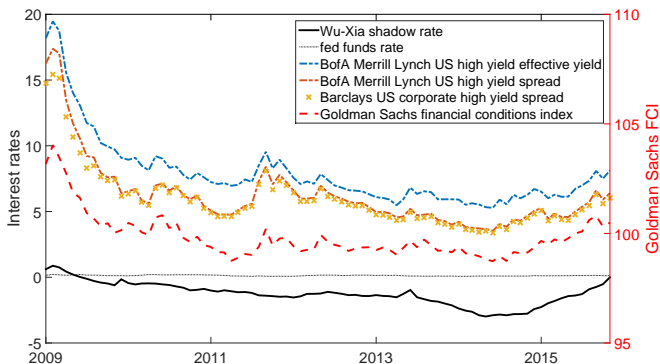
$$r_t = i_t - \mathbb{E}_t[\pi_{t+1}]$$

Basic channel

normal times:	inflation \uparrow	\rightarrow	real rate \uparrow	\rightarrow	$C, I \downarrow$
ZLB without UMP:	inflation \uparrow	\rightarrow	real rate \downarrow	\rightarrow	$C, I \uparrow$
ZLB with UMP:	inflation \uparrow	\rightarrow	real rate \uparrow	\rightarrow	$C, I \downarrow$

Comment 2: no unconventional monetary policy

Shadow rate and private borrowing rates

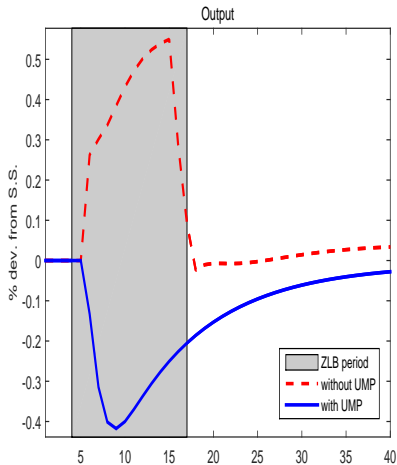


ZLB with UMP: inflation $\uparrow \rightarrow$ shadow rate \uparrow
 \rightarrow private borrowing rate $\uparrow \rightarrow$ private real rate $\uparrow \rightarrow C, I \downarrow$

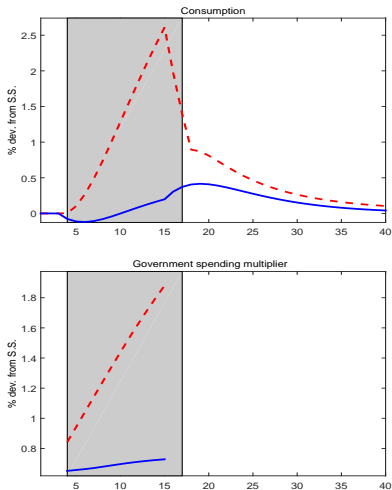
Comment 2: no unconventional monetary policy

Wu and Zhang (2016)

Negative supply shock



Government spending shock



Comment 3: relation to macro news

Table 6: Oil Pre- and Post- Break Regression Results

	Cap. util.	Cons. conf.	Core CPI	GDP (adv.)	Init. claims	ISM manuf.	Leading ind.	New homes	Nonf. payrolls	Core PPI	Retail sales	Unemp. rate
Surprise	0.29 (1.61)	0.22 (1.29)	0.20 (1.11)	-0.19 (-0.72)	-0.02 (-0.28)	-0.05 (-0.31)	0.57 (1.71)	0.06 (0.44)	0.00 (-0.01)	0.00 (-0.01)	-0.39 (-2.17)	-0.27 (-1.39)
Surprise *Post-break dummy	-0.37 (-1.27)	-0.17 (-0.61)	-0.48 (-1.42)	-0.28 (-0.53)	0.39 (2.68)	0.55 (1.82)	-0.42 (-0.98)	-0.11 (-0.28)	0.92 (2.29)	0.66 (1.92)	0.41 (1.08)	0.26 (0.80)
Post-break response												
$\beta_{1j} + \beta_{2j}$	-0.08	0.05	-0.28	-0.47	0.37	0.50	0.15	-0.05	0.92	0.66	0.02	0.00
F-stat	0.12	0.04	0.97	1.08	9.08	3.80	0.32	0.02	6.21	4.50	0.00	0.00
p-value	0.72	0.84	0.32	0.30	0.00	0.05	0.57	0.90	0.01	0.03	0.96	0.99
Observations	280	283	283	95	1176	277	284	281	275	281	282	273

- ▶ Oil responds to the labor data.
- ▶ What is special about that?

Comment 3: relation to macro news

Table 7: Equity Pre- and Post- Break Regression Results

	Cap. util.	Cons. conf.	Core CPI	GDP (adv.)	Init. claims	ISM manuf.	Leading ind.	New homes	Nonf. payrolls	Core PPI	Retail sales	Unemp. rate
Surprise	0.12 (1.33)	0.06 (0.68)	-0.29 (-3.15)	0.08 (0.62)	0.00 (0.08)	0.06 (0.77)	-0.03 (-0.20)	-0.02 (-0.22)	-0.10 (-1.21)	-0.10 (-1.31)	0.00 (0.03)	0.05 (0.54)
Surprise *Post-break dummy	-0.12 (-0.84)	-0.12 (-0.80)	0.39 (2.25)	-0.34 (-1.28)	0.12 (1.61)	0.38 (2.49)	0.01 (0.02)	0.05 (0.28)	0.31 (1.53)	0.30 (1.71)	0.55 (2.82)	-0.06 (-0.37)
Post-break response												
$\beta_{1j} + \beta_{2j}$	0.00	-0.06	0.10	-0.26	0.12	0.44	-0.03	0.04	0.21	0.20	0.55	-0.01
F-stat	0.00	0.24	0.48	1.25	3.90	11.70	0.05	0.04	1.29	1.61	10.39	0.00
p-value	0.98	0.62	0.49	0.26	0.05	0.00	0.83	0.83	0.26	0.20	0.00	0.95
Observations	280	283	283	95	1176	277	284	281	275	281	282	273

How do we reconcile equity with oil?

- ▶ Oil responds to the labor data.
- ▶ Equity responds to manufacturing and sales data.

Comment 4: one year rolling window

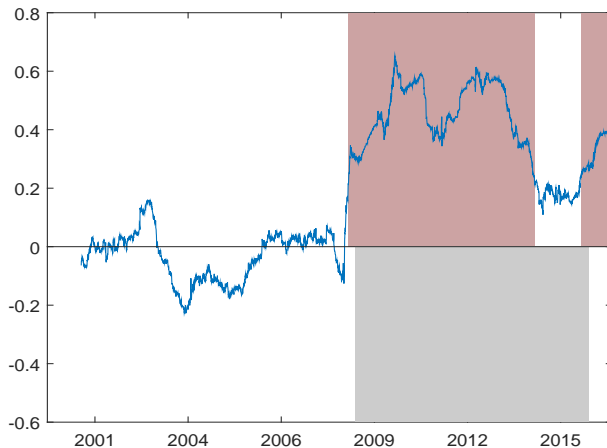
The main results heavily depend on the one-year rolling window. Are they robust to alternative window size?

- ▶ What if the window is smaller? For example, 3 months or 6 months
- ▶ What about larger window size? For example, 2 years or 3 years.

Comment 4: one year rolling window and ZLB



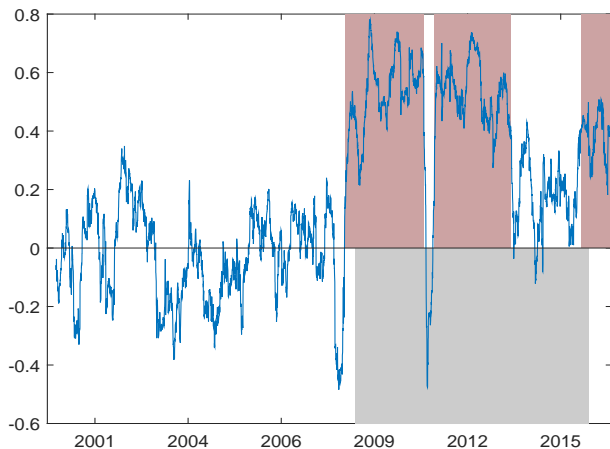
Comment 4: one year rolling window and ZLB



Also, the “break” date Sep 2008 really covers Sep 2007 - Sep 2008.

Comment 4: 3-month rolling window and ZLB

If I use 3 month moving average,



Conclusion

Overall, this is a very interesting paper!

- ▶ Comment 1: is the correlation driven by the ZLB?
- ▶ Comment 2: no unconventional monetary policy
- ▶ Comment 3: relation to macro news
- ▶ Comment 4: one year rolling window