

The Supply of Liquidity and Real Economic Activity

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¹The views expressed are those of the author and do not indicate concurrence by the Federal

Paper in a nutshell

Does the supply of liquidity matter for real activity?

Financial crisis. Kiyotaki Moore 2012

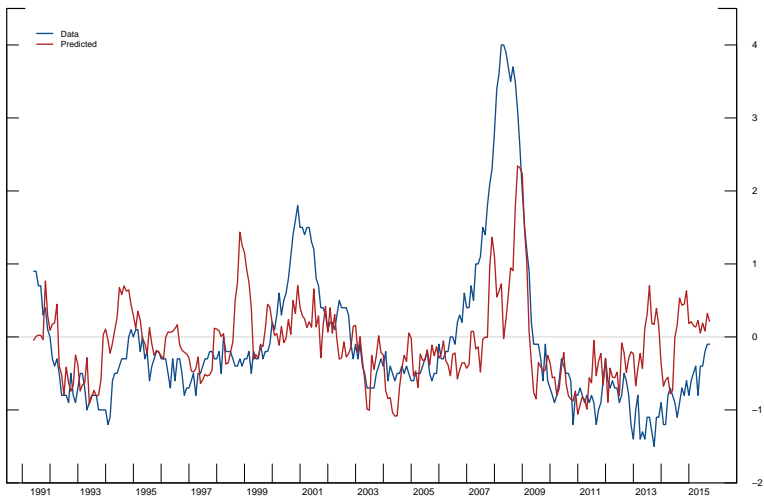
Paucity of empirical evidence

Identify liquidity supply shocks using sign restrictions in SVAR

Treasury market as laboratory

Predictability using only liquidity supply shocks

12-month-ahead change in unemployment



Related literature

Treasury market liquidity

- ▶ Fontaine & Garcia (2012); Hu Pan & Wang (2013); Malkhozov et al (2016)

Liquidity commonality: Supply and demand

- ▶ Koch et al (2016); Coughenour & Saad (2004)

Intermediary asset pricing

- ▶ Brunnermeier & Sannikov (2014); Adrian Etula Muir (2014), He Kelly Manela (2015)

Treasury market as a laboratory

Theory

- ▶ Vayanos & Vila 2009, Malkhozov et al 2016

Normally, dealers smooth out the Treasury yield curve

- ▶ Dispersion low
- ▶ Dealers accommodate security-specific demand imbalances

Decrease in supply of liquidity

- ▶ Price dispersion \uparrow
- ▶ Dealer gross positions (sum of long and short) \downarrow

Treasury market as a laboratory

The fact that there are severe market-functioning problems in the asset class that is in greatest demand—Treasuries—underscores the scope and severity of the markets' broader dysfunction.

William Dudley, October 2008 FOMC meeting

Variables in the VAR

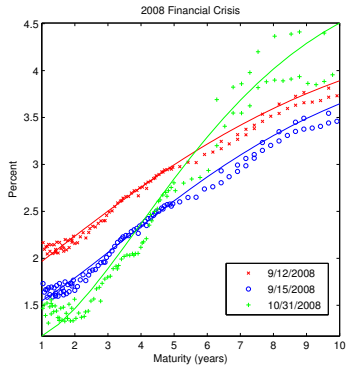
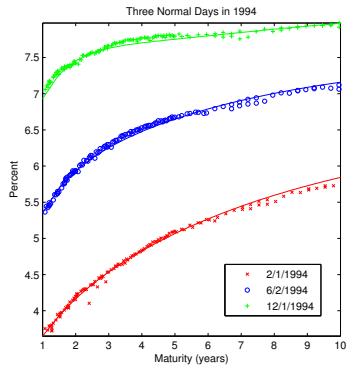
Noise in Treasury yields

- ▶ Each day, fit a smooth yield curve
- ▶ Noise is the “average” deviation
- ▶ Gurkaynak, Sack & Wright (2007), Hu, Pan & Wang (2013)

Dealer gross positions

- ▶ Primary dealers
- ▶ Sum of gross long and short Treasury positions
- ▶ “Weekly Report of Dealer Positions,” 1990-2016

Noise



Identification

Positive liquidity supply shock, on impact:

- ▶ Noise ↓
- ▶ Dealer Gross Positions ↑

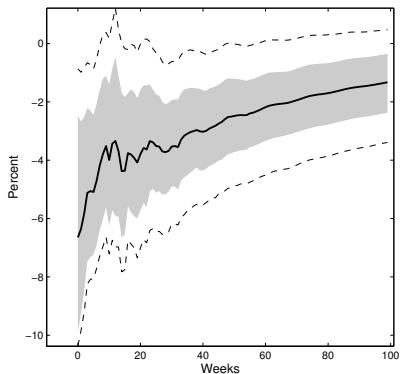
Pure sign restriction (Uhlig 2005)

Dealer intermediation VARs with recursive identification

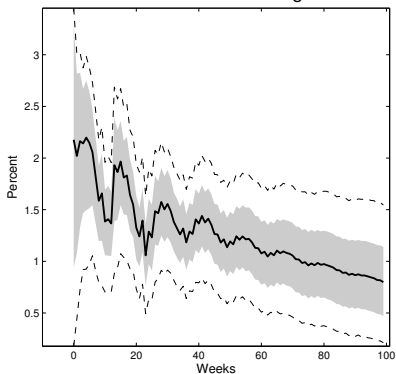
- ▶ Adrian and Shin (2010); Comerton-Forde et al (2010)

IRFs

Noise Measure



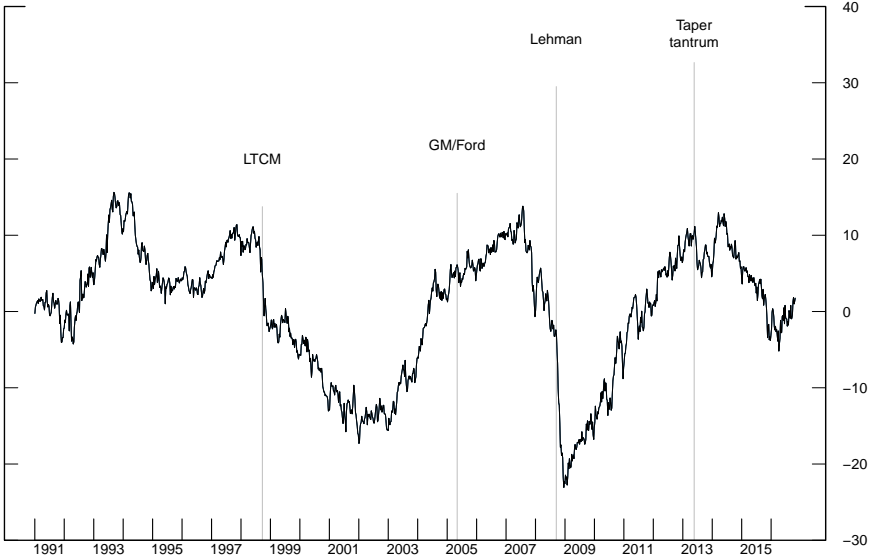
Gross Dealer Holdings



Response to 1-standard deviation liquidity supply shock

Dashed lines: pointwise 95-percent credible interval

Liquidity Supply Shock (Cumulative Sum)



Liquidity supply shock

Correlation with usual suspects: Expected sign, R^2 very low ($<.02$)

- ▶ Stock returns, PD returns, T-bill yield, VIX, Credit spreads,
HKM Capital Ratio

Correlation with liquidity measures: Expected sign, R^2 low ($<.04$)

- ▶ Refcorp spread, "TIPS spread," AAA spread,
Pastor-Stambaugh

Liquidity supply and real activity

Regress 12-month-ahead change in unemployment...

...on current liquidity supply shock v_t

Controls: current and lagged Δu_t

$$u_{t+12} - u_t = \alpha + \beta v_t + \sum_{i=0}^p \gamma_i \Delta u_{t-i} + \epsilon_{t+12}$$

Repeat for other real activity measures

Liquidity supply and real activity

Liquidity supply shock coefficient

Unemployment		Payrolls	
β	t -stat	β	t -stat
-0.48	4.4	0.54	3.9

Sample period: 1991m1:2015m10. Hodrick (1992) standard errors.

SD(liquidity supply shock) = 0.45.

Liquidity supply and real activity

- ▶ Pre-crisis subsample
- ▶ Additional controls: Treasury yields, VIX, etc.

Liquidity supply and real activity

Liquidity supply shock coefficient

	<u>Unemployment</u>		<u>Payrolls</u>	
	β	<i>t</i> -stat	β	<i>t</i> -stat
Pre-crisis subsample	-0.23	2.4	0.23	2.9

Memo:

Full sample	-0.48	4.4	0.54	3.9
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Pre-crisis sample period: 1991m1:2005m12. Hodrick (1992) standard errors.

Liquidity supply and real activity

Adding 8 controls: Treasury yields, VIX, etc.

	Unemployment		Payrolls	
	β	<i>t</i> -stat	β	<i>t</i> -stat
Full sample	-0.30	3.7	0.29	3.5
Pre-crisis subsample	-0.25	2.7	0.21	2.8
<hr/>				
Memo: Full sample, no controls				
Liquidity supply shock	-0.48	4.4	0.54	3.9

Liquidity supply and real activity

Adding 8 controls

- ▶ Rates
 - ▶ 3-month T-bill rate
 - ▶ Treasury “term spread” (10 yr - 2 yr)
- ▶ Equity markets
 - ▶ Return
 - ▶ VIX
- ▶ Credit
 - ▶ Credit spreads
 - ▶ Credit sentiment
- ▶ Primary dealers
 - ▶ Stock return
 - ▶ HKM capital ratio

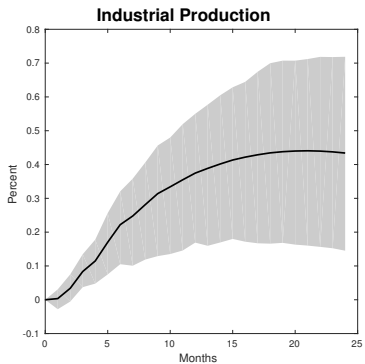
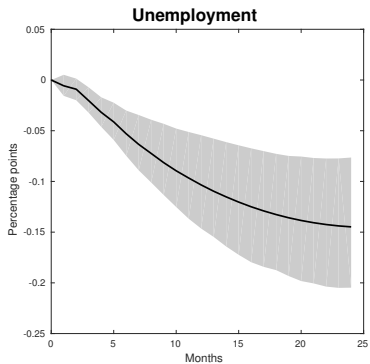
Business cycle VAR

Liquidity supply shock, with no effect on impact on:

- ▶ Unemployment
- ▶ Industrial production
- ▶ Core PCE prices
- ▶ Real federal funds rate
- ▶ Term spread
- ▶ Stock market return
- ▶ VIX

Arias et al (2016)

Business cycle VAR



Conclusion

New method for identifying shocks to liquidity supply

Sign restrictions based on theory model

Liquidity supply shocks predict liquidity across markets

Liquidity supply shocks predict real activity