The Real Effects of Liquidity During the Financial Crisis: Evidence from Automobiles

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First-order problem: understand and avoid recessions

- recession $\equiv$ GDP contraction.
- drop in \{income, credit\} $\Leftrightarrow$ drop in consumption
- much consumption is financed

Rich empirical autopsy literature, all resembles:

$$\text{Real outcome} = f(\text{financial frictions}) + \varepsilon$$

Typical indeterminacy: supply or demand? Hard to identify!

This paper: 1) ID credit supply shocks, 2) show they matter
Credit Demand or Credit Supply?

- Distinction matters! Major policy implications
  - (but not either/or)

- Lots of salient work on Credit Demand channel
  - Households aren’t borrowing because of HH fundamentals
  - Irresponsible leveraging during boom leads people to deleverage
    - e.g. Mian & Sufi, debt overhang lit
  - motivates policy like stimulus checks, HAMP, HARP

- Less work on Credit Supply
  - progress in banking (e.g. Chodorow-Reich, 2014)
  - even though borrowers could qualify under early-2000s lending standards, problem is they now can’t get loans
    - i.e. of course people want to borrow to smooth consumption, it’s a contraction in the supply of credit that prevents them
  - motivates policy like TALF, TARP bailouts
Fall in car sales mirrors depth of recession
- can learning about contraction in car sales teach us about the causes of the recession?

How much of this is explained by household credit supply (access) shocks?

Recovery has been faster than many other fundamentals (house prices, income, employment)
- consistent with relatively quick return of credit supply?

Source: Polk via Authors’ Figure IA3

Figure IA3. Total Retail Car Sales, 2002–2013. Retail car sales are the sum of retail leases and retail purchases in Polk.
Captive financing is when a car financing provided by lender who’s vertically integrated with manufacturer, e.g. GMAC.

Like much non-bank lending, captives rely heavily on ABCP.

ABCP market wretched during recession.

Some counties depend a lot on captives.

Those counties’ car sales declined much more.

Ergo, contraction in credit supply deepened recession.

Captive-financing liquidity shock could explain 31% of 2008-09 drop in auto sales.
• Asset-backed Commercial Paper
• Short-term investment vehicle with 90-180 day maturity
• Backed by physical assets like trade receivables, cash flows
• Often used to fund investment in long-term risky assets (e.g. consumer loans, AAA CDO) at short-term rates
• Backed by collateral and by shadow-y guarantee of sponsor
• Requires frequent rollover of short-term debt
• Attractive maturity transform + balance sheet dodge ⇒ ABCP outstanding doubles from 2004-2007 (Chen, 2015)
• Rollover stops/becomes prohibitively expensive when ABS marked down in crisis
Sponsor: e.g. Citi

Structured Investment Vehicle (SIV): e.g. AAA CDOs

Investor

Credit Guarantee

$
ABCP Turmoil: Spread Relative to Fed Funds Rate

Source: Krishnamurthy, Nagel, and Orlov (2011)
Identification

- Key result: car sales decline more in counties whose consumers rely on captive financing
- Classic: aggregate time series × cross-sectional variation
- Worry: what else is different about captive-reliant counties?
- To drill down to credit supply, need to make sure that results not driven by decrease in credit demand
Ruling out other channels: Demand

- Robust to a bevy of demand-side controls
- More impressively: substitution from captive auto loans to non-captive auto loans and cash transactions (even though sales decline on net)
- Basically a diff-in-diff $\Rightarrow$ event studies key to check for parallel trends!
- Limited ability to examine pre-trends since data starts 2006
- Still, why not include 2006 data in all individual-level regressions?
Are captive counties high-β areas? i.e. larger boom and bust?
- If so, would sales have declined even w/o credit supply shock?
- Decline seems to happen before credit supply collapse (M&S)
  - Not either demand or supply, undoubtedly both!
Ruling out other channels: Floorplan Financing

- Dealer financing inventory
- Either way, it’s credit supply and either way, liquifying Repo and ABCP markets is the policy prescription
  - Paper mentions that floorplan financing reliance likely correlated with captives.
  - ...but paper’s entire motivation is on consumer side, could use discussion about whether distinction matters.

- Can get data on inventories? If inventories aren’t *that* low, floorplan financing shouldn’t matter
- Shift from captive consumer loans to non-captive and cash ⇒ entire effect can’t be floorplan financing
Supply and Demand has another axis

- Can gauge relative importance of negative supply and negative demand shock from price!
- Credit market price: interest rates (or maybe spread to Treasury)
- Suggestive evidence: “In 2009, many of these captive finance companies altered their floorplan financing programs to our detriment, providing additional restrictions on lending and increasing interest rates.” - AutoNation 10K (2009)
What happens in short-term funding markets doesn’t stay in short-term funding markets.

Ignore seemingly obscure ABCP-market disruptions at our own peril.

Availability of consumer credit impacted during crisis and even holding consumer demand fundamentals fixed, this led to less consumption, deepening crisis.

Fed actions aimed at liquidity a good idea.