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

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Big Picture: Whence the Recession?

- 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

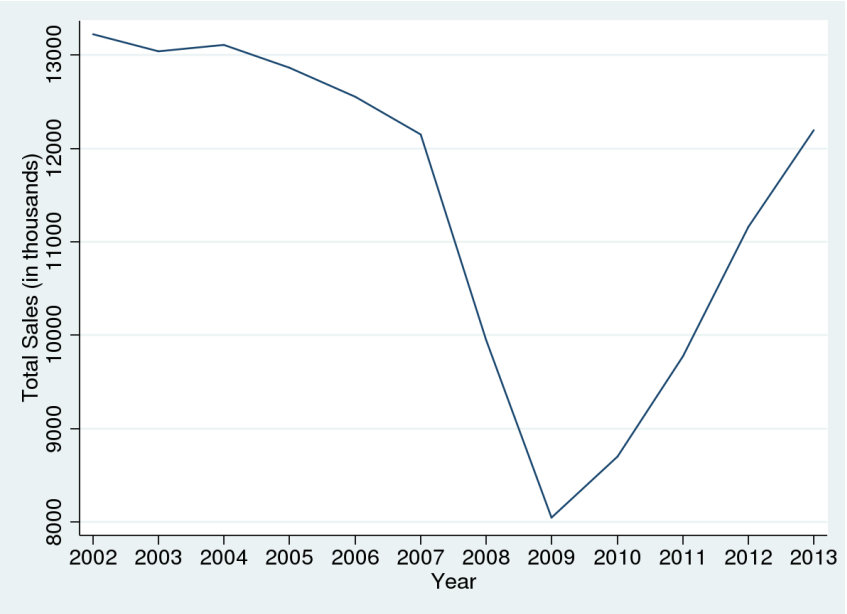
Credit Demand or Credit Supply?

- 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

Paper Motivation

- 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



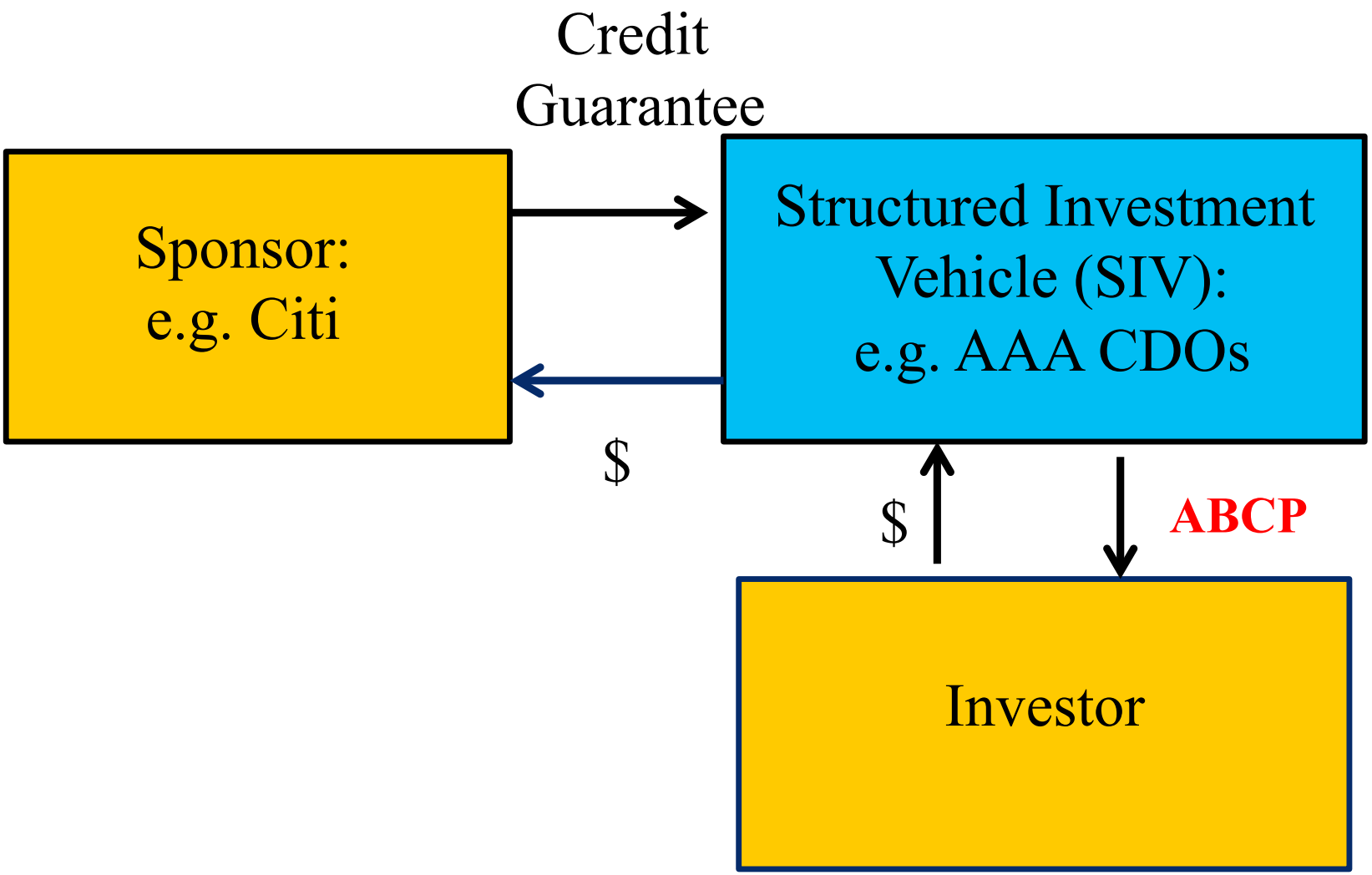
Paper Summary

1. Captive financing is when a car financing provided by lender who's vertically integrated with manufacturer, e.g. GMAC
2. Like much non-bank lending, captives rely heavily on ABCP
3. ABCP market wretched during recession
4. Some counties depend a lot on captives
5. Those counties' car sales declined much more
6. Ergo, contraction in credit supply deepened recession
7. Captive-financing liquidity shock could explain 31% of 2008-09 drop in auto sales

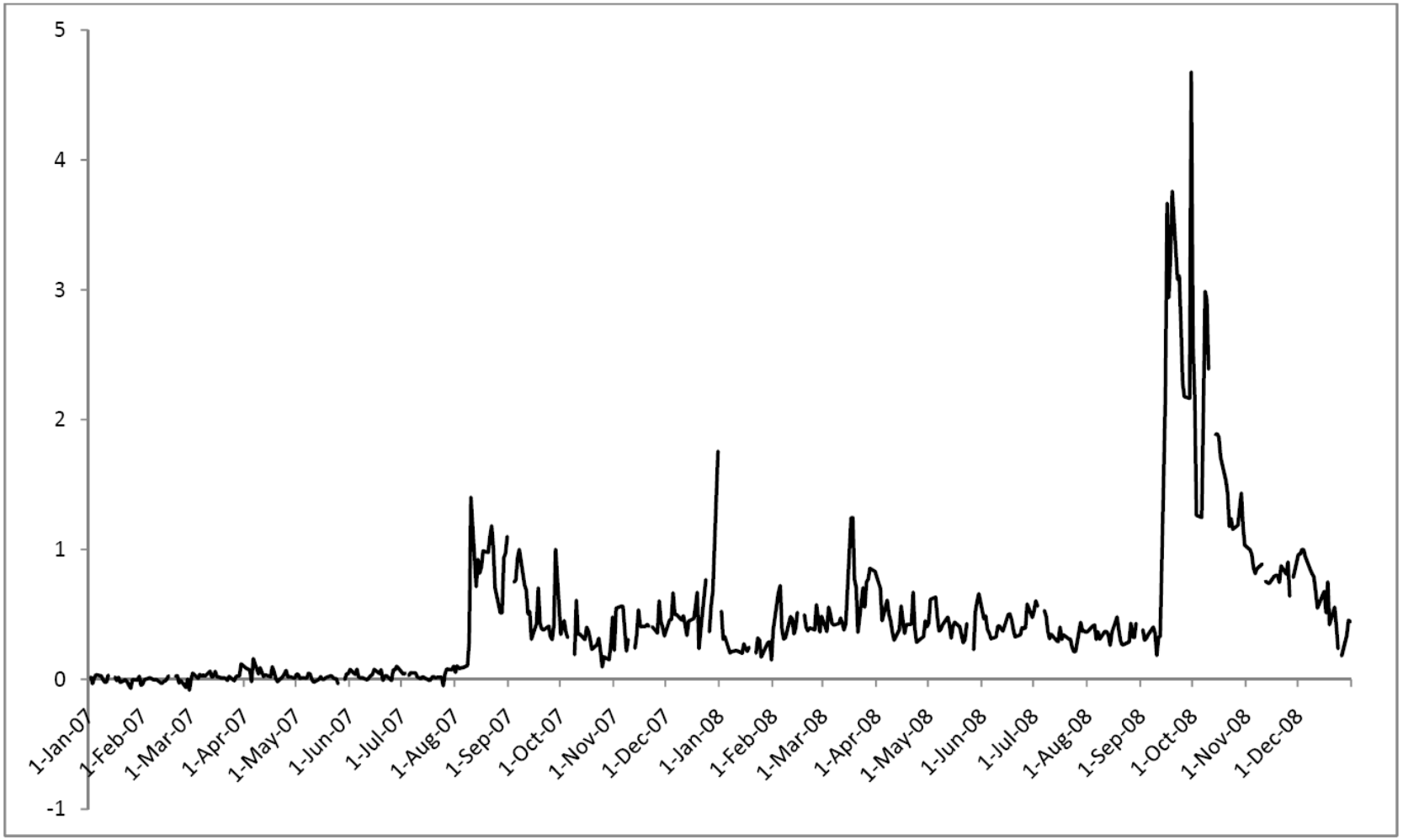
ABCP Shock

- 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 $\Rightarrow$ ABCP outstanding doubles from 2004-2007 (Chen, 2015)
- Rollover stops/becomes prohibitively expensive when ABS marked down in crisis

ABCP SIV Example



ABCP Turmoil: Spread Relative to Fed Funds Rate



Source: Krishnamurthy, Nagel, and Orlov (2011)

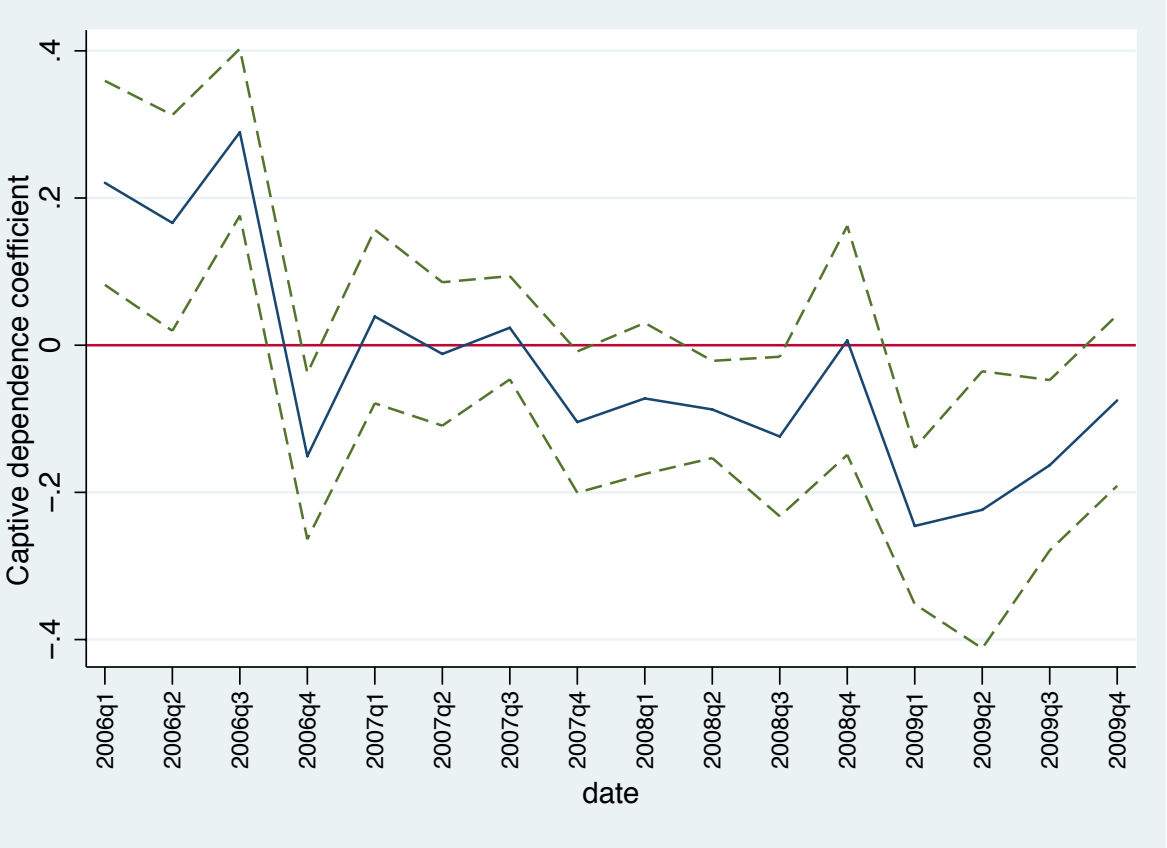
Identification

- Key result: car sales decline more in counties whose consumers rely on captive financing
- Classic: aggregate time series $\times$ 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?

Comparability of Captive Counties: Parallel Trends?



- 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 $\Rightarrow$ 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)

Conclusion

- 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.