The Hidden Cost of Bank Bailouts During the Recent Financial Crisis: How Much Did Taxpayers Pay?

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Outline

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Questions

- How can we quantify the amount of moral hazard resulting from bank bailouts during the financial crisis?
- How much did taxpayers pay to save failing financial institutions?

Background (1)

- May 1984 bailout of Continental Illinois Bank (Conover 1984)
- During financial crisis, Bear Stearns, AIG, GM, Chrysler, Fannie Mae, Freddie Mac bailed out
- Goal: contain financial contagion from interconnected financial institutions
- Only solvent but illiquid financial institutions should have access to lender of last resort lending (Mishkin 2007)
- Too big to fail => moral hazard

Background (2)

- Credit default swap: derivative contract providing insurance against particular company's default
- Spread of a CDS: annual amount paid by buyer to seller
- CDS transactions were completed OTC with little regulation and transparency (Brunnermeier 2009)
- Assume CDS spread value equals firm's probability of default

Data

- 12 U.S.-based too big/complex to fail institutions, including Goldman Sachs, AIG, Lehman Brothers, and Ford Motor Company
- Daily trading CDS spread data between October 2004 and December 2009 from Bloomberg
- Other firm-specific and macroeconomic variables
- 5 government intervention events selected from NY Fed Crisis Timeline

Empirical Analysis (1)

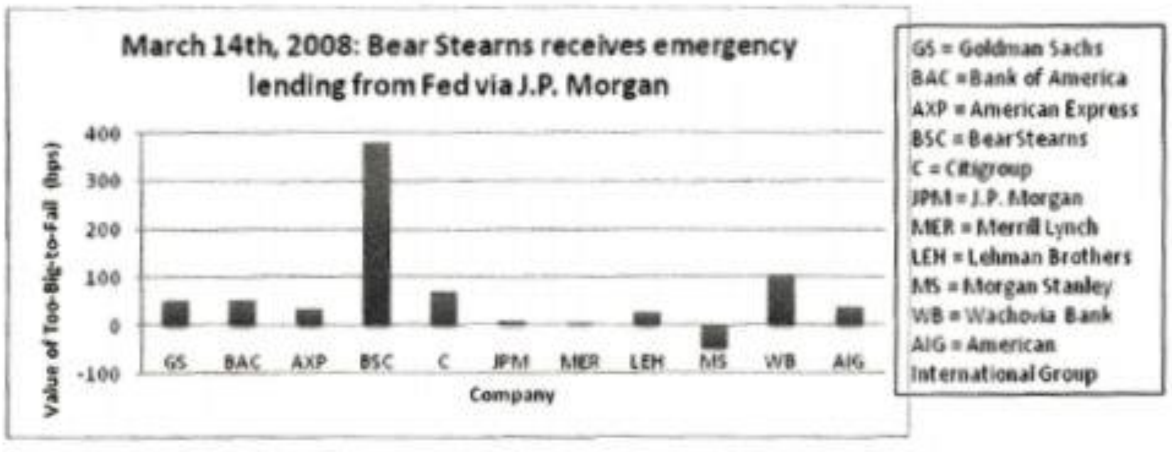
- Forecast CDS spreads in absence of 5 government intervention events:
    1. March 14, 2008: JP Morgan acquires Bear Stearns with Fed assistance
    2. September 7, 2008: Fannie Mae and Freddie Mac placed in federal conservatorship
    3. September 15, 2008: Lehman Brothers files for bankruptcy
    4. September 29, 2008: Citigroup bails out Wachovia in Fed-brokered deal
    5. October 14, 2008: 9 large banks get capital injection
- Value of TBTF = forecasted CDS spreads – observed CDS spreads

Empirical Analysis (2)

$$\hat{\text{Spread}}_{i,t} = \beta_0 + \beta_1 \text{VIX}_{i,t-1} + \beta_2 \text{PB}_{i,t-1} + \beta_3 \text{PVol}_{i,t-1} + \beta_4 \text{ROE}_{i,t-1} + \epsilon_{i,t}$$

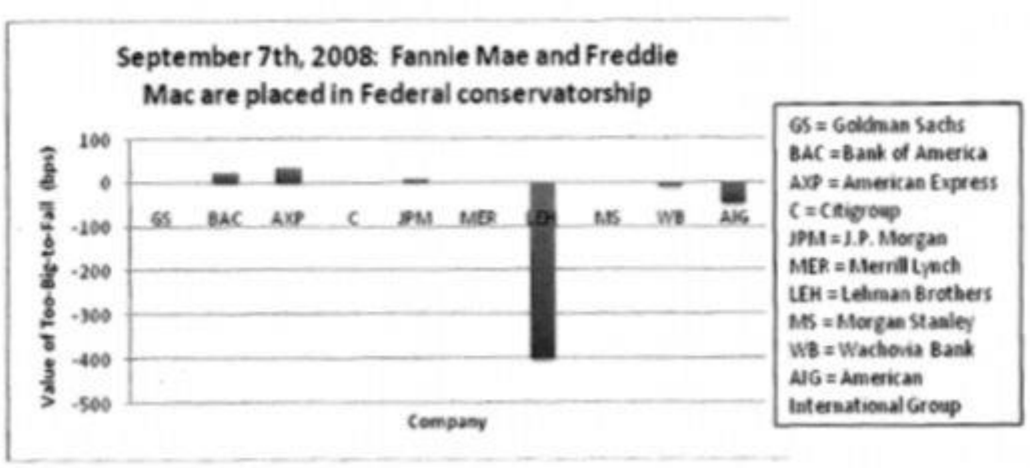
- *VIX:* CBOE volatility index
- *PB:* market-to-book ratio
- *PVol:* equity volatility
- *ROE:* return on equity
- $\epsilon_{i,t}$: autoregressive error process of order 2

Event 1: Bear Stearns acquisition (3/14/08)



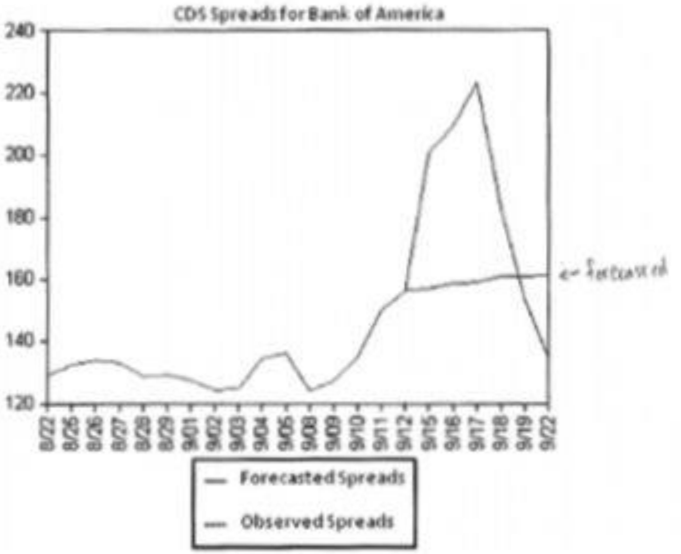
- CDS spreads narrowed for 10 of 11 financial institutions after bailout
- Bear Stearns had highest value of TBTF (378 bps), signaling increased investor confidence despite no fundamental change in nature of business

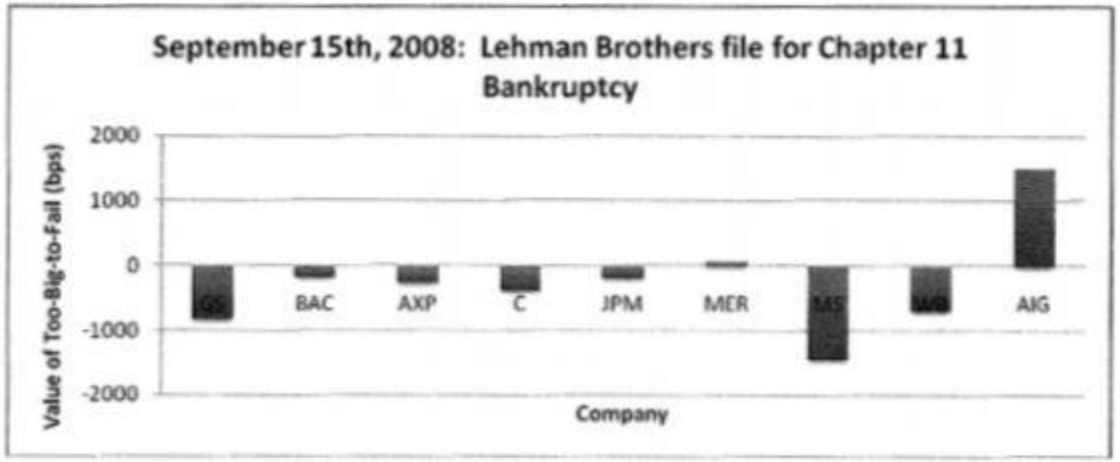
Event 2: Takeover of Fannie & Freddie (9/7/08)



- Average decline in TBTF of 39.8 bps
- Value of TBTF lowest during Event 2 among five considered
- Market considered Fannie and Freddie distinct from private sector
- Lehman Brother considered at extreme risk of default despite Bear Stearns bailout

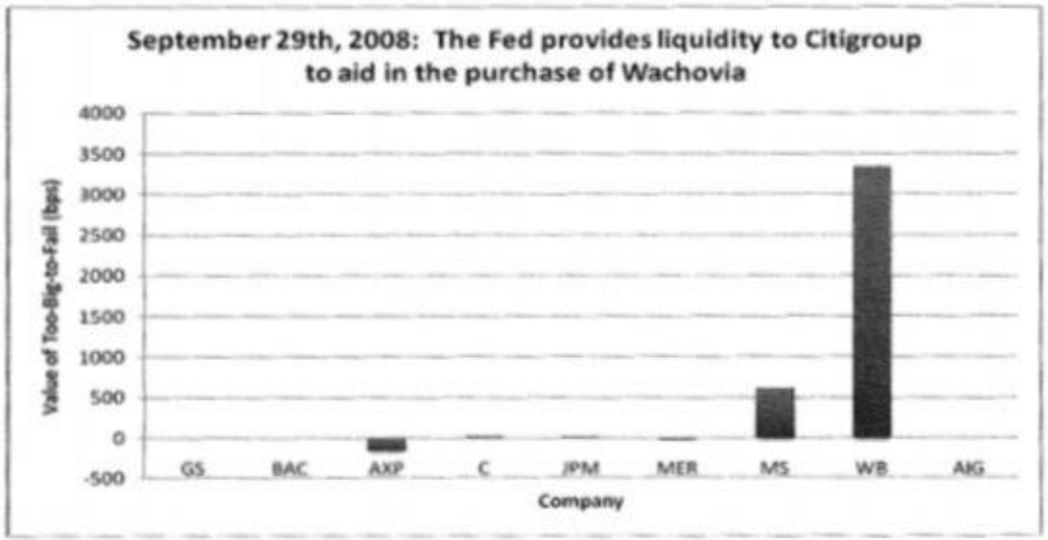
Event 3: Lehman Brothers collapse (9/15/08)





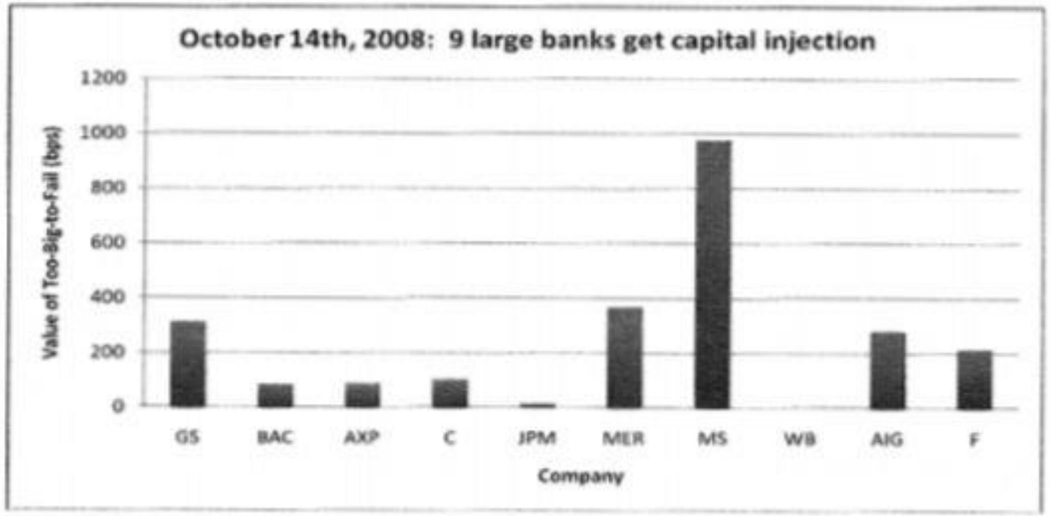
- Fed signaled it would allow some institutions to fail
- Forecasted CDS spread now below observed spread
- Value of TBTF significantly decreased for 7 of 9 institutions

Event 4: Wachovia bailout (9/29/08)



- Large spike in Wachovia TBTF value to 3340 bps reflecting bidding war between Citigroup and Wells Fargo
- Investors still unsure how government would act after Lehman bankruptcy

Event 5: Capital injection (10/14/08)



- 9 large banks forced to take loans from Treasury, subjecting them to restrictions on unnecessary risk
- Increase in TBTF value for 8 of 9 companies (except Wachovia, which was previously bailed out)
- Market perception of safety net more influential than risk restrictions

Conclusion

Company	Value of TBTF (bps)	Total Debt (in millions $)	Taxpayer burden (in millions $)
Goldman Sachs	313.6543	498416	15633.03
Bank of America	82.89361	632946	5246.72
American Express	87.77198	69034	605.93
J.P. Morgan	17.55458	633474	1112.04
Morgan Stanley	977.6304	395266	38642.41
Citigroup	105.0802	720317	7569.11
Wachovia Bank	3339.971	251217	83905.75
Merrill Lynch	87.22296	601354	5245.19
Lehman Brothers	-402.475	457493	(475905)
Bear Stearns	378.1361	237885	8995.29
American International Group	1502.507	203765	30615.83

- Value of TBTF corresponds to cost for a TBTF institution to have its total debt insured
- Obtain taxpayer burden by multiplying TBTF value (bps) by total debt
- Taxpayer burden is positive for all institutions except Lehman, which was allowed to fail
- Net taxpayer burden -$278 billion