The Cost Effectiveness of the Private-Sector Reorganization of Failed Bank Assets

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Motivation

- As of year-end 2007, the FDIC estimates that the total cost to the deposit insurance fund of resolving the 1,244 failed banks during 1986-2007 is $30 billion

- In this new era of bank failure resolutions, a careful analysis of past is warranted

- To provide useful guidance for an efficient resolution process, we undertake a thorough analysis of the resolution methods and costs

Preliminary Definitions

- Resolution
  - Marketing the assets and liabilities (franchise value) of a failed bank to potential bidders
- Resolution Methods
  - Liquidation
    - Liquidate the assets of the failed bank and pay off the insured depositor
    - All or partial liquidation of the assets
    - Franchise value of the failed bank is destroyed. Impact on the community severe.
  - Private-Sector Reorganization (PSR)
    - An approved acquirer purchases all or part of the failed-bank's assets and simultaneously assumes all or part of the failed bank's liabilities. Reorganizes the failed bank.
      - Whole bank P&A - All of the assets and liabilities are sold. The franchise value is preserved and the impact on the community is minimal
      - P&A - Some of the assets are sold (all of the deposits are assumed). Impact on the community depends on the percentage of assets transferred.
- Costs of Resolving Bank Failures
  - Net loss on assets: Difference between the BV of assets and the proceeds received from the assets plus premium received for deposits.
  - Direct expenses: Salaries, travel, legal, and other professional fees, such as accounting and auditing fees incurred in the resolution process.

Hypotheses

- Differential Cost Hypothesis (James 1991)
  - In a PSR the franchise value of the bank is preserved. Given that this value is non-negative a PSR should always be less costly than a liquidation. The value of failed bank is less in an FDIC liquidation than a PSR.
    - Assets might be worth less in the hands of the FDIC (Carns and Nejezchleb, 1992)
    - Customers may have higher incentives to default (FDIC, 1992)

- However, Differential Cost Hypothesis assumes away frictions that can arise in PSR
  - Asymmetric information or lack of risk capital due to industry distress can cause fire sales (Shleifer and Vishny, 1992)

  - If there is lack of risk capital due to industry stress and FDIC finds itself in an environment where it cannot liquidate assets in an orderly manner, a PSR might prove to be costlier than liquidation

Hypotheses

- Our sample period, 1986-2007 allows us to test these hypotheses.
    - 1986-1991 period represents the banking crisis period
    - 1992-2007 period represents more stable industry conditions
- Thus, we can test the validity of these hypotheses in these two distinct economic and regulatory conditions.

The sub-periods

- Crisis period: 1986-1991
  - Record levels of bank failures
  - End of 1986, 10.27% of 1457 institutions were problem banks. By the end of 1992 this percentage dropped to 6.87%
  - The deposit insurance fund balance declined from 84 basis points of domestic deposits in 1986 to 1 basis points in 1992
- Post-crisis period: 1992-2007
  - As of end of 2007 only 1% of the banks were considered to be problem banks
  - Insurance fund increased to 76 basis points of insured deposits by the end of 2007

Prior Literature

- Bovenzi and Murton (1988)
  - 218 failed banks in 1985 and 1986 (50 deposit payoffs and insured-deposit transfers and 168 P&A transactions)
  - Average losses 33% of total failed-bank assets. Range from 2% to 64%.
- James (1991)
  - 412 bank failures from 1985 through June 1988 (46 deposit payoffs and insured-deposit transfers, 287 clean P&A transactions, and 29 whole-bank P&A transactions)
  - Average losses 30% of total failed-bank assets. Direct receivership expenses of 10% of failed-bank assets.
- Brown and Epstein (1992)
  - 594 bank failures from 1986 to 1990
  - Average loss is 29% of total assets. Direct and variable indirect expenses are 7% of total assets.
- Osterberg and Thompson (1995) McDill (2004) Schaeck (2006)
  - Analyze the cost to the FDIC from the Failed Bank Cost Analysis
  - Average cost to the FDIC is approximately 20 percent in each paper

Testing the Difference
in Cost between Resolution Methods

- Two complications
- Classification of resolution methods
    - Standard approach - Deposit payoff versus the P&A
        - Noisy classification because not all assets are liquidated under deposit payoff and not all assets are transferred to the acquirer in a P&A
    - The approach in this paper – Private-sector versus an FDIC liquidation
        - Private sector resolution – when 25% or more assets are purchased by a health bank. Otherwise, FDIC liquidation
        - We vary the cutoff point 0% to 50% in robustness checks
- Impact of the failed bank's characteristics on the choice of the resolution method
    - Institutions that have higher quality assets and a higher franchise value are more likely to attract more bidders with the results that more assets will remain in the private sector.
    - Therefore, we need to control for endogeneity in model estimation
    - Previous research completely ignores this selection bias when testing the cost differences

Estimation

- Costs depend on resolution method

$$L_i = X_i \beta + \gamma C_i + \varepsilon_i$$

- Resolution method

$$C_i = \begin{cases} 1 & if & C_i^* > 0 \\ 0 & otherwise \end{cases}$$

$$C_i^* = V_i \alpha + \mu_i$$

- The probability of a private sector resolution

$$\Pr(C_i = 1 \mid V_i) = \Phi(V_i \alpha)$$

- Hazard rate for each failure

$$h_i = \begin{cases} \dfrac{\phi(V_i \hat{\alpha})}{\Phi(V_i \hat{\alpha})} & if \ C_i = 1 \\ \dfrac{-\phi(V_i \hat{\alpha})}{1 - \Phi(V_i \hat{\alpha})} & if \ C_i = 0 \end{cases}$$

- Treatment regression

$$E(L_i \mid C_i) = X_i \beta + \gamma C_i + \lambda h_i$$

Factors Affecting
the Resolution Method

- Cost minimization
  - 1986-1991 – Cost test
  - 1992-2007 – Least cost test
    - New innovations to market the failed bank
- Impact on the community
  - Banking stability
  - For the period of 1986-1991 FDIC acknowledges that impact on the community was a consideration

Determinants of Resolution Method (First Stage Regression)

- Bank Characteristics Industry Characteristics
    - Book value of equity (BVERATIO)
    - Non-performing assets (NPA)
    - Owned real estate (ORE)
    - Income earned but not collected (EARNEDINC)
    - Insider loans (INSIDER)
    - Brokered deposits (BROKER)
    - Number of failed bank branches as a percent of bank branches in that state (BRANCHRATIO)
    - Asset size (LOGASSET)
- Industry Characteristics
    - State unemployment rate (UNEMP)
    - Failure rate in state (FAILRATE)
- Community Disruption (instruments)
    - Number of business establishments in the state (LOGESTABLISH)
    - Ratio of state PI to national PI (PIRATIO)

Determinants of Net Loss on Assets (Second Stage Regression)

- Bank Characteristics (as in first stage)
- Industry Characteristics (as in first stage)
- Resolution Choice
- Hazard Rate

Data Sources used to Calculate Resolution Costs

- FDIC General Ledger
  - I/S and Balance sheet for each failed-bank receivership (reconciliation is between corporate side of GL and receivership side of GL)
- Failure Transactions Database (FTDB)
  - Maintained by DIR
  - Includes FBCA figures
- Failed Bank Cost Analysis (FBCA) –published on the FDIC website
  - Produced by the Division of Finance

Resolution Types
Sample

Year of Failure	Total	FDIC	Private Sector	Deposit Payoff		P&A		
				IDT	PO	PA	PI	Whole Bank
1986	138	32	106	19	21	98	0	0
1987	184	48	136	40	11	114	0	19
1988	160	29	131	30	6	56	0	68
1989	164	37	127	22	9	90	0	43
1990	160	41	119	12	8	97	0	43
1991	113	36	77	17	3	69	0	24
1992	95	41	54	13	11	31	34	6
1993	39	16	23	0	5	6	28	0
1994	12	7	5	1	0	4	7	0
1995	6	3	3	1	0	2	3	0
1996	4	2	2	0	0	3	1	0
1997-2007	17	5	12	1	0	7	6	3
Total Sample	1,092	297	795	156	74	577	79	206

Descriptive Statistics for Selected Components of Resolution Costs
BIF-Insured Sample
as a Percent of the Book Value of Assets at Failure

	Mean	Standard Deviation	Minimum	First Quartile	Median	Third Quartile	Maximum
Book Value of Assets at Failure ($000 omitted)	183,663	1,421,160	1,357	12,888	24,429	50,627	32,927,546
Book Value of Equity on the Last Call Report (as a percent of Assets on Last Call Report)	-1.47	5.99	-47.94	-3.31	-0.24	1.55	13.08
Book Value of Equity	1.41	6.50	-56.07	-1.35	1.84	4.76	26.45
Net Loss on Assets	-21.42	13.93	-93.98	-30.07	-19.96	-11.19	14.14
Direct Liquidation Expenses	-3.53	2.11	-12.70	-4.74	-3.44	-2.06	-0.09
Total Resolution Costs	-33.61	19.67	-133.63	-45.11	-30.46	-19.78	8.61
Total Resolution Costs, Not Discounted	-29.95	19.16	-127.06	-40.45	-26.58	-16.10	10.79
Cost to the FDIC, Not Discounted	-24.39	13.92	-90.24	-32.76	-22.96	-14.03	0.00

Univariate Analysis of the Components of Resolution Costs

- Univariate analysis indicates there are significantly lower net loss on assets, direct expenses and total resolution costs for
  - Private-sector resolutions
  - Large (>$1 billion in assets) failures
- Univariate analysis also indicates there are significantly lower net loss on assets and total resolution costs for the post-crisis period
- These results are consistent with multivariate results from prior research

Mean and (Median)
BIF-Insured Sample
as a Percent of the Book Value of Assets at Failure

	Book Value of Equity		Net Loss on Assets		Direct Expenses		Total Resolution Costs	
Panel A: Resolution Type								
FDIC	2.50		-26.33		-4.71		-39.59	
	(2.60)		(-25.45)		(-4.42)		(-37.28)	
Private Sector	1.00	***	-19.59 ***		-3.09 ***		-23.06 ***	
	(1.53)	***	(-17.78) ***		(-2.95) ***		(-27.35) ***	
Panel B: Size								
Small	1.13		-21.59		-3.64		-34.11	
	(1.66)		(-20.57)		(-3.53)		(-30.72)	
Medium	3.13	***	-21.71		-3.14 **		-32.99	
	(3.77)	**	(-19.17)		(-3.04) ***		(-31.01)	
Large	3.36	*	-12.86 ***	+++	-1.53 ***	+++	-16.55 ***	+++
	(4.80)	*	(-15.25) ***	+++	(-1.48) ***	+++	(-19.50) ***	+++
Panel C: Legislative Period								
Pre-FDICIA	0.95		-23.13		-3.54		-35.65	
	(1.35)		(-22.17)		(-3.47)		(-32.66)	
FDICIA	3.83	***	-12.33 ***		-3.53		-22.79 ***	
	(4.25)	***	(-10.81) ***		(-3.24)		(-21.17) ***	

	Resolution Method		
		Pre-FDICIA	FDICIA
	(1)	(2)	(3)
NPA	-0.000	0.001	-0.002
	(0.04)	(0.17)	(0.000)
ORE	-0.011	-0.012	-0.009
	(1.33)	(1.34)	(0.40)
EARNEDINC	-0.239***	-0.247***	-0.167
	(3.88)	(3.99)	(0.89)
INSIDER	0.002	-0.001	0.198*
	(0.11)	(0.04)	(1.74)
BROKER	-0.014***	-0.012**	-0.034*
	(3.11)	(2.49)	(1.84)
BRANCHRATIO	0.266**	0.196*	2.850***
	(2.00)	(1.78)	(3.05)
LOGASSET	0.497	0.719*	0.267
	(1.37)	(1.90)	(0.20)
LOGASSETSQ	-0.024	-0.032*	-0.028
	(1.46)	(1.89)	(0.47)
UNEMP	-0.058*	-0.041	-0.240*
	(1.79)	(1.14)	(1.75)
FAILRATE	-0.023	-0.018	-0.046
	(0.75)	(0.59)	(0.30)
LOGESTABLISH	0.495***	0.411***	1.024***
	(4.39)	(3.06)	(2.87)
PIRATIO	-0.149***	-0.132***	-0.159**
	(4.90)	(3.30)	(2.13)
Constant	-7.013***	-7.361***	-10.159
	(2.70)	(2.78)	(1.13)

Net Loss on Assets

	OLS	Treatment	Pre-FDICIA	FDICIA
	(1)	(2)	(3)	(4)
RESMETHOD	-7.348***	4.607	14.464*	-10.928***
	(9.36)	(1.02)	(1.79)	(2.58)
BVERATIO	-0.657***	-0.645***	-0.679***	-0.515***
	(8.27)	(13.24)	(11.99)	(5.88)
NPA	0.219***	0.220***	0.211***	0.206***
	(6.21)	(6.02)	(4.30)	(2.93)
ORE	0.422***	0.456***	0.498***	0.414***
	(8.26)	(6.87)	(5.46)	(3.34)
EARNEDINC	3.536***	4.432***	5.535***	0.805
	(6.03)	(7.69)	(6.38)	(0.84)
INSIDER	0.571***	0.532***	0.544***	1.081*
	(5.83)	(3.95)	(3.19)	(1.68)
BROKER	0.164***	0.225***	0.251***	0.131
	(2.62)	(5.15)	(4.15)	(1.45)
BRANCHRATIO	-0.896**	-1.358***	-1.725***	-0.326
	(2.09)	(3.01)	(2.80)	(0.39)
LOGASSET	8.359***	6.801**	4.188	4.271
	(3.01)	(2.45)	(1.04)	(0.91)
LOGASSETSQ	-0.320**	-0.250**	-0.115	-0.228
	(2.54)	(2.01)	(0.63)	(1.12)
UNEMP	1.356***	1.602***	1.543***	0.367
	(4.76)	(5.89)	(4.40)	(0.57)
FAILRATE	0.921***	0.990***	0.998***	1.444*
	(3.91)	(4.11)	(3.25)	(1.73)
Constant	-36.293**	-37.808**	-44.798**	7.951
	(2.49)	(2.26)	(2.19)	(0.28)
Lambda		-7.228***	-13.218***	3.156
		(2.71)	(2.79)	(1.20)

	Direct Expenses			
	OLS	Treatment	Pre-FDICIA	FDICIA
	(1)	(2)	(3)	(4)
RESMETHOD	-1.537***	-5.350***	-5.305***	-2.886***
	(13.15)	(5.54)	(3.91)	(3.16)
BVERATIO	-0.005	-0.031**	-0.027*	-0.036*
	(0.49)	(2.27)	(1.82)	(1.70)
NPA	0.020***	0.019**	0.021**	0.010
	(3.02)	(2.42)	(2.46)	(0.67)
ORE	0.071***	0.057***	0.055***	0.085***
	(6.51)	(3.95)	(3.41)	(3.13)
EARNEDINC	0.036	-0.250**	-0.269*	0.097
	(0.49)	(2.00)	(1.81)	(0.46)
INSIDER	0.022	0.037	0.032	0.188
	(1.31)	(1.27)	(1.07)	(1.36)
BROKER	0.017**	-0.004	0.002	-0.028
	(2.33)	(0.37)	(0.21)	(1.41)
BRANCHRATIO	0.127**	0.285***	0.280***	0.002
	(2.57)	(2.88)	(2.62)	(0.01)
LOGASSET	-1.214***	-0.663	-0.151	-3.705***
	(3.20)	(1.10)	(0.22)	(3.61)
LOGASSETSQ	0.032**	0.008	-0.012	0.134***
	(2.00)	(0.31)	(0.37)	(2.99)
UNEMP	-0.054	-0.134**	-0.141**	0.200
	(1.41)	(2.23)	(2.27)	(1.47)
FAILRATE	0.082**	0.047	0.056	0.039
	(2.09)	(0.90)	(1.04)	(0.21)
Constant	9.587***	9.796***	10.245***	23.496***
	(4.43)	(2.70)	(2.89)	(3.80)
Lambda		2.302***	2.255***	0.772
		(4.04)	(2.84)	(1.37)

Robustness Checks

	Treatment	Pre-FDICIA	FDICIA
	(1)	(2)	(3)
Panel A: Maximum Likelihood Estimates for Net Loss on Assets			
RESMETHOD	3.258	4.877**	-14.375***
Lambda	-6.498	-7.625	5.339
LR Test	4.444**	26.797***	6.663***
Panel B: Cutoff Points on Assets Passed			
0%	17.231***	17.342***	-0.019
	(3.73)	(2.71)	(0.00)
10%	15.028***	17.612**	-7.254
	(2.84)	(2.20)	(1.35)
50%	8.800**	15.675	-5.932
	(2.11)	(1.59)	(1.29)
Panel C: Size Cutoffs			
Medium	4.164***	6.414***	-3.789*
	(2.77)	(3.09)	(1.77)
Large	-0.938	-0.214	-2.724
	(0.41)	(0.06)	(0.91)
Panel D: Lagged Instruments			
RESMETHOD	3.321	11.724	-10.875**
	(0.77)	(1.59)	(2.55)

Comparison with Non-Financial Bankruptcies

- Analogy between FDIC liquidation and Chapter 7 bankruptcy. Analogy between private-sector resolution and Chapter 11 bankruptcy

- Bris, Welch, and Zhu (2006). Estimates of creditor losses and direct expenses for Chapter 7 and Chapter 11 bankruptcies for 300 bankruptcies from 1995 to 2001

- Losses / Assets at Failure
  - Chapter 7 (72.6%); Chapter 11 (30.6%)
  - Liquidation (39.6); PSR (23%)

- Direct Expenses /Assets at Failure
  - Chapter 7 (8%); Chapter 11 (16.9%)
  - Liquidation (4.7); PSR (3.1%)

Conclusion

- Controlling for the quality of assets, private-sector resolutions do not inherently have lower net loss on assets than FDIC liquidations during the crisis period of 1986-1991

- However, we have the opposite result for the post-crisis period of 1992-2007

- These results lend support to Shleifer and Vishny (1992) who argue that prices from asset sales are below the value of the assets in periods of industry distress

  - The loss in asset value in the private-sector resolution outweighs the loss in franchise value in the FDIC liquidation

- Private-sector resolutions inherently have lower direct expenses in both the crisis and post-crisis periods.

Policy Implication

- Banks that fail during the crisis periods are more costly than those that fail in non-crisis period.

- As a result banks that fail and cause negative externality (systemically important financial institutions) lead to increased losses in bank failures.

- Therefore, this cost needs to be considered in systemic risk charges.