

DOUBLE LIABILITY AT EARLY AMERICAN BANKS

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LIMITED AND EXTENDED LIABILITY

- Limited liability is one of the defining characteristics of modern corporation
- Nineteenth-century statutes sometimes imposed double, even unlimited liability on certain types of corporations
 - Massachusetts and Pennsylvania imposed double liability on all manufacturing corporations
- In 1850 New York and Maryland imposed double liability for all bank debts; Pennsylvania and Massachusetts imposed double liability for bank note issues

TWO QUESTIONS AND PREVIEW

- Did double liability change the nature of shareholding?
 - Change in the number of shareholder
 - Change in some classes of shareholders
- Did change in liability lead banks to alter their portfolios?
 - Change in bank risk taking, measured by balance sheet ratios
 - Banks in double liability became more leveraged

WHAT DO WE KNOW ABOUT DOUBLE LIABILITY?

- Macey and Miller (1992), Esty (1998), Grossman (2001) show that double liability was associated with increased bank leverage
- Macey and Miller (1992) and E. White (2011) find that Comptroller collected about one-half to two-thirds of assessments on shareholders (state bank regulators less), so reasonably credible guarantee
- Grossman and Imai (2011) find that contingent (uncalled) capital reduces risk taking
 - Double liability is NOT contingent-collateral capital (Co-Co), which is called before failure
- Acheson and Turner (2006), Hickson et al (2005) find that extended liability concentrated shareholdings in 19th century England

A LITTLE ECONOMIC INTUITION

- Limited liability reduced monitoring costs among shareholders
 - Unlike unlimited liability partnerships, one's potential liability following firm default does not depend on other investors' networth
- Limited liability reduces monitoring costs among firm creditors
 - Creditors monitor corporate net worth only; default risk priced into contracts
 - Double liability provides creditor security, reduces the cost of risk taking
- Double liability means that shareholders have more “skin in the game”
 - “prevent stockholders and directors ... from engaging in hazardous operations”
 - Sentaor John Sherman (1863)
 - Potential option call on shares in default may change investment calculus for risk-averse shareholders

DOUBLE LIABILITY ADOPTION

- New York: 1846 constitution imposes double liability beginning 01/01/1850
- Maryland: 1850 constitution phases in double liability beginning after ratification in 1851
- Pennsylvania: 1849 imposes double liability (note issues only) beginning in 1850
- Massachusetts: 1850 imposes double liability (note issues only) beginning in 1850

SHAREHOLDING DATA

Farmers and Drivers Bank of Somers (NY)
Bank of Westbrook (ME)

Names of Stockholder	No of Shares \$50.00 each	
William Bailey	Three hundred	15000
William Bailey, Jr.	Forty	2000
Daniel Bailey	Three hundred & one	15050
William H. Wright	Twenty	1000
W. H. Wright, Adm.	One hundred & eighty five	9250
Charles Reed	Forty	2000
Isaac Wright	Twenty	1000
A. B. Meade	Forty	2000
Isaac Purdy	Ten	500
William Marshall	Twenty	1000
Louis Brown	One hundred & five	5250
William Stone	Sixty	3000
Samuel Bedell	One hundred & four	5200
M. A. Green	Sixteen	800
Nathaniel Deane	Thirty	1500
Adel Chase	Twenty	1000
Harvey Wood	Forty	2000
Elizabeth Bailey	Fifty	2500
Stephen Brown, Jr.	Twenty	1000
Sarah Brown	Twenty	1000
John Gregory	Twenty	1000
W. H. Horton	Twenty five	1250
Thompson Perry	Eighty eight	4400
Samuel Deane	Twenty	1000
Floyd Hall	One hundred & twenty five	6250
John Deane	Twenty	1000

LIST OF STOCKHOLDERS.

Bank of Westbrook.

Names.	Residence.	Amount of Stock.
Oliver Buckley,	Westbrook,	800
S. B. Stevens,	do.	900
Samuel Jordan,	do.	800
Rufus Morrill,	do.	2,000
Jos. Walker, Jr.,	do.	1,200
William Kimball,	Portland,	500
Asa Clapp,	do.	1,000
O. F. Woodford,	Boston, Mass.,	2,500
Charles Bartlett,	Westbrook,	900
Miriam Stevens,	do.	100
Walter B. Goodrich,	do.	300
P. D. & Co. Canal bank,	Portland,	1,400
P. D. & Co. Bk. of Cumberland,	do.	2,000
Rebecca K. Chesley,	Westbrook	600
Almira Broad,	do.	500
Solomon H. Chandler,	New Gloucester,	800
P. D. & Co. Bk. of Westbrook,	Westbrook,	7,500
Samuel Haskell,	Portland,	200
William Bartlett,	Westbrook,	300
Dana Bridgham,	do.	300
Moody F. Walker,	Portland,	500
Benjamin Walker,	Bridgton,	500
N. L. Woodbury,	Westbrook,	100
James Furbish, guardian,	Portland,	3,500
John Anderson, trustee,	do.	2,100
John Anderson,	do.	1,200
Susan Watson,	Unknown,	600
James Ellison,	do.	2,000
Augustine Haines,	Portland,	100
Calvin Thomas,	Unknown,	7,800
P. D. & Co. Merchants' bank,	Portland,	2,500
Samuel Wells,	do.	1,000
John Anderson, guardian } for E. W. Morton, }	do.	3,200
		\$50,000

NUMBER AND TYPE OF SHAREHOLDERS BY LIABILITY REGIME

Variable	Full sample	Limited	Extended
Shareholders	92.64 (228.45)	292.68 (453.66)	43.74* (53.89)
ln(shareholders)	3.35 (1.63)	4.89 (1.20)	2.97* (1.50)
Largest shareholding	0.21 (0.23)	0.09 (0.08)	0.23* (0.24)
Common surname	0.35 (0.24)	0.39 (0.19)	0.34 (0.25)
Women and children	0.03 (0.04)	0.02 (0.28)	0.03* (0.04)

Notes: 610 banks across 11 states; * implies difference significant at $p < 0.01$.

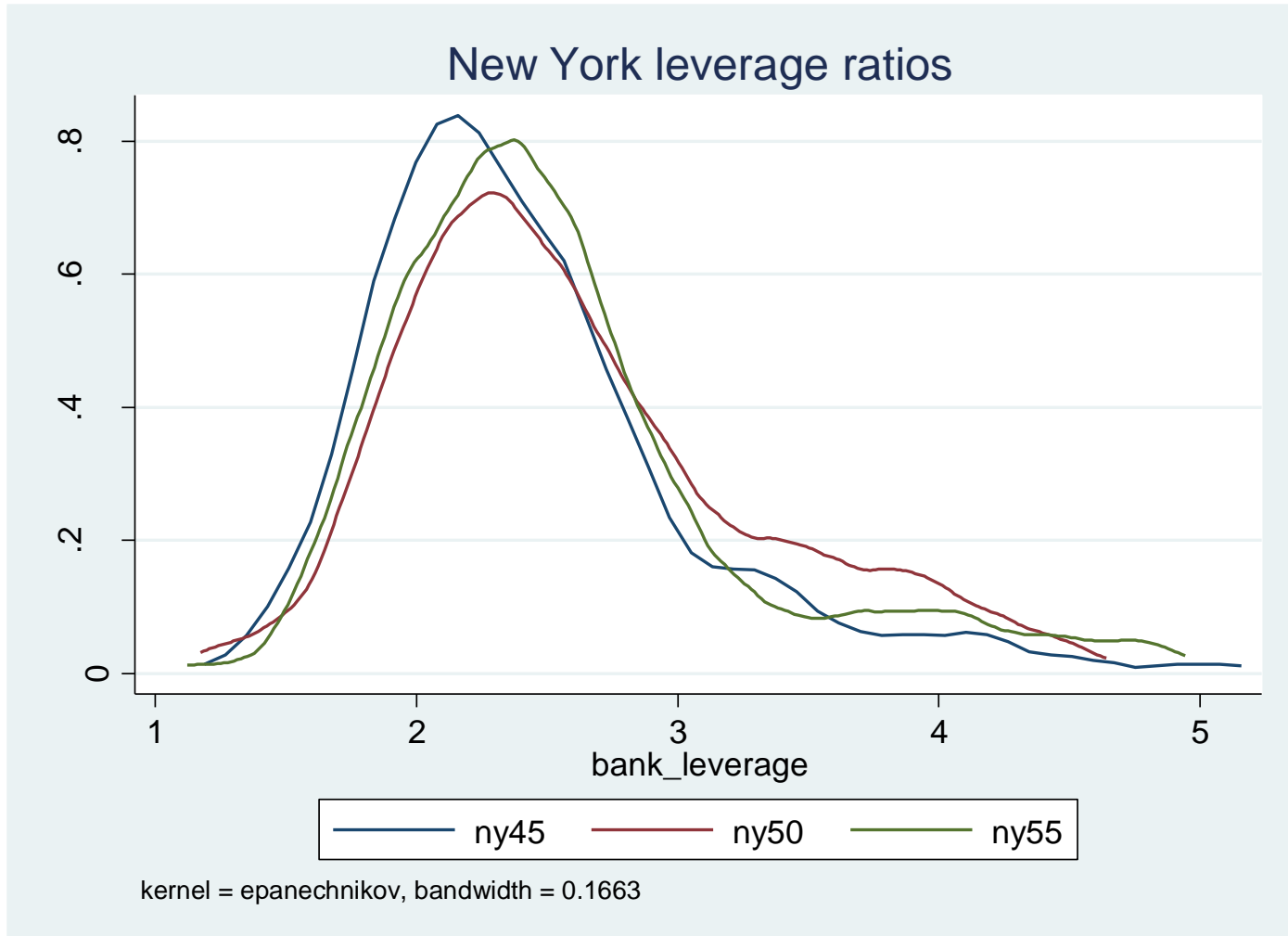
OLS – SHAREHOLDERS ON LIABILITY REGIME

	Ln(shareholders)	Largest shareholder	Women
Double liability	-2.08**	0.27**	-0.03**
Graduated voting	1.88**	-0.23**	0.05**
Capital	0.002**	-0.00	0.00
Free bank	-0.96**	0.14**	-0.00
Year	0.05**	-0.004**	0.001*

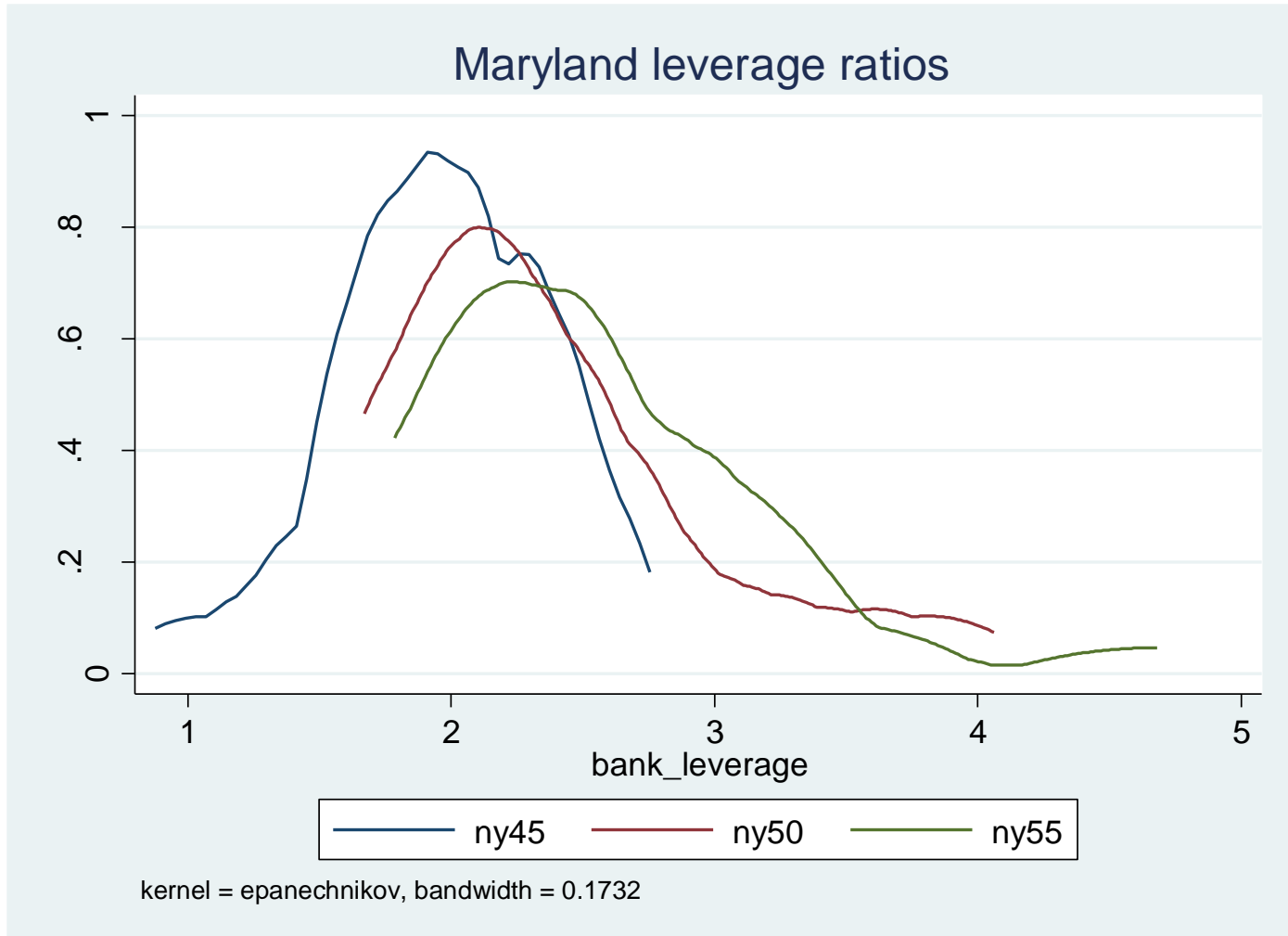
A LITTLE MATH

- Define leverage ratio :
 - Single liability: $\ell = \text{assets} / \text{capital} = A / K$
 - Double liability: $\ell' = A' / (K + p\alpha K)$
 - Where p = probability of contingent call; α = share of call shareholder expects to pay
- $\ell' / \ell > 1 \rightarrow (A - A') / A > p\alpha$
- % change in assets is greater than expected contingent call
- In 1850s $p \approx .01$; $\alpha \approx 0.5$; leverage expected to increase by 5% or more
 - New York bank leverage 1845 = 2.55; 1850 = 2.84; increased by 11.4%

DOUBLE LIABILITY AND LEVERAGE



DOUBLE LIABILITY AND LEVERAGE II



DOUBLE LIABILITY AND LEVERAGE

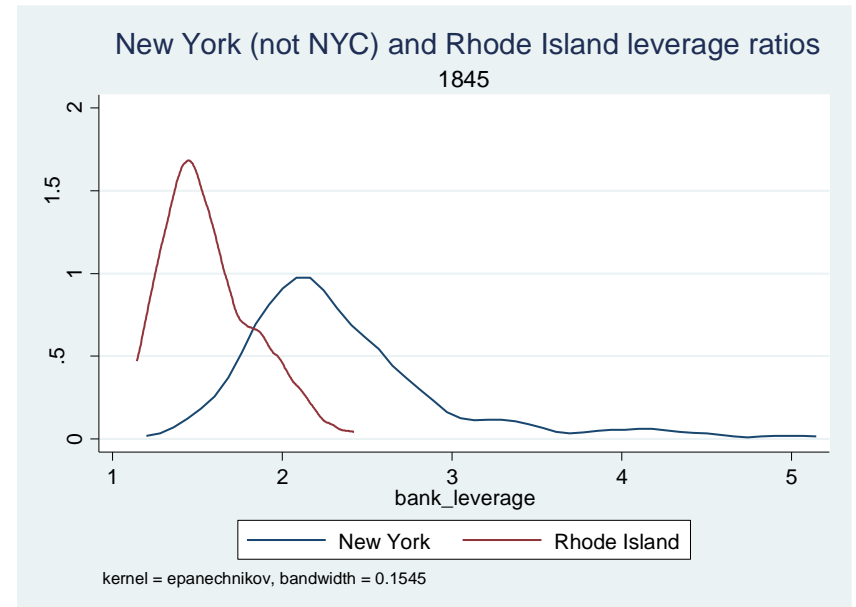
- Difference-in-difference methodology
- Leverage = Assets / Shareholder net worth = Assets / (Capital + Retained)
- $L_{it} = \alpha + \beta \text{ Treatment}_{it} + \gamma \text{ After}_i + \delta (\text{Treatment} * \text{After})_{it} + \varepsilon_{it}$
- β = treatment group effect
 - Permanent differences between treatment and control groups
- γ = common trend effect
 - Trends common to treatment and control groups
- δ = effect of treatment on the treated
 - Double liability after it goes into effect

ISSUES FOR Diff-in-Diff ANALYSES

- Error term is uncorrelated with both treatment and trend variables
- The lag between enactment and implementation means we need to be reasonably confident that no other confounding events or regulation occurs between pre- and post-treatment period
- We need to be confident that trend variable is not capturing some other feature of bank leverage (mostly seasonal effects)
- Identify a control group for which no new regulations and reports at same time of year due to large seasonal component to leverage

APPROPRIATE COMPARISON GROUP?

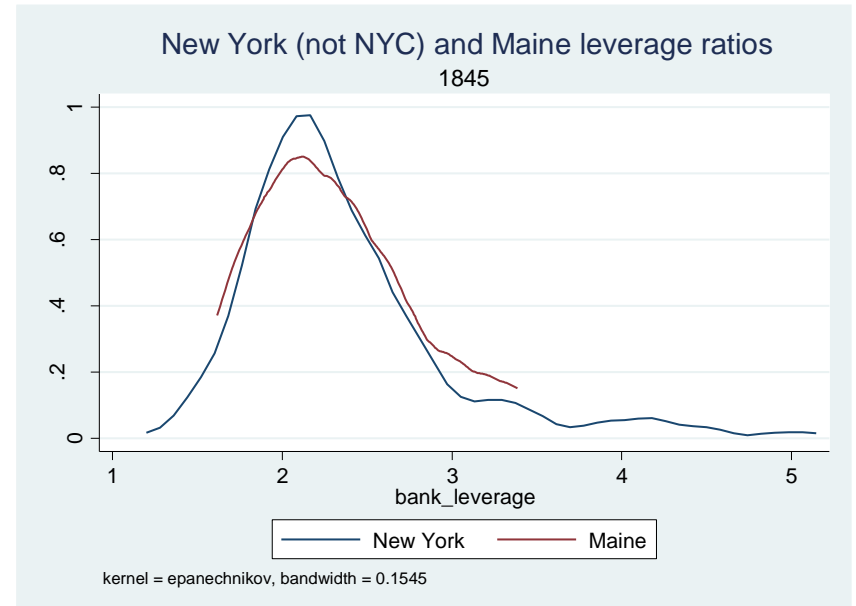
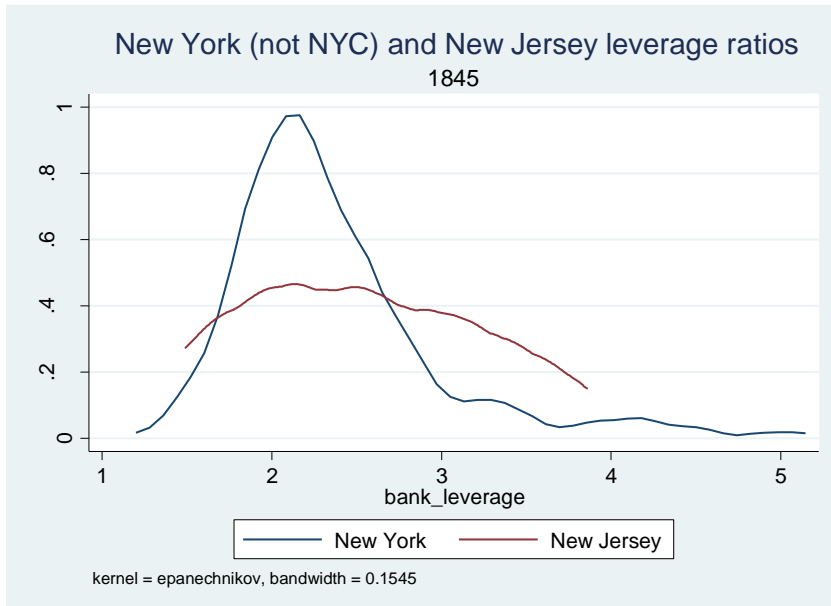
- State with large number of banks
- State with no other regulatory change
- State that reports in same quarter as New York and Maryland
- Connecticut? No, reports in spring
- Rhode Island? No, not common support



APPROPRIATE COMPARISON GROUP

New Jersey? Questionable, dissimilar distributions; mostly different quarters

Maine? Yes, large # banks, common support, same quarters



BASIC Diff-in-Diff ESTIMATES

	New York-Maine 1845 & 1850			Maryland-Maine 1842/44 & 1854/56		
	(1)	(2)	(3)	(1)	(2)	(3)
New York	0.242* (0.108)	0.197† (0.112)	0.202† (0.116)	0.068 (0.087)	0.164 (0.127)	0.157 (0.128)
After	-0.086 (0.101)	-0.086 (0.101)	-0.086 (0.101)	0.271** (0.050)	0.271** (0.050)	0.561** (0.072)
NY*After	0.372** (0.151)	0.372** (0.150)	0.362* (0.164)	0.672** (0.139)	0.654** (0.137)	0.648** (0.133)
NYC dummy (Baltimore)	na	0.277** (0.104)	Excluded	na	-0.160 (0.137)	-0.155 (0.135)
Constant	2.307** (0.079)	2.307** (0.079)	2.307** (0.079)	1.827** (0.038)	1.827** (0.038)	1.766** (0.050)
Year FE	No	No	No	No	No	Yes
Obs	389	389	336	303	303	303

LONG RUN Diff-in-Diff with YEAR FEs

	New York-Maine 1840-1859	Maryland-Maine 1840-1859
New York / Maryland	0.312** (0.036)	0.270** (0.085)
After	0.765** (0.079)	0.631** (0.071)
NY/Maryland*After	0.122** (0.049)	0.507** (0.081)
NYC/ Baltimore dummy	0.133** (0.037)	-0.117 (0.086)
Constant	1.590** (0.039)	1.699** (0.048)
Year FEs	Yes	Yes
Obs	2,361	731

PLACEBO TESTS

	Connecticut- Maine 1848-1850/52	Rhode Island- Maine 1846-1850	New Jersey- Maine 1842/44-1853/54
State	-0.346** (0.110)	-0.719 (0.081)	0.429** (0.094)
After	0.044 (0.102)	-0.027 (0.097)	0.423** (0.078)
State*After	0.155 (0.134)	0.043 (0.111)	-0.027 (0.137)
Constant	2.267** (0.081)	2.248** (0.074)	1.897** (0.058)
Year FEs	Yes	No	Yes
Obs	222	190	320

WAS DOUBLE LIABILITY CREDIBLE?

- Double liability should induce banks to liquidate voluntarily prior to failure to avoid assessments
- 12 banks closed between Jan 1850 and Dec 1857, 6 closed with positive net worth (assuming bad loans exactly exhausted shareholder equity)
- Of those banks that “failed,” balance sheet data and price of collateral bonds generate estimated shortfall (assessment) as a percent of capital of 50%
 - Empire City Bank, estimated shortfall is 29%, actual shortfall was 12%
 - Shareholders assesses \$12.12 per \$100 share, but it took 2 years of court hearing before collection commenced
 - If we assume, following White (2011), that collections were about 50% of assessments, depositors recovered about 73¢ on the dollar (not discounted for delay)
 - If Empire City is indicative, 73¢ is likely underestimate

CONCLUSIONS

- Double liability encouraged bankers to increase their (measured) leverage
 - Asset/capital ratios increased by 35-65% in short term
 - Asset/capital ratios increased by 12-50% in long term
 - Bank creditors viewed double liability as credible guarantee
 - Contingent liability freed bank capital for alternative uses
- Double liability altered the nature of shareholding
 - Fewer shareholders
 - More concentrated shareholdings
 - Fewer widow/orphan shareholders
 - Encouraged informed, insider investment