Why did some banks perform better during the credit crisis?

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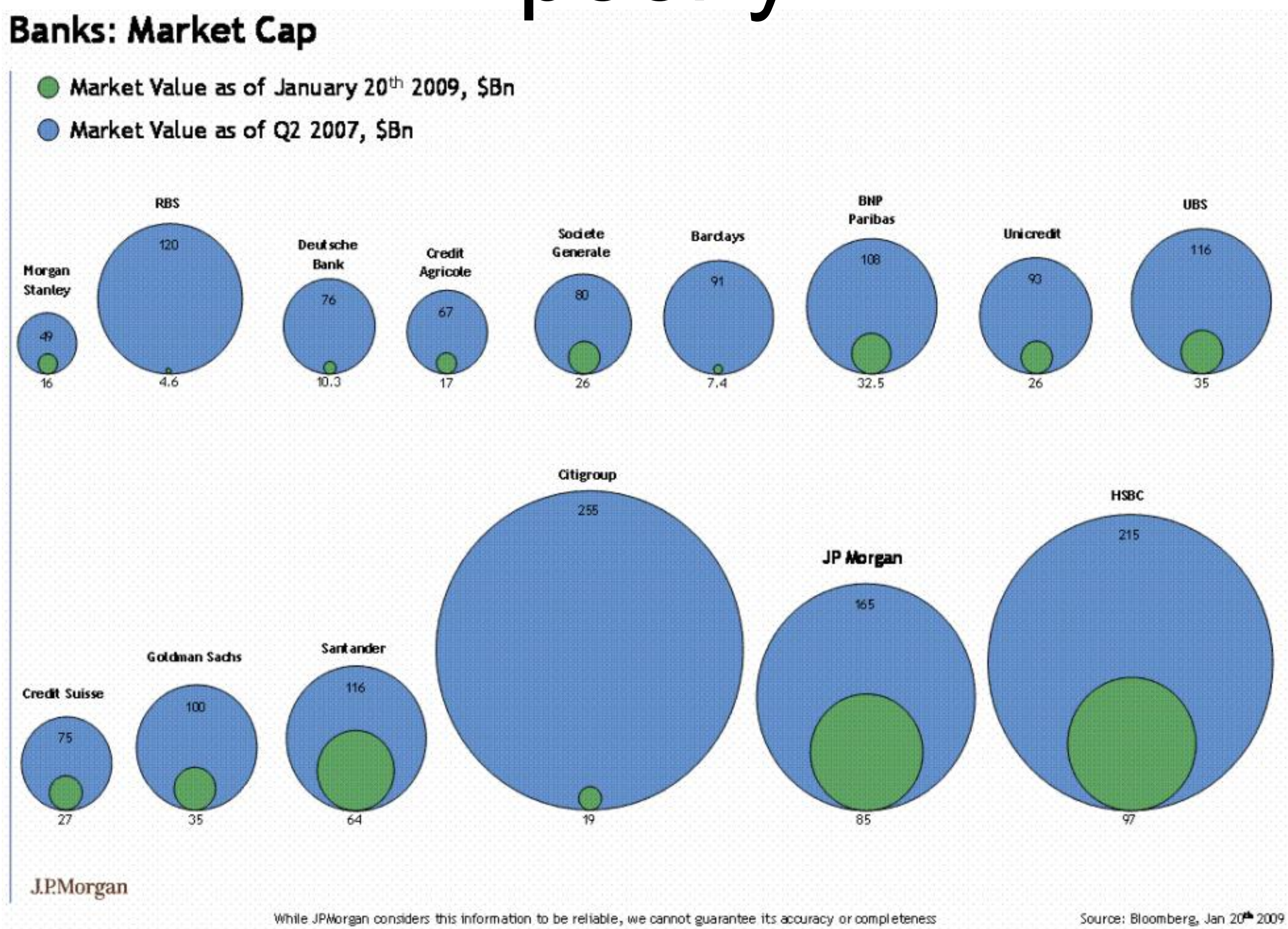
Not all banks performed equally poorly



“I don’t think there’s any question that a dramatic failure of corporate Governance was a central issue of the crisis. You’re going to find when Our report is released that this will be a major point.”

Phil Angelides, Chair, Financial Crisis Inquiry Commission

Crisis theories and bank performance

- Subprime collapse in U.S. lit the fuse
- The crisis became so dramatic because of its impact on banks and from banks
- Many theories on how the crisis propagated through banks

Key theories

- Short-term funding, repo run
  – E.g., Brunnermeier, Diamond/Rajan, Gorton, Adrian and Shin
- Poor governance
  – OECD, Diamond/Rajan, Bebchuck,
- Lax regulation and regulatory arbitrage
  – Stiglitz, Volcker, Acharya/Schnabl
- Contagion
  – Allen/Carletti

More theories

- Flood of money: Greenspan (?), Rajan

This paper

- Uses large sample of banks across countries
  - 31 countries, 164 banks with assets in excess of $50 billion
- Investigates whether the performance of banks across countries is consistent with the predictions of these theories
- Performance is defined as stock return from middle 2007 to end of 2008

Summary of results

- Not governance: Banks with more shareholder-friendly boards performed worse
- Short-term funding: Banks that relied more on deposits performed better
- Regulation puzzle: Large banks in countries with more restrictions on banks performed better, but restrictions are positively correlated with risk measures in 2006

More summary

- Contagion: Foreign banks in countries with more U.S. exposures performed worse
- Current account: Banks in countries with a surplus performed better
- Banks in countries with more banking exposure to U.S. performed more

Data

- Sample selection
- Balance sheets characteristics
- Regulation variables
- Corporate governance variables

Sample selection

- Start from the 1,648 financial institutions on Bankscope with total assets in excess of $10bn as of 2006
- Keep banks with data on the characteristics we use and with returns on Datastream as of beginning of July 2007
- What is a bank?
  - loan/asset ratio above 10%
  - deposit/asset ratio above 20%
- Find 442 banks
- Focus mostly on 165 banks with assets in excess of $50 bn (32 countries)

Balance sheet, income, and return characteristics

- Tier 1 ratio, Tangible equity to total liabilities
- Deposits/assets, loans/assets, liquid assets/assets
- Non-interest income, diversification index
- Distance to default as (ROA+CAR)/vol(ROA)
- Beta, idio vol.

Regulation

- Use 2006 version of indices developed by Levine and co-authors in a series of papers
- Official: index of power of the commercial bank supervisory agency (e.g. meet with auditors, intervene in a bank…)
- Capital: index of regulatory oversight of bank capital (e.g. how tight is the definition of capital)
- Restrict: index of regulatory restriction on the activities of banks (e.g. own non-financial corporations, engage in securities trading…)
- Independence: index of independence of supervisory authority
- PMI: private monitoring
- Limitations?

Corporate governance

- Use dummy variable for existence of controlling shareholder who holds more than 10% of shares
- Use dummy variable for shareholder-friendly boards using the index developed by Riskmetrics

Macro variables

- Log GDP
- Current account
- Bank concentration
- Anti-director index
- Country governance

Country	Number of banks	Number of large banks	Log gdp	Current account	Concentration
Australia	8	5	10.50	-5.32	0.62
Austria	6	4	10.57	2.83	0.61
Belgium	3	3	10.54	2.65	0.81
Brazil	7	4	8.68	1.25	0.54
Canada	8	6	10.58	1.40	0.56
China	11	10	7.61	9.53	0.59
Denmark	4	1	10.83	2.89	0.78
France	16	5	10.52	-0.51	0.62
Germany	13	11	10.48	6.13	0.68
Great Britain	11	9	10.60	-3.31	0.50
Greece	9	3	10.09	-11.10	0.67
Hong Kong	9	2	10.22	12.08	0.68
Iceland	3	1	10.90	-7.55	N.A.
India	19	2	6.63	-1.06	0.33
Ireland	5	5	10.87	-3.57	0.53
Israel	5	2	9.97	5.04	0.77
Italy	16	8	10.37	-2.59	0.32
Japan	81	22	10.44	3.91	0.39
Korea	5	4	9.89	0.57	0.51
Malaysia	10	1	8.69	16.01	0.46
Netherlands	4	3	10.63	9.33	0.78
Norway	3	1	11.19	17.23	0.95
Portugal	4	2	9.82	-10.03	0.88
Russia	4	1	8.84	9.54	0.19
Singapore	3	3	10.36	25.42	0.86
South Africa	6	5	8.60	-6.31	0.75
Spain	10	6	10.24	-8.97	0.63
Sweden	4	4	10.68	8.59	0.94
Switzerland	13	2	10.89	14.40	0.87
Taiwan	16	7	9.68	7.18	0.27
Turkey	9	1	8.96	-6.03	0.50
USA	63	22	10.71	-6.00	0.32

Country	Number of banks	Number of large banks	ADRI	Institution	Official	Capital	Restrict	Private Monitoring	Deposit insurance
Australia	8	5	4	1.60	13	4	10	7	0
Austria	6	4	2.5	1.59	10	5	7	4	1
Belgium	3	3	3	1.36	11	3	7	6	1
Brazil	7	4	5	-0.08	14	5	9	7	1
Canada	8	6	4	1.64	6	4	8	6	1
China	11	10	1	-0.56	10	4	15	7	0
Denmark	4	1	4	1.83	10	5	9	7	1
France	16	5	3.5	1.18	8	8	9	7	1
Germany	13	11	3.5	1.51	8	7	7	7	1
Great Britain	11	9	5	1.56	8	6	4	7	1
Greece	9	3	2	0.66	10	4	8	7	1
Hong Kong	9	2	5	1.45	11	4	5	7	0
Iceland	3	1	4.5	1.87	8	7	10	7	1
India	19	2	5	-0.15	10	8	11	6	1
Ireland	5	5	5	1.56	12	2	7	7	1
Israel	5	2	4	0.59	10	4	12	7	0
Italy	16	8	2	0.59	7	4	12	7	1
Japan	81	22	4.5	1.24	12	6	11	8	1
Korea	5	4	4.5	0.63	11	4	9	8	1
Malaysia	10	1	5	0.36	13	6	11	7	1
Netherlands	4	3	2.5	1.63	7	5	6	8	1
Norway	3	1	3.5	1.72	8	8	11	6	1
Portugal	4	2	2.5	1.01	14	8	12	6	1
Russia	4	1	4	-0.76	8	7	8	6	1
Singapore	3	3	5	1.48	13	7	10	8	0
South Africa	6	5	5	0.48	10	9	10	8	0
Spain	10	6	5	0.92	11	9	7	8	1
Sweden	4	4	3.5	1.72	5	4	10	6	1
Switzerland	13	2	3	1.79	14	6	8	6	1
Taiwan	16	7	3	0.76	13	7	13	7	1
Turkey	9	1	3	-0.07	N.A.	N.A.	N.A.	N.A.	1
USA	63	22	3	1.27	13	6	11	7	1

	Observations	Minimum	Maximum	Average	Median	Standard deviation
Stock returns						
- 2006	157	-34.49	267.06	32.37	27.11	38.02
- July 2007 - Dec. 2008	165	-99.95	29.14	-51.60	-52.37	27.82
Bank characteristics						
- Tier 1	147	4.40	17.50	8.81	8.40	2.32
- Tangible equity	165	1.24	14.06	5.54	5.20	2.66
- Deposits	165	22.79	91.23	59.35	57.62	18.14
- Loans	165	19.55	82.81	55.86	58.82	14.70
- Liquid assets	165	1.96	65.14	19.60	14.46	14.19
- Assets	165	51.10	1956.00	347.00	129.00	477.00
- Income diversity	163	0.04	0.99	0.53	0.51	0.25
- Non-interest	165	2.57	85.58	41.27	41.13	18.80
- Log Z	158	0.55	5.89	3.45	3.46	1.05
- Beta	160	0.25	2.30	1.02	0.99	0.40
- Idiosyncratic volatility	160	9.75	60.43	24.51	21.56	9.22
- State	150	0.00	1.00	0.07	0.00	0.26
Regulation and institution						
- Official	165	5.00	14.00	10.50	11.00	2.42
- Capital	165	2.00	9.00	5.68	6.00	1.64
- Restrict	165	4.00	15.00	9.65	10.00	2.64
- Private monitoring	165	4.00	8.00	7.06	7.00	0.78
- Deposit insurance	165	0.00	1.00	0.84	1.00	0.37
- Institution	165	-0.76	1.87	1.06	1.24	0.62
- ADRI	165	1.00	5.00	3.63	3.50	1.15
Corporate governance						
- Ownership	161	0.00	1.00	0.45	0.00	0.50
- Board	104	6.00	21.00	12.29	12.00	3.74
Macroeconomic variables						
- Log GDP	165	6.63	11.19	10.11	10.44	0.93
- Current account	165	-11.10	25.42	1.20	1.40	7.10
- Concentration	164	18.68	94.95	53.35	53.35	18.34

How do banks differ?

- Banks in top quartile of performance in 2006:
  - 38.71% average return in 2006
  - -85.23% during the crisis
- Banks in bottom quartile in 2006:
  - 24.93% average return in 2006
  - -15.57% during the crisis

Banks that did better

- More equity in 2006: 9.61% tier 1 versus 8.56%
- More deposits: 69.66% versus 50.10%
- Less income diversity
- Less non-interest income: 34.20% versus 43.60%
- Lower distance to default!
- More idiosyncratic volatility!

Regulation, governance, macro

- Banks that did better come from tougher regulation, weaker governance, current account surplus countries
- All banks in the bottom quartile of performance come from countries with formal deposit insurance

- Country fixed effects
- Regression (2) is for extended sample
- Performance increases in Tier 1, deposits; decreases in 2006 return, beta, governance.

	Regression 1	Regression 2	Regression 3
Constant	-35.586	7.115	65.555
	(0.755)	(0.881)	(0.573)
Tier 1	5.570	1.196	5.514
	(0.022)**	(0.370)	(0.070)*
Deposits	0.645	0.419	0.660
	(0.005)***	(0.020)**	(0.009)***
Loans	-0.499	-0.487	-0.698
	(0.262)	(0.006)***	(0.185)
2006 return	-0.317	-0.110	-0.489
	(0.003)***	(0.039)**	(0.035)**
Log assets	-2.637	-2.822	-4.977
	(0.542)	(0.200)	(0.178)
Beta	-40.378	-20.758	-23.323
	(0.007)***	(0.033)**	(0.273)
Log Z	1.649	2.156	-0.042
	(0.567)	(0.255)	(0.987)
Non-interest	0.110	-0.109	0.067
	(0.238)	(0.583)	(0.343)
Income diversity			
Owner	-3.157	1.405	-2.881
	(0.460)	(0.764)	(0.399)
State	4.512	8.119	24.216
	(0.553)	(0.307)	(0.003)***
Board			-2.755
			(0.035)**

Not significant

- The following variables are not significant in the regression
  - Log assets
  - Non-interest income/assets
  - Indicator for state ownership
  - Indicator for controlling shareholder

Regressions with regulatory variables

- No fixed effects because of multicollinearity
- Same bank characteristics as in the governance regression
- Coefficient significance unchanged, except for Tier 1 and beta; Tier 1 becomes significant for the whole sample banks as well; beta is not significant for large or small banks.

- First two regressions
- have bank characteristics;
- third does not.

- No fixed effects.

- Restrict is significant.

Log GDP	-3.240	-2.726	-6.993
	(0.424)	(0.256)	(0.212)
Current account	0.178	0.434	0.510
	(0.674)	(0.132)	(0.084)*
Official	-1.546	-0.596	-0.079
	(0.148)	(0.563)	(0.940)
Capital	2.680	1.633	2.374
	(0.159)	(0.378)	(0.227)
Restrict	1.854	0.814	2.769
	(0.102)	(0.464)	(0.052)**
Private monitoring	3.911	5.977	4.353
	(0.518)	(0.267)	(0.392)
Deposit ins.	-0.768	-0.872	-4.025
	(0.947)	(0.899)	(0.562)
ADRI			0.572
			(0.824)
BIS			
Instit			8.721
			(0.329)
Country fixed effects	No	No	No
Number of observations	135	289	164
Adj.-R^2	0.257	0.329	0.128

Alternative specifications

- Indicator for SIVs is not significant
- Diversification index instead of non-interest income
- Liquid assets/assets is not significant

Why is restrict significant?

- No regulatory variable is associated with lower risk.
- Evidence that banks with non-interest income were riskier.
- Banks with better governance had lower distance to default.
- Ownership is associated with greater distance to default and lower idiosyncratic volatility.

Conclusion

- Banks with shareholder-friendly boards performed worse;
- Ownership seems to have been irrelevant, even though banks with more insider ownership seem to take less risk
- Banks with more deposit financing performed better

More conclusions

- Banks in countries with more restrictions on bank performance perform better, but not because they have less risk