

Table 1: Summary of Bank Data

This table summarizes characteristics of the “Big Six” financial institutions (Bank of America, Goldman Sachs, Wells Fargo, Morgan Stanley, Citigroup, and JP Morgan) in Panel A; and the top-50 largest US financial institutions excluding these six in Panel B; and the largest non-US and non-Chinese financial institutions in Panel C. We compare pre-crisis to the most recent measure.

Panel A: Big 6

Measure	Pre-crisis average	Post-crisis average	2015 average
Volatility	24.70	33.47	20.67
Bank volatility/market volatility+	1.55	1.78	1.71
Implied volatility++	22.90	30.77	22.96
Implied bank volatility/market implied	1.91	2.14	1.61
Option delta+++	0.036	0.074	0.046
Beta	1.18	1.61	1.23
CDS spread++++	31.85	140.63	93.58
PE/market PE	0.67	1.22	0.68
Preferred stock price+++++	24.97	20.25	20.74
SRISK%++++++	4.76	8.25	7.68

Panel B: Midsize Domestic Financial Institutions

Measure	Pre-crisis average	Post-crisis average	2015 average
Volatility	25.54	30.11	21.61
Bank volatility/market volatility+	1.68	1.66	1.78
Implied volatility++	25.62	32.06	26.79
Implied bank volatility/market implied	2.15	2.31	1.91
Beta	0.96	1.29	1.05
CDS spread++++	23.02	94.00	67.91
PE/market PE	0.79	0.75	0.73

Panel C: International Institutions

Measure	Pre-crisis average	Post-crisis average	2015 average
Volatility	26.55	32.73	25.57
Bank volatility/market volatility+	1.52	1.72	1.43
Implied volatility++	22.10	31.36	27.27
Implied bank volatility/market implied	1.36	1.50	1.36
Beta	0.80	1.07	0.99
CDS spread++++	13.66	129.13	103.66

+For domestic volatility/market comparisons, we used the market return of the S&P 500. We used the standard deviation of the daily return over 260 trading days to best approximate an annual average. For international comparisons, we use local indices except for banks in the Netherlands, Sweden, and Denmark. We benchmark volatility of banks in these countries against the European index.

++Earliest implied volatility data available in 2005. For domestic implied volatility/market comparisons, we use the US VIX. For international comparisons, implied volatility country indices are rather scarce. As such, we benchmark against a European implied volatility index except for Australian, Brazilian, and Canadian banks, which we compare to the US VIX.

+++ Delta on a one-year, 50% out-of-the-money put option. Option data dates back to June 2015, so we use 2014 average as most recent measure.

++++Earliest CDS data available is 2/04. This is the data for a five-year tenor.

++++++There are only three banks in our sample (Bank of America, Goldman Sachs, and Morgan Stanley) with floating rate preferred stock dating back to the pre-crisis period.

+++++++SRISK data through mid-2015, so we use 2014 as most recent annual measure.

Table 2: Recent Preferred Stock Issuances by the Big 6 U.S. Financial Institutions

Table 2: Big 6 Recent Preferred Stock Issuances¹

Bank	Date of Most Recent Issue	Par Value	August 2016 Price	August 2016 Yield
Bank of America	Apr-16	25	26.60	5.64%
Citigroup	Jan-16	25	27.12	5.81%
Goldman	Apr-16	25	27.48	5.73%
JP Morgan	Apr-14	25	27.49	5.73%
Morgan Stanley	Apr-14	25	27.59	6.00%
Wells Fargo	Jun-16	25	26.91	5.11%

¹ These yields are all for recently issued fixed rate preferreds, except for Morgan Stanley. MS issued a fixed rate preferred for 5.375% annually that will convert to a floating rate in five years.

Table 3: Volatility and Beta in Earlier Period

Big 6 Volatility

<i>Bank</i>	1995-2005	2002-2007	Post-crisis	2015
Bank of America	29.54	19.70	39.02	23.21
Citigroup	34.19	24.51	38.06	21.75
Goldman Sachs	36.71	26.92	28.23	19.35
JP Morgan	34.78	28.01	29.57	20.17
Morgan Stanley	40.60	31.75	37.22	22.60
Wells Fargo	26.29	17.29	28.74	16.94
Mean	33.69	24.70	33.47	20.67
Median	34.49	21.09	30.24	20.87

Big 6 Beta

<i>Bank</i>	1995-2005	2002-2007	Post-crisis	2015
Bank of America	1.09	0.88	1.79	1.22
Citigroup	1.48	1.19	1.78	1.32
Goldman Sachs	1.24	1.33	1.32	1.21
JP Morgan	1.39	1.35	1.46	1.20
Morgan Stanley	1.63	1.56	1.85	1.40
Wells Fargo	0.97	0.77	1.43	1.04
Mean	1.30	1.18	1.61	1.23
Median	1.32	1.18	1.49	1.22

Table 4: Variance Ratio for Big 6 Banks

Bank	Five day ratio		Ten day ratio		Twenty day ratio		Fifty day ratio	
	Pre-crisis	Post-crisis	Pre-crisis	Post-crisis	Pre-crisis	Post-crisis	Pre-crisis	Post-crisis
Bank of America	5.00	4.67	8.96	9.1	18.08	18.11	41.78	41.62
Citigroup	5.14	4.96	8.78	9.39	22.82	18.70	55.65	43.89
Goldman Sachs	4.82	4.83	8.32	9.09	17.53	19.51	33.16	45.77
JP Morgan	4.43	4.59	8.80	8.99	21.86	17.83	54.05	39.49
Morgan Stanley	5.09	4.49	8.09	8.57	18.36	14.94	40.15	44.66
Wells Fargo	4.51	4.06	8.60	7.09	17.00	14.93	41.5	25.17
No. Banks Post-crisis < Pre-crisis	4		1		4		4	

Table 5: T-Test for Difference in Means in Analyst Report Deviations

	Pre-crisis	Post-crisis
Deviation from EPS	-0.0082 (0.1848)	0.0377*** (0.4643)
Absolute Value of Deviation from EPS	0.0516 (0.1776)	0.1166*** (0.4511)
Deviation from Earnings Price Ratio	-0.0001 (0.0049)	0.0007*** (0.0065)
Absolute Value of Deviation from Earnings Price Ratio	0.0015 (0.0047)	0.0028*** (0.0059)

¹ Asterics denote significance for t-test for difference in means. Standard deviation in parantheses.

Table 6: Price-to-Book Ratio, Price-to-Tangible-Book Ratio, Ratio of Market Value of Equity/Total Assets, and Ratio of Market Value of Equity/Risk-Adjusted Assets

Panel A: Big 6

Bank	Pre-crisis average				Post-crisis average				2015 average			
	PTB	PTTB	MVE/A	MVE/RA	PTB	PTTB	MVE/A	MVE/RA	PTB	PTTB	MVE/A	MVE/RA
Bank of America	2.06	3.55	0.16	0.22	0.63	1.01	0.06	0.10	0.76	1.12	0.08	0.13
Citigroup	2.25	3.78	0.16	0.28	0.70	0.85	0.07	0.12	0.79	0.91	0.09	0.14
Goldman Sachs	2.23	2.78	0.10	N/A	1.05	1.13	0.08	0.15	1.10	1.16	0.10	0.15
JP Morgan	1.42	2.27	0.10	0.16	0.98	1.34	0.08	0.14	1.10	1.41	0.10	0.15
Morgan Stanley	1.85	2.02	0.07	N/A	0.84	1.04	0.06	0.13	1.05	1.23	0.09	0.16
Wells Fargo	2.73	3.99	0.24	0.29	1.43	1.90	0.14	0.18	1.68	2.06	0.16	0.22
Mean	2.09	3.06	0.14	0.24	0.94	1.21	0.08	0.14	1.08	1.32	0.10	0.16
Median	2.05	2.97	0.13	0.24	0.91	1.15	0.08	0.14	1.06	1.20	0.09	0.15

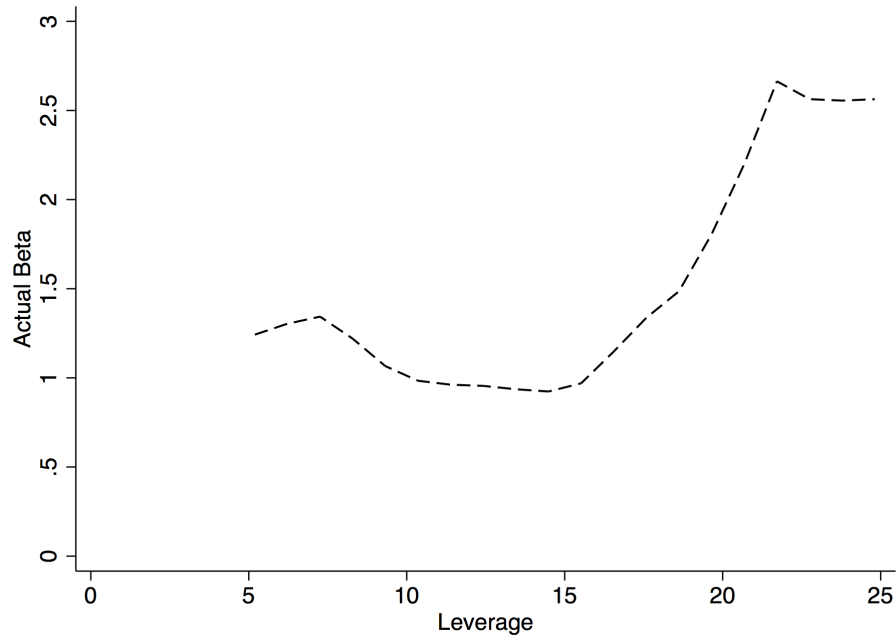
Panel B: Midsize Financial Institutions

Quintile	Pre-crisis average				Post-crisis average				2015 average			
	PTB	PTTB	MVE/A	MVE/RA	PTB	PTTB	MVE/A	MVE/RA	PTB	PTTB	MVE/A	MVE/RA
Low MVE	1.88	3.15	0.19	0.44	1.21	1.61	0.13	0.37	1.18	1.60	0.11	0.41
Quintile 2	2.36	2.90	0.22	0.31	1.40	1.78	0.15	0.27	1.41	1.82	0.16	0.24
Quintile 3	2.27	3.27	0.21	0.27	1.19	1.73	0.13	0.20	1.41	1.84	0.16	0.25
Quintile 4	2.45	3.46	0.22	0.27	1.22	1.46	0.14	0.17	1.36	1.54	0.14	0.17
High MVE	2.73	3.93	0.27	0.29	1.88	2.71	0.19	0.35	1.94	2.79	0.22	0.35
Mean	2.32	3.32	0.22	0.32	1.35	1.84	0.15	0.27	1.44	1.91	0.16	0.29
Median	2.11	3.09	0.21	0.28	1.21	1.65	0.13	0.19	1.27	1.72	0.14	0.18

Panel C: International Institutions

Bank	Pre-crisis average				Post-crisis average				2015 average)			
	PTB	PTTB	MVE/A	MVE/RA	PTB	PTTB	MVE/A	MVE/RA	PTB	PTTB	MVE/A	MVE/RA
Australia	2.44	3.34	0.10	0.15	1.71	2.41	0.11	0.24	1.74	2.40	0.09	0.20
Brazil	1.75	3.19	0.05	0.14	1.22	1.51	0.04	0.07	0.72	0.82	0.01	0.02
Canada	2.43	3.45	0.09	0.27	1.89	2.64	0.09	0.25	1.67	2.26	0.07	0.19
Denmark	1.66	1.77	0.01	0.02	0.87	1.06	0.01	0.02	1.19	1.39	0.01	0.03
France	1.44	1.81	0.06	0.22	0.59	0.83	0.03	0.11	0.73	0.98	0.03	0.13
Germany	1.14	1.44	0.04	0.16	0.48	0.73	0.02	0.09	0.49	0.62	0.02	0.09
Italy	1.55	2.48	0.11	0.20	0.57	0.81	0.05	0.11	0.87	1.05	0.06	0.15
Japan	1.77	2.54	0.00	0.02	0.72	0.84	0.00	0.05	0.74	0.82	0.00	0.05
Netherlands	N/A	1.88	0.06	0.26	N/A	0.74	0.04	0.14	N/A	1.09	0.06	0.19
Spain	1.66	2.56	0.12	0.23	0.90	1.42	0.07	0.16	0.92	1.39	0.07	0.16
Sweden	1.57	1.96	0.09	0.43	1.27	1.46	0.07	0.27	1.46	1.67	0.07	0.33
Switzerland	2.13	3.99	0.05	0.38	1.14	1.43	0.04	0.20	1.10	1.36	0.02	0.08
UK	2.16	3.06	0.12	0.20	0.91	1.35	0.06	0.17	0.84	1.21	0.06	0.19
Mean	1.94	2.70	0.07	0.21	1.06	1.38	0.05	0.15	1.05	1.33	0.05	0.15
Median	1.90	2.61	0.07	0.15	0.89	1.15	0.05	0.14	0.88	1.15	0.05	0.15

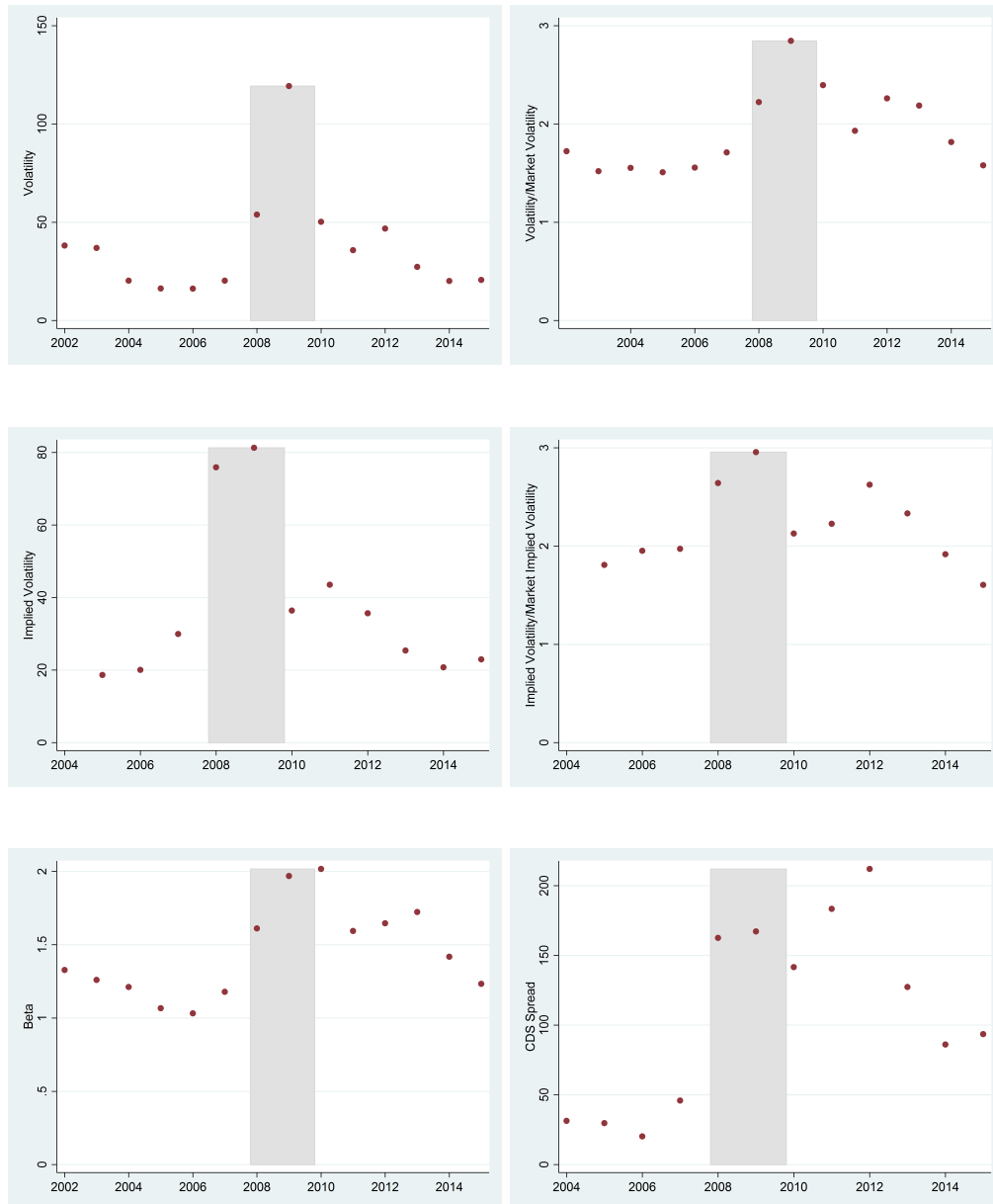
Figure 1: Beta and Bank Leverage



Like Baker and Wurgler (2015), the dependent variable here is forward beta and our independent variable is the ratio of total risk-based capital to Tier 1 capital. We have just over 6,000 bank-months in our dataset. We report results from local polynomial regressions using an Epanechnikov kernel with 20 bins and a smoothing interval of 0.1.

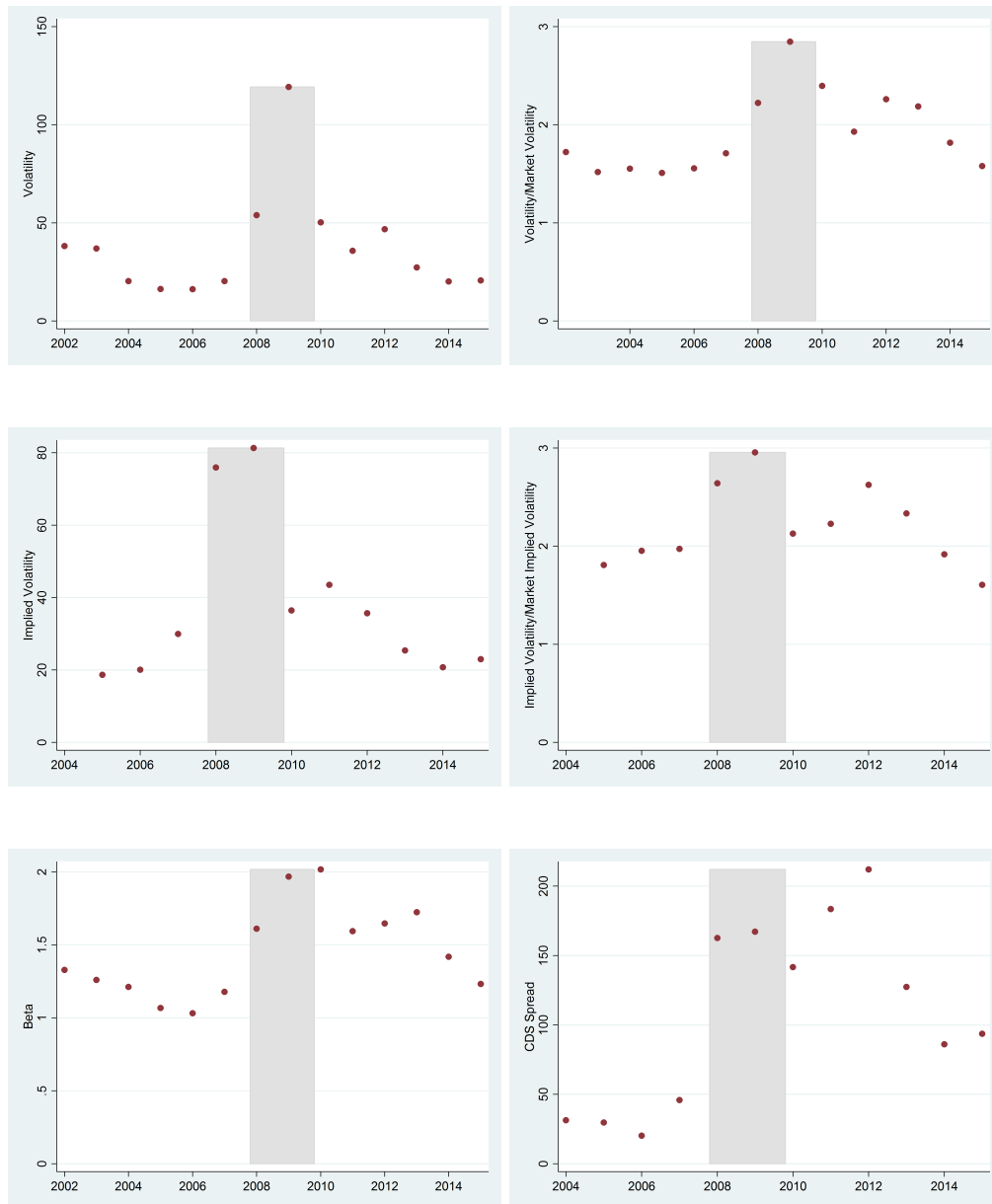
Figure 2: Changes in Risk Measures Over Time¹

Panel A: Big 6 Institutions



¹Shaded region indicates crisis years, 2008 and 2009 in our sample.

Panel B: Midsize Domestic Financial Institutions



Panel C: International Institutions

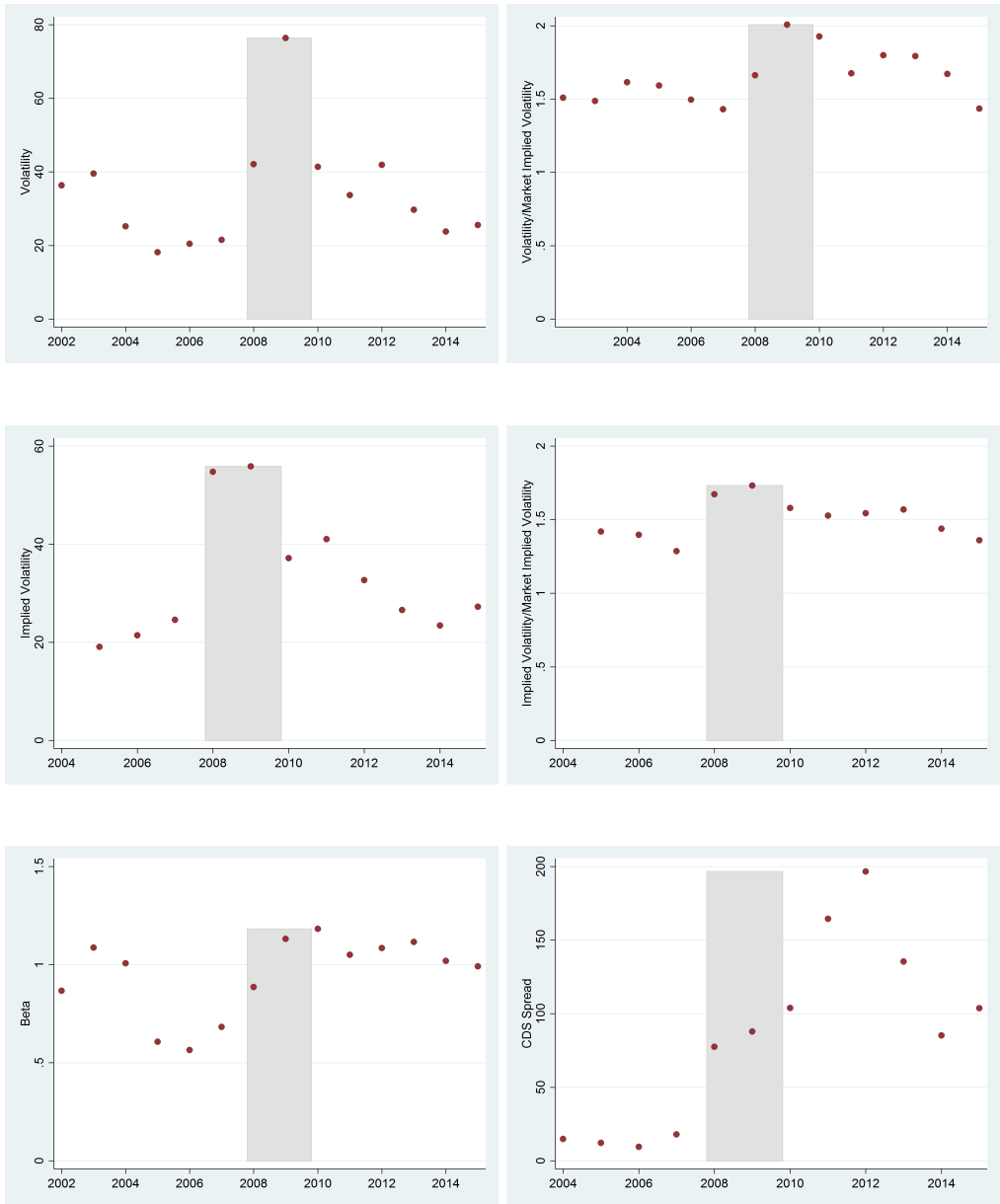


Figure 3: Preferred Stock Prices Over Time

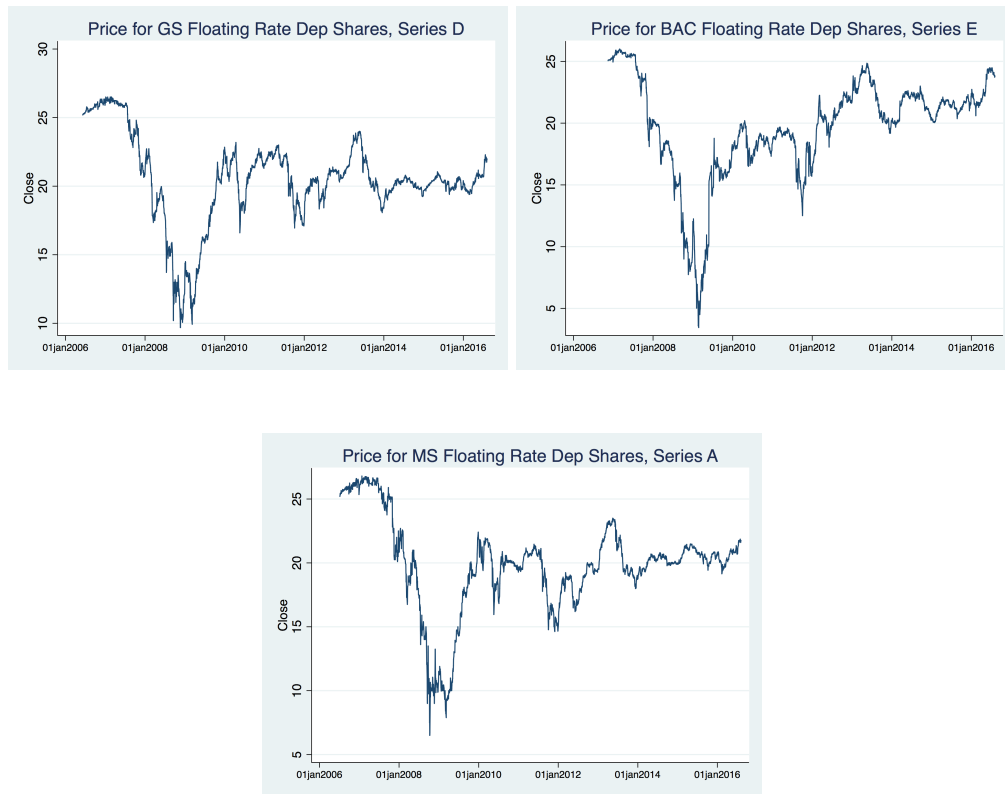
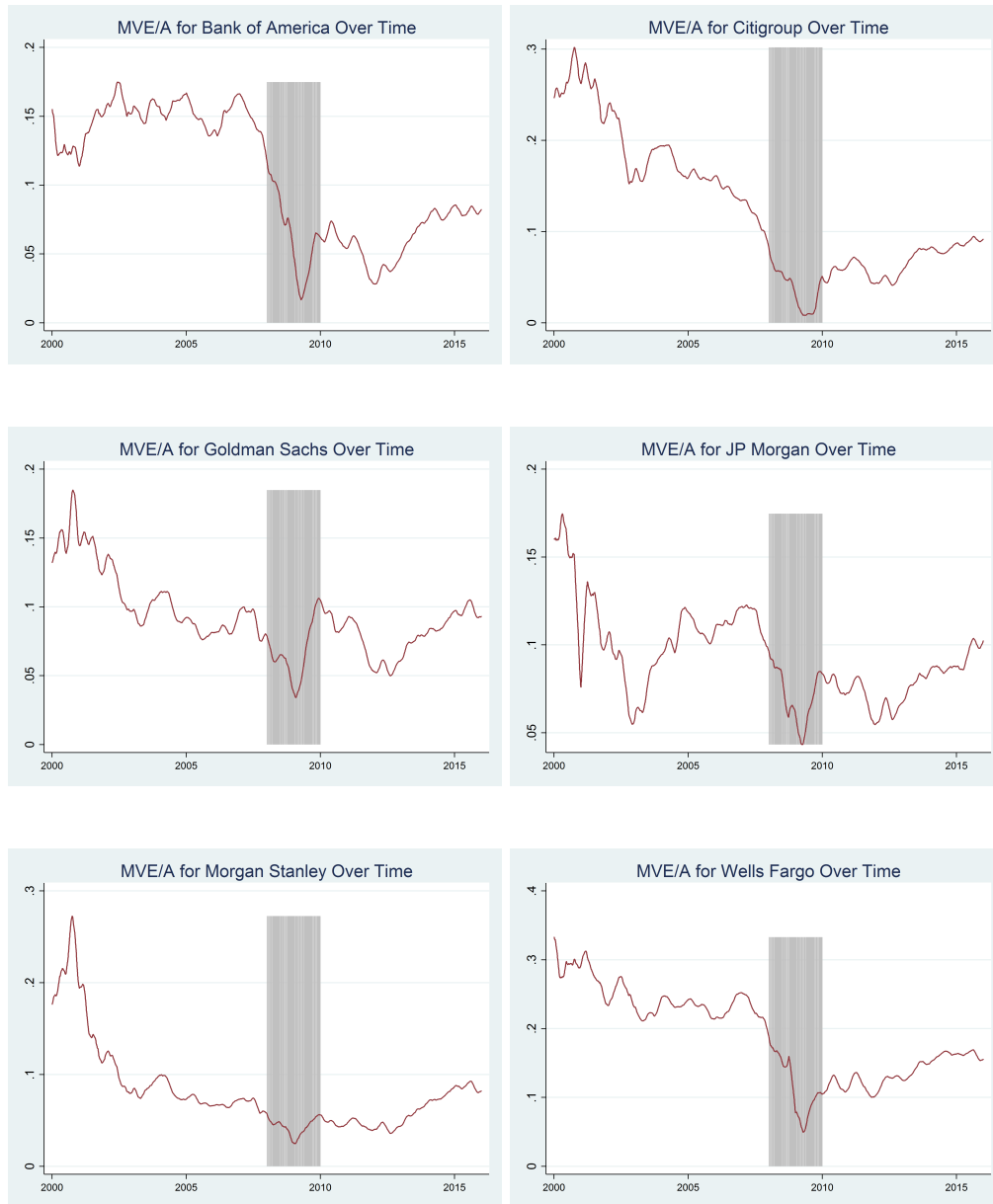


Figure 4: Market Value of Equity/Assets Ratio Over Time²



²Shaded region indicates crisis years, 2008 and 2009 in our sample.