

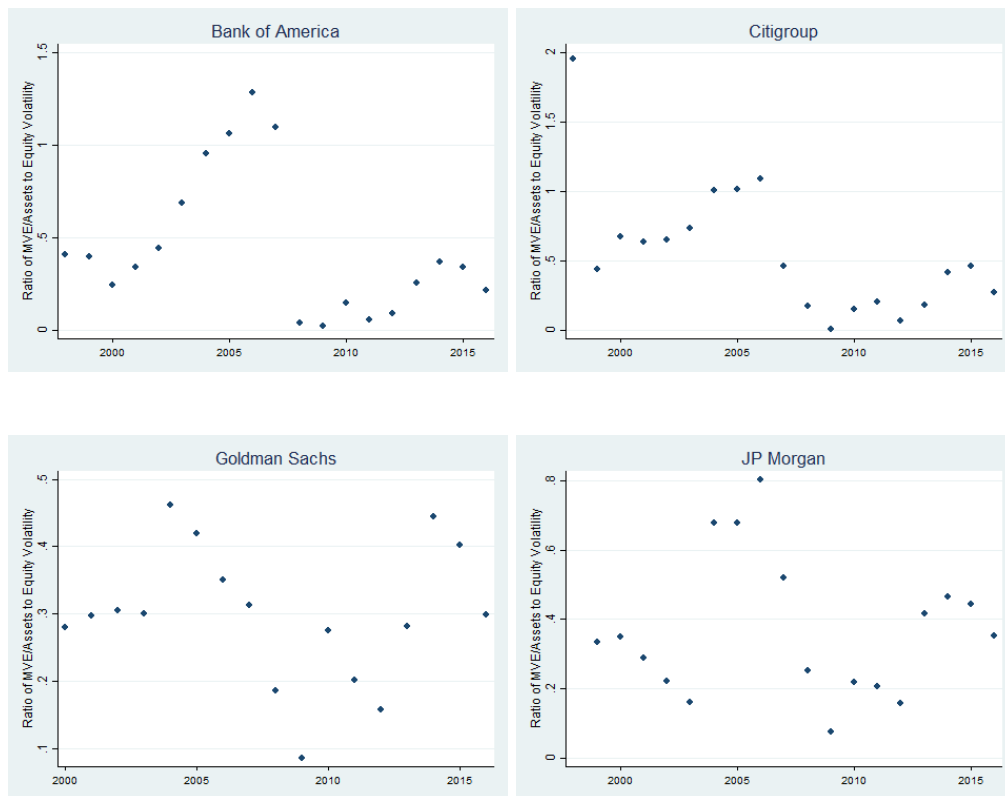
Understanding Long-Term Bank Trends

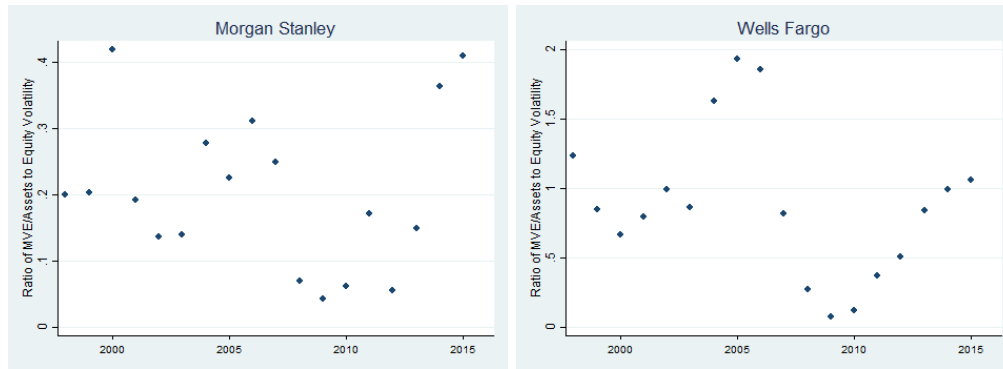
October 24, 2016

1 Relationship between MVE/Assets and Volatility Over Time

For each bank, we computed an implied measure of asset volatility by taking the ratio of MVE/assets to equity volatility and seeing how this has evolved over time.

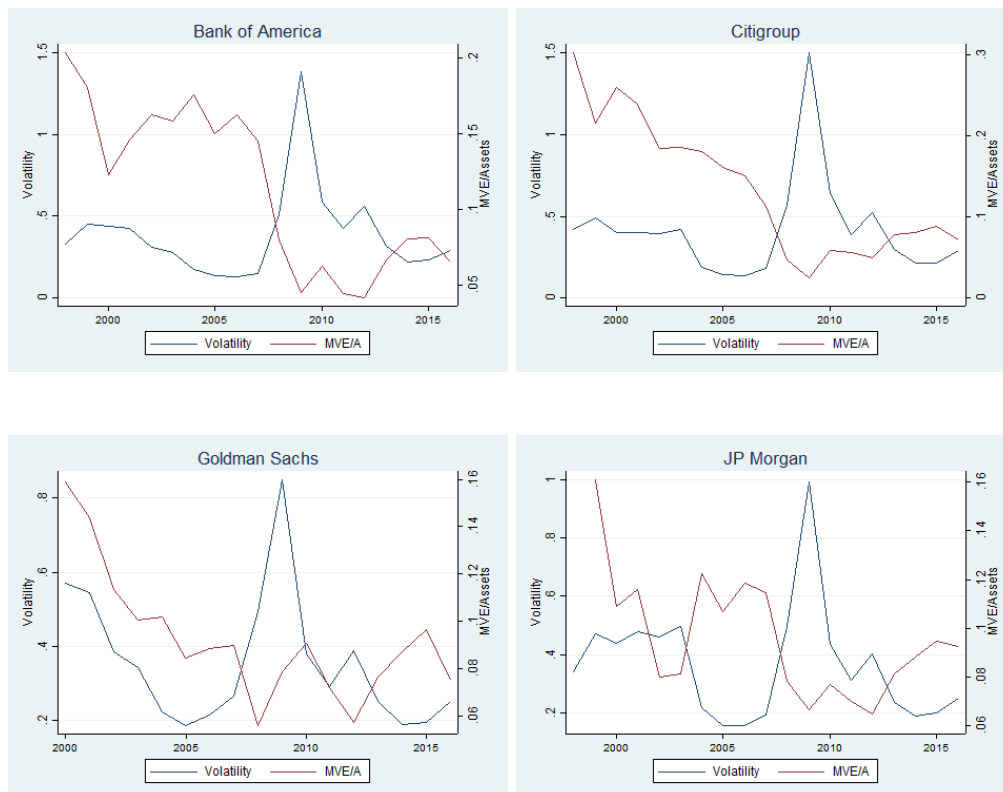
1.1 MVE ratio/volatility

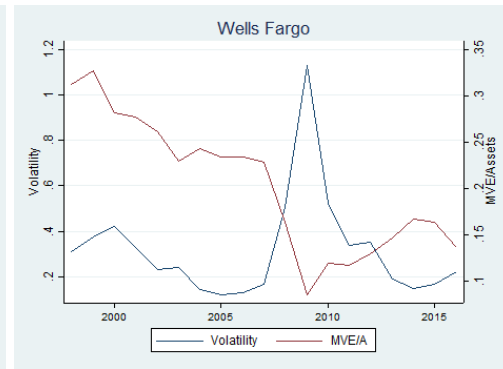
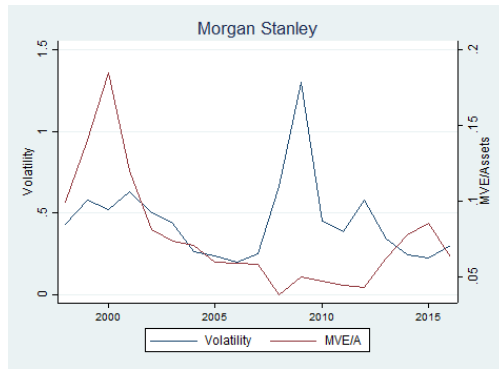




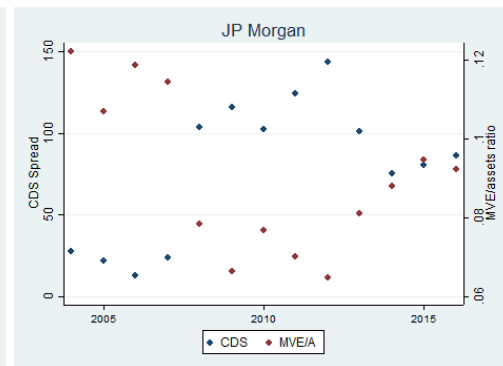
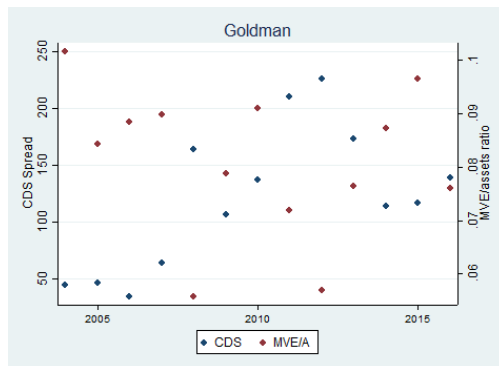
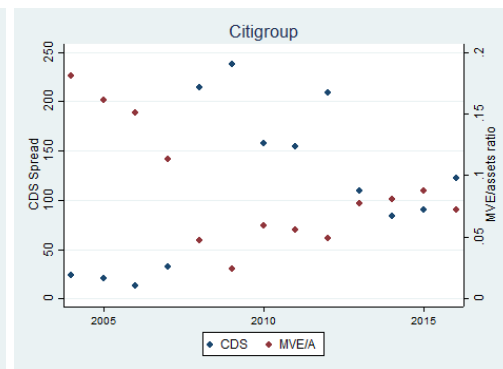
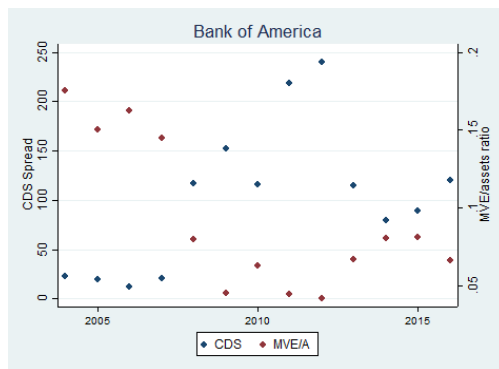
1.2 MVE/assets and volatility over time

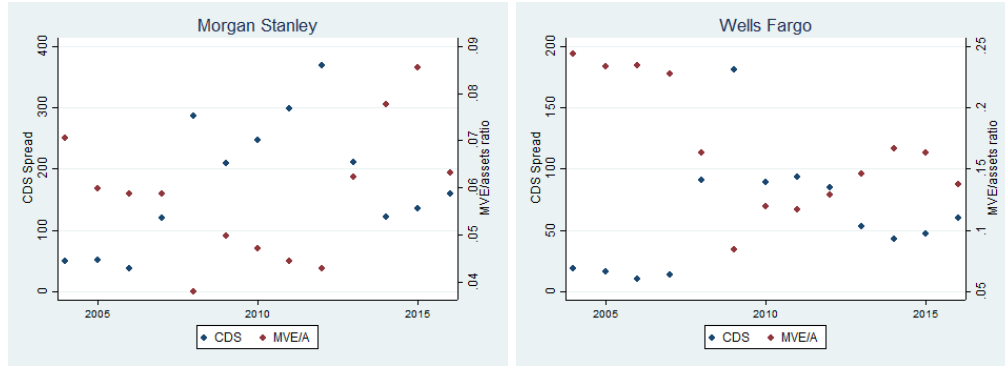
To understand what is driving the graphs above, we also graphed the MVE/assets and volatility series separately.





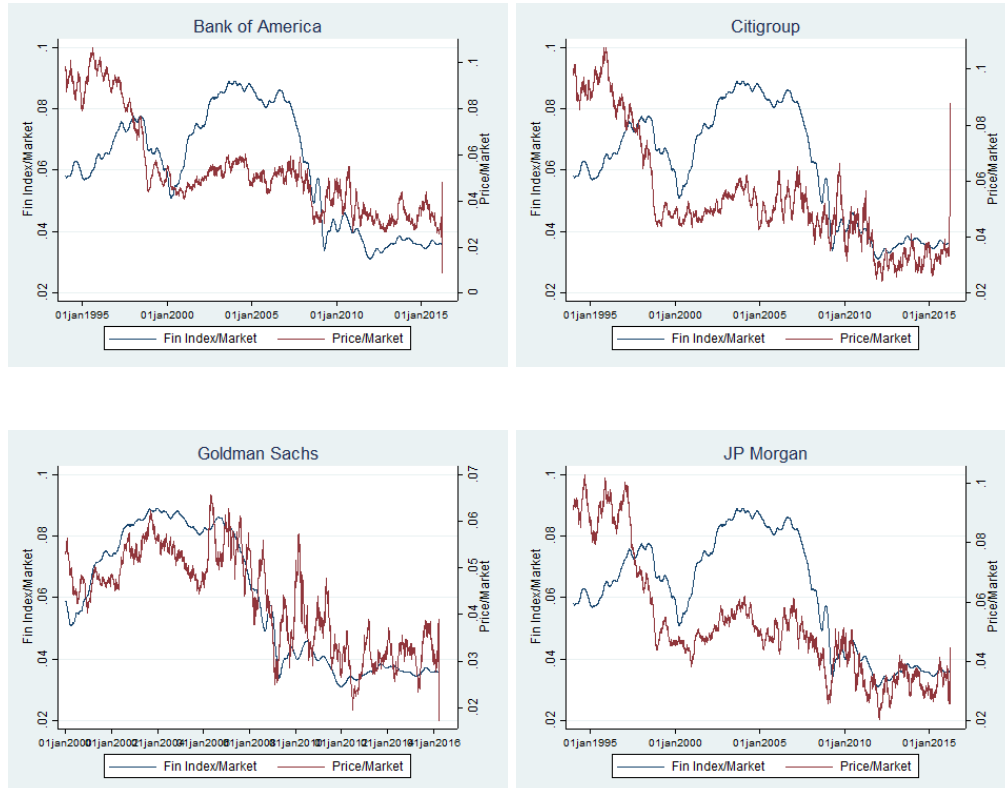
2 Relationship between MVE/Assets and CDS Spread Over Time

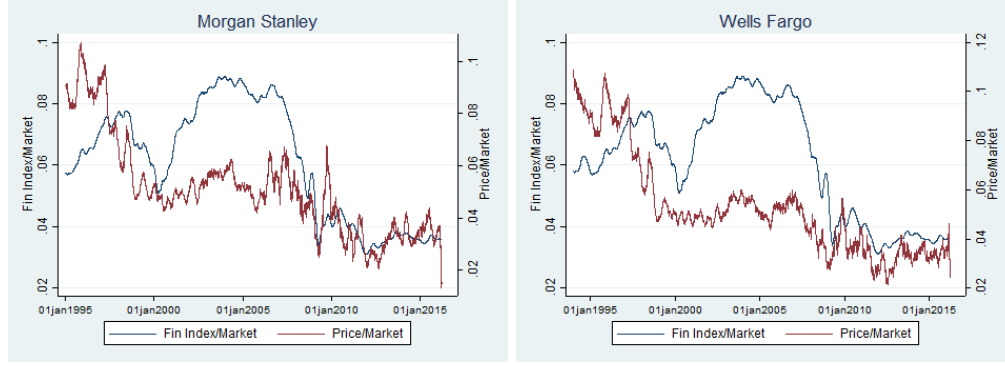




3 Pre-crisis bubble

We compare our six banks to the S&P 500 to see if there is a large pre-crisis bubble. To do this, we take the closing price of (1) our six banks and (2) the KBW Nasdaq Bank Index and divide it by the S&P 500. We use a three month moving average to compute these ratios.





4 Pulling crisis back

We construct our basic tables (for the Big 6) using 1995-2005 as the pre-crisis period.

Table 1: 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	1.26	1.62	1.22

Table 2: 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	25.71	33.40	20.96

Table 3: Big 6 Volatility/Market

<i>Bank</i>	1995-2005	2002-2007	Post-Crisis	2015
Bank of America	1.78	1.24	2.21	1.97
Citigroup	2.08	1.48	2.13	1.85
Goldman Sachs	1.88	1.77	1.67	1.64
JP Morgan	2.06	1.68	1.71	1.71
Morgan Stanley	2.42	2.01	2.18	1.92
Wells Fargo	1.63	1.13	1.59	1.44
<i>Mean</i>	1.98	1.55	1.92	1.76
<i>Median</i>	1.97	1.58	1.92	1.78