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What Moves Stock Prices: Another Look

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In 1989, Culter, Poterba and Summers (1989) published a paper examining the extent to which ex-post movements in aggregate stock prices could be attributed to the arrival of news. The research was motivated by Richard Roll's (1988) presidential address to the American Finance Association in which he concluded that only about a third of the variation in market indicies could be attributed to economic influences. As part of their research, Cutler, Poterba and Summers examined the fifty largest one-day returns on the S&P 500 index over the period from 1946 through 1987. They found that many of the fifty largest movements in the S&P 500 could not be matched with any convincing account of why future profits or discount rates might have changed. Consequently, the authors concluded that, "Our inability to identify fundamental shocks that accounted for these significant market moves is difficult to reconcile with the view that such shocks account for most of the variation in stock returns."

Studying large market movements is particularly interesting because news important enough to account for a major swing in aggregate stock prices should make it way into media reports in one way or another. This is particularly true for the more recent sample analyzed here. Since the time when Cutler, Poterba and Summers published their work, stock market reporting has expanded dramatically. Whereas major publishers like the New York Times and the Wall Street Journal covered the market during the years from 1946 to 1987, by the end of the technology stock boom in 2000 there were hundreds of internet sites that focused on the stock market and entire television networks had sprung up offering real time market punditry. In fact, one of the biggest problems in doing the research for this paper was separating the wheat from the chaff. Following major market moves today, there are typically dozens of explanations, most of them clearly half baked, and virtually none of them relating the explanation for the move to changes in expected future profits or discount rates.

Overall, the results reported here confirm the findings of Cutler, Poterba and Summers. Despite the passage of time and the massive improvement in information technology, it is, if anything, more difficult to tie major stock price movements to fundamental economic news sufficient to rationalize the size of the observed move. Furthermore, the tendency to use tautological psychology, such as "the market fell today on renewed fears of recession or because of panic selling," to explain large movements in prices (a problem noted by Cutler, Poterba and Summers) has become even more prevalent. The bottom line is that the source of large movements in overall market prices remains as much of mystery today as when Cutler, Poterba and Summers published their paper in 1989.

Data Empirical results

As opposed to the S&P 500, I use the broader CRSP value weighted index covering all New York, American and NASDAQ stocks to measure market movements. Daily returns for the CRSP index were downloaded and sorted by absolute value over the twenty-five year period from January 1, 1988 to December 31, 2012. For comparison with Cutler, Poterba and Summers, it should be noted that the CRSP index had a slightly smaller standard deviation than the S&P 500 during the sample period, so holding everything else constant the 50 largest moves should be slightly smaller in my sample.

The sorted returns are reported in Table 1 followed by the related news for the day. The news stories were selected from the database maintained by Factiva. In most instances, the market report was based on information Factiva accumulated from the Dow Jones News Service. As a check, the reporting of the Dow Jones News Service was confirmed with other sources.

The impact of a news story depends not only on the importance of the news, but the extent to which the story was anticipated. For instance, the government seizure of Fannie Mae and Freddie Mac on September 6, 2008 has all the earmarks of an important event, but the market return on that day does not rank among the top fifty, presumably because the bankruptcy was largely anticipated by the time it occurred. On the other hand, there are events that also should have been anticipated, but nonetheless made the list. For instance, the downgrade of the U.S. Government credit rating on August 8, 2011 followed weeks of speculation that such a downgrade was imminent. Therefore, even if an unexpected downgrade of the United States would have been significant news, a largely expected downgrade should not have been.

A number of interesting conclusion emerge from Table 1. The first, and most basic, is that the data presented in the table are consistent with the earlier findings of Cutler, Poterba and Summers. With a few exceptions, such as such as the terrorist attacks of September 11, 2001 and the decision by governments throughout the world to support troubled banks on October 13, 2008, it is hard to conceive how the news arriving on the day in question led to revaluation of the entire market value of U.S. equity on the order of five to ten percent. On the days, when there is no fundamental economic news which could reasonably be said to have caused the drop, the financial media typically would offer a tautological explanations for the movement based on unverifiable psychological factors. The reason for this apparently being that the media believes that major market moves require *some* explanation. For instance, on August 31, 1998 stocks allegedly crashed on "fears" of turmoil in Russia and "doubts" about Asia. A more common response was to mix fundamental news with psychological explanations without connecting the two. For example, on October 22, 2008, it was reported that "Recession fears overwhelmed world stock markets today as a number of large companies reported weak earnings in the third quarter and forecast worse to come."

It is interesting to note that these psychological explanations invariably overlooked the fact that for every buyer there is a seller. Furthermore, in not one instance was a psychological explanation tied to shifts in long-run expectations regarding cash flows and discount rates. The apparent media viewpoint was that readers and viewers require an explanation for a major market move, but do not require that the explanation be tied to the underlying economics in any meaningful fashion.

Second, the results reported in Table 1 indicate that rather than ameliorating since the publication of Cutler, Poterba and Summers, large movements in the market have become even more common. Comparing Table 1 item by item with the comparable table from Cutler, Poterba and Summers reveals that except for two days associated with the crash of October 1987, the percentage change for a given rank, such as the 10th largest, is universally greater for the current sample than the earlier one. In fact, the smallest of the 50 market movements reported in Table 1 would have ranked 18th on Cutler, Poterba and Summers' list. This results hold despite the fact that the CRSP index was slightly less volatile than the S&P 500 during the current sample period.

A third curious feature is the extent to which the large returns are bunched. Some bunching is expected because numerous previous studies have found that the volatility of stock prices is persistent, but the extent of the bunching is surprising.[1] Twenty-four of the fifty largest stock price movements occur in 2008, including the seven largest. Together, 2008 and 2009 account for 31 of the 50 largest movements, including 9 of the top 10 and 15 of the top 20. In contrast, the years during which the alleged "technology bubble" inflated and collapsed, account for only one observation among the top 20.

There is also evidence of short-term bunching. Of the 50 largest movements, 14 occur on pairs of consecutive days. If a gap of one day is allowed, 21 of the 50 largest movements are bunched in strings of "consecutive" days. By way of comparison, the Cutler, Poterba and Summers sample contained only 5 such paired observations, 3 of which were associated with the crash of October 1987.

Fourth, all but one of the big returns on consecutive days involves a reversal. This is consistent with the Cutler, Poterba and Summers sample where both of their observations of large moves on consecutive days involved a reversal. Such reversals are odd because a very large stock price movement, if rational, requires long-run changes in investor expectations regarding future cash flows and discount rates. It is peculiar that long-run views on the part of investors would be altered on one day only to be reversed on the next. For example, on August 8, 2011 the CRSP index experienced dropped 6.87%, the largest decline in the sample excluding the financial crisis years of 2008 and 2009, on news that the United States was losing its coveted AAA credit rating. The next day, however, the index bounced back 5.12% (the 28th largest move in the sample) following President Obama's expression of confidence in U.S. Government finances. Putting aside whether a 6.87% drop was a rational response to the largely anticipated loss

[1] See, for example, Schwert (2011).

of the AAA credit rating, it is hard to see how an expression of confidence in government finances by a sitting President could be interpreted as offsetting good news. What else would he be expected to say?

The period around the bankruptcy of Lehman provides a more dramatic example of reversals. On September 15, 2008 the CRSP index fell 4.57% in response to Lehman filing for bankruptcy, Merrill Lynch being sold to Bank of America, and AIG announcing that it faced a cash crunch. The market response, though large, does not appear out of line with the news on that day. On September 16, the index rose 1.52%, not enough to make the top 50. On September 17, the index fell another 4.55 percent on news that AIG need emergency government funding. However, the next two days the market reversed direction rising 4.41% on Thursday and 4.60% on Friday on news both days that the government was working on plans to absorb bad debt and support troubled financial institutions. Although the week contained four days that were in the top 50, the total return for the week was close to zero.

Finally, there is a curious disconnect between the short-run and the intermediate-run with respect to the reaction of stock prices to news. In the intermediate run things make sense, at least qualitatively. Specifically, the market drops sharply as the extent of the financial crisis and the depth of the associated recession becomes apparent and then rebounds as the economy improves. On a day to day basis, however, only a small minority of largest moves are associated with what appears to be unexpected fundamental information regarding the economy. The mystery is only deepened by the offsetting nature of many of the largest moves.

Conclusions and implications

The results reported here largely mirror those published more than two decades ago by Cutler, Poterba and Summers. Despite the explosion in information technology, enhanced market regulation, innovation in stock trading and the introduction of new equity related financial products, large movements in the market remain as common and mysterious as ever. Only a minority of the 50 largest moves in the last 25 years can be tied to fundamental economic information that could have had a pronounced impact on cash flow forecasts or discount rates. If anything, the mystery has deepened because the size of the unexplained market movements has grown.

The most significant difference between the current results and those of Cutler, Poterba and Summers is that the large changes are more bunched in the current sample. More than half of the 50 largest moves occur in 2008 and 2009. Furthermore, 21 of the 50 largest moves occur on what are basically strings of consecutive days. This bunching further deepens the mystery because, with one exception, when large moves occur on consecutive days, the signs oscillate, often for no apparent reason. It is as if investors significantly alter their long-run views regarding cash flows and discount rates only to change their minds the next day.

REFERENCES

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Table 1: Fifty Largest Daily Moves in the CRSP Index - 1988 to 2012 (sorted by absolute move)

Rank	Date	Return	News
1	Monday, October 13, 2008	11.49%	Governments through out the world announce moves to support troubled banks.
2	Tuesday, October 28, 2008	9.53%	Late rally on Wall Street as rebound in stocks defies latest economic news.
3	Wednesday, October 15, 2008	-8.98%	Falling retail sales and rising wholesale prices spikes fears of recession and erases Monday's record rally.
4	Monday, December 01, 2008	-8.94%	Obama reveals national security team. NBER says US entered recession in December 2007. Bernanke warns of weak economic conditions
5	Monday, September 29, 2008	-8.25%	$700 billion TARP bill reject by House of Representatives. President Bush disappointed.
6	Thursday, October 09, 2008	-7.27%	Rising fears of global recession purshed Wall Street into freefall. U.S. Treasury may take stakes in major banks.
7	Thursday, November 20, 2008	-7.01%	Another wave of selling roiled Wall Street. Democrats say no to current plan for auto bailout telling industry to come back next month with a detailed plan.
8	Monday, March 23, 2009	6.91%	Secretary Geitner makes second attempt at unveiling Obama Administration's plan to deal with the banking crisis. Obama wants to expand clean energy effort.
9	Monday, August 08, 2011	-6.87%	Wall Street had its worst day since the 2008 financial crisis, as fearful investors reacted to the United States losing its coveted AAA credit rating.
10	Thursday, November 13, 2008	6.80%	Dow down 300 points on the morning reverses on new investor confidence and ends up 553.
11	Friday, April 14, 2000	-6.63%	Investors surprised by unexpected surge in inflation. Economy may be overheating.
12	Monday, November 24, 2008	6.61%	Citigroup's massive rescue package and President-elect Obama's picks for his economic team pushed investors off the sidelines.
13	Monday, August 31, 1998	-6.59%	Stocks crashed today on fears of continuing financial turmoil in Russia and growing doubts about Asia.
14	Monday, October 27, 1997	-6.53%	Mini crash sparked by economic crisis in Asia (need more details)
15	Wednesday, November 19, 2008	-6.39%	Doubts raised about an immediate government bialout of the auto industry. Obama Administration plans major health care initiative next year.
16	Tuesday, March 10, 2009	6.34%	The stock advance picked up speed after Rep. Barney Frank, D-Mass. and the head of the U.S. House Financial Services Committee, said that the Securities and Exchange Commission would restore the "uptick rule." The SEC later confirmed that it could reinstate the rule as early as next month.
17	Friday, November 21, 2008	6.11%	Dow Jones jumps on report that Barack Obama will nominate Timothy Geitner as new Treasury Secretary.
18	Wednesday, October 22, 2008	-5.91%	Recession fears overwhelmed world stock markets today as a number of large companies reported weak earnings in the third quarter and forecast worse to come.

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19	Tuesday, October 07, 2008	-5.79%	Wall Street took another beating today on fears about the financial sector and doubts regarding the federal rescue plan. Fed Chairman Ben Bernanke said the financial turmoil may drag down economic growth well into next year.
20	Friday, January 08, 1988	-5.54%	Stocks staged one of their biggest retreats in history hammered by investors' worries about the economy and the possibility of stricter regulation of financial markets. Rumors also circulated of a widening U.S. budget and trade deficits.
21	Tuesday, January 20, 2009	-5.49%	A large reported earnings miss by State Street bank today lead to renewed concern regarding bank stocks and exacerbated recession fears
22	Wednesday, November 12, 2008	-5.36%	Treasury Secretary Paulson says the Government won't buy mortgage assets from banks but will inject capital into them.
23	Friday, October 13, 1989	-5.34%	Stocks fell dramatically following a news story of the break-down of a $6.75 billion leveraged buyout deal for UAL Corporation.
24	Monday, July 29, 2002	5.32%	Galvanized by hopes that the market's worst days are over, investors on Monday bought stocks enthusiastically. Analysts believe investors, growing less woriied about earnings and corporate bookkeeping, are ready to buy again.
25	Wednesday, January 03, 2001	5.29%	Citing signs of economic slowdown the Fed unexpectedly cut fed funds rate target to 6%, the discount rate was cut to 5.75%.
26	Tuesday, December 16, 2008	5.29%	A record drop in the initial jobless claims and a strong manufacturing report helped the benchmarks register significant gains for the first time this week. Additionally, FedEx Corporation’s better-than-expected results helped bolster sentiment.
27	Wednesday, July 24, 2002	5.23%	The Dow Jones industrials stormed up as Wall Street cheered legal and legislative action on the corporate eithics scandals that fueled nine weeks of sharp losses.
28	Tuesday, August 09, 2011	5.12%	President Obama expressed confidence in U.S. Government finances following the first ever downgrade of the country's AAA credit rating by Standard & Poor's.
29	Monday, September 17, 2001	-5.07%	Stock markets reopen for the first time following the terrorist attack on September 11, 2001.
30	Wednesday, November 05, 2008	-5.07%	The market experienced the largest post election drop ever on the reported contraction of 157,000 jobs in October.
31	Saturday, August 04, 2001	-5.03%	A slowdown in number of job losses to 42,000 and unchanged unemployment of 4.5 pecent indicated that economic deterioration might be turning into stagnation. The report led some investors to think this might discourage the Federal Reserve from continuing its aggressive campaign of cutting interest rates in an effort to avoid a recession.
32	Monday, March 02, 2009	-4.98%	Banking sector continues its downward spiral. AIG gets additional $30 billion in government aid. Saving rate rises to its highest level in 14 years.

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33	Thursday, November 06, 2008	-4.91%	The sell-off today occurred after major retailers posted the worst October sales in nearly 40 years and government reports showed labor costs rising and productivity slowing.
34	Tuesday, September 08, 1998	4.83%	Stocks stormed higher Tuesday after Federal Reserve Chairman Alan Greenspan hinted in comments over the holiday weekend that a cut in interest rates might be possible.
35	Tuesday, September 30, 2008	4.66%	The Dow jumped 485 points on bets that Congress will pass a verion of the government's $700 billion package, following Monday's crushing defeat.
36	Thursday, October 30, 2008	4.65%	U.S. stocks rose on signs that central banks' actions are bearing fruit. Gains came despite a Commerce Department report that the economy shrunk 0.3% in the third quarter. Investors anticipating another interest rate cut by the Fed.
37	Friday, September 19, 2008	4.60%	Stocks rallied Friday, with the Dow rising 369 points, as the government's plan to help rescue banks from toxic mortgage debt soothed investors at the end of a gut-churning week on Wall Street.
38	Tuesday, February 10, 2009	-4.60%	Stocks slumped Tuesday, with the Dow industrials ending at a 3-month low, as the government's bank rescue plan failed to reassure investors burned by the 14-month old recession.
39	Thursday, April 05, 2001	4.59%	Stock prices shot higher today after Dell Computer and Alcoa gave Wall Street its first really good earnings news in months.
40	Monday, September 15, 2008	-4.57%	Lehman files for bankruptcy. Merrill agrees to be sold to B of A. AIG in cash crunch.
41	Thursday, October 02, 2008	-4.57%	Stocks tumbled Thursday as frozen credit markets and weak economic reports amplified jitters ahead of the House vote on the $700 billion bank rescue plan. Credit markets remained tight, with two closely watched measures of bank lending jitters at record highs.
42	Wednesday, September 17, 2008	-4.55%	Stocks plummeted Wednesday, with the Dow industrials falling 449 points in its second worst session of the year, as the government's emergency rescue of AIG amplified fears about the stability of financial markets.
43	Wednesday, December 05, 2001	4.53%	Bullish comments from executives in bellwether tech companies and a much better-than-expected reading on the U.S. service sector fueled speculation that the U.S. economy and corporate profits are on a faster track to recovery than once estimated.
44	Thursday, August 18, 2011	-4.53%	Jobless claims rose 9,000 more than expected. Existing home sales dropped 3.5% in July more than the expected 2.0%. Inflation jumped 0.5% compared to expected 0.2%. Morgan Stanley put out a dismal forecast for the globlal economy.
45	Tuesday, February 17, 2009	-4.53%	Asian stock markets extended their drop Tuesday amid renewed fears of deepening global recession. U.S. stocks declined after Geithner’s bank rescue plan received a weak reception.
46	Thursday, August 11, 2011	4.52%	All three indexes surged about 4% on positive corporate earnings and positive labor market news. The Commerce Department released its July retail sales report, exceeding expectations. The report showed that retail sales rose 0.5%.

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47	Tuesday, October 15, 2002	4.52%	A trio of rosy earnings reports from market bellwethers Citigroup, Johnson & Johnson and General Motors sparked the latest advance.
48	Monday, May 10, 2010	4.49%	US stocks were sharply up today, and major European bourses surged, after European leaders agreed to a nearly $ 1 trillion rescue plan to avoid a major debt crisis and the Fed said it would provide loans overseas.
49	Monday, April 20, 2009	-4.48%	Fears surfaced that if the Government takes a bigger stake in major banks, this would be nationalizing the banks through their back doors. Citigroup was down big today on this news.
50	Thursday, September 18, 2008	4.41%	Wall Street rallied Thursday, finding momentum at the end of a tough session, on a CNBC report that the government is working on a more permanent solution to absorbing bad debt.