



IQS Research Brief

The Long Slow Dow!

**How long does it take for the DJIA to leave an index level?
What are the decade returns for the DJIA?**

September 30, 2010

Topic

In this IQS Research Brief, we take a look at two topics.

When the DJIA crosses an index level (e.g. 10000), how many times does the DJIA close above that level (when the day before it closed below that level)? Furthermore, how many months or years (what we call duration) is the time from the first crossing to the last crossing (it's probably a lot longer than you think)? For instance, the DJIA first closed above 10000 on March 29, 1999, and closed just above 10,000 (while closing below the previous day) 34 times so far, with the last one being on August 27, 2010. This represents over 11 years back to the 10000 level from when it first closed above 10000!

Another topic we analyze in this IQS Research Brief is the notion that the US Equity Market (DJIA as the proxy) is a good investment at almost any price level. It is generally considered that long-term the market rises roughly 8% per year. In fact, many pension funds incorporate a long-term asset return assumption of 8-10% or more. We will look at returns over various historical periods for DJIA and test this tenet.

Analysis

We used the Dow Jones Industrial Average (DJIA) as the proxy for the market. The DJIA is a price-weighted index which contains 30 large companies. The index has been around since before 1900, and continues to be closely followed in the press. We acknowledge that the DJIA does not represent the broad US market, but does represent the media's index. For decade returns, we started with the 1930s and ended with the 2000s.

Duration

For DJIA levels, we chose 300-1000 by hundreds, and then 1000-10000 by thousands. There should not be too much magic in the index levels chosen, except that they are round numbers, which can be a psychological barrier for the DJIA. Still, the results should not be biased by the round numbers chosen. We could have included just about any index level, and would expect similar patterns to what we found.

As you can see in the chart below, there are 2 distinct types of duration time frames: 10+ years or 2 or fewer years. There is the long, slow recovery like the DJIA 300 which took 25 years to recover during the great depression, and the DJIA 7000-11000 of the credit crisis of the late 2000s. The second type is the bull market runs of the early to mid-1990s (DJIA 2000-6000), or the post-WWII economic expansion (400-500). Note that the huge market collapse in October 1987 doesn't even show up, as the market rebounded relatively quickly. See Appendix A for a graphical depiction of duration by DJIA level.

Since the DJIA is currently below 11000, we don't yet have completed results for 11000-14000.

<u>DJIA Level</u>	<u>Duration (in Years)</u>	<u>First Time</u>	<u>Last Time</u>
300	25.2	12/31/1928	3/29/1954
400	0.2	12/29/1954	3/16/1955
500	2.4	3/12/1956	7/25/1958
600	15.8	2/20/1959	12/26/1974
700	13.7	5/17/1961	1/31/1975
800	18.5	2/28/1964	8/17/1982
900	17.7	1/28/1965	10/1/1982
1000	10.1	11/14/1972	12/17/1982
2000	1.6	1/8/1987	8/24/1988
3000	0.7	4/17/1991	12/23/1991
4000	0.0	2/23/1995	3/10/1995
5000	0.0	11/21/1995	11/21/1995
6000	0.0	10/14/1996	10/31/1996
7000	12.1	2/13/1997	3/12/2009
8000	11.8	7/16/1997	4/24/2009
9000	11.3	4/6/1998	7/23/2009
10000	11.4	3/29/1999	8/27/2010
11000	11.0	5/3/1999	?
12000	1.4	10/19/2006	?
13000	1.1	4/25/2007	?
14000	0.2	7/19/2007	?

Returns

Admittedly, returns on the DJIA is largely an academic exercise since investors use large cap indexes like S&P 500 or Russell 1000 as their benchmark, and not the DJIA. With the DJIA a price-weighted return, the returns for DJIA may not be representative of a broader, investable index that is cap-weighted and includes more stocks.

What are the decade returns for the DJIA? The chart below shows total returns by decade and annualized returns by decade. Note that over the past 8 decades, the annualized decade return has been in double figures only 3 times, and 2 of them are from 2 of the past 3 decades. Moreover, for the other 5 decades, the cumulative return is around 0%!

The DJIA does not include cash dividends, only stock dividends, stock splits and other corporate actions. With an assumption that cash dividends has been yielding about 3% per year (current yield around 2.8%), we have simply added that to the annualized return.

Returns by Decade, With and Without Cash Dividends

<u>Decade</u>	<u>Decade Return</u>	<u>Annualized Return</u>	<u>Annualized Return, With 3% Estimate for Cash Dividends</u>
1930s	-39.6%	-4.9%	-1.9%
1940s	33.7%	3.0%	6.0%
1950s	238.8%	13.0%	16.0%
1960s	17.8%	1.7%	4.7%
1970s	4.8%	0.5%	3.5%
1980s	228.3%	12.6%	15.6%
1990s	317.6%	15.4%	18.4%
2000s	-9.3%	-1.0%	2.0%

Returns over Various Time Periods, With and Without Cash Dividends

<u>Start Date</u>	<u>End Date</u>	<u>Years</u>	<u>Annualized Return</u>	<u>Annualized Return, With 3% Estimate for Cash Dividends</u>
12/31/1979	12/31/2009	30	8.8%	11.8%
12/31/1979	12/31/2008	20	14.0%	17.0%
12/31/1929	12/31/2009	80	4.8%	7.8%
12/31/1949	12/31/2009	60	6.8%	9.8%

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Summary

Looking at our duration metric for various DJIA levels shows that it can take the DJIA a very long time to recover from down markets. We should not be surprised to have to wait 10 or more years for the DJIA to rebound back to a level.

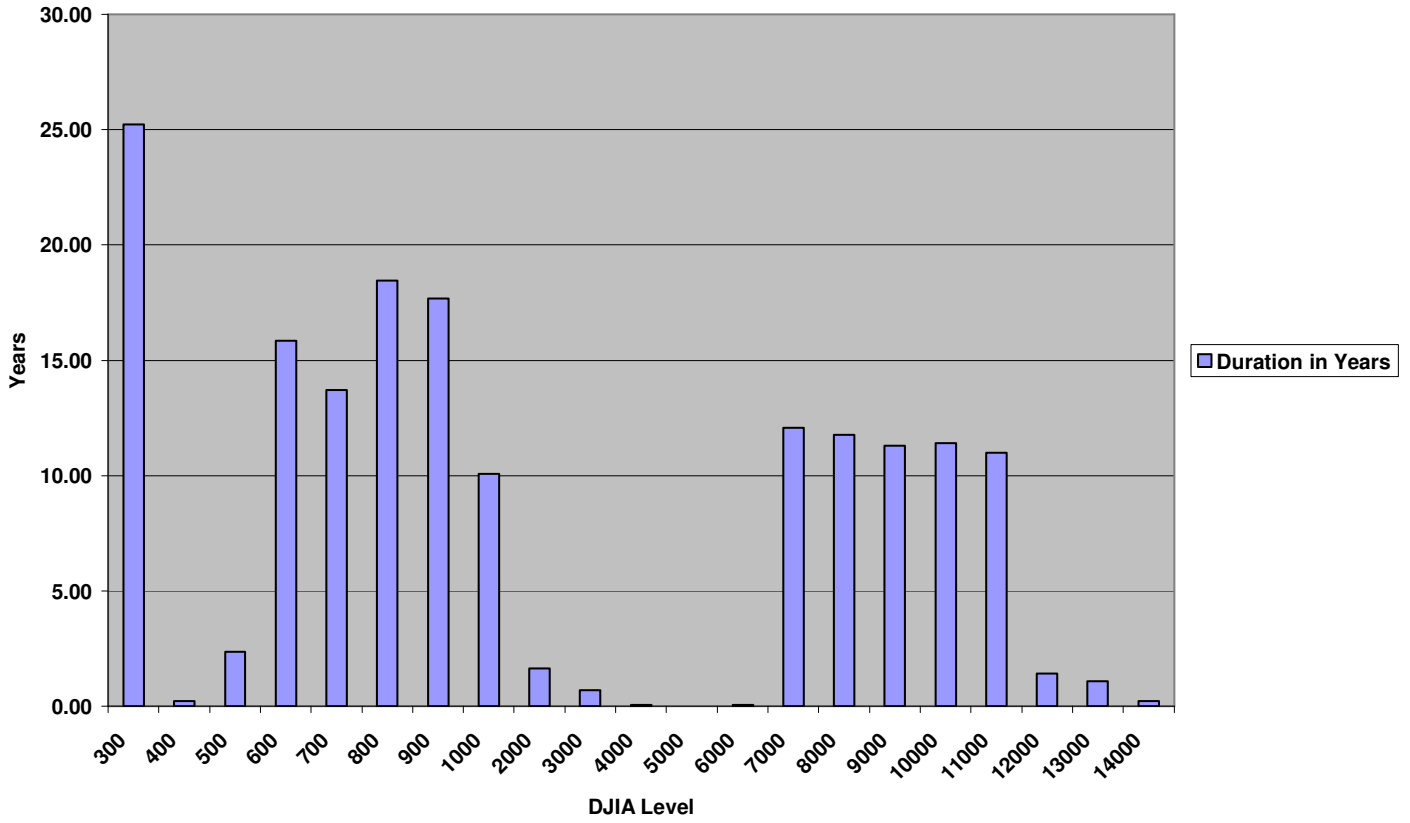
Our expectations of return may be biased by the strong returns in the 1980s and 1990s. On a longer term perspective, annualized returns are closer to investor expectations, but not necessarily over shorter time periods.

About IQS

We are an independent equity research company that provides dynamic-weighted models to institutional managers and hedge funds. We also are available to solve, build, or analyze portfolio construction, analytics or other special project needs. Please contact us at ian@innovativequant.com for more information. Visit our website at www.innovativequant.com and blog at <http://iqsquant.blogspot.com/>

Appendix A:

DURATION OF DJIA AT VARIOUS LEVELS
HOW MANY YEARS FROM TIME FIRST CLOSED ABOVE A LEVEL TO LAST TIME?



Appendix B:

