Evidence for the Stability of Risk Tolerance

There is a widespread misconception that risk tolerance collapses when markets collapse. A new academic study, “Do Large Swings in Equity Values Change Risk Tolerance?” in the Journal of Financial Planning June 2014, shows that there was no such collapse during the 2007 - 2009 market turmoil. Using FinaMetrica data, the authors found that, based on 341,782 risk tolerance tests completed from January 2007 to May 2012:

"Average risk tolerance scores demonstrated little monthly variation despite large swings in equity values during this time period. This suggests that individual risk tolerance scores are determined more by individual preference than external market forces."

Before getting into the details of the study, there is an important message for advisors who might otherwise find this study confusing.

We do see behavioural change as markets rise and fall and many have assumed that this indicates changes in risk tolerance. But risk behaviour is influenced by more than just risk tolerance. Clients’ perception of market risk will also be a major factor. Market risk is likely to be underestimated when markets are rising and overestimated when markets are falling. Additionally, in a falling market, if what is happening to a client’s portfolio comes as an unpleasant surprise, that is likely to increase the potential for a panicked sale regardless of the client’s risk tolerance.

The most likely cause of a panicked sale in a falling market is that the client has been over exposed to risk and did not understand the risks being taken. The former can be avoided through a robust risk profiling process and the latter through proper explanation and framing of likely portfolio performance, particularly downside risk.

When we first developed our Investment Risk and Return Guide in 2002, it was prompted by our view that as an industry we were doing a very poor job in explaining downside risk in a way that was meaningful to clients. While standards have improved, in our view advisors could still be doing a better job in helping clients establish realistic expectations about likely portfolio performance.

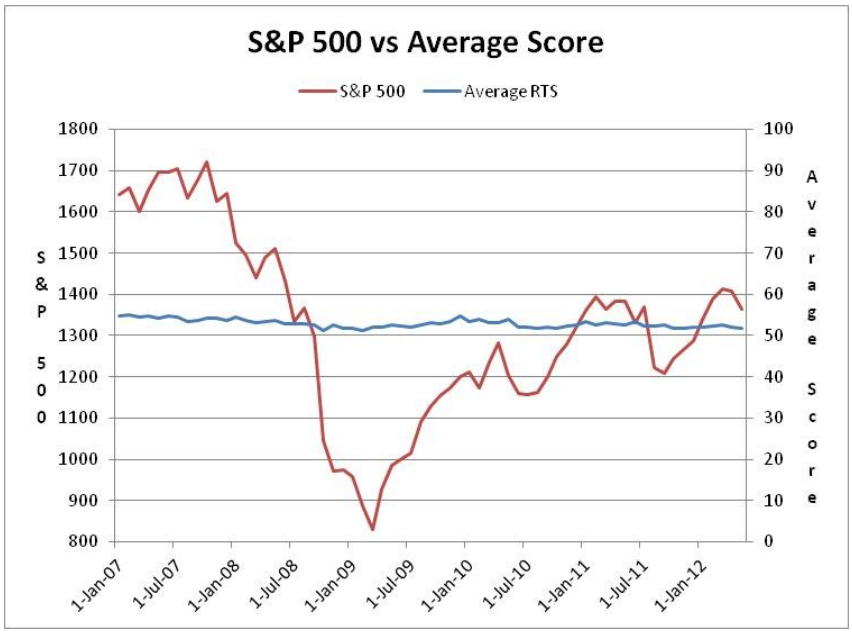
We strongly recommend that those not familiar with our Investment Risk and Return Guide and the associated Portfolio Reports take the time to consider whether our expectation framing tools would be of benefit to them in working with clients. Our subscribers think very highly of the guide and reports which can be found in System Resources under the Resources and FAQs tab at www.riskprofiling.com.

The Data at First Glance

Let’s now turn to the JFP paper, Do Large Swings in Equity Values Change Risk Tolerance?, by Michael Guillemette PhD and Michael Finke PhD, CFP.

The risk tolerance data being analysed were monthly average scores for North American clients, the vast majority of whom were from the US, who completed FinaMetrica's psychometric risk tolerance test. This can be thought of as repeated samples from the same population. There will be demographic differences from month to month which would be expected to create some very minor ‘noise’ in the data.

When compared to the S&P 500, the raw data looks like this:



Looking at that chart, you see huge variation in the S&P 500 and virtually no change in the average risk tolerance score, and there is no obvious correlation between the two. But the chart presents a superficial picture of an apples-to-oranges comparison and is very scale-dependent - lies, damned lies and statistics.

The data can be analysed in different ways but the essential questions are:

- **Were there any material changes in risk tolerance?,** and
- **If there were any changes, material or not, did they correlate with changes in the stock market?**

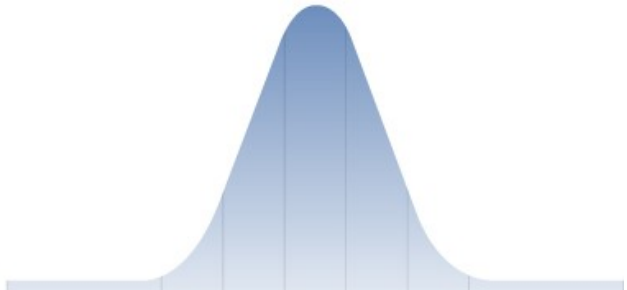
The short answers are, No there weren't, and, Sort of ... but there is more to it than that.

Let's deal with the first question first.

The Magnitude of Changes in Monthly Average Risk Tolerance Scores

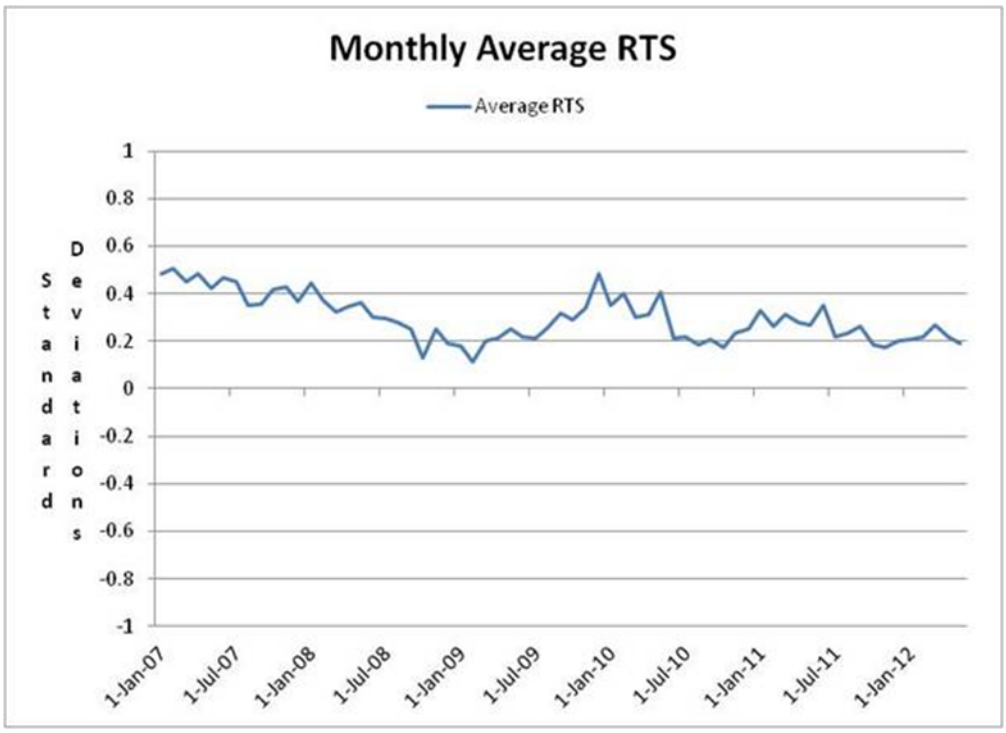
It is important to note that a risk tolerance score is a measure of risk tolerance, not risk tolerance itself. Further, conducting a risk tolerance test is not an endpoint but rather a starting point for the advisor-client risk conversation. Psychology tells us that while test-based assessment is more accurate than interview-based assessment, the ideal is to use a good test as input to a discussion the endpoint of which is a risk tolerance assessment accepted by both client and advisor. But for the present, let's focus on the scores.

A critical piece of information not included in the paper is that the FinaMetrica 0 to 100 scoring scale has a mean of 50 and a standard deviation of 10.



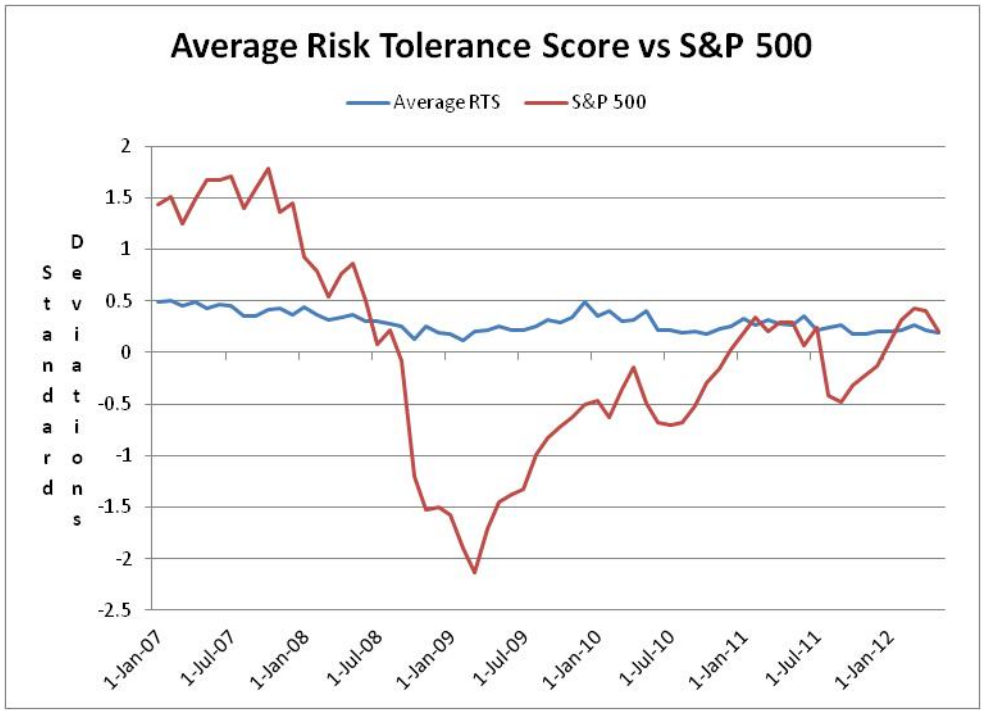
Risk Group	1	2	3	4	5	6	7
Score Range	Less than 25	25-34	35-44	45-54	55-64	65-74	75 or more
Number in Group	1%	6%	24%	38%	24%	6%	1%

Using the mean and standard deviation for the FinaMetrica scoring scale provides a way to illustrate the volatility of the monthly average score in terms of multiples of standard deviations of the scale, as follows:



As can be seen, the maximum fall was .4 of a standard deviation, i.e. 4 points on the 0-100 scale, which occurred between February 2007 and March 2009.

This suggests a way of comparing the volatility of the S&P 500 to that of the monthly average risk tolerance score. Over the period in question, the S&P 500 had a mean of 1316 and a standard deviation of 227. Expressing the S&P 500 as a multiple of its standard deviation and adding it into the chart produces:



Again, we can see major fluctuations in the S&P 500 and very small fluctuations in the average risk tolerance score, but this time there is the hint of a correlation between the two. Nonetheless, it is still not really an oranges-to-oranges comparison, more like a mandarins-to-oranges comparison. However, it does present a picture of both relative magnitude and possible correlation in a single chart. Unfortunately, there was no chart in the paper which served this dual purpose. The charts there focused purely on the correlation.

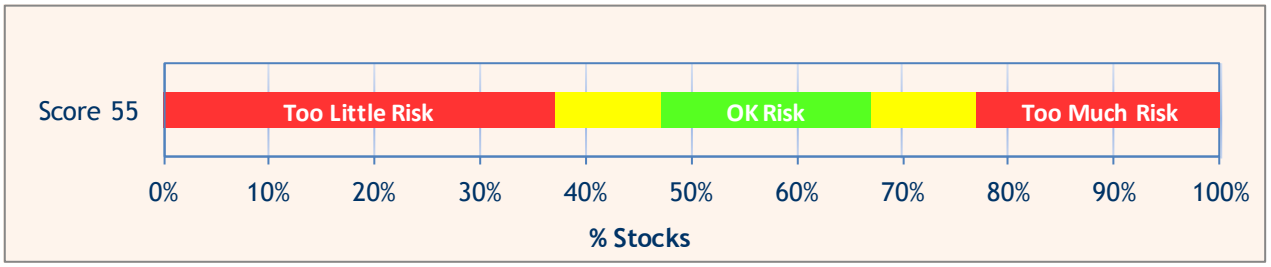
As we saw above, the peak to trough fall was 4 points on our 0 to 100 scale. This implies that where a client was tested in February 2007 and again in March 2009, the expected fall would be 4 points (and that for any other test/ retest period the expected fall would be less.)

Would a fall of 4 points result in a material change in investment advice?

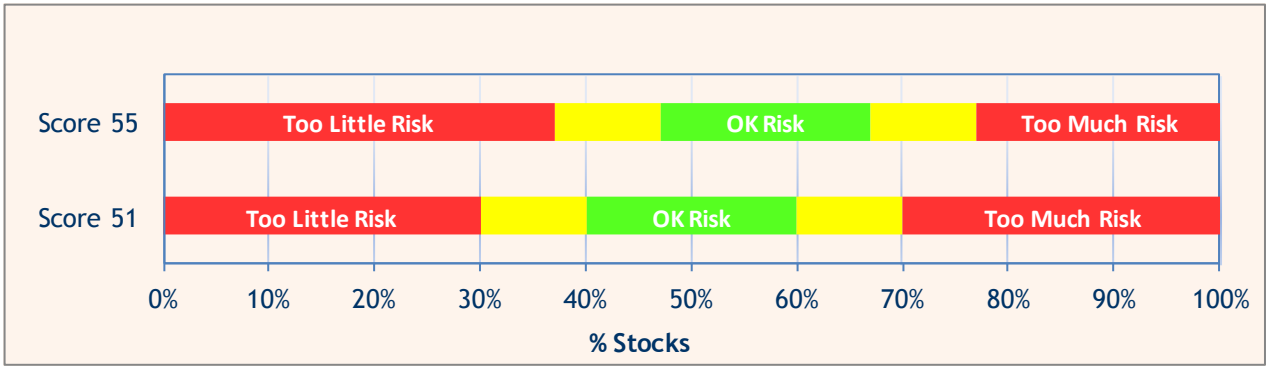
The Materiality of Risk Tolerance Score Changes

Risk tolerance does not drive investment advice but rather acts as a (somewhat) loose constraint on the investment strategy that might otherwise be suitable given the client's goals, time horizons and financial resources. At the extreme, simplistically, the aim is to avoid having a low risk client in a high risk portfolio.

Under the FinaMetrica methodology, a risk tolerance score maps to an investment risk comfort zone rather than to a specific level of investment risk. For example, a score of 55 maps to this comfort zone:



The peak to trough fall in average monthly scores was from 55 to 51. Comparing the comfort zones for these two scores gives:



Imagine a client who scored 55 in February 2007 and then scored 51 when retested in March 2009. There is a substantial overlap between the two comfort zones. Only if the client's February 2007 strategy was at the upper end of their comfort zone would a score of 51 have moved them out of it and then only into marginal discomfort. Clearly, a change in score of the magnitude we are talking about here would, at most, only result in a marginal change of advice and, in all likelihood, no change at all.

To try and put the study in perspective using an analogy, imagine a comparison between seismic readings in Dallas, where there has been an earthquake, and wave height readings on the Lubbock lakes. Allowing for the time delay there would be a quite striking correlation. However, focusing on the correlation would miss the point that buildings fell in Dallas and nobody noticed the ripples on Lubbock lakes.

Did Risk Tolerance Itself Actually Change?

Let's now return to the issue of the difference between a risk tolerance test score and risk tolerance itself. A good test will be both valid and reliable. Valid meaning that it tests what it purports to test and reliable meaning that it tests consistently. Here we are concerned about validity. Is the test actually a pure measure of risk tolerance?

One of the difficulties with a risk tolerance test is to control for risk perception - to ensure, as far as possible, that the answers chosen by respondents reflect their risk tolerance rather than their (then current) perception of the risk in the situation addressed by the question.

You sometimes see in an industry-standard risk questionnaire questions along the lines of, "Suppose you have just won $100,000 in a lottery, what proportion of that would you invest in stocks/equities?" Clearly, the answer to this question will depend upon both the respondent's risk tolerance and the respondent's perception of market risk at that time.

There is ample evidence that risk perception changes as markets rise and fall. If this is not controlled for, the test will not be a pure test of risk tolerance. Unfortunately, it is nigh on impossible to both completely control for risk perception and to have questions that relate to real life situations.

But there is more to this issue than just perceptions of market risk. Risk tolerance is a psychological trait which has five domains: physical, social, ethical, health and financial. People behave consistently within domains but there is only a weak correlation across domains, i.e. a physical risk taker may or may not be a financial risk taker. There are no sub-domains within financial risk tolerance, i.e. there isn't an investment risk tolerance, a borrowing risk tolerance, an insurance risk tolerance and so on.

Financial risk tolerance impacts on all decisions involving financial risk, not just investment decisions, and in most cases financial advisors provide more than investment advice. Accordingly, the FinaMetrica risk tolerance test asks questions about a wide variety of situations involving financial risk not just investment situations.

Test questions are multiple-choice. The riskiness of any particular answer option will depend upon the respondent's then current perceptions of risk in the situation being addressed by the question. For example, one of the FinaMetrica questions is, "If you had to choose between more job security with a small pay rise and less job security with a big pay rise, which would you pick?" Clearly, how a respondent answers that question will be influenced by how the respondent sees the economy as a whole and/or the particular industry in which they work.

The FinaMetrica test does control well for risk perception but not perfectly. We did anticipate seeing (marginally) lower scores in the 2007 to 2009 bear market.

As with other aspects of personality, risk tolerance is determined by a mix of genetics and life experiences and is pretty much set by early adulthood. But it may change as a result of subsequent major life events, good or bad, and can be expected to decrease slowly with age. Accordingly, while it can be considered to be stable, it is not set in concrete. A client's risk tolerance should be retested after any major life event and otherwise every two or three years.

Across 2007 to 2009, the incidence of negative life events would have been higher than normal. In addition to investment losses, there would have been more of the negative events that occur in economic downturns - more retrenchments, more business failures, more forced home sales, more marriage break-ups, etc. While these would have only affected some of those being sample, we have anecdotal reports from subscribers of isolated instances of much lower scores for clients who had very negative life experiences across this period. However, while there would have been some effect on average scores, we believe it would have only been very marginal.

Overall, in our view, the implied general decrease in actual risk tolerance for an individual would have been even less than was indicated by the decrease in scores because scores are not immune to changes in risk perception and, to a lesser extent, because there would have been more major negative life events than usual.

Now let's look at the correlation between changes we did see and what was happening in investment markets.

What Drives Perceptions of Financial Risk?

The study reported a moderately high overall correlation of .70 between average monthly risk tolerance scores and the S&P 500 for the period 2007 to 2012. (Remember, we believe these changes are as much attributable to

changes in risk perception as to changes in risk tolerance.) Interestingly, however, the study also found that while the correlation during the fall was .90 the correlation during the recovery was only .01. While the study noted this disconnect it did not suggest possible explanations, of which there would appear to be at least two.

Firstly, a once- bitten twice-shy effect. Having suffered a loss, particularly if it was outside their range of expectations, it may take some time for an investor's risk perception to recover.

Secondly, and more persuasively in our opinion, it was economic conditions generally, rather than what was happening in investment markets, that was the major influence. There was very real concern about many economies. In the US even "the American way" was being questioned. The fact that this period is described as the Great Recession in the US and, elsewhere, as the Global Financial Crisis, is an indication that it was about much more than investment markets. In this context, it is not at all surprising to see that though investment markets made a steady recovery from March 2009, the scores did not trend upwards in unison because of ongoing fears about the economy as a whole.

Of course, at this stage these two explanations are at best hypotheses. However, we are expanding our data collection activities and by the time the next bear market hits should have the data needed to test these and other hypotheses.

Conclusion

There were statistically significant changes in average monthly risk tolerance scores across 2007 to 2009. However, the small magnitude of the changes would in all likelihood have not resulted in a change of advice. Given the nature of the test and the composition of the samples being tested, the changes in scores would overstate actual changes in risk tolerance and are more likely attributable to changes in risk perception.

Risk perception appears to be influenced not just by what is happening in financial markets but also in the economy as a whole.

Advisors can be confident that a client's risk tolerance is stable, though not set in concrete, and should be retested regularly. If an advisor is using a risk tolerance assessment technique that shows substantial fluctuations correlated with market/economic conditions, the technique is not measuring risk tolerance but probably risk perception.

Advisors cannot control their client's risk tolerance but can influence their client's risk perceptions through proper education. How well clients handle the next market collapse will largely depend upon how well their advisors educated them about investment risk and return, particularly downside risk.