



## Time

*"Time is an illusion."*

Albert Einstein  
(1879 - 1955)

A crucial aspect of any organised civilisation is its ability to structure time.

The modern Western calendar is a descendant of early Roman versions, as the names given our months show. The biggest challenge facing primitive calendars everywhere was how to reconcile the two most obvious, natural systems of time-keeping: the twelve lunar months (354 days) with the solar year (365 1/4 days). The insertion of an extra month every few years was a rough attempt to solve the problem. Julius Caesar eventually standardised the calendar and it remains one of our most important Roman inheritances.

Temporal quandaries continue to this day. Time is a great unknown. It is a concept that is applied in a strict theoretical sense to create structure in our lives, but there is nothing certain about our lives within this temporal paradigm.<sup>1</sup>

When it comes investing, does the perception of time affect us? If so, how?

It is difficult to talk about investing without also talking about time; after all, the two are interconnected. There's the time value of money; there's the relationship between money, interest rates and time; there's investing short-term versus investing long-term, etc.

The concept of 'time dilation' is at the centre of a debate in finance and economics. Time dilation is a psychological concept - but which in a sense is just as real as it is in the physical world.

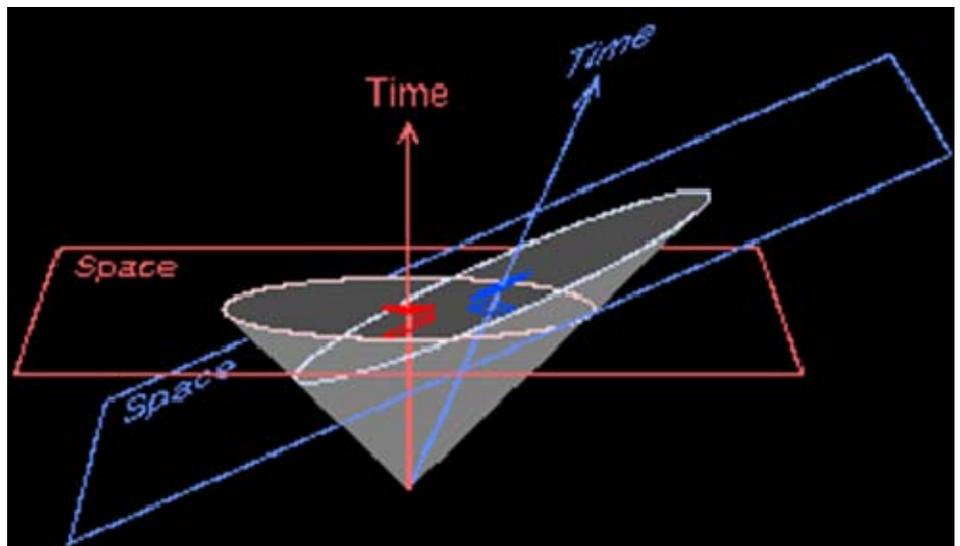
Psychologists have observed that people experience the passage of time at different rates. For older people, time passes more quickly than for younger people. In car accidents, people have described how time slows as the brain layers dense memories.

In the theory of relativity, one measure of time dilation is the difference of elapsed time between two events as measured by observers moving relative to each other. Time passes at different rates depending on one's frame of reference.

In investing, time dilation influences our perception of the present and can affect our choices through a 'present bias', a kind of temporal myopia. We focus on the present, and value it more highly than the past or the future.<sup>2</sup>

As an example, one might say: "Oh, look what happened to the markets back in 2007-09 . . . but they recovered nicely by 2012." In retrospect, it seems easy to dispassionately view abstract historical returns - versus living through extreme market events, moment by moment.

Living through those moments seems to take longer than the actual time it really lasts. Emotional stress appears to *slow* time. Investors who lived through the global financial crisis probably felt it like it aged them considerably. Thus, in psychology as in



## Time (cont'd)

physics, time is relative to one's frame of reference.

Why should these experiences of time be so different? Partly this relates to having money at risk, but it's also about how we perceive time. A period of time that is from the distant past is more short-lived than a similar period experienced in the here and now.

During a challenging investing environment, time dilates as losses become more and more prominent and investors increasingly overweight the present. Time dilation might also cause investors to discount the possibility of future returns: there is no future return which can possibly offset the increasing pain of further potential losses. Investors capitulate and sell just when they shouldn't. So in addition to money at risk, changes in how investors perceive time may also influence their decision making.<sup>3</sup>

These temporal quandaries also extend to market forecasting. Anyone who allocates financial assets is making a forecast about an uncertain future. However, temporal concepts should be treated with caution. The idea of the 'long-term' can be just as dangerous as the idea of the 'short-term'. Making long-term decisions appears easy (in the long run we are all dead); however, making short-term decisions about the financial markets is very diffi-

cult. Forecasting is easy; managing money is hard. How does one reconcile long-term decisions within the finite time period that is our lives?

We all have to make decisions about the future, but there are smart ways and not-so-smart ways to make those decisions. Some experienced investors think about the future as probability distributions. Less experienced investors often think that short-term decisions are likely to be high probability events. That thinking might not work out when one considers current market valuations and one's after-tax, after-fee returns. Unfortunately, far too many investors still focus excessively on the 'short-term', or succumb to 'recency bias' (events that have occurred most recently are given more weight than a longer-term trend) or rely on media talking heads to make their financial decisions.<sup>4</sup>

There's a potential way to reconcile these temporal problems - but it requires a great deal of behavioural fortitude to follow. *Make your buy and sell decisions based upon valuations.*

The chart on this page is based on research by Brad McMillan, and shows how future returns have varied based on starting valuations, using a Shiller P/E ratio (which considers average earnings over rolling, past 10 year periods). As of December 2015, the Shiller

P/E metric is between 26 and 27.5 for the American stock market. The more expensive the market is, the lower one's returns will likely be, on average, over the ensuing years. Note that these figures, especially for the 25 - 34.99 group, skew higher due to the inclusion of the dot-com bubble which took valuations to extreme levels.<sup>5</sup>

Using this metric, based on the current valuation of the American market and taking into account the distortions caused by the dot-com bubble, a stock portfolio might be expected to earn, on average, a nominal 4.5 percent per year over the next 5 years, and perhaps a nominal 6.5 percent over the next 10 years. In this environment, adjusting your expectations accordingly could head off disappointment.

A caveat: these potential returns will likely accrue only to those who can control their behaviour given all the uncertainties that time creates for us.

Perhaps it's appropriate to think more carefully about how the perception of time can affect your investment decision making?

Sources:

1. Cullen Roche, "The Temporal Problem in Market Forecasting", Pragmatic Capitalism, 7 December 2015
2. David Foulke, "How our perception of time affects our investing" Alpha Architect, 4 November 2015
3. Ibid
4. Ben Carlson, "Buy Side vs Sell Side", A Wealth of Common Sense, 19 November 2015
5. Brad McMillan, "Avoiding Shortsightedness: Looking at Returns for the Next 10 Years", Commonwealth Financial Network, 29 December 2015
6. Page one graph: Paradox, <http://casa.colorado.edu/~ajsh/sr/time.html>
7. Page two chart, Brad McMillan, "Avoiding Shortsightedness: Looking at Returns for the Next 10 Years", Commonwealth Financial Network, 29 December 2015

## Buy and Hold Analyses

### Average Returns by Starting Valuation

	10 yr	5 yr
35-45	0.02%	-1.55%
25-34.99	7.51%	4.92%
15-24.99	11.54%	12.96%
5-14.99	15.23%	14.60%