

## Mach Numbers

*“Physics is experience, arranged in economical order.” – Ernst Mach*

Ernst Mach was an Austrian physicist who was raised Catholic, but died a Buddhist sympathizer. Spiritual life aside, Mach’s major contribution to science was the Mach number, which is the ratio of the speed of an object to the local speed of sound. It is the regime most often used to measure high speeds in supersonic flight.

More meaningful to us as investors, he was also a key part of the bridge between Newtonian physics and relativity. These two frameworks are important because they offer distinct ways of looking at the world– the absolute and the relative. In the world of the absolute, things are defined in and of themselves. In the relative world, things are defined in terms of how they relate to other things around them. It’s a subtle difference, but a critical one to consider in the world of value investing.

For example, you could analyze a company and perhaps determine that it is consistently creating a 10% return on equity. If this return meets your needs, and the company's risk profile is reasonable, you might invest. That is the absolute, Newtonian approach.

However, you might look at the same company, and despite its attractiveness on its own merits, decide not to invest because other companies in the same business are producing 12% returns on equity with a similar risk profile. In that instance, you are evaluating the business based on how it is positioned in the broader universe. Both these absolute and relative approaches are worthwhile and have unique strengths and weaknesses.

Last quarter's letter covered the absolute details of S&P 500 valuation—earnings, dividends, rates of change, etc. This quarter, I want to look more in terms of relativity in order to get a better idea of where markets are in comparison to other markets around them.

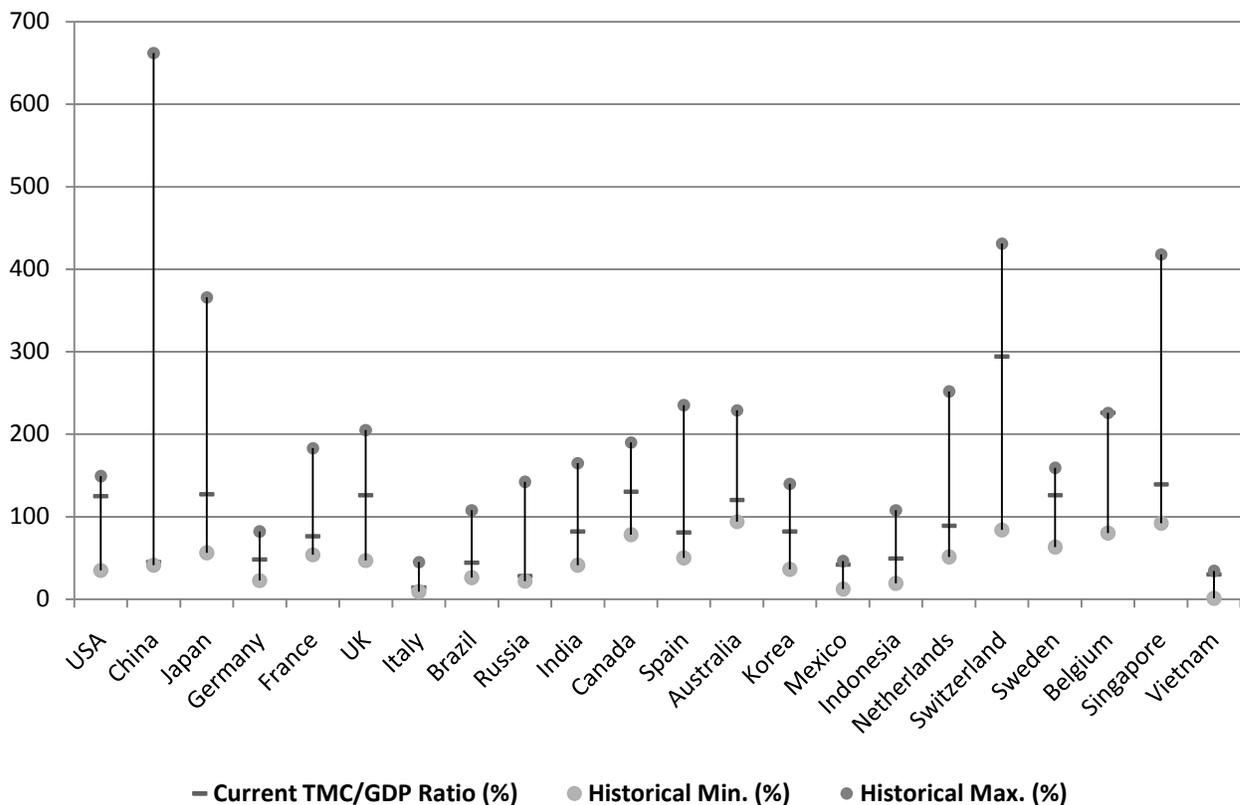
One particularly good methodology to make this comparison is the *Total Market Capitalization to GDP Ratio*. This measure is actually quite simple. It measures the total price of all listed stock in a country, over the size of that country's GDP. That is, how much companies are worth vs. how much total business is being done. This ratio gained special attention after the NASDAQ bubble in 2001 when Warren Buffett told a group of MBA students that the TMC/GDP ratio "is probably the best single measure of where valuations stand at any given moment." In retrospect, using this ratio one could see that stock market values were quite extended in 2001 relative to actual economic activity.

The table below presents this ratio for a variety of major markets, and it also details the highs and lows seen in the ratio for each market over the longest reliable time period:

Equity Market Cap vs. GDP in Global Markets						
Country	GDP (\$T)	TMC/GDP Ratio (%)	Min. (%)	Max. (%)	Currently Above Min. (%)	Years of Data
USA	17.02	125	35	149	90	44
China	9.3	45	41	662	4	24
Japan	4.76	127	56	366	71	30
Germany	3.71	48	23	82	25	24
France	2.91	76	54	183	22	24
UK	2.72	126	47	205	79	42
Italy	2.27	14	9	45	5	14
Brazil	2.16	44	26	108	18	17
Russia	1.91	28	22	142	6	14
India	1.91	82	41	165	41	17
Canada	1.71	130	78	190	52	24
Spain	1.58	81	50	235	31	21
Australia	1.49	120	94	229	26	14
Korea	1.46	82	36	140	46	17
Mexico	1.24	42	12	46	30	23

Indonesia	0.92	49	19	108	30	17
Netherlands	0.88	89	51	252	38	22
Switzerland	0.67	294	84	431	210	24
Sweden	0.61	126	63	159	63	13
Belgium	0.51	226	80	226	146	4
Singapore	0.3	139	92	418	47	27
Vietnam	0.17	30	1	34	29	11

Source: World Bank, Guru Focus, Various © 2014 Sankala Group LLC



A couple of things should stand out as you look at the plot above. First, you will notice that not only are the ranges different in magnitude, but they are also quite different in regard to how far they are above zero. Zero would describe an economy without a single listed business, while 300% would describe an economy with a very high level of listed business to GDP. Switzerland stands out as the economy with the highest current TMC/GDP ratio, at ~300%. This makes sense because Switzerland is a small country but it is also an international banking center and home to a significant number of multi-national corporations. On the low end of the scale you can see Vietnam, which has a current ratio of 30%, a bit below its historic high of 34%. This also makes sense because Vietnam is a developing economy getting ready to turn the corner from “frontier” status to “emerging” status.

So we can actually observe three important things here. The first is the overall level of “financialization” in a given economy. Second is where that economy stood during Q4 2014 relative to its own history, and third is where that economy stands relative to other economies.

As I review this data, one thing stands out starkly. The United States is trading today at 127% market capitalization over GDP, in the top quartile of its range, and a stone’s throw away from the high of 149% seen in 2001. The historical chart below is perhaps easier to digest:



Year End 2014, Source: GuruFocus.com LLC

Even allowing for an overall trend higher based on further financialization of the U.S. economy, we are still far above the mean, as well as any reasonably extrapolated trend. The low of ~55% seen in 2008 appears a distant relic. More importantly, we also know how the markets performed last time we reached numbers above 125% in 2001. If the TMC/GDP ratio is in fact “the best single measure of where valuations stand at *any given moment*,” then we should be worried about putting any new money to work in U.S. stocks *at this particular moment*.

Given that information, rather than succumb to apathy about U.S. stock investments, I think we should take this opportunity to continue to look elsewhere for better conditions. Most clients remain very reasonably invested abroad and have more room to increase exposure thoughtfully, with far better long-term return expectations. Some of the standout options as far as low historical TMC/GDP are China, Brazil, Russia, Italy, Germany, Singapore and Australia. Of course some of these options have huge risks, like Russia, where investments could be expropriated. Others have doubtful upside potential for political reasons, like Italy.

Brazil and Australia are certainly quite interesting, but we have been reminded recently of their unique reliance on global commodity demand for economic growth. If it wasn't clear from the earlier collapse of metals prices, the recent implosion of the oil market has made even the staunchest commodity bulls admit the so-called "commodity super-cycle" is officially over. The question is simply, does that make Brazil and Australia more or less attractive again? Will commodity prices stabilize and thus provide support to these economies, helping their equity markets bottom?

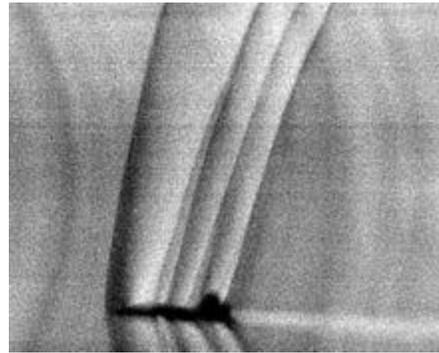
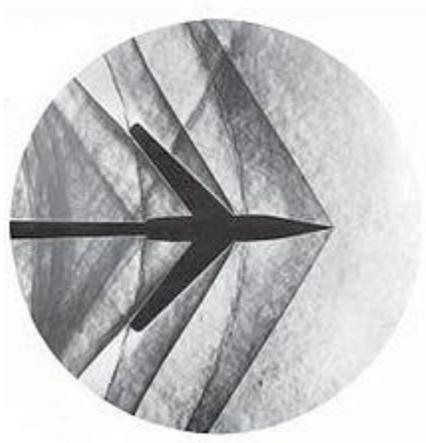
Some like China and Germany strike me as obvious opportunities due to the combination of low valuations, robust export economies that generate trade surpluses, and low correlations to core U.S. equity positions. China is probably the most interesting simply due to the absolute size of that economy combined with its historically floored TMC/GDP ratio of 45%. Further, the voracious appetite of Chinese investors in bull market conditions was revealed by the outrageous bubble conditions that occurred earlier in its history when the ratio nearly hit 700%. I think it would be foolish to discount how exciting the next (current?) bull market in China could become even if it only reaches one third of previous proportions. The total amount of value at stake will be many magnitudes higher the next time around.

My hope is that these comparisons make clear how the positioning of other bodies around an object can actually alter reality for that object. Our simply looking at this TMC/GDP data and allowing it to influence our decision making about U.S. shares is evidence of that fact. We simply want to be one of the early observers of this information, so we can get in front of forces that will ultimately change and connect these objects. In globalized financial markets, decisions are not made based strictly on an absolute evaluation of your home market. An ongoing evaluation of alternatives is needed not only to gain a clearer picture of the markets you are focused on, but also to help observe moments where certain objects strike you as out of place.

Things which get too far out of place in finance have an amazing way of coming back into position very quickly. In fact, much of Ernst Mach's work centered around shock waves, or "propagating disturbances." The subject is fascinating when viewed in light of finance. There is a great deal to think about and consider, but for now I'd like to leave you with this short gem from Science Daily's definition of *shock waves*. It offers eerily keen insight into how markets function when change arrives after long periods of acceleration in one direction.

*"When an object (or disturbance) moves faster than the information about it can be propagated into the surrounding fluid, fluid near the disturbance cannot react or "get out of the way" before the disturbance arrives."*

The wisdom to be gleaned from this phenomenon is that markets can sometimes travel faster than information about them can travel. That means that necessarily certain risks/information is unknowable and will arrive after the fact. While we can attempt to ponder and predict what might cause some kind of propagating disturbance, that undertaking is extremely difficult due to the way that information lags reality under those circumstances. For us, it will be far more productive to spend our time and energy on the discipline of value portfolio management, which seeks to constantly rotate and rebalance capital into safer, higher value positions. If we practice that discipline effectively over time, we will get the results we seek regardless of the occasional sonic-boom around us. This approach doesn't always travel at Mach speeds, but it ensures we won't disintegrate mid-air.



*Schlieren Photography. Process invented by German physicist August Toepler, 1864.*

Best,

A handwritten signature in black ink, appearing to read "Harold A. Hallstein IV". The signature is fluid and cursive, with a large loop at the beginning and a trailing end.

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