CAPE Around The World: The Relationship Between Risk and Return

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Despite differences in accounting standards, market transparency, and liquidity, the cyclically adjusted PE-ratio (CAPE) proves to be a reliable predictor of long-term equity market returns in both developed and in emerging markets (Klement [2012a, 2012b]). Granted, there are variations in reliability from country to country, but correlations between the CAPE and future 5- to 10-year equity market returns are consistently in excess of 0.7 in almost all of the markets we monitor. We previously introduced the concept of the "macroeconomically fair CAPE" that takes into account the current interest, inflation, and growth rates in our sample countries to yield a "fair" valuation level. As we have shown in Klement [2013], the prevailing very low interest rates at least partially explain today's high valuations. However, at least in the U.S., the CAPE now significantly exceeds levels that can be justified by macroeconomic variables.

In this analysis, we take a fresh look at valuations around the world and calculate expected returns for each equity market over the next five years. As we will see, low interest rates may underpin the current high valuations, but investors should not make the mistake of expecting that future returns will be high as well. On the contrary, we show that high valuations like those currently recorded lead to lower expected future returns and increased risks of significant drawdowns, including possibly permanent loss of capital. To be clear, today's high valuations are an alarm bell for the future that investors should take very seriously.

Developments Over the Past Year or So

We calculate the CAPE for 38 developed and emerging markets around the world at the end of January 2015 (sees Exhibits 1 and 2). Exhibit 1 shows the current valuation levels for developed markets, as well as our macroeconomically tuned fair CAPE for these countries, and the current difference between the two in percent. As a comparison, we also show the deviations of September 2013, presented in Klement [2013]. With the exception of Belgium, Germany, and Hong Kong, the deviations from fair CAPE have declined — sometimes significantly.

This is a reflection of two trends that have emerged over the past 15 months. First, the positive performance of equity markets has increased the CAPE for almost all countries. Particularly countries with a very low CAPE — for example, Italy or Spain — have seen their valuations increase by about 20% due to the strong performance of these markets in the past 15 months. Since these countries had an unjustifiably low fair CAPE a year ago, the latest deviations have now narrowed.

Developed Market	CAPE	Fair CAPE	Deviation, in %	Deviation in September 2013
Australia	15.1	16.3	-7.4	4.1
Austria	8.3	4.2	97.6	48.6
Belgium	17.0	7.8	117	-18.1
Canada	19.2	21.4	-10.2	-27.5
Denmark	25.6	28.6	-10.4	13.2
Finland	15.8	12.0	31.6	107.8
France	13.0	13.2	-1.5	-38.9
Germany	15.8	19.3	-18.1	4.2
Hong Kong	15.9	16.5	-3.6	7.1
Ireland	20.6	14.8	39.2	50.0
Italy	9.8	10.5	-6.7	-47.4
Japan	21.8	29.5	-26.1	-30.7
Netherlands	14.6	15.5	-5.8	-16.7
New Zealand	18.5	17.9	3.4	7.1
Singapore	15.9	14.5	9.7	0.7
Spain	9.2	8.1	13.6	19.7
Sweden	18.0	18.2	-1.0	-17.5
Switzerland	18.0	28.4	-36.6	15.0
UK	12.5	15.5	-19.4	-3.8
US	24.4	17.5	39.4	68.4

Exhibit 1 CAPE and Fair CAPE for Developed Equity Markets, January 31, 2015

Source: Wellershoff & Partners

A second new trend has been the change in the fair CAPE itself. Interest rates have fallen since September 2013 in almost all developed markets while economic growth has accelerated. Both developments have led to an increase in the fair CAPE that has outpaced the increase in the CAPE. As a result, the difference between the two CAPEs has narrowed.

Nonetheless, these developments are no reason for complacency. Some markets still display a CAPE significantly above what can be justified by their current macroeconomic environments. Most notably, the U.S. equity market has a CAPE that is about a third higher than its current rates of interest, inflation, and GDP growth can justify. This is surely not a sign of long-term market stability, in our view.

Emerging Market	CAPE	Fair CAPE	Deviation in %	Deviation in September 2013
Brazil	8.0	9.1	-12.3	0.0
Greece	2.9	9.1	-68.1	-4.0
Hungary	7.1	6.4	10.9	1.1
India	21.3	15.3	39.2	20.1
Korea	12.4	12.9	-3.8	-1.4
Malaysia	18.2	19.2	-5.2	39.7
Mexico	17.2	17.9	-3.9	-2.5
Peru	16.1	21.7	-25.8	-39.4
Philippines	20.2	19.9	1.5	-17.2
Poland	12.3	12.3	0.0	0.7
Russia	5.7	7.3	-21.9	-23.2
South Africa	19.9	12.9	54.3	20.0
Thailand	14.0	13.2	19.6	72.9

Exhibit 2 CAPE and Fair CAPE for Emerging Equity Markets, January 31, 2015

Source: Wellershoff & Partners

Exhibit 2 shows the same data for emerging equity markets. The performance of emerging equity markets has been rather mixed since September 2013, as have their economic fortunes. Thus, no clear trend is evident in the change of the deviations between the CAPE and fair CAPE. The strong performance of the Indian stock market led to a significant increase in the CAPE since September 2013, but this was matched by an increase in the fair CAPE, so the deviation between the two actually narrowed. In Brazil, on the other hand, the CAPE declined a bit since September 2013 thanks to the weak performance of the Brazilian stock market. Yet the economic environment deteriorated so much more that the CAPE is now 12% above the fair CAPE.

The Russian equity market has also been in the headlines. In the wake of the conflict with the Ukraine, the Russian stock market sold off considerably, leading to even cheaper valuations today than in September 2013. On the other hand, high inflation and weak growth have hit the fair CAPE as well, driving it downward in lockstep with the CAPE.

A Crystal Ball for Expected Returns

So far, we have focused on the current situation and assessed whether current valuations can be justified by the macroeconomic environment. Far more important for investors, of course, is what current valuations say about future stock market returns. First, we caution readers not to think that a CAPE that is in agreement with the current macroeconomic environment augurs high or even average future returns. Interest rates and inflation are exceptionally low in most developed markets, and thus largely justify today's high valuations. But we know from more than a century of experience that below-average stock market returns typically follow high valuations. In Exhibit 3 we show the updated return expectations for developed markets based on our panel regression methodology, which estimates future real returns in local currencies, while respecting both current valuation levels and the relationships (co-movement) of different markets. Exhibit 4 shows the results for emerging markets.

Developed market	CAPE	Cumulative 5-year real returns, in %	Annual expected real returns for the next 5 years, in %
Australia	15.1	41.4	7.2
Austria	8.3	83.4	12.9
Belgium	17.0	30.1	5.4
Canada	19.2	23.1	4.2
Denmark	25.6	38.0	6.7
Finland	15.8	26.1	4.7
France	13.0	68.6	11.0
Germany	15.8	34.8	6.2
Hong Kong	15.9	65.8	10.6
Ireland	20.6	-15.5	-3.3
Italy	9.8	55.3	9.2
Japan	21.8	35.7	6.3
Netherlands	14.6	35.7	6.3
New Zealand	18.5	16.6	3.1
Singapore	15.9	42.9	7.4
Spain	9.2	49.9	8.4
Sweden	18.0	60.8	10.0
Switzerland	18.0	35.8	6.3
UK	12.5	28	5.1
US	24.4	7.7	1.5
Developed Markets Value Weight	23.9	43.0	7.4
Developed Markets Equal Weight	20.2	38.4	6.7

Exhibit 3 Estimated Five-Year Real Returns for Developed Markets, January 31, 2015

Source: Wellershoff & Partners

Emerging markets	CAPE	Cumulative 5-year real returns, in %	Annual expected real returns for the next 5 years, in %
Brazil	8	22.8	4.2
Chile	15.2	60.2	9.9
China	15.8	89.1	13.6
Colombia	18.6	121.5	17.2
Greece	2.9	178.0	22.7
Hungary	7.1	41.6	7.2
India	21.3	56.7	9.4
Indonesia	21.7	53.9	9.0
Korea	12.4	30.4	5.5
Malaysia	18.2	50.6	8.5
Mexico	17.2	72.6	11.5
Peru	16.1	147.8	19.9
Philippines	20.2	-12.7	-2.7
Poland	12.3	67.7	10.9
Russia	5.7	40.1	7.0
South Africa	19.9	7.5	1.5
Thailand	15.8	9.6	1.9
Turkey	14	61.4	10.0
Emerging Markets Value Weight	15.1	37.1	6.5
Emerging Markets Equal Weight	14.6	59.8	9.8

Exhibit 4 Estimated Five-Year Real Returns for Emerging Markets
Source: Wellershoff & Partners

We triage the results into three categories — the good, the bad, and the ugly.

The Good:

- The gap in expected returns between developed and emerging markets is narrowing further. Because of the relative outperformance of developed versus emerging markets, the developed markets' expected returns for the next five years have declined about 0.5% since September 2013, while the expected returns for emerging markets have increased by the same amount.
- Compared to long-term historical averages, the expected returns for developed markets should remain at or above average for the next five years. Excluding the U.S. and Ireland, investors can expect to earn mid to high single-digit returns in other stock markets, according to our model.
- From a regional perspective, the Eurozone remains the most attractive area. Particularly the southern European markets of France, Italy, and Spain offer attractive return opportunities. Smaller European markets like Austria or Sweden may achieve even higher returns, but we caution investors not to rely on this outperformance too much, because it is precisely in these countries that the estimation error of our model is greater than it is in France, Germany, or the U.K., for example. Thus, it is entirely possible that these markets will not outperform their larger neighbors.
- Recent market turmoil has opened up significant investment opportunities in several emerging markets. Compared to September 2013, expected returns in Russia have increased from -0.5% per year to 7%, mostly due to factors related to the conflict in the Ukraine. Similarly, weak stock market performance in Poland has led to a significant increase in expected returns, now about 10% per year over the next five years.

The Bad:

- Expected returns for some emerging markets have slipped significantly, often due to a strong rally in stock market prices since September 2013. Expected real returns in India have declined from 15% a year to about 10%. In Hungary, expected returns have declined to just 7.2% per annum. The smaller emerging markets of Peru and Greece have also seen declines in their expected returns, but remain firmly ahead of their peers.
- The most developed emerging markets — South Korea and Thailand — continue to be among the most unattractive emerging markets, with below-average expected returns.

The Ugly:

- While Ireland has an even lower expected return, the U.S. remains among the most overvalued equity markets, with the second lowest expected returns globally. At a mere 1.4%, expected annual real returns for the U.S. are several percentage points below international markets, indicating that the U.S. stock market is significantly overvalued. For a U.S. investor, the benefits of international diversification have rarely been greater than they are today.

The Relationship Between Risk and Return

As interest rates have hit bottom and stayed there in recent years, valuation multiples expanded and helped equity markets achieve strong performances, particularly over the past two years. Some investors mistakenly assume that, given the persistent low interest rates, equities remain an attractive investment, particularly when compared to bonds. As Asness [2003] has pointed out, such assumptions, based on the so-called Fed Model and its relatives, are invalid. In fact, high valuations and low interest rates are typically followed by low equity market returns. This is because rising interest rates lead to higher discount rates for future corporate earnings and thus to lower earnings multiples, which translate into lower returns.

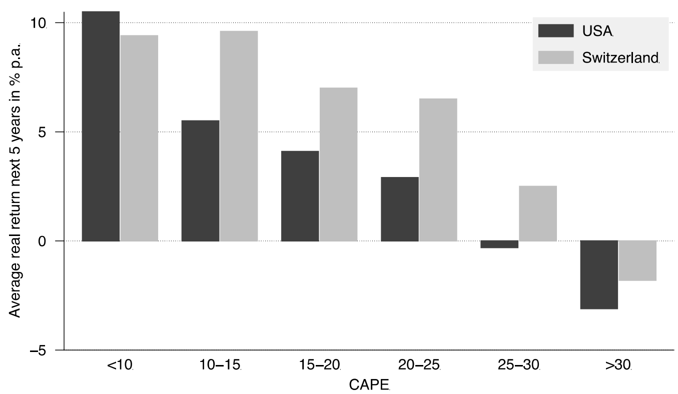

Exhibit 5 Relationship Between CAPE and Future Real Returns in the U.S. and Switzerland
Source: Wellershoff & Partners

Exhibit 5 shows this inverse relationship between the CAPE and future returns for the U.S. and Switzerland. For the U.S., it has long been understood that a high CAPE is an indication of low returns in the following years. After all, that consistent pattern is what popularized the use of this indicator in the first place. Exhibit 5 shows that this relationship is not only true for the U.S., but also for a small open economy with completely different economic characteristics and regulatory framework. In fact, we could have produced a similar chart for all of the 38 countries in our sample. All of them show that a higher CAPE is typically followed by lower returns over the subsequent five to ten years.

Another misconception some investors have is that (systematic) risk and return should be positively correlated. Modern portfolio theory and almost all asset-pricing models postulate that higher returns should be possible only by taking on higher systematic risk. For some, this theory means that the Swiss stock market should be riskier than the U.S. market. After all, the higher expected returns of the Swiss stock market should be the compensation for taking on greater risk.

For real investors, the problem with these theories is that they typically define risk as volatility or market beta relative to a market portfolio. For these investors, however, risk is not symmetrical. That is, they do not attempt to capture both the upside and the downside of an investment. For most investors, risk is asymmetrical. It is the risk of losing your money. A simple and practical measure of risk is the drawdown that an investment might incur in the future.

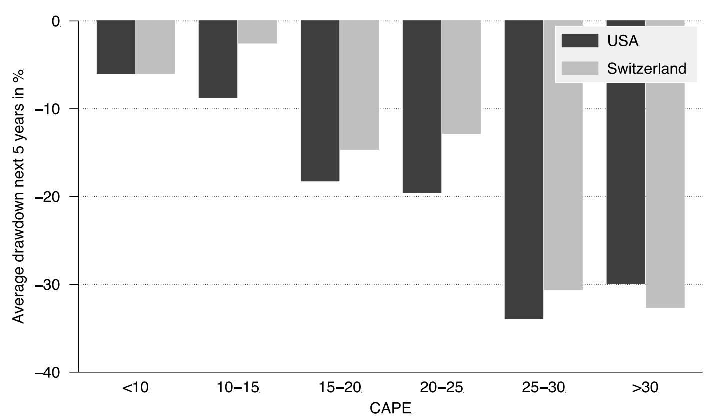

Exhibit 6 Relationship Between CAPE and Future Drawdowns in the U.S. and Switzerland
Source: Wellershoff & Partners

In Exhibit 6 we show the average drawdown of U.S. and Swiss stocks, depending on the CAPE. We have calculated these drawdowns by looking at the maximum loss each market experienced over the next five years compared to the starting level of the stock market. Thus, it could well have been that the stock markets rose for two years, then collapsed and then recovered again. If the stock market collapsed after three years to levels below the index level at the beginning of the five-year investment period, the drawdown would be negative. If it does not fall below the initial index level at any point during the following five years, the drawdown would be zero.

This would be the case even though it is also possible that stock markets could rise by 50% and then drop by 20% in the meantime. The average of these drawdowns is shown in Exhibit 6 for the U.S. and Switzerland.

We clearly see that the drawdown risk of stock markets increases as the CAPE increases. Thus, in direct contradiction to the received wisdom of modern portfolio theory, higher valuations clearly lead to lower returns and higher risks in the future.

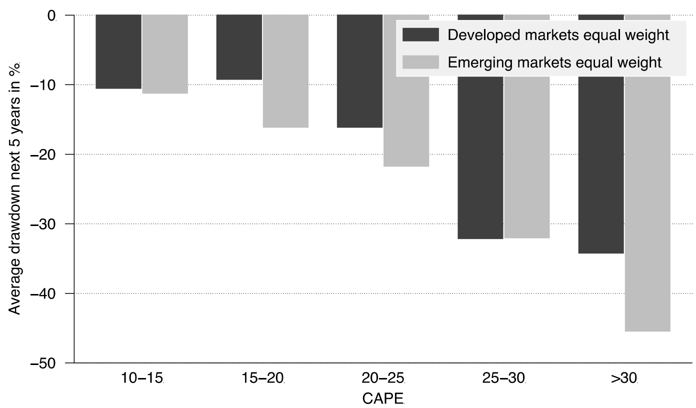

Exhibit 7 Relationship Between CAPE and Future Drawdowns in Developed and Emerging Markets
Source: Wellershoff & Partners

Again, we could have created similar charts for all the countries in our sample. In Exhibit 7, we show the average drawdowns for developed markets and emerging markets. In order not to rely on a few big countries in each category, we have used equally weighted averages of both developed and emerging markets. It is interesting to note that emerging markets show only slightly higher drawdowns for a given valuation level than do developed markets.

Looking at the current valuation levels in different markets, it is interesting to observe the trade-off between expected returns and possible drawdown risks. In Exhibit 8, we show the expected real returns together with the average drawdown. The expected returns are from our model in Exhibit 3, and the average drawdown reflects the experience of the past five years, following CAPE valuations similar to today's current CAPE of ±10%.

The relationship is clear. Investors in markets with the lowest expected returns face the highest drawdown risk. In other words, in markets like those in the U.S. or Ireland it is highly likely that a buy-and-hold investor will experience severe losses from current index levels. Or, as John Hussman put it, the returns of the next five years are already on the table now.

In fact, in the U.S., when the CAPE has been at levels comparable to today's, the average drawdown over the next five years has been an eye-watering 26%. We note, however, that this is a historical average. The most extreme drawdown came after the 1929 stock market crash when the market fell by 80%. Since 1900, there have been only two occasions when CAPE levels like today's were not followed by a drawdown of 15% or more: 1995 and 2003. In both instances, the market continued climbing for five more years, reaching even more exaggerated valuation levels, before crashing. We would add here that the 2008 financial crisis has already wiped out any profits made since 2003 and more.

We would also hasten to note that all is not bleakness on the world's equity stage. There are attractive markets in France, Belgium, Hong Kong, or Japan that combine appealing return opportunities with low drawdown risks. These are the markets long-term investors should focus on at the moment, in our opinion.

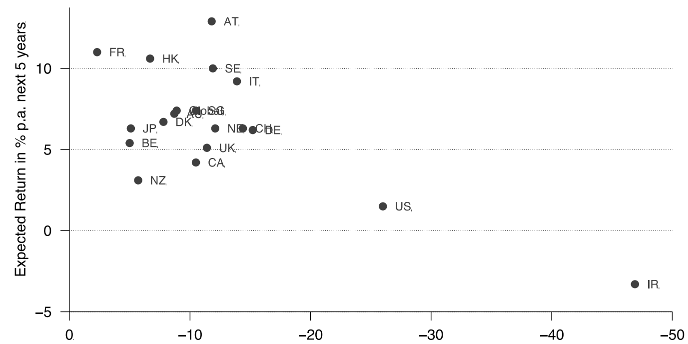

Exhibit 8 Risk and Return Outlooks for Developed Equity Markets, January 31, 2015
Source: Wellershoff & Partners
Note: AU = Australia, AT = Austria, BE = Belgium, CA = Canada, DK = Denmark, FR = France, DE = Germany, HK = Hong Kong, IR = Ireland, IT = Italy, JP = Japan, NE = Netherlands, NZ = New Zealand, SG = Singapore, SE = Sweden, CH = Switzerland, UK = United Kingdom, US = United States, Global = Developed markets globally.

In emerging markets, the relationship between expected returns and future drawdown risks are similar. We have restricted our sample in Exhibit 9 to countries where current valuations have been experienced at least in ten different months in the past. In this way, we attempt to create a meaningful average for the drawdown risks inherent in these markets.

Unfortunately, this approach eliminated such emerging markets heavyweights as Brazil, China, and Russia. But the remaining countries paint a diverse picture that is itself a cautionary reminder for investors to be selective.

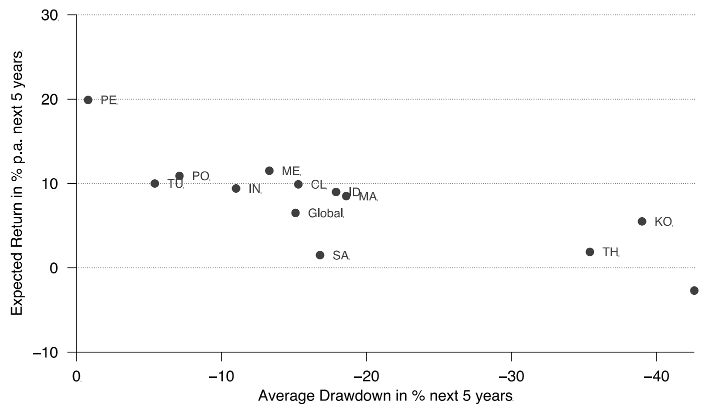

Exhibit 9 Risk and Return Outlooks for Emerging Markets, January 31, 2015

Source: Wellershoff & Partners
Note: CL = Chile, IN = India, ID = Indonesia, KO = Korea, MA = Malaysia, ME = Mexico, PE = Peru, PH = Philippines, PO = Poland, SA = South Africa, TH = Thailand, TU = Turkey, Global = Emerging markets global.

Turkey, Poland, and Peru each have attractive expected returns and show valuation levels that in the past led to no or only very small drawdowns, on average. The more developed emerging markets of Thailand and Korea, and also the Philippines, trade at valuation levels that in the past were followed by average drawdowns of 35% or more. The risks of substantial loss of capital in these markets are high.

Conclusions

We have updated our predictions for expected real returns in 38 equity markets around the world. Compared to our previous assessment in September 2013, expected returns in developed markets have declined somewhat, particularly in the U.S. and Ireland, while they have increased in emerging markets. Overall, however, the landscape of expected long-term returns remains largely unchanged.

That said, at current valuation levels the risk of significant capital loss in some markets is alarmingly high. Particularly in the U.S., current valuation levels have historically been followed by drawdowns of up to 80% in the subsequent five years. Going back to 1900, there has been only one instance when the valuation levels we see today were not followed by drawdowns of 15% or more over the subsequent five to six years. Thus, at least for the U.S. market, it seems fair to say that the risk of losing capital is substantial.

Other equity markets are more balanced in their outlook and particularly in Europe investors can still find attractive trade-offs between future expected returns and possible drawdowns. A similar situation persists in emerging markets, where very attractive investment opportunities are lumped together with highly risky investment propositions. We think investors will have to be even more selective over the next five years if they want to avoid losses of capital and, instead, realize satisfying returns.

References

Asness, C. "Fight the Fed Model." *The Journal of Portfolio Management*, Fall 2003, p. 11 – 24.

Klement, J. "Does the Shiller-PE Work in Emerging Markets?" Available at SSRN: http://ssrn.com/abstract=2088140, (2012a).

Klement, J. "What the Shiller-PE says about Global Equity Markets." *Critical Perspectives*, (2012b).

Klement, J. "What the Shiller-PE says about Global Equity Markets – Update 2013." *Critical Perspectives*, (2013).

Authors' Bios

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Joachim Klement is a partner at Wellershoff & Partners., Ltd. He specializes in investment management, asset allocation advice, and the impact of personal values and investor psychology on investment decisions. He particularly emphasizes the impact of emotions on investor behavior and financial markets and helps wealth managers, asset managers, and family offices improve their investment processes and client services.

Before joining Wellershoff & Partners, Joachim Klement spent six years at UBS Wealth Management in Zurich, first as an investment consultant for institutional clients, and then as Head Asset Allocation Strategy and Head Equity Strategy.

Joachim Klement graduated from the Swiss Federal Institute of Technology (ETH Zürich) with a degree in mathematics and from the University of Hagen, Germany, with a degree in finance. Additionally, he is a CFA charter holder and a CFP® certificant.

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Prior to joining Wellershoff & Partners, Oliver Dettmann worked for UBS Wealth Management as an investment strategist analyzing European and emerging equity markets. In addition, he worked as a business consultant in the Group Strategy team of UBS and as an equity analyst for Deka Investment GmbH in Frankfurt. Oliver Dettmann studied finance and econometrics in Berlin and Copenhagen and graduated with a degree in economics from the Freie Universität Berlin. He is a CFA charterholder.