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Capital Market Assumptions

Q1 2024

As Benjamin Graham famously said: "In the short term, the market is a voting machine, but in the long term, it is a weighing machine". In other words, while the price of an asset can fluctuate wildly and often arbitrarily, depending on the mood of the moment or the flow and liquidity factors, it tends to follow its fair value eventually. Now, Keynes already stated: "In the long run, we are all dead". Nevertheless, we believe that there is value in trying to understand the given economic and market environment and derive some estimates for the interim period.

March 2024

Capital market assumptions (CMAs) generally refer to long-term expectations regarding the behaviour and performance of various asset classes in the financial markets. These assumptions are crucial for guiding asset allocation decisions and portfolio construction in the presence of given investment goals and restrictions. Concretely, CMAs allow an asset allocator to design a portfolio in a way that its anticipated risk and expected return match the client's requirements and preferences. At the same time, they themselves can influence or steer these investment targets by providing a benchmark against which the realism of existing expectations can be measured.

In fact, we note that without such a benchmark, asset allocation discussions can quickly deteriorate to lengthy arguments about market momentum ("stock prices have already run too high") or valuation levels ("20x earnings are crazy, the market will certainly drop"). Similarly, investors may over- or underestimate the returns achievable with a given allocation, with significant consequences for long-term wealth planning. On the other hand, it is, of course, crucial to remember that all expectations, especially for risky asset classes, are inherently highly uncertain, and our Capital Market Assumptions may not be confused with market timing signals. Furthermore, all assumptions are naturally debatable, and the whole approach can be considered more art than science.

We have, therefore, developed a range of models that, based on prevalent market conditions such as interest rates, the shape of the yield curve, credit spreads, valuation levels, expected earnings and economic growth, and, of course, inflation, as well as the historical behaviour of various asset classes, derives estimates for future returns, risk and cross-asset correlations. These estimates are updated regularly and integrated into our interactive portfolio construction and simulation application.

This publication focuses on our approach to the first factor, return estimates, across different asset classes, regions and currencies.

Equities

Our model implied expected local currency equity market returns by country/region, applying a three-stage dividend discount model. The model is outlined below, using Switzerland as an example. It starts with the current level of the SMI and the dividends and net share buybacks (repurchase of shares - issuance of new shares) expected by the consensus for the current and the coming year (Phase 1). We then obtain the consensus expectations for the country's real economic growth and inflation for the following year and assume that dividends and share buybacks will grow in line with nominal economic growth. Afterwards, we derive a drift factor, assuming that nominal economic growth will gradually converge with that of the development category the country falls into (in the given case, this means all OECD countries) (Phase 2). Finally, ten years from now, we will apply the terminal value formula: the expected dividend and net buybacks divided by the discount rate minus assumed terminal growth (Phase 3). We can then derive the

Dividend Discount Model Switzerland	Phase 1		Phase 2								Phase 3
	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	LT
Economic Assumptions											
Expected Real Economic Growth Switzerland	1.20%	1.50%	1.60%								
Expected CPI Inflation Switzerland	1.50%	1.20%	1.00%								
Expected Nominal Growth Switzerland	2.70%	2.70%	2.60%	2.64%	2.68%	2.72%	2.76%	2.80%	2.84%	2.88%	2.88%
Expected Real Economic Growth OECD			1.88%								
Expected CPI Inflation OECD			1.00%								
Expected Nominal Growth OECD			2.88%								
Nominal Growth Gap			0.28%								
Assumed long-term harmonization factor			0.04%								
Equity Market											
Net Buybacks	227	240	246	253	260	267	274	282	290	298	307
Dividends	381	403	413	424	435	447	460	473	486	500	514
Total Shareholder Return	607	643	660	677	695	714	734	754	776	798	15116
Years	0.8	1.8	2.8	3.8	4.8	5.8	6.8	7.8	8.8	9.8	9.8
Discount Rate	?	?	?	?	?	?	?	?	?	?	?
Discounted Cashflows	571	558	529	501	475	450	427	406	385	366	6929
Sum of Discounted Cashflows	11598										
SMI Index (Price Level)	**11598**										
NPV	0										
Implied Expected Return	**8.31%**										

Dividend Discount Model Switzerland as of 24/03/2024

implied expected rate of return by iteratively solving for the discount rate that sets the difference between the sum of the discounted expected dividends and net buybacks and the current market level to zero (NPV). In Switzerland's case, this yields an expected return of 8.31%.

Active Equity Strategies

We derive expected returns for subsectors/industries, including REITS (listed real estate) or active equity investments such as diversified systematic risk-premia strategies (value, momentum) by adjusting the expected return derived for the broad reference market for the respective 2-year weekly adjusted market beta. The value is derived from the calculation of the raw market beta using the following formula:

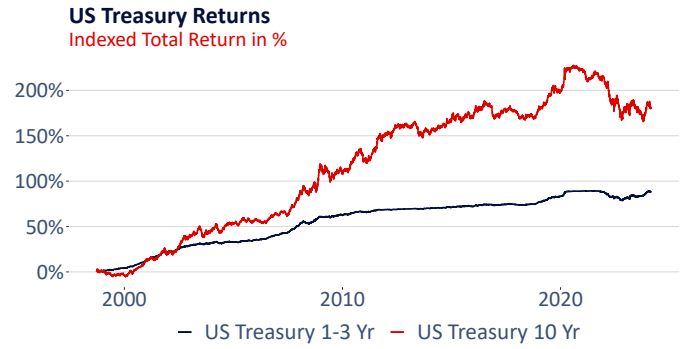
Adjusted beta = (.67) * Raw beta + (.33) * 1.0.

Government Bonds

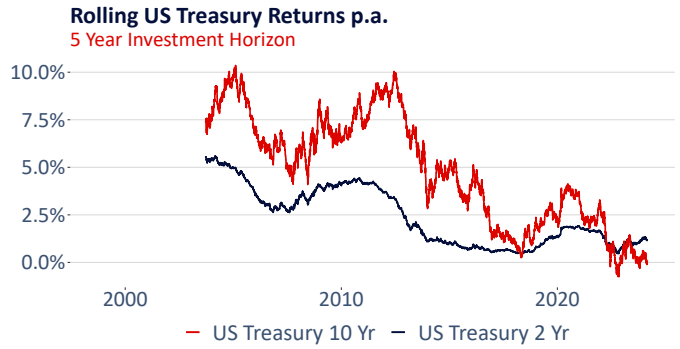
By definition, given the predictable nature of cashflows, there is generally much better visibility on fixed income than on equity returns. However, especially in the current environment, there is the question of how to account for roll-down effects (currently negative) and anticipated changes in the shape of the yield curve. Simply using yield to maturity as an expected return proxy introduces a duration mismatch and makes longer-dated bonds look terribly unattractive at the moment. Clearly, the current curve signals that investors do not expect the high yield offered by cash and short-term bonds to be sustainable, resulting in significant reinvestment risk for investors with longer investment horizons. We also note that historically, duration risk has been rewarded by bond markets (over the past 25 years, 10-year treasuries outperformed 1-3-year bonds by 1.6% p.a.), and, thus, longer-term bonds should be expected to generate higher returns eventually.

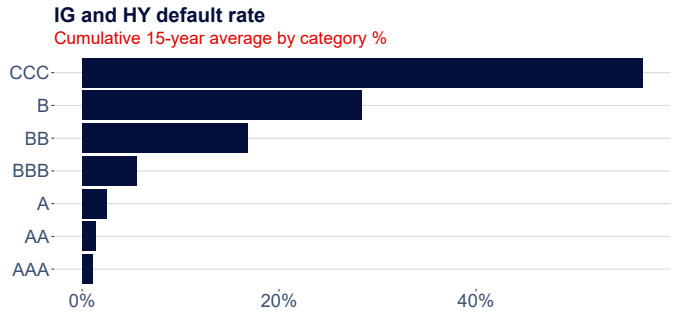
We have investigated this topic further and run linear regressions of the annualized returns of two US Treasury Index (1-3 year bonds and 10-year bonds) on the lagged 2-year and 10-year interest rates, respectively, over different time frames. In other words, we tested how well the current 2-year yield forecasts the total return realized by bonds, which, on average, mature in 2 years over a 2, 5 and 7-year investment horizon, and compared it with the prediction accuracy of 10-year yields for 10-year bonds over the same time frame. The results are displayed below.

The indices we are using are generic indices, assuming that an investor holds their portfolio's duration constant over time, which is a reasonable assumption, especially for investors entering the market through funds or ETFs with a specific target duration. Not surprisingly, we find a very good fit between past 2-year rates and realized returns of the 1-3-year bonds over the 2-year investment horizon (R* of 0.91). It is also not surprising that the correlation between lagged yields and realized returns of 10-year bonds increases with a longer investment horizon. Interestingly, while intercepts



Investment Horizon	Intercept 1-3 Yr Bonds	Intercept 10 Yr Bonds	Beta 1-3 Yr Bonds	Beta 10 Yr Bonds	R* 1-3 Yr Bonds	R* 10 Yr Bonds
2	0	-0.05	1.35	3	0.91	0.69
5	0.01	-0.02	0.69	1.97	0.71	0.78
7	0.01	-0.02	0.58	1.78	0.69	0.83





are generally negligible, beta estimates are significantly higher for the 10-year bonds than the 1-3-year bonds. As interest rates tended to decline until 2022 and as the curve was rather steep during the early to mid-2010s, shorter-dated bonds underperformed relative to their lagged yields over a five or seven-year horizon, while 10-year bonds generated higher returns, driven by the price appreciation. Applying these regression estimates to current yield levels with a 5-year investment horizon yields rather aggressive but nevertheless not unheard-of results. As the graphic below shows, the 5-year rolling return differential between short-date and long-date bonds occasionally topped 5%.
Nevertheless, we generally seek to abstain from explicit economic forecasting when deriving our Capital Market Assumptions.

Hence, we, for the time being, do not account for anticipated changes in the yield curve and the resulting price changes. We, therefore, model the expected return of different government and corporate bond markets and the proxies we use for them based on the respective duration and the applicable reference yield curve by currency/country and credit rating while keeping in mind the reinvestment risk high yielding short-term bonds are currently facing. We currently do not include emerging market bonds in our investment universe.

Credit

For developed market government bonds, the risk of default is minimal. On the other hand, corporate bonds come with credit risk, which, depending on the rating category, can significantly impact returns. We, therefore, adjust our expected returns for the additional carry generated on the one hand and the expected average loss rates on the other hand. As outlined in the previous graphic, default rates for developed market investment-grade bonds have been almost negligible over the past one-and-a-half decades. Assuming an average rating of AA and a recovery rate of 40%, we assume a loss rate of only 6bp per year. In fact, there were no defaults in investment-grade bonds in 14 of the past 22 years. A more relevant question in this context might be how much an IG investor who does not hold positions to maturity may, on average, lose due to rating migration and subsequent spread widening. We do not currently account for this.

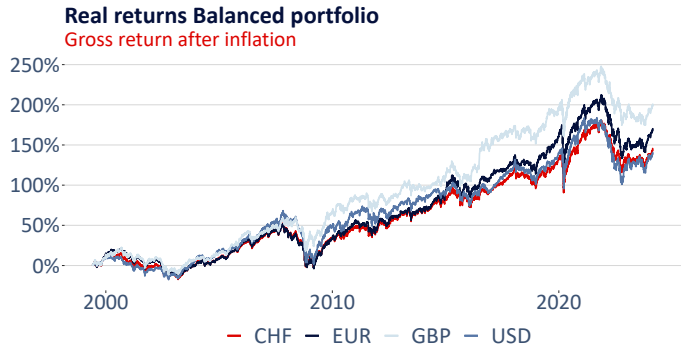
Losses relating to defaults are generally more significant for riskier debt. In the case of high-yield bonds, senior loans or private debt, we pursue respective adjustments based on long-term empirical data on loss rates. We elaborated on the topic in detail in our third Private Market Primer.

Gold

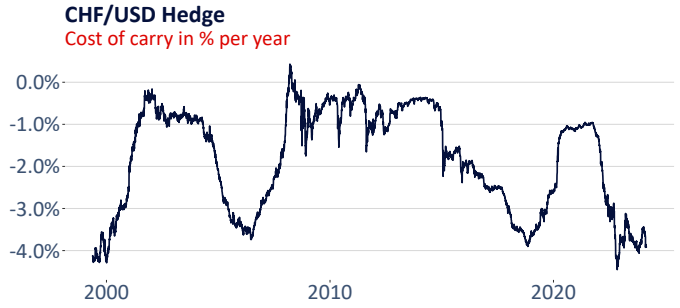
Commodities generally don't generate any cashflows, and industrial demand for precious metals like gold is minimal. Their value, thus, lies primarily in their appeal to the human psyche, translating into demand for jewellery and bullion as a status symbol, store of wealth and ultimate crisis currency. We have, therefore, taken two approaches. First of all, we looked at historically realized returns generated by gold since the end of the Bretton Wood system (7.7% in USD terms). Secondly, we derived an equilibrium return estimate through reverse optimization by applying the Black Littermann model to our global balanced portfolio, which typically holds around 10% in gold. The latter yields a slightly lower estimate (6.2%), which we decided to conservatively include in our framework.

FX Effects

We generally start with local currency returns, which are subject to the different interest rate environments and growth and inflation dynamics worldwide. To harmonize



and aggregate these returns and estimate expected returns for portfolios in different reference currencies, we need to account for exchange rate movements and the cost of currency hedging where applied. We approach this problem by first uncovering interest parity and translating local currency return estimates into reference currency returns by adding or subtracting the respective inflation differential. This is a reasonable assumption, given that we have previously shown that the real returns of multi-asset portfolios tend to be surprisingly in line, defying the myth of lucky USD-based investors and their eternally burdened Swiss peers.



Afterwards, we account for the cost or carry generated by the hedging policies of our model portfolios. We typically hedge all fixed-income exposure while keeping the exchange rate risk on equities. Given the currency's rather unique position, we tend to hedge a greater part of foreign exchange exposure in the case of CHF-denominated portfolios.

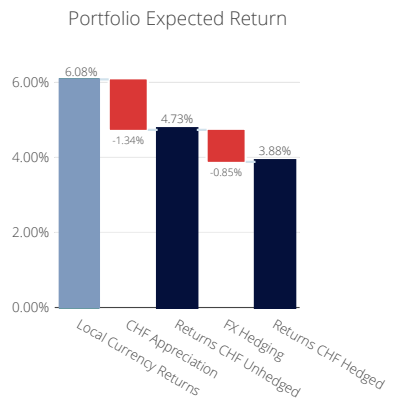
The table below provides an overview of our Capital Market Assumptions in CHF.

Reference Currency	Asset Class	Sub Asset Class	Local Currency Return	FX Gain / Loss	Reference Currency Return	90-Day Volatility
CHF	Cash	Cash	1.11%	0%	1.11%	0%
CHF	Bonds	FI CHF Gov 1-3	1.11%	0%	1.11%	1.93%
CHF	Bonds	FI CHF GOV 3-7	0.74%	0%	0.74%	3.83%
CHF	Bonds	FI CHF Gov 7-15	0.63%	0%	0.63%	7.41%
CHF	Bonds	FI USA Gov 7-10	4.22%	-2%	2.22%	7.62%
CHF	Bonds	FI Europe GOV 1-3	2.89%	-1.4%	1.49%	1.63%
CHF	Bonds	FI JP Gov 7-20	0.97%	-1.6%	-0.63%	9.86%
CHF	Bonds	FI World Corp35/Gov65 1-15	4.37%	-2%	2.37%	7.47%
CHF	Bonds	CHF Corp	1.43%	0%	1.43%	3.56%
CHF	Bonds	FI Corp World 1-15	2.32%	-1.4%	0.92%	3.93%
CHF	Bonds	FI Tips World 1-30	4.07%	-2%	2.07%	8.79%
CHF	Bonds	FI Tips Global 1-15	4.07%	-1.4%	2.67%	6.99%
CHF	Bonds	FI High Yield	6.26%	-2%	4.26%	5.46%
CHF	Bonds	FI Senior Loans	7.41%	-2%	5.41%	3.07%
CHF	Bonds	FI Private Debt	7.82%	-2%	5.82%	3.07%
CHF	Equities	GMP USA	7.35%	-2%	5.35%	11.5%
CHF	Equities	GMP Europe	9.08%	-1.4%	7.68%	8.13%
CHF	Equities	GMP Emerging Markets	11.21%	-1.58%	9.63%	12.73%
CHF	Equities	GMP China	6.82%	0.5%	7.32%	27.25%
CHF	Equities	GMP Canada	8.23%	-1.6%	6.63%	11.61%
CHF	Equities	GMP Australia	8.04%	-2.9%	5.14%	16.72%
CHF	Equities	GMP Japan	6.79%	-1.6%	5.19%	12.87%
CHF	Alternative Investments	Momentum USA	7.08%	-2%	5.08%	16.73%
CHF	Alternative Investments	Momentum Europe	8.4%	-1.4%	7%	7.99%
CHF	Commodities	Gold	6.2%	-2%	4.2%	12.31%
CHF	Real Estate	Real Estate Europe	10.3%	-1.4%	8.9%	19.49%
CHF	Real Estate	Real Estate Switzerland	6.48%	0%	6.48%	7.78%

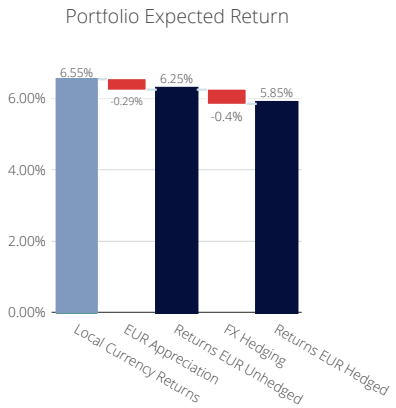
Amadeus Capital Market Assumptions as of 2024-03-25

We derive expected medium-term nominal returns for a **Balanced** portfolio denominated in **CHF, EUR or USD**. The charts below display the results, accounting for the respective cost of hedging and currency appreciation but not assuming any market timing or alpha generation.

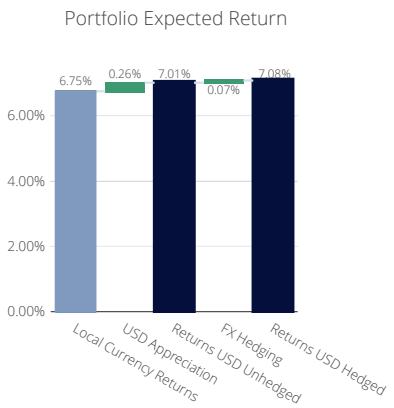
CHF



EUR



USD



About Amadeus

We cater to wealthy families and institutions with a pronounced ownership approach, making sure that the interests of our clients and ourselves are aligned by investing alongside them.

We offer a special know-how in niche strategies and we provide access to exclusive investment opportunities through our network.

Amadeus Capital finds itself in the centre of a full-service ecosystem controlled by the Brockmann family, which allows us to easily connect all aspects of private wealth management.

While we are proud of our heritage, we constantly seek to adapt to a rapidly changing financial industry and don't shy away from undertaking the necessary investments to stay ahead of the curve.

We actively foster and cultivate an entrepreneurial corporate culture, encourage continuous innovation and work closely together with our external network of specialists and consultants.

Amadeus Capital merged in 2019 with Nucleo Capital, a Geneva-based multi-family office created in 2005 by Laurent Timonier; further to the merger Laurent Timonier and Marovita Holding are the sole shareholders of Amadeus Capital.

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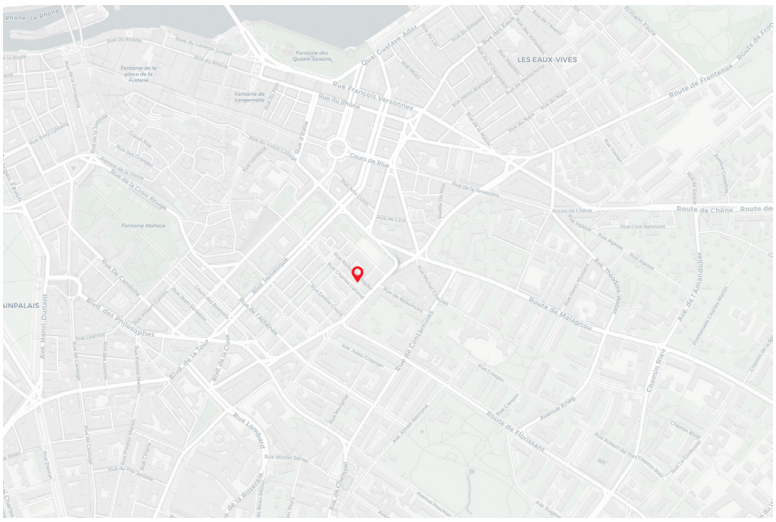

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