

MANAGER REPORT

Quant Group

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COHORT 17

Portfolio Management Program

2019 – 2021 • QUANT GROUP

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MANAGER

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I. STRATEGY

The Quant Group's investment approach focuses on capturing quantitative risk premia. While our approach has been mainly quantitative, we have always kept our guiding principles in mind and used the extraordinary market conditions due to the Corona pandemic to execute opportunistic trades. However, we were consciously focused on developing and containing a well-diversified portfolio and thereby following long-term investments and ideas backed by academic literature which ultimately led to a high Sharpe ratio and to an outstanding performance throughout the year.

The previous managers followed in most parts a successful buy and hold strategy based on long-held assets from previous cohorts, complemented by a newly implemented factor timing strategy. The group's main investment style targets – value, momentum, quality, size and carry – were represented by certain securities, mainly ETFs and fixed income instruments. To further emphasize the aspect of quantitative investing and to continue a well-working strategy of the two previous cohorts, we decided to harvest quantitative risk premia via NDFs. As the factor timing strategy is the core strategy in our investment orientation, and previous managers focused on fewer factors, we opted to supplement these with further risk premia that are discussed in academic literature. A brief outline of the factors that we focus on is stated below:

VALUE. Equities with higher book-to-market ratios and earnings yields have yielded higher returns than the market and growth stocks over many decades. A potential behavioral explanation for this phenomenon is that earnings growth mean-reverts faster than the market expects. Hence, growth firms with inflated expectations are more likely to disappoint. Our strategy regarding value is consequently, to buy stocks that exert certain value characteristics. This strategy is implemented via an ETF.

MOMENTUM. In addition to value, we also follow a momentum strategy, which is also implemented via an ETF which purchases stocks that exert momentum characteristics. This strategy is based on

a finding from the early 1990s that found a short to medium-term momentum effect. Equities that had outperformed in recent months typically keep outperforming up to 12 months ahead. Value and momentum strategies are particularly suitable complements because they tend to be negatively correlated, which potentially results in more favorable risk-reward characteristics of the portfolio.

SIZE. One of the factors we opted to add to the portfolio is the size factor, which is frequently also linked to more illiquid stocks. The rationale of this factor is that small companies tend to be riskier and therefore investors should be compensated by higher returns for holding companies with low market capitalization.

QUALITY. The quality factor looks at measures like accruals, asset growth, profitability, and leverage. Firms that are characterized as high-quality companies and thereby having more stable earnings, stronger balance sheets and higher margins tend to outperform low-quality stocks, over a long-time horizon. The above-mentioned factors were represented by factor ETFs and were chosen according to our factor timing strategy.

CARRY. In contrast to the earlier strategies, this one is not primarily focused on equity but currencies. Purchasing high-yielding currencies and going short in low-yielding currencies has been a profitable strategy over many decades. It relies on the fact that forward rates have been less than perfect predictors of future spot rates. In the context of carry, we continued the "rolling carry



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strategy” implemented by the managers of the 15th cohort. Under the appliance of macro-economic and diversification considerations, we pick the three highest yield currencies each month and go long in these. The short leg is either US dollar or Euro depending on the quotes. We execute this strategy with 3-month NDFs with a nominal amount of either €50,000 or \$55,000 each. Due to the Corona pandemic and associated restrictions, we only had three 3-month NDFs at the time other than the target of nine NDFs outstanding at any point in time. This strategy emphasizes the quantitative aspect of investing by making a macro-economic evaluation of emerging market currencies a second-tier, though important consideration. Carry also relates to our fixed-income investments in high-yield bonds denominated in the respective emerging market currency. In combination with fixed coupon pay-

ments, our diversified bond basket is set up to get as close as possible to the PMP return targets despite the low-interest environment. In contrast to the NDF strategy, investment decisions for bond investing were rather macro-economically driven due to stronger restrictions regarding the investment horizon. Moreover, due to further decreasing yields we decided to maintain the fixed income positions of the Quant portfolio and we will not engage in restructurings accordingly.

The portfolio restructurings taken place during the Corona crash in the first quarter of 2020 allowed us to continue a more passive buy and hold strategy that was successful for our group in the past. Due to remarkable results over the long term, even though partially hit by the devaluation of the Turkish Lira recently, the following cohort is already interested in continuing the rolling carry strategy.

2. PERFORMANCE

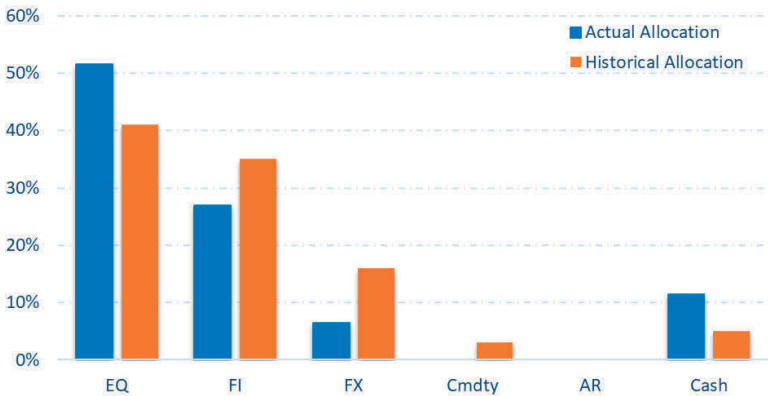
The overall performance of the portfolio of the Quant Group during the manager term of the 17th cohort is depicted in figure 1. The total performance is 17.60% and the final AuM is 1.89 mEUR.

The performance of the Quant portfolio throughout the manager year exhibits a strongly positive development. The strategic decisions made together with previous managers, namely restructuring our equity positions, and executing ‘opportunistic’ trades, which is a deviation from our usual focus, led to a very successful rebound from the crash due to the outbreak of Corona (S&P 500 was down 33%). Over the manager year, the Quant portfolio participated in positive developments of the capital markets driven by beliefs of a quick recovery in developed countries. The restructuring of our equity positions taking the factor timing strategy into account and thereby adding the

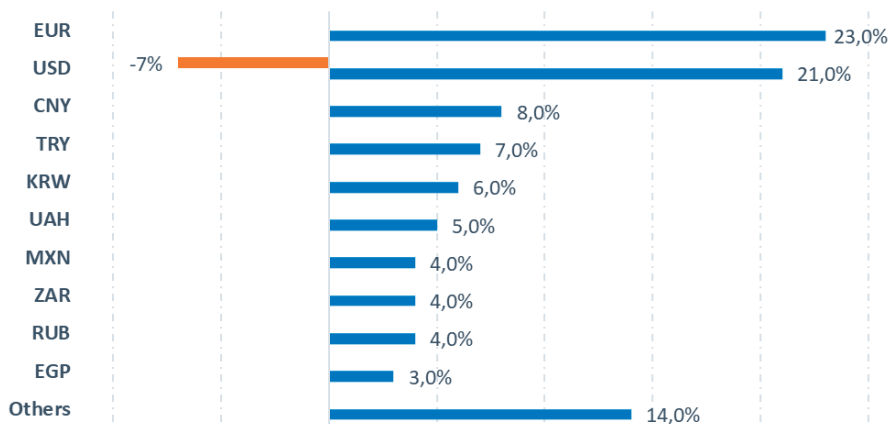
iShares Europe Value Factor ETF and the iShares EMU Small Cap ETF to our portfolio which perform best in recovery led us profit significantly both from a rebound in economic activity and in the capital markets. The performance of the portfolio was therefore mainly positive throughout the year with the highest drop of 5.76% in October when Corona Virus cases started rising worldwide again and the US election led to uncertainty in the markets. The performance peaked on the 6th of April with an overall performance of 17.75% since handover and has been moving sideways since then. With a very low sample volatility of around 5%, the Quant portfolio presents a twelve-month Sharpe ratio of 2.19.

Given the good performance, the Quant group is overall satisfied with the cumulative performance of 17.60% at the end of the manager year, with only the Academia Macro Finance group reaching a (slightly) higher return.

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ASSET ALLOCATION COMPARISON 05/2019 & 05/2020



CURRENCY ALLOCATION 05/2021

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In hindsight, given the expected new super-cycle of commodities, we could have further, if we had not sold it, participated on the rising commodity prices through the iShares Commodity Swap ETF, which rallied 8.54% recently.

3. ASSET ALLOCATION & EXPOSURE

Our asset allocation broadly follows the allocation of the previous managers' but overall leans more towards equity. One key understanding of our team was to only extend our previous managers successful strategy and trade on regular and longer intervals only. Due to the debt load, many countries had to lever up to finance their economies during the pandemic, which was the primary decision about why the team overallocated equity over bonds.

The FX-carry strategy was continued: It requires larger holdings of cash in various currencies, which explains a large part of

our cash exposure. At the end of our current management year, we converted all foreign currencies back to Euro in order to be able to purchase exposure to China. The remaining liquidity therefore is – apart from some minor coupon and dividend payments, exclusively Euro.

4. MARKET CONDITIONS THROUGHOUT THE YEAR

When we took over the portfolio, we were in a phase of optimism and a boom of tech stocks. After the crash in March 2020 investors had finally caught up with the shift towards digitalization and were rotating into growth stocks. The corresponding high valuations for tech stocks in the US were only corrected in September when NASDAQ experienced a large technical correction. November 2020 was then impacted by the US presidential elections, where US voters decided to prematurely end the Trump era in favor of president-elect Joe Bid-

en. While Biden promised to continue a hardline trade war with China, it was clear that to no extent would his policies be as threatening to international trade as the re-election of the Trump administration could have proven to be. Correspondingly, Chinese assets experienced a large increase in valuation, especially in the electric vehicle market. Early 2021 was, moreover, characterized by a boom in Cryptocurrencies which showed its early signs already in late 2020.

Overall, the Quant Groups decision about underinvesting in bonds proved fruitful, as over the whole manager year equities indeed strongly outperformed fixed income.

5. INVESTMENT BEHAVIOR

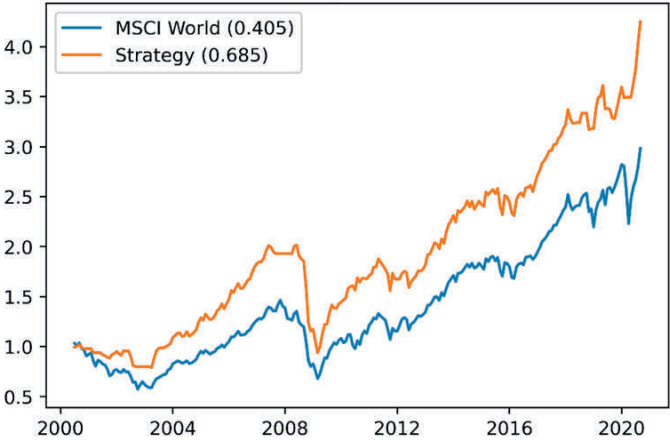
As described above, the quant portfolio seeks to harvest risk premia via long-

term buy and hold strategies. Hence, we have remained faithful to the group’s philosophy and continued its investment policy. Although this came with some necessary changes for the purpose of fulfilling the final objective of the strategy. The latter adjustments were carried out in three dimensions.

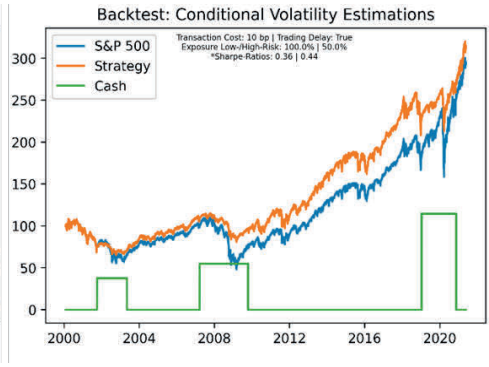
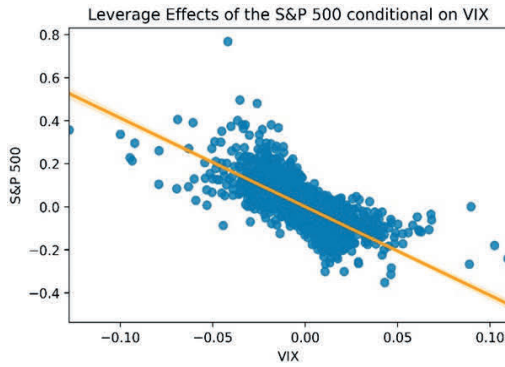
First, we had to accommodate the factor timing strategy to the newest economic and social developments. Namely, the size and value factors were included in our portfolio as a response to the COVID crisis. In particular, we expected the negative GDP growth that the globe experienced at the beginning of 2020 to translate into a relatively swift recovery. The suggestion by Hodges et al. (2017) was followed, who show that value and size outperform the rest of the factors during economic recoveries. Quality was kept as a continuation of the previous cohort for diversification

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Backtest Results before Taxes and after Delay and Transaction Cost (Sharpe Ratios)



BACKTEST ON AN ADAPTED APPROACH TO GOYAL/WELCH (2008) ON EXCESS FACTOR RETURNS INSTEAD OF EXCESS ASSET RETURNS.



US INVESTOR-PERCEIVED MARKET RISK AND ITS IMPACT ON HOLDING US EQUITIES

purposes. In particular, this factor exhibits less volatility and smoother returns than the two newly incorporated factors. The strategy was then extended by considering equity-predictive variables similar to what Goyal/Welch (2008) suggested, which could robustly outperform a naive selection of factor allocations. Overall, little changes to our portfolio allocation were necessary throughout the year.

Secondly, we also decided to increase our activity in terms of opportunistic trades in order to increase performance. This, in tandem with the factor timing strategy worked nicely, as reflected in a Sharpe Ratio of 2.19. Available cash and proceeds from the FX strategy were utilized in order to gain exposure to Asia given its high economic growth and fine management of the COVID pandemic. In particular, a significant part of the portfolio performance throughout 2020 can be ascribed to our exposure to the Chinese market, which outperformed other geographies by a large margin. This was further complemented by our investment

into Korea which also delivered significant outperformance during the worst waves of COVID.

Thirdly, we continued the NDF strategy for the purposes of gaining exposure to this asset class. Last cohort's performance in this field proved promising, however, some flags were already raised during their management year. Despite their positive results, we could observe as already broadly documented by academia, that the FX carry trade strategy exhibits a high negative skewness. In particular, a great part of the profits they managed to collect were partially eroded due to the Argentinian peso devaluation as a consequence of hyperinflation and excessive sovereign debt. Regardless, we decided to carry on with this strategy, which certainly delivered performance to some extent, however, we once again experienced the negative skewness inherent to this strategy. This was reflected by the devaluation of the Turkish Lira as a result of political and economic instability which slightly dragged our total return.

Lastly, we did not carry out any restructuring for the fixed income class as yields around the globe remained low and even decreased due to COVID. This proved to be a good decision as it seems that they will remain so for the near future. Therefore, continuing to underweigh fixed income seems to be the most reasonable action for now. It is important to note, however, that although we currently find ourselves in a low interest rate environment, our bond exposure is mainly to high yield fixed income, which tends to outperform in such scenarios. Hence, regardless, the portfolio remains to benefit from this.

To deal with our over-exposure to the US and our strong overweight of US equities, we introduced an early warning tool based on distributional properties of the CBOE VIX index to limit our exposure in times of uncertainty. This is done by working under a 2-regimes-scenario, one of which is a normal and the other a high-risk scenario. By computing the Mann-Whitney statistic on log changes of the CBOE VIX, structural breaks and volatility spikes might be uncoverable. Historically, this indicator has worked very well, but it also fired relatively quickly for the current COVID-19 crisis when markets were already perceived as “heated” back in late 2019. During our management year and especially after the recovery mid-2020, however, markets remained stable and equity exposure, consequentially, was at our upper bound.

6. TIPS FOR FUTURE COHORTS

The consensus across cohorts has been that genuine long-term investments have

yielded superior performance for the portfolio. Hence, our recommendation is to keep this in mind and follow the plan of action regardless of the performance of your management year. Recall that incoming managers will have to overtake your strategies and might suffer the consequences alongside the portfolio in the long-term, should a short-term approach be implemented. In comparison with the other groups, our more long-term and, thus, less aggressive approaches to trading have yielded a strong performance. Keep in mind to focus your ideas and do not fall for quick testing and perceived pressure to act, since trading costs you Bid/Ask-spreads, trading fees with your bank, especially taxes, and probably follow-up costs for currency conversions as well.

The factor timing strategy in combination with the high yield fixed income has also delivered encouraging results throughout the life of the portfolio. Hence, we strongly recommend the continuation of this approach and especially emphasize the importance of the factor timing strategy as the group’s main pillar. The latter has accounted for most of the performance of the portfolio.

We also encourage that incoming managers revisit the Hodges et al. (2017) paper for the purpose of reassessing the business cycle towards which we are heading and restructure the factor strategy accordingly. The momentum factor is currently trading at a discount and is a good performer after recoveries, hence the future cohort might consider it as a new incorporation to the portfolio.

Last but not least, we advise to remain vigilant on the NDF strategy due to its negative skewness. Do not follow the carry backtest blindly and always aim to complement it with a qualitative analysis. Although the Quant group highly relies on quantitative backtests this is a good example of why one need not follow the signal strictly. NDF-trading without “special” information has a negative implied value due to transaction costs and market frictions. So be sure to have a high-quality analysis to back up your trades.

7. CONCLUSION

We have been fortunate to have enjoyed favorable market conditions in our manager year, in particular for the factor timing strategy, and are content with our overall management. Furthermore, the group is pleased with its decisions that have revolved around this last strategy as well as its geographical opportunistic trades which highly boosted the portfolio return.

Naturally, there have been some regrets and decisions that we would have liked to have turned another way, such as closing our exposure to commodities or investing in the Turkish Lira. However, the impact of these have been minor and we receive them as valuable lessons for the future.

Having the chance to manage a portfolio in such turbulent markets as a consequence of the COVID is a rare opportunity. This has taught us valuable lessons which otherwise would have not been

possible as well as thickened our skin for such difficult investment environments. Furthermore, in our humble opinion, we believe that this has also better prepared us to operate as portfolio managers during both thriving and poor socio-economical events.

The whole experience has been very enriching for all of us and even determined the investment preferences for some members of the group. Hence, we are especially grateful for this outstanding opportunity that PMP has provided us with. The learning curve has been extremely steep, which naturally comes with its hurdles, but regardless, worth the effort. Overall, we have found PMP to be an exceptional program that has equipped us with valuable tools for our upcoming incorporation to the job market or academia.