KKR 2nd Interview

Position: Portfolio Construction / Asset Allocation Team - Associate

Position

- KKR is seeking an experienced quantitative investment professional, at the Analyst/Associate level, to join its Global Portfolio Construction team which is responsible for the following:
    - Formulating investment-oriented portfolio construction recommendations for KKR's Private Markets and Credit portfolios with $470bn+ AUM
    - Monitoring and managing risk across KKR Private Market and Credit portfolios and sharing insights with senior investors and C-level firm management
    - Providing asset allocation recommendations for various multi-asset portfolio client initiatives including KKR strategic partnerships, multi-asset structured products, and allocation-based marketing efforts
- The successful candidate for this role will be focused on portfolio construction initiatives across KKR's Credit portfolios, along with asset allocation for KKR's multi-asset mandates internally and externally. In this high visibility role, the successful candidate will interact frequently with KKR senior management and will therefore be expected to synthesize information clearly. They will also be tasked with contributing to proprietary models in asset classes where there are fewer industry-level standards, requiring someone who is capable of being creative and thinking outside the box. In general, the successful candidate must be highly technical, while also being collaborative as a member of this high-performance team. This position is based in New York.

Responsibilities

- Help prepare portfolio construction recommendations for Credit funds for Portfolio Management Committees across the Americas, Europe and Asia
- Provide support on fund modeling to understand drivers of historical and projected performance, risk exposures and economic sensitivities
- Monitor portfolios closely and assist with portfolio analytics using quantitative and qualitative approaches, coordinating with deal teams, client partners group, operations, and finance colleagues while ensuring data integrity
- Demonstrate working knowledge of financial markets ideally in Credit or Fixed Income, and assist with tracking the latest market development and providing updates / actionable recommendations to Portfolio Managers
- Help communicate risk concerns efficiently and prepare presentations

for Portfolio Managers / Investment Committees
- Help manage and enhance quantitative asset allocation models for KKR's various multi-asset portfolios and KKR's Balance Sheet
- Think creatively about solutions to structure multi-fund investments and be able to simulate scenarios and explain outcomes
- Maintain and continue to improve upon customized models tailored to the firm's investment process and risk framework; work closely with dedicated IT resources to automate and institutionalize these models
- Serve as a quantitative resource for the larger firm, evaluating existing resources and recommending improvements in models and technology

Qualification
- 1-3 years of experience related to Fixed Income or Credit (High Yield, Loans, Structured Products, Private Credit)
- Strong programming skills in a structured language (Python preferred) and strong proficiency in Microsoft Office Products (Excel and PowerPoint)
- Experience in applying best practices in quantitative methods and strategies to the investment/risk management process, including practical application of large data analysis
- Basic understanding of corporate fundamentals
- Broad experience with various types of investments and their characteristics, which may include private and public equities, fixed income and structured investments, as well as real estate/ infrastructure. Prior exposure to private assets is preferred but not required
- Understanding of global economic principles and trends, and their impact on the management of a large and diverse investment platform
- Knowledge of risk systems a plus (MSCI RiskMetrics, Barra, Bloomberg PORT, Factset)

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Strategic Investments Group
Invest dynamically across asset classes and capital structures in both public and private markets, including providing bespoke financing solutions for companies

Responsibilities
portfolio level analytics: cash flow analysis, scenario analysis, protection, portfolio exposure, risk
along with investment cycle: impact of adding new deal (return, leverage…); best way to exit (potential outcome…)

Hard skills
Python: aggregate dataset, portfolio optimization (MVO+)
SQL
Excel: cash flow modeling, portfolio analytics => pay attention to details
Paper test: economics, financial market

Video Interview Questions
Bond duration, convexity
Evaluate PE, PC, liquidity assets
Multiple regression
Recent asset class performance and driver

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Interview - Behavioral
Small talks
- NYU's 2024 Commencement speaker: former dean of Harvard Law School
- Professor? Thesis?

Self-intro
- My name is Wayne. I am an Economics Masters student at NYU. I have extensive training and interest in portfolio research, credit and quantitative analysis.
- In my current internship, I conduct portfolio-level modeling and analytics for the family office's private investments, with a focus on BDCs. For example, we look at the leverage, origination, credit quality of these private credit funds, to do time series and cross-sectional analysis. I also monitor the credit market condition and macroeconomics, to provide recommendations for the portfolio manager.
- For my current study at NYU, I have worked on multiple projects in Python. I use Python to combines datasets, manipulate the data to extract useful information. I also do statistical analysis using multiple regression and time series models. In my master thesis, for example, I developed a systematic asset allocation strategy that integrates fundamental signals and technical signals. This was done by using dynamic portfolio optimization and a combination of rule-based algorithms.
- Before NYU, I have professional experience in multi-asset research. I have gained the abilities to draw insights from large datasets and provide asset allocation recommendations. Specifically, I analyze asset class relative value, including credits, under various economic and market scenarios. Then I constructed quantitative models and tools to
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aid research.
- Overall, I believe I have gained the abilities and skills for this role. I love portfolio construction and asset allocation. And I think KKR is a very unique and amazing company. So this is definitely the right place to be! Thank you!

Motivation (Why KKR? Why credit? Why private? Why this role?)
- Why KKR?
  - KKR has a really deep culture of teamwork and relationship. I've watched the talks from current co-CEOs, Scott and Joe. They've been working together since they're 24 and they're still running the company together. And the former co-CEOS, Henry and George, who founded the company, are cousins. And it's not just the idea of co-CEOs, KKR also has a $25bn of its balance sheet investing alongside clients. So the culture is really amazing.
    => also, I talked to Frances Lim from KKR Singapore and learned that KKR is a very entrepreneurial firm even after 40 years.
  - KKR has a really unique structure that I don't see in other alternative managers. KKR has the Global Macro team and Global Institute that support all of its investments on the platform, which I believe is a superior framework.
  - KKR has a strong growth momentum. I just read an article on WSJ that says alternative managers are taking over Wall Street from big banks. As for KKR, it's building a strong capital market platform, it has an insurance business, and is the largest private investor in Asia. So definitely a lot of opportunities.
- Why this role?
  - Private market is the future opportunity. The public market is too crowded, dominated by quantitative funds and passive investments, there's no alpha left. But the private market is huge, the opportunity set is much larger. Especially private credits, they've experienced incredible growth as banks are retreating.
  - I love asset allocation I love portfolio construction. I've always enjoyed studying how asset prices are influenced by macro forces and different market dynamics, exploring the undiscovered patterns and market inefficiency. To me, it's just so fascinating that every day I have something new to learn from the markets.
  - Finally, this is a really unique opportunity where I can work directly with KKR senior management, which would be a very challenging yet rewarding experience.

Why hire me?
- First of all, I believe my skills really align with this role. I have experience in credit portfolio modeling and analytics. I also have exposure to asset allocation and the multi-asset space, with

capabilities in quantitative modeling and data analysis.
- Second, my biggest is the research framework I've developed over the years. It's basically a systematized body of knowledge that allows me to organize information and ideas into a coherent structure. For example, I built a "macro-flows framework" that transforms 5 economic models into a flow chart with layers of cause-effect relationships. This allows me to evaluate the potential impact of macro shocks in a systematic way. I also use the "4W1H" framework, which includes WHAT, WHY, HOW, SO WHAT and WHAT'S NEXT. By going over this process, everything becomes clear and it's easy to spot the key problems.
- Finally, I am super curious and passionate about portfolio construction and asset allocation. It really drives me to do more, learn more, and keep improving, cause it's just so much fun. Actually, I've been building my personal portfolio recently. I spend two hour everyday, even more time during the weekend. To me, investing is not just about work or about money, it's my hobby.

Weakness
- I would say my biggest weakness is that sometimes, I lack the confidence to present my work, especially in a larger group setting.
- One example was during the second year of my previous Analyst role. I was helping out on the Quarterly Market Outlook for our institutional clients. We did this every quarter and usually my manager presented most of it and I added on some numbers and details.
- At the last minute, I was unexpectedly entrusted to present the entire section. I felt nervous initially especially given my usual supportive role. So not only did I practice and memorize the entire thing, I also sent each bullet point of my presentation to my colleagues beforehand to address any potential problems.
- Thankfully, my manager received positives feedbacks regarding my presentation. While I can't say I suddenly became a confident speaker, the experience taught me valuable lessons in effective communication and adaptability under pressure. In the long term, I believe presenting to a large group would be less and less of a problem for me.

Failure
- I've encountered multiple challenges throughout my life. I approach them with honesty and try to reflect and improve myself.
- One significant setback I experienced was misjudging a market trend during my previous role as an analyst. In a project where I was assigned to generate the investment outlook of the emerging market equities, I relied heavily on historical data to evaluate the upside opportunities without sufficiently considering the emerging macro dynamics in the large EM economies. As a result, my views were

significantly off target, leading to undesirable performance for the team.
- Reflecting on this failure, I realized the importance of incorporating both historical data analysis and forward-looking insights into my decision-making process. I learned the value of staying updated on current market trends, leveraging diverse data sources, and continuously reassessing my assumptions.

Where do you see yourself in 5 years
- First of all, I would think of my 5 year plan as a milestone to my ultimate career goal, which is a multi-asset portfolio manager.
- To achieve this goal, I believe I should focus on portfolio strategy research for the first 5-10 years, to gradually form my research methodology.
- And for the second half of the 10 years, I think it would be helpful to get exposure to all parts of the portfolio management process, including risk management, performance analytics, trading and operations.
- So to sum up, in 5 years I see myself working on portfolio strategy research by building my capabilities there, and gradually transitioning to a portfolio management role.

Question to ask (follow-ups)
Position-related
- From the JD, this role will be working on credit fund modeling and analytics. Although it's on the portfolio level, but it's a pool of individual investments. So I was wondering how deep do we expose to each issuers at the portfolio construction team? As we're providing recommendations, the solution/decisions will be made on the individual company level right?
- I learned from our call two weeks ago that this role will be focusing on the strategic investment team. This team invests across asset classes in both public and private markets. I am curious how does the team interact with the other two credit teams, with one focusing on the public side, the other on the private side?
- I see on KKR's website that you lead the asset allocation research for KKR's Global Liquid Multi Asset. Is that one of KKR's fund? Or is it KKR's own balance sheet?

Behavioral
- What would you say are the most important skills to succeed in this role? And how will the success of this role be measured?
- What would you recommend a newly-onboard portfolio construction analyst to get prepared?
- If I have the honor to get this job, what will I be doing in the first

month, 3 month and 6 months?

<u>My Technical Exposure</u>

SIAR: BDC modeling

- Financial ratios
  - Portfolio stats: NAV, P/B, NAV discount, dividend, WA yield, yields on funding/exit, spread, rate sensitivity, PIK income%
  - Earnings: NII, EBITDA, net interest margin, realized/unrealized P&L
  - Investment activity: origination, repayment, average size, portfolio company WA EBITDA/leverage/interest coverage
  - Asset allocation: floating rate%, first-lien/second-lien/subordinated/equity, sector allocation
  - Credit quality: portfolio FV/cost, watchlist companies FV/cost/%, non-accrual FV/cost/%, internal rating
  - Debt: net debt (borrowing+payable-cash-receivable), debt/equity, EBITDA/interest (coverage), maturity wall, secured/non-secured debt
- Research
  - Time series watch: trend (leverage, yield, origination, credit, FV/cost…)
  - Comparative analysis: outliers, pick the characteristics we favor (low leverage, low PIK%, high EBITDA/interest, high NIM, high first-lien%, large size)
  - Regression analysis (cross-sectional): low PIK%, high first-lien%, high FV/cost ~ high P/B
  - Compare with: management comments(concern on cyclical sectors…), macroeconomics(base rate, Fed…), credit market(HY spread, default…)
- Some findings
  - Leveraged loan and small-cap value equity returns explain 81% of BDC performance
  - Cross-sectional BDC returns are widely dispersed (15% diff between top/bottom quantile) and exhibit strong persistence in top- and bottom-quartile manager performance.
  - There’s significant relationship between valuation (price-to-NAV) and performance, with BDCs with greater price-to-NAV premium (or smaller discount) outperforming those with a smaller premium (larger discount) by all return metrics.

ProTrend

- Credit market indicators
  - IG/HY credit spread
  - IG/HY/MBS/credit card… default rates
  - Distressed ratio (% >1000 bps)
  - Interest coverage

    - Debt/EBITDA
    - Bankruptcy filing
    - Fed lending standard
    - Business surveys
- Invest in: LQD, HYG, BKLN(Invesco Senior Loan ETF)

Alternative Asset Allocation

- Think of them with three parts:
    - Alpha: PE, hedge fund, distressed credit
    - Income: private credit, real estate, infrastructure, transport, timberland
    - Diversification: hedge fund, private credit, real estate, infrastructure, transport, timberland
- SAA: Portfolio optimization on alternative index
    - Mean variance + resampling
    - Mean-CVaR (Conditional Value at Risk) Optimization
    - Optimize on max diversification (least correlation)
    - Risk Parity portfolio

DISPLAY 6

Potential Drivers of Returns

INDICATORS:	Real Estate Return Drivers	Infrastructure Return Drivers	Natural Resources Return Drivers	Private Credit Return Drivers	Private Equity Return Drivers
SUPPLY	Development pipeline, completions	Funding gap, infra quality	Arable/forest land per capita, food/timberland production	PE dry powder, PE transaction volume	VC: High propensity to new businesses Growth: VC exit value Buyout: Deal value
DEMAND	Absorption rates, vacancy, rental growth	Air/sea/railroad transport volume, electricity production, net GW[4] capacity, LCOE,[5] Capex, fiber/5G subscriptions	Food consumption/ prices, market pulp and paper consumption/ prices, housing starts	PC dry powder	Dry powder
MARKET DYNAMICS	CMBS[2] issuance, dry powder, transactions, fundraising	Municipal Bond Issuance, dry powder, transactions, fundraising	Profit margin, inflation, dry powder, fundraising	Trailing 12m default rate, distress ratio, % of positions in PD portfolios on "watch"	CCI,[9] BCI, PMI; EBITDA/EPS growth, EBITDA margin
VALUATION	Cap rates, cap rates spread	EV/EBITDA	Land/forest values, EV/ EBITDA, dividend yield	OID,[8] LIBOR, margin, # of restrictive covenants, # of maintenance covenants	VC: Pre-money valuations Growth: EV/Revenue Buyout: EV/EBITDA
LEVERAGE	LTV, debt yield, YTM[3]	Net debt/EBITDA, YTW[6]	Net/Debt EBITDA, USDA[7] interest rates	Debt/EBITDA, interest coverage	VC: N/A GE/BO: debt/EBITDA, interest coverage, equity contribution, LBO[10] spreads
LIQUIDITY	Fund life, investment period, exit volumes	Fund life, investment period, exit volumes	Fund life, investment period, exit volumes	Fund life, investment period, exit volumes	Fund life, investment period, exit volumes
DEPLOYMENT	Called capital speed, deal competition, manager feedback	Called capital speed, deal competition, manager feedback	Called capital speed, deal competition, manager feedback	Called capital speed, deal competition, manager feedback	Called capital speed, deal competition, manager feedback
FEES AND TERMS	Management fee, carried interest, hurdle rate, catch-up, LP rights	Management fee, carried interest, hurdle rate, catch-up, LP rights	Management fee, carried interest, hurdle rate, catch-up, LP rights	Management fee, carried interest, hurdle rate, catch-up, LP rights	Management fee, carried interest, hurdle rate, catch-up, LP rights
ESG	GRESB score, ad hoc indicators, manager survey, manager ESG framework	GRESB score, ad hoc indicators, manager survey, manager ESG framework	GRESB score, ad hoc indicators, manager survey, manager ESG framework	GRESB score, ad hoc indicators, manager survey, manager ESG framework	GRESB score, ad hoc indicators, manager survey, manager ESG framework

Market

- News
    - LPs such as pension funds and family offices are selling their

    private equity and credit investments given liquidity ~ low distribution from PEs; Private credit funds such as Apollo and Ares are looking to take over the discounted (85c) early exits.
  - IG bonds suffer, worst month since last Sep, with first outflow of the year as Fed turned hawkish
  - Treasury yields rose to 2024 highs, as traders push first cut to December, seeing only about 33 bps rate reductions for all of 2024
  - MSIM is reducing credit and duration risks; BlackRock is reducing duration but can add after data clear; JPM bullish on credit and UST
  - Data: US 1Q24 GDP 1.6% vs. estimated 2.5% (3.4% 4Q23) but core PCE + 3.7% vs. estimated 3.4% ; US CPI rose to 3.5% in March, higher than expected
  - What's next: March PCE inflation 4/26; FOMC meeting 4/30-5/1
- View
  - Recent divergence in asset quality across BDCs shows difference in underwriting standard, portfolio risk and workout capabilities, could see higher non-accurals and spread compressions
    => safer bets, larger platforms (can write larges checks, flexible)
  - M&A/IPO columns are ticking up + PE dry powder
    => good for credit deal flow
  - Credit spreads haven't widen during each higher-for-longer episodes, starting in late21/early22
    => no worries for rate dynamics
  - Spreads are tight but yields are still high
    => should continue to attract retail, insurance, and pension flows (strong so far)
  - Leverage loans interest rate/cash flow coverage down; leverage (debt/EBITDA) stable; EBITDA margin down; default rate up; but IG/HY spreads are low
    => Corporate fundamentals remain stable but higher for longer rates could pressure companies with higher floating rate debt and/or near-term maturities
  - Credit card and auto loan delinquency rates rising; CREs delinquency remain low
    =>

February 2024

Display: Stacked | Relative to zero | Relative to asset

Highlight: Asset class | Return

2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	Annualised
Japan equities 9.9%	High yield 14.3%	China equities 54.3%	Cash 1.9%	U.S. equities 31.6%	China equities 29.7%	Commodities 38.5%	Commodities 22%	U.S. equities 27.1%	Japan equities 7.8%	U.S. equities 12.6%
U.S. equities 1.3%	Infrastructure 12.4%	EM equities 37.8%	DM gov. debt -0.4%	Infrastructure 27%	U.S. equities 21.4%	REITs 32.5%	Cash 1.3%	Japan equities 20.8%	U.S. equities 7%	Japan equities 6.6%
Emerging debt 1.2%	U.S. equities 11.6%	Europe equities 26.2%	IG credit -3.5%	Europe equities 24.6%	EM equities 18.7%	U.S. equities 27%	Infrastructure -0.2%	Europe equities 20.7%	Commodities 5.2%	Infrastructure 5%
REITs 0.6%	EM equities 11.6%	Japan equities 24.4%	High yield -4.1%	REITs 24.5%	Japan equities 14.9%	Europe equities 17%	High yield -12.7%	High yield 14%	Europe equities 1.5%	REITs 4.7%
Cash 0.1%	Emerging debt 10.2%	U.S. equities 21.9%	U.S. equities -4.5%	China equities 23.7%	IG credit 10.1%	Infrastructure 11.9%	Europe equities -14.5%	REITs 11.5%	Cash 0.8%	Europe equities 4.6%
Europe equities -2.3%	Commodities 9.7%	Infrastructure 20.1%	Emerging debt -4.6%	Japan equities 20.1%	DM gov. debt 9.5%	Japan equities 2%	IG credit -16.1%	Emerging debt 10.5%	High yield 0.6%	EM equities 3.4%
High yield -2.7%	REITs 6.9%	High yield 10.4%	REITs -4.8%	EM equities 18.9%	High yield 7%	High yield 1%	Japan equities -16.3%	EM equities 10.3%	EM equities -0.1%	High yield 3.4%
DM gov. debt -3.3%	IG credit 6%	Emerging debt 9.3%	Infrastructure -9.5%	Emerging debt 14.4%	Europe equities 5.9%	Cash 0%	Emerging debt -16.5%	IG credit 10.2%	Emerging debt -0.5%	Emerging debt 2.8%
IG credit -3.8%	Japan equities 2.7%	IG credit 9.3%	Commodities -10.7%	High yield 12.6%	Emerging debt 5.9%	Emerging debt -1.5%	DM gov. debt -17.5%	Infrastructure 6.8%	IG credit -1.6%	IG credit 1.6%
China equities -7.6%	DM gov. debt 1.7%	REITs 8.6%	Japan equities -12.6%	IG credit 11.8%	Cash 0.7%	IG credit -2.1%	U.S. equities -19.5%	Cash 5.1%	DM gov. debt -3.1%	Cash 1.3%
Infrastructure -11.5%	China equities 1.1%	DM gov. debt 7.3%	EM equities -14.2%	Commodities 11.8%	Infrastructure -5.8%	EM equities -2.2%	EM equities -19.7%	DM gov. debt 4.2%	Infrastructure -3.1%	China equities 1.2%
EM equities -14.6%	Cash 0.4%	Commodities 1.7%	Europe equities -14.3%	DM gov. debt 5.6%	REITs -8.1%	DM gov. debt -6.6%	China equities -21.8%	Commodities 0%	China equities -3.1%	Commodities 0.5%
Commodities -23.4%	Europe equities 0.2%	Cash 0.8%	China equities -18.7%	Cash 2.3%	Commodities -9.3%	China equities -21.6%	REITs -23.6%	China equities -11%	REITs -3.6%	DM gov. debt -0.9%

Key: Equities | Bonds | Private markets, commodities