Yale SCHOOL OF MANAGEMENT
Executive Education

EDHEC-RISK Institute

Yale School of Management – EDHEC-Risk Institute
Multi-Asset Investment Products and Solutions

16-18 July, 2019, Yale Campus (New Haven, CT) - USA

Yale SOM – EDHEC-Risk
Multi Asset Investment Products and Solutions Seminar

This seminar is part of the Certificate in Risk and Investment Management. Please **click here** to play video.

1/ Seminar Description

Over the last 15 years or so, the investment industry has experienced a series of profound structural changes, and an increasing number of serious new challenges are being faced by both institutional and individual investors as a result of these changes. The investment management industry is actually currently experiencing a profound industrial revolution, which results from the confluence of historically powerful forces. These forces imply a dramatic acceleration in the pace of change on the following two main dimensions, which are reminiscent of industrial revolutions that have impacted other industries: mass production and mass customization.

- **Mass production: The emergence of factor investing**

Mass production has happened long ago in investment management via the emergence of the mutual fund industry, first with a focus on beating the market through the generation of abnormal performance (a.k.a. alpha, defined as excess reward above and beyond the fair compensation of the risks taken), with a main focus on «beating the markets». In the face of an increasing concern over the existence and persistence of alpha, we have seen a gradual shift towards a passive holding of risk premia (a.k.a. beta, defined as the quantitative measure of a portfolio exposure with respect to a hopefully rewarded risk factor), with a main focus on cost control and low fees (passive mutual funds, ETFs, etc.). After the major pension fund crisis in 2000-2003, the increasing pressure towards lower fees was paralleled by a growing recognition that standard forms of beta management, based on passive replication of cap-weighted indices led to an inefficient harvesting of risk premia. This was the start of the smart beta and factor investing revolution, which is blurring the line between alpha and beta by providing cost-efficient and risk-efficient access to risk premia.

- **Mass customization: The emergence of goal-based investing**

Investment management is only justified as an industry to the extent that it can demonstrate a capacity of adding value through the design of meaningful investment solutions that allow investors' to meet their meaningful goals. This recognition is leading to a new investment paradigm, which has been labeled goal-based investing (GBI) in individual money management, where investors' problems can be fully characterized in terms of their lifetime meaningful goals, just as liability-driven investing (LDI) has become the relevant paradigm in institutional money management, where investors' problems are broadly summarized in terms of their liabilities. In a nutshell, goal-based investing includes two distinct elements. On the one hand, it involves disaggregation of investor preferences into a hierarchical list of goals, with a key distinction between essential and aspirational goals, and the mapping of these groups to hedging portfolios possessing corresponding risk characteristics. On the other hand it involves an efficient dynamic allocation to these dedicated hedging portfolios and a common performance-seeking portfolio.

Building upon expertise developed within Yale School of Management and EDHEC-Risk Institute over the last 15 years, the aim of this seminar is to provide participants with an in-depth introduction to modern risk allocation techniques and their applications to the design and implementation of innovative forms of welfare-improving investment products solutions. Emphasis will be made on real world examples of application and the development of problem-solving skills through the use of dedicated portfolio simulation / construction tools.

The first day of the course, **led by Professor Lionel Martellini**, is designed to familiarise investors with risk and asset allocation decisions. The focus will be on bridging the gap between portfolio theory and portfolio construction. Participants will be introduced to a coherent framework, which can be used to frame optimal decisions for the design of a well-diversified performance portfolio through an efficient harvesting of risk premia within and across asset classes. It discusses the limits of modern portfolio theory and presents solutions to address estimation issues. Our main ambition is to provide a methodology for measuring the level of diversification at the level of a multi-asset portfolio, and propose suggestions for improving the portfolio diversification. In particular, we will discuss how to measure the effective number of constituents as well as the effective number of bets using various methods for extracting underlying risk factors. We will also test several risk and asset allocation methodologies with an efficient blend of techniques mixing naive and scientific approaches to portfolio diversification.

The second day of the seminar, **also led by Professor Lionel Martellini**, has a focus on the efficient use of the three forms of risk management (hedging, diversification and insurance) for the production and distribution of improved investment solutions for institutional and individual asset owners. The seminar will present disciplined approaches to liability-driven investing strategies and goal-based investing strategies, and explain how asset managers may help investors maximise the probability of reaching their objectives subject to dollar and risk budget constraints, with applications in institutional or individual money management.

The third and last day of the seminar, **led by Professor Stefano Giglio**, will begin with a discussion about the predictability of equity returns and volatility, and how this allows investors to achieve superior Sharpe ratios. It will then expand the analysis to the predictability of fixed income returns. Next, it will study predictability of individual stock returns using a large number of firm characteristics and modern statistical methods like machine learning. Finally, the seminar will present methodologies for identifying managers who are most likely to outperform in the future for situations when the asset allocation strategy is implemented via active mutual fund managers.

2/ Key Learning Objectives

> Learn how to perform factor investing and risk allocation
> Develop an understanding of strategic asset allocation in the presence of liability constraints
> Assess how to overcome effect of estimation error by imposing better constraints
> Understand how to implement liability-driven investment solutions with cash and derivatives instruments
> Learn about goal-based investing strategies in institutional and private wealth management
> Identify affordability conditions for essential and aspirational goals
> Discuss implementation and mass customization challenges for individual investment solutions
> Explore novel welfare-improving forms of investment solutions
> Discuss an application to the design of efficient retirement solutions
> Learn the evidence on return predictability
> Discuss the models, techniques and applications of active multi-asset allocation strategies
> Review the evidence on identifying active managers who are most likely to outperform

3/ Detailed Outline

The first day of the course, led by Professor Lionel Martellini, starts with a brief review of classical portfolio optimisation theory, and explores practical issues in the implementation of efficient portfolio construction in the absence and in the presence of liability constraints through examples and cases. The course also explores modern factor investing techniques that can be used to improve portfolio diversification for the most efficient harvesting of risk premia across and within asset classes.

day ONE

Factor Investing and Risk Allocation Decisions in the Presence of Liability Constraints

Professor Lionel Martellini

Asset allocation policy is a critical determining factor in portfolio performance. Day 1 of the program tackles the fundamental trade-offs facing institutional and individual investors in the presence of liability constraints or individual goals, and introduces factor investing and risk allocation strategies for optimizing those trade-offs.

Lionel Martellini,
Professor of Finance, EDHEC Business School
Director, EDHEC Risk Institute
Senior Scientific Advisor, ERI Scientific Beta
PhD U.C. Berkeley

Professor Lionel Martellini, is Director of EDHEC-Risk Institute. He conducts research in a broad range of topics related to investment solutions for individual and institutional investors, equity and fixed-income portfolio construction, risk management and derivatives valuation. He was previously on the faculty of the University of Southern California and has held a visiting position at Princeton University. He sits on the editorial boards of various journals, including the *Journal of Alternative Investments* and the *Journal of Portfolio Management*. He holds a PhD in Finance from the Haas School of Business, University of California at Berkeley. Outside of his activities in finance, he recently completed a PhD in Relativistic Astrophysics (University Côte d'Azur) and has become a member of the LIGO/Virgo international collaboration for the observation of gravitational waves.

Morning Session: Harvesting Risk Premia Across Asset Classes

Optimal asset allocation beings with the fundamental question of what features define the "optimal" portfolio?

If one could reliably predict future returns, one would not need or seek diversification; one would instead invest in the highest returning asset at each point in time. Crystal balls, however, hardly exist in the real world, and this is the reason why investors should instead hold well-diversified portfolios. Well-diversified portfolios are scientifically defined as portfolios that deliver the highest reward for a given risk budget. In the absence of parameter uncertainty, and if volatility is used as a risk measure, this leaves us with a simple prescription, namely maximize the Sharpe ratio. This definition, however, is not fully operational because of the presence of parameter uncertainty. In this context, one can turn to naive diversification, which focuses on the question of how to construct a well-balanced portfolio (mean goal) as a proxy for constructing a well-diversified portfolio (end goal). While naive diversification is often taken to imply an equally-weighted portfolio, the approach can be extended to imply an equal allocation in terms of contributions from underlying factors to the risk of the portfolio.

Over the course of this morning session, we investigate practical issues in the implementation well-diversified portfolios allowing for an efficient harvesting of risk premia. We use a dedicated Excel-based portfolio construction tool to identify and implement efficient portfolios, and we work through the mechanics of portfolio optimization in various applied contexts. Examples will be drawn from real-world investment problems facing asset managers and asset owners, and will allow us to better analyze the impact of implementation constraints on expected portfolio outcomes.

The topics discussed will include:
> Factor investing and risk premia harvesting across and within asset classes
> Allocating to risk factors versus allocating to asset classes
> Weight-based versus risk-based measures of diversification
> Measuring the number of independent bets in asset allocation decisions
> Turning correlated asset returns into uncorrelated factor returns
> Risk parity and factor risk parity portfolios

Afternoon Session: Liability-Driven Investment Solutions
The afternoon session focuses on the design of optimal allocation strategies for investors endowed with long-term liabilities. It presents the state of the art in asset-liability management (ALM), with a specific emphasis on the liability-driven investment (LDI) paradigm in institutional money management. This paradigm formalizes the recognition that investment decisions should not be framed in terms of one all-encompassing reference policy portfolio, but instead in terms of two distinct reference portfolios, namely a liability-hedging portfolio and a performance-seeking portfolio. This dual portfolio approach, consistent with the "fund separation theorems", which advocate a separate management of performance and risk control objectives, has led to an increased focus on liability risk management, which is precisely a first step towards properly accounting for an institutional investor's meaningful objective, and the risk factors that impact the probability of the objective being achieved.

Finally, we will also explore the interaction between the performance-seeking and liability-hedging portfolios, with implications for the design of improved equity and bond benchmarks. In particular, we will analyze equity portfolios with enhanced liability-hedging properties, as well as the benefits of duration matching bond portfolios with improved diversification benefits.

We use a dedicated Investment Solutions serious game developed in R with a web-based interface to analyze the trade-offs involved in the design in a meaningful liability-driven investment approach.

The topics discussed will include:
> A brief history of ALM: cash flow matching, immunization, surplus optimization; fund separation theorem and LDI strategies; performance seeking portfolio versus liability-matching portfolio; using derivatives to implement the liability-matching portfolio.
> Beyond LDI: from fund separation theorems to fund interaction theorems; performance-seeking portfolios with attractive liability-hedging properties and liability-hedging portfolios with attractive performance properties; inflation hedging portfolios with enhanced performance; reducing the required allocation to the performance-seeking portfolio by enhancing the liability-hedging portfolio; selecting asset classes on the basis of their portfolio properties versus standalone properties; trading-off diversification benefits versus hedging benefits.
> Case studies of LDI strategies: constructing better bond benchmarks from an ALM perspective; bond portfolios with duration constraints and improved Sharpe ratios; constructing performance benchmarks with improved hedging benefits; liability-friendly equity benchmarks based on selection and/or optimization procedures.

> A good summary/update of developments in the academic world and of feasible adoption in real world settings.
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> **Chadwick Teo**
> *Bank Julius Baer, Investment Advisory*

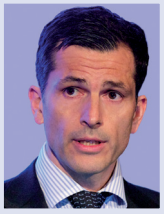
day TWO

Life-Cycle Investment Strategies and Goal-Based Investment Solutions

Professor Lionel Martellini

Broad description

In the face of a changing regulatory landscape, investment management needs to redefine itself as the art and science of efficiently spending investors' dollar and risk budgets through a disciplined use of the three forms of risk management, namely (1) risk-hedging for efficiently controlling the risk factors in investors' liabilities, (2) risk diversification for efficiently harvesting risk premia across and within asset classes, and (3) risk insurance for efficiently controlling downside while generating the kind of upside potential needed for investors to achieve their goals. The second day of the seminar builds on the fundamental material on asset allocation decisions covered during the first day of the seminar, which it extends to account for the presence of long-horizons and investment goals. Again, we use Investment Solutions serious games developed in Excel and in R to identify and implement welfare-improving forms of efficient investment solutions. Examples will be drawn from real-world investment problems facing asset managers and asset owners, including the design of long-term investment strategies such as improved target date funds and retirement solutions.



Lionel Martellini,
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Morning Session: Life-Cycle Investment Strategies

The morning session investigates how to account for the presence of long-term objectives in portfolio construction. We extend the portfolio construction paradigm from short-term static portfolio selection decisions to long-term intertemporal portfolio selection decisions. We explore in particular the optimal allocation decisions in the presence of a stochastic opportunity set and provide a thorough analysis of the hedging demands with respect to interest rate risk, inflation risk, equity volatility and risk premium risks. We also explain how to use suitable econometric techniques to estimate latent mean-reverting variables such as equity volatility or the equity risk premium.

In a case study application of the dynamic portfolio construction techniques, we first review the benefits and limits of current forms of target-date funds. We then discuss how to design improved forms of life-cycle investing strategies through the implementation of market-dependent allocation decisions.

We use a dedicated Excel-based portfolio construction tool to design improved forms of life cycle funds, and to measure the opportunity gain with respect to ad-hoc products such as balanced funds or target date funds based on deterministic glide paths. Practical examples will be presented, which allow us to better analyze the impact of implementation constraints on expected portfolio outcomes.

The topics discussed will include:
> Intertemporal portfolio selection
> Application of stochastic calculus to long-term investment decisions
> Analysis of volatility pumping benefits
> Measuring the benefits of volatility targeting strategies
> Hedging against negatives changes in the equity risk premium
> Constructing improved forms of target date funds

Afternoon Session: Goal-Based Investing

The afternoon session transports the concept of investment solutions to the context of individual money management, where the massive shift of retirement risks onto individuals is laying great responsibility with the investment management industry, in terms of how to provide households with suitable retirement solutions.

Just as in institutional money management, we will define an asset allocation solution as a function of the kinds of particular risks to which the investor is exposed, or needs to be exposed to meet liabilities or fulfill goals, as opposed to purely focusing on the risks impacting the market as a whole. This recognition is leading to a new investment paradigm, which has been labelled goal-based investing (GBI) in individual money management, and which involves disaggregation of investor preferences into a hierarchical list of goals and the mapping of these groups to hedging portfolios possessing corresponding risk characteristics.

Drawing from liability-driven investment practices in institutional money management, one natural benchmark strategy consists in first securing all essential goals, and investing the available liquid wealth in a performance portfolio allowing for the most efficient harvesting of market risk premia.

This strategy, which is appealing since it secures essential goals with probability 1 and generates some upside potential required for the achievement of important and aspirational goals, is in fact a specific case of a wider class of (in general) dynamic goals-based investing strategies.

The topics discussed will include:
> Designing improved forms of long-term investment for individual investors: capturing the benefits of mean reversion in equity returns; including maximum drawdown constraints; introducing goal-oriented strategies; reducing the opportunity cost of downside risk hedging; using improved asset class benchmarks within long-term investment strategies.
> Designing dedicated ALM solutions for private wealth management: taking into account a private client's full profile; including consumption/bequest objectives and short-term performance constraints.
> Designing improved forms of retirement solutions: defining retirement goals in terms of replacement income throughout the decumulation phase; estimating the maximum amount of replacement income given initial wealth and future contributions; securing a minimum level of replacement income while generating high probabilities of achieving higher target levels; managing longevity risk in the decumulation phase; meeting the challenges of mass customization and scalability.

day THREE

Exploiting Predictability in Asset and Factor Returns

Professor Stefano Giglio

Multi-asset managers can add value through their allocation decisions across broad asset classes and their choice of managers within each asset class. We will begin this day by surveying the evidence on the predictability of returns in equity and fixed income indexes, and their implications for tactical asset allocation strategies. We will also explore individual stock return predictability using a large number of firm characteristics and modern statistical methods like machine learning to maximize the predictive power. We will then turn our attention to how one might select active mutual fund managers in the implementation of multi-asset investment products and solutions.

Predicting stock market returns

> Valuation ratios
> Investor sentiment measures
> Learning from corporate financing decisions
> Model averaging
> Macro announcement timing
> Volatility timing
> Individual return predictability and firm characteristics
> Improving predictability via machine learning

Predicting bond market returns

> Learning from the term structure
> Learning from issuance decisions

Stefano Giglio,
Professor of Finance
Yale School of Management
PhD Harvard University

Stefano Giglio is an expert in empirical financial economics. His research interests span several topics, including empirical asset pricing, macroeconomics, and real estate, with a particular focus on volatility risk and on the term structure of asset prices across markets. Before joining Yale SOM, he was an Associate Professor at the University of Chicago Booth School of Business. His research has been awarded several prizes, including the AQR Insight Award, the Fama-DFA Prize for the Best Paper in the *Journal of Financial Economics*, and the Jacob Gold & Associates Best Paper Prize. His work has been featured in several news outlets, including *Forbes* and the *Economist*, and has been published in the leading finance and economics journals.

> An invaluable seminar which you will receive not only knowledge but also practical guidance.
>
> **Chayaluck Garun Chompucot**
> *Bank of Thailand, Division Executive*

4/ Yale SOM–EDHEC-Risk Certificate in Risk and Investment Management

Yale SCHOOL OF MANAGEMENT *Executive Education*

EDHEC-RISK Institute

The Certificate in Risk and Investment Management consists of three seminars
> Multi-Asset Investment Products and Solutions —16-18 July, 2019
> Harvesting Risk Premia in Equity and Bond markets — November 2019
> Harvesting Risk Premia in Alternative Asset Classes and Investment Strategies — March 2020
Participants can complete all three seminars and receive the prestigious joint Yale School of Management-EDHEC-Risk Certificate in Risk and Investment Management, or attend a single session which provides more focused study.

For further information on the Yale SOM–EDHEC-Risk Certificate in Risk and Investment Management please refer to the **certificate brochure**.

Requirements to obtain the certificate:
> Attend the 3 seminars. The Certificate can be completed over a 1 to 2 year period
> Successfully submit one dedicated assignment for each attended seminar. The assignment will take the form of a four-page overview of how the themes covered in the seminar may be used in the design of innovative investment solutions.

Distance-learning Option

For more flexibility, we also offer a distance-learning option. The technology is really simple and reliable and will enable you to interact with the Professor before and during the event. Please be advised that in order to obtain the certificate, a maximum of 1 session of distance-learning is permitted within the whole series.

5/ Fees, Billing and Further Information

Fees

Standard rate: EUR5,400/$6,200 (for reference)
Fees include instruction, documentation, refreshments at breaks, lunch, as well as the coktail event.
Accommodation is not included.

Billing and payment

The fee is billed in euros upon registration and must be settled before the seminar begins. Payment can be made by credit card or wire transfer.

Transfer or cancellation

Transfer of registration to a colleague, upon written notice, is allowed and free of charge.

Cancellations of confirmed seats must be received in writing and are subject to the following charges: 45 to 30 days' notice: 25% of the tuition fee; 29 to 11 days' notice: 50% of the tuition fee; 10 days' notice or less: 100% of the tuition fee.

Schedule

A typical program day lasts from 9:00 am to 5:00 pm and is usually divided into lectures and application cases. The two class sessions in each half-day period are separated by 30-minute refreshment breaks. Lunch is included.

Venue

Yale School of Management
165 Whitney Avenue
New Haven, CT 06511-3729

6/ Registration

For further information and registration
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To register, please click here.

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