TEACHING & RECRUITING

Committed to nurture talent, foster equitable opportunities and develop a diverse pool of early career investment professionals.
https://github.com/rnfermincota/academic/

- Traditional Assets: statistical modeling techniques applied to equity risk-premia strategies that are built on firm characteristics.
- Real Assets: real assets modeling are pretty gruesome, but students interested in real estate and infrastructure financing will learn how to automate and communicate results using Excel and RStudio.
- Digital Assets: formulate statistical arbitrage strategies as optimization problem and present the efficient solving approaches.
- Research Lab: sparsity-based signal processing and statistical learning techniques.

Rafael Nicolas Fermin Cota - Resume
https://www.dropbox.com/s/dn9gqt2oqdygr4t/Rafael%20Nicolas%20Fermin%20Cota%20-%20Resume.pdf?dl=0
Become better than we were yesterday, work tirelessly to fulfill our purpose; to live our dream because the only person we are in competition with is ourselves.

TECHNOLOGY

What Happens When Preparation Meets Opportunity
https://www.linkedin.com/pulse/what-happens-when-preparation-meets-opportunity-fermin-cota/
The COVID-19 pandemic has already forced governments globally to intervene in the economy in ways that are completely unprecedented. At some point, the Faustian bargain of money printing and debt accumulation will cause people to reevaluate fiat currency regimes altogether and that some of these forces could begin to unravel leading to demand for digital assets. When faced with uncertainty, I truly believe it is important to have optionality. By introducing 162 Digital Capital, we aim for our investors to gain additional diversification, and unlock potential to generate higher returns as compared to portfolios constrained to traditional investments.

162 Grid
https://www.linkedin.com/pulse/162-grid-rafael-nicolas-fermin-cota-1e/
https://www.linkedin.com/posts/rnfc_16w-grid-features-benchmarks-activity-6650941790935408640-s-eC/
By working with major data vendors for the past decade, we were able to clean 24TB database of financial information, including S&P Global and Bloomberg Professional Services, which was subsequently used for building our data engineering capabilities for storing and pre-processing data. Our proprietary database solution, 162 Grid, can handle the distributed nature of storing and analyzing data. It is designed for real time generation of analytical data reports and is blazing fast. At OneSixtyTwo, capturing, storing, calculating and sharing features is coded exclusively in distributed C++ and supported by a data engineering team with educational backgrounds in computer science, statistics, and engineering.

Financial Data Quality
https://www.linkedin.com/posts/rnfc_financial-data-quality-activity-6706735330785153024-ugMT
Access to aggregated, comprehensive, clean and accurate data is critical for robust financial analysis. This is especially true for the growing pool of fund managers who use quantitative investment frameworks. Bloomberg and S&P's offerings fail to offer a universal set of available data, especially historically, that is clean of errors - which is much needed by investment managers. This report describes how data accessed from these data vendors can be too error prone for effective investment research workflows.

A Tour of World Economies & Businesses
https://162tech.com/world.html
In this report, I use 162 Grid to compile a comprehensive overview of the global corporate landscape, including the price of risk, costs of capital, quality of investments, indebtedness, and payouts in terms of dividends and stock buybacks. For company-specific data, I used data from trusted data vendors including S&P Capital IQ, Bloomberg, and a host of specialized data sources. In computing cost of capital and excess returns, I deliberately removed financial services firms from the analysis, because: (i) computing operating income or invested capital is a difficult, if not impossible task, at these firms. (ii) debt to a financial service firm is more raw material than capital, and determining what comprises debt is almost an unsolvable puzzle.

The Cost of Capital and the new role of the CFO as the Chief Figure-it-out Officer
https://www.linkedin.com/pulse/cost-capital-new-role-cfo-chief-figure-it-out-officer-fermin-cota/
Heading into a post-virus economy, there will be wrenching changes in most sectors globally, and complications for CFOs lie in two aspects. First, in the statistical problems with estimating risk parameters, and second, with the financial models they build on these parameters. In this post I do share the global database with capital structure quality and what each company can sustain in debt as we change the current debt to capital ratio to a target debt ratio. Using this approach, I estimated target capital structures for a total of *39,643* firms to get a sense of how much punishment businesses can take.

Making Sense of the S&P500
https://www.linkedin.com/posts/rnfc_gsresearch-activity-6702256758372626432-HfbX/
Given my philosophy of trusting fundamentals, I went back to my tidy dcf framework (https://rpubs.com/rafael_nicolas/sp500_valuation) for valuation, which is to tie the value of the S&P500 to its cashflows, growth and risk. When valuing the recovery scenarios of the index, here is what it looks like.

COVID-19 Implied Equity Risk Premium
https://www.linkedin.com/posts/rnfc_covid-19-implied-equity-risk-premium-activity-6663866086435487744-dPJW
Over the past two months, we have witnessed very high levels of volatility. This has been reflected by the VIX, a traded measure of volatility that is considered a gauge of fear and worry. With the spike in volatility came along the large sell-off in the stock market, triggered by concerns about the severe economic impact of the COVID-19 pandemic. In this document, I explore the use of implied risk premium as the proxy for price of equity risk and its role in explaining the impact of the COVID-19 on the S&P500.

Apple Inc. Historical and Forward Looking Factors
https://www.linkedin.com/posts/rnfc_markets-stocks-investing-activity-6695007563559395328-PejH
Apple just announced in its fiscal third-quarter earnings that the Board of Directors has approved a four-for-one stock split. That means that, for each share of Apple stock that an investor owns, they'll receive three additional shares. This is Apple's fifth stock split since it went public. Five years ago, I wrote a detailed teaching module, a behemoth weighing in at 150 pages, for students to learn in plain English how to model the cash flow for Apple.

Global Default Spreads & Risk Premiums
https://rpubs.com/rafael_nicolas/crp
Equity risk premiums, by country, with the intent of using these estimates when I value international stocks. This year, though, the COVID-19 pandemic has caused these numbers to change significantly. Note that the premiums have not only climbed in every country, but the sovereign default spreads, which like corporate bond spreads, have widened significantly.

Tidying Saudi Aramco Valuation
https://rpubs.com/rafael_nicolas/aramco
The tidy data principles are a cornerstone of financial data management and the data modeling workflow. The foundation for tidy data management is the tidyverse, a collection of R packages, that work in harmony, are built for scalability, and are well documented in R for Data Science. Using this infrastructure and the core tidy concepts, we can apply the tidy data principles to the Saudi Aramco Discounted Cash Flow Valuation.

Shortfalls of the Hierarchical Risk Parity
https://www.linkedin.com/pulse/shortfalls-hierarchical-risk-parity-rafael-nicolas-fermin-cota/
The Hierarchical Risk Parity (HRP) approach of portfolio allocation, introduced by Lopez de Prado, applies graph theory and machine learning to build a diversified portfolio. While the HRP algorithm leads to better performance out-of-sample than mean-variance optimization or minimum variance, some shortfalls of the algorithm may hinder its performance. The improvements we have introduced have shown better out-of-sample performance on long-short equity portfolios.

Internal Rate of Return (IRR) and the notorious Reinvestment Assumption
https://rpubs.com/rafael_nicolas/irr_mirr
As a consequence of senility, I still feel I do not understand this debate on the various interpretations people might have regarding IRRs and the reinvestment of withdrawals in private equity (PE) investments. I could be wrong but those that say there is an implicit reinvestment assumption, when using IRR to calculate performance metrics never seem to justify that claim. I even wrote a detailed teaching module for students to learn in plain English how to calculate the cash flow and performance metrics for a private equity real estate investment, where investments are illiquid and market timing is determined by the GP with a sequence of capital calls and distributions which are non-discretionary for the LPs.