MICKIAS AMBAYE

Quantitative Research • Commodity Markets • Machine Learning
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SUMMARY

Quantitative finance professional bridging derivatives pricing and ML research with hands-on commodity trading and corporate finance. CFO of a coffee export operation scaled to $5M in annual revenue, and a CQF candidate building option-pricing engines, volatility-forecasting models, and ML trading systems in Python and R. Targeting quantitative research roles at the intersection of commodity markets, data analysis, and machine-learning research applied to systematic, data-driven strategies.

QUANTITATIVE RESEARCH & PROJECTS

- **Advanced Option Pricing Suite:** Built a derivatives pricing engine implementing Black-Scholes-Merton, Heston stochastic volatility (via Fourier transforms), and Monte Carlo with antithetic variates; renders the full Greeks surface and an interactive 3D volatility surface inside a Streamlit dashboard with real-time, user-adjustable model parameters (Python). site
- **Commodity Risk Lab:** Built a live VaR backtesting and stylized-facts diagnostic suite on six commodity tickers (coffee, soybeans, wheat, crude, gas, ETB/USD); applies Gaussian, Cornish-Fisher, and Filtered Historical Simulation methods with Kupiec POF and Christoffersen independence tests on a rolling 60-day window; data refreshes nightly through a Supabase pipeline I maintain (Python, TypeScript). site
- **Eli Lilly DCF Valuation:** Built a discounted-cash-flow valuation with pharmaceutical pipeline analysis, probability-weighting revenue projections by drug-approval stage and layering in WACC estimation, comparable-company analysis, and Monte Carlo simulation with sensitivity testing on the terminal-value and discount-rate assumptions. site
- **Urban Heat Island Satellite ML:** Authored UHI-Pipe, a published PyPI package that pulls Sentinel-2, Landsat-8, and DEM data from Microsoft Planetary Computer and computes 19 spectral indices into ML-ready features; used it to classify urban heat-island intensity across three cities, reaching 0.96 F1 on Rio de Janeiro (28K+ grid points) with an interactive Leaflet explorer. GitHub live explorer
- **Brand Perception NLP:** Scraped and cleaned ~16K consumer reviews from the App Store, Reddit, and Trustpilot; ran sentiment (NRC/AFINN/Bing), LDA topic modeling, TF-IDF, bigram and co-occurrence network analysis, and aspect-based sentiment to surface the language driving each brand's perception on price, quality, and sustainability (R). GitHub

PROFESSIONAL EXPERIENCE

Muda Coffee LLC — 2024 – Present
Chief Financial Officer — *Washington, DC*

- **Scaled exports to roughly $5M in annual revenue** (about 30 containers in FY2025, over 50 cumulatively in two years) by driving pricing and inventory decisions grounded in data-driven margin and demand analysis.
- Build quantitative models for the business: an inventory-hold profitability model for buy/hold/sell timing, plus volatility forecasting of coffee prices, operational-demand forecasting, and tariff-impact modeling to guide pricing, procurement, and inventory decisions.
- Manage net working capital and cash flow across AP/AR for both Muda and its Ethiopian vendor (HAI), coordinating the financing and operational needs of an intercompany supply chain spanning the US and Ethiopia.
- Own banking relationships and trade finance (letters of credit) for international shipments; implemented Odoo ERP and represented the company at the Chicago and Boston specialty coffee expos to build buyer and supplier relationships.

Haileselassie Ambaye Industrial PLC (HAI) — 2020 – 2021
Operations & Business Development — *Addis Ababa, Ethiopia*

- **Fully restructured the corporate vehicle fleet from 87 units down to 0**, negotiating sales, loan compliance, and ownership transfers to eliminate carrying costs, loan obligations, and operational overhead tied to depreciating assets.
- Coordinated third-party and bank-appointed asset valuations for loan renewals, and audited prefinancing agreements and construction/manufacturing milestones before financing was released, ensuring proper documentation and regulatory compliance.
- Ran market and competitor analysis to source cost-effective procurement and negotiate favorable supplier contracts.

EDUCATION & CREDENTIALS

- **Certificate in Quantitative Finance (CQF)**, In Progress: derivatives pricing, stochastic calculus, numerical methods, risk management, and machine learning applied to finance and trading strategies.

Hult International Business School — Cambridge, MA

- **MSc, Business Analytics**: 3.79 GPA (Distinction), 2026 | **MSc, Finance**: 3.58 GPA, 2025
- **BBA, Entrepreneurship** (Minor: Finance): 3.6+ GPA (Distinction), 2024; multiple Dean's List awards.
- **Harvard University Extension School**: 4.0 GPA, covering Hedge Funds: History, Strategies & Practice; Real Estate Finance & Investment; Intro to CS with Python; and Intelligence & International Security.

TECHNICAL SKILLS

Programming: Python, R, SQL, Advanced Excel
Quant & Finance: Black-Scholes-Merton, Heston, Monte Carlo, GARCH volatility modeling, derivatives & Greeks, VaR, CAPM / APM / WACC, DCF & relative valuation, portfolio optimization, fixed income
Machine Learning: XGBoost, Random Forest, CNN / MLP, K-Means & hierarchical clustering, NLP & sentiment analysis, time-series forecasting, López de Prado financial ML
Data & Tools: PostgreSQL / Supabase, Snowflake, MongoDB, Power BI, Tableau, Microsoft Fabric, Git, Streamlit, Odoo ERP
Domain & Languages: Commodity markets (coffee, soybeans, wheat, sesame), FX, trade finance & letters of credit; English & Amharic (fluent), Tigrigna (native)