NICK DEROBERTIS

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RESEARCH INTERESTS

Fintech, empirical asset pricing, behavioral finance, monetary policy, empirical corporate finance, and market microstructure

EDUCATION

University of Florida   **May 2021**
Ph.D. in Business Administration - Finance and Real Estate   Gainesville, FL

Virginia Commonwealth University   **May 2014**
Master of Science in Business, Concentration in Finance   Richmond, VA

Virginia Commonwealth University   **May 2013**
Bachelor of Science in Business, Concentration in Finance   Richmond, VA

ACADEMIC EXPERIENCE

University of Florida   August 2014 - Present
Graduate Assistant   *Gainesville, FL*

· Conduct full research projects, including project development, data collection, and analysis
· Analyze billions of data points of panel- and time-series data using econometric models and techniques such as OLS, Logit, Probit, Fama-MacBeth, ARIMA, vector autoregression, Granger causality, hazard, quantile, PCA, LDA, EFA, CFA, SEM, difference-in-differences, and propensity score matching
· Predict and classify outcomes using machine learning models such as deep learning (multilayer perceptron), SVM, K-nearest neighbors, K-means, decision trees, ridge, LASSO, naive Bayes, and ensemble methods
· Collect data using web-scraping, APIs, and databases
· Clean, aggregate, and merge data from multiple sources with outliers and errors at different frequencies and levels of aggregation

Courses taught:

- Financial Modeling (senior capstone Python and Excel-based course, 4.5/5 evaluations)
  - Course Website: **https://nickderobertis.github.io/fin-model-course**
  - Semesters: Fall 2019, Spring 2020, Fall 2020
- Debt and Money Markets (fixed income course, 4.8/5 evaluations)
  - Semesters: Fall 2016, Spring 2018

Virginia Commonwealth University   September 2013 - August 2014
Graduate Assistant   *Richmond, VA*

· Conduct research and assist professors in teaching class sections and grading assignments

Courses taught:

- Financial Management Lab (Excel skills course)
  - Semesters: Spring 2014

PROFESSIONAL EXPERIENCE

Carbon Health Technologies
April 2021 - Present
Senior Software Engineer
San Francisco, CA

· Collaborate with product, design, data science, and other engineers to release features that improve the productivity of clinicians and support staff
· Independently architect and execute large projects to improve the Scala monolith and React Native mobile and web applications
· Optimize organizational engineering practices by contributing to discussions and documentation
· Assist in training and hiring of new engineers

Claimfound, Inc.
August 2016 - Present
Co-Founder and Chief Technology Officer
Gainesville, FL

· Created the business that ultimately grew to 15 employees, raised $1.75M, and was acquired by Carbon Health Technologies, with only one co-founder
· Manage up to 10 software developers, providing technical guidance and tracking progress, using a custom management system designed based on agile practices
· Architect a web application with a Python Flask back-end API and a TypeScript Angular front-end to assist individuals in claiming lost money
· Design and implement data pipelines which clean and aggregate state unclaimed property data into a 3NF schema in a PosgreSQL database hosted in AWS RDS
· Developed the full-stack prototype of the application and deployed it using Docker Swarm on AWS EC2 instances
· Secure, monitor, and manage the application by developing encryption, rate limiting, active monitoring services, user analytics, and operator interfaces
· Optimize consumer funnel by analyzing conversions in an A/B testing framework
· Automate testing, data pipelines, and deployment using Python and Bash scripts, AWS CLI, and Gitlab CI/CD
· Strategize about product development to improve user experience (UX) and monetization while appeasing regulatory concerns
· Assess and refine product-market fit by developing detailed financial models and updating them with information learned from user analytics, user feedback, and regulatory response

Eastern Virginia Bankshares
August 2012 - August 2013
Portfolio Analyst, Portfolio Management
Atlee, VA

· Rebuilt Allowance for Loan and Lease Losses (ALLL) models, ultimately saving $5.4 million for the bank
· Developed probability of default (PD) and loss given default (LGD) statistics for over 10,000 commercial and consumer loans by internal risk grade, delinquency status, and FFIEC code using migration analysis
· Designed and implemented stress testing methodologies

Federal Reserve Board of Governors
May 2011 - August 2011
Credit Risk Intern, Banking Supervision & Regulation
Washington, D.C.

· Created a regulatory scale which standardizes the largest banks' internal ratings
· Analyzed the Shared National Credit (SNC) program to reduce inefficiencies and implemented a data pipeline to improve usability of data

AWARDS AND GRANTS

Warrington College of Business Ph.D. Student Teaching Award	Fall 2016
Graduate Management Admission Test (GMAT) Score (780 | 99.6 percentile)	2014
Warrington Finance Ph.D. Research Grants ($2000/yr)	2014-2019
CFA Global Investment Research Challenge – Global Semi-Finalist	2013
Finance Student of the Year	2013
Alcoa Foundation Community Scholarship (full tuition and fees)	2010-2014
VCU School of Business Scholarship ($3000/yr)	2010-2014

SKILLS

Hours of Experience: ● 3,000+ | ◕ 1,000 - 3,000 | ◑ 500 - 1,000 | ◔ 100 - 500 | ○ 20 - 100

Programming

● Software Development	◑ Automation	◔ Distrib. Computing	◔ Scala
● Back-End Dev.	◑ Open-Source	◔ Version Control	◔ SAS
● Python	◑ Databases	◔ Parsing	◔ Bash
● IDEs	◑ Debugging	◔ Web-Scraping	○ CMS
● PyCharm	◑ Stata	◔ Documentation	○ Cryptography
◕ Software Architecture	◑ Security	◔ SQL	○ SEO
◕ Front-End Dev.	◔ Templating	◔ Git	○ R
◕ Web Development	◔ Migrations	◔ IDEA	○ NoSQL
◕ JavaScript	◔ Automated Testing	◔ CLI Development	○ Java
◕ TypeScript	◔ Parallelism	◔ Remote Development	○ MATLAB
◕ VS Code	◔ Async. Programming	◕ Mobile Development	

Data Science

● Statistics	● Modeling	◔ Forecasting	○ Dim. Reduction
● Empirical Research	◕ Econometrics	◕ Machine Learning	○ Deep Learning
◕ Data Analysis	◔ Visualization	○ Geovisualization	
◕ Data Munging	◔ Time-Series	○ Supervised Learning	

Frameworks

◕ pandas	◔ Selenium	○ Compodoc	○ typer
◕ Flask	◔ Panel	○ Svelte	○ Storybook
◕ SQLAlchemy	◔ Jinja2	○ Sass	○ Qt
◕ Jupyter	◔ pytest	○ Bootstrap	○ Material Design
◑ Angular	◔ Google Maps API	○ SciPy	○ jQuery
◔ pydantic	◔ FastAPI	○ scikit-learn	○ Django
◔ React	○ Redis	○ HoloViews	○ Beautiful Soup
◔ React Native	○ SymPy	○ Google Charts	○ Dash
◔ NumPy	○ GeoPandas	○ Plotly	○ Wagtail
◔ Matplotlib	○ lxml	○ Uvicorn	○ Grafana
◔ Celery	○ Sphinx	○ Pelican	○ Prometheus
◔ Requests	○ xlwings	○ fire	

Dev-Ops

◑ Docker	◔ ElastiCache	○ VPC	○ ECS
◔ Server Administration	◔ Gitlab CI	○ Route53	○ CDK
◔ CI/CD	○ Github Actions	○ S3	○ Nginx
◔ EC2	○ Networking	○ IAM	○ App Monitoring
◔ AWS	○ RDS	○ CloudWatch	○ CloudFormation

Presentation

◕ Typesetting	◑ HTML	◔ Plotting
◕ Writing	◔ CSS	◔ LaTeX

Soft Skills

● Communication	● Work Ethic	● Collaboration	◕ Organization
● Critical Thinking	● Teaching	● Entrepreneurship	
● Multitasking	● Attention To Detail	◕ Leadership	

Other

● Linux	◑ Excel	◑ Quality Assurance
● Windows	◑ Operating Systems	◔ JIRA
◕ Project Management	◑ Computer Hardware	○ Bloomberg Terminal

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Valuation without Cash Flows: What are Cryptoasset Fundamentals?

Cryptoassets represent a novel asset class in which tokens are generated and transacted using cryptography through blockchains. To date, few studies have attempted to derive a fundamental valuation for a cryptocurrency. I developed a model based on the Quantity Theory of Money (QTM) that informs us about fundamental value of a currency, and applied it to understand cryptocurrency valuation. For most cryptocurrencies, an expectation of future use as a currency drives the valuation. I analyzed attention, sentiment, and R&D measures as proxies that form this expectation, and found that they are all significantly related to cryptocurrency returns. A portfolio that was long high attention cryptocurrencies with weekly rebalancing would have earned a 0.58% daily alpha from mid-2017 to the end of 2019. The portfolio which is long high attention cryptocurrencies and short low attention cryptocurrencies has an even higher daily alpha of 0.72%, though it is not currently a tradeable strategy due to short-sale constraints. A portfolio formed from cryptocurrencies with high investor sentiment would have yielded a 0.33% daily alpha. R&D does not show as strong effects, but is still significantly related, and all the proxies for future usage remain significant with a variety of analyses and controls including other crypto market factors such as MKT_c, SMB_c, and UMD_c, and dual portfolio sorts on maturity, size, and momentum.

- Overview Video (Nick DeRobertis) | 3-minute video overview of the paper

Government Equity Capital Market Intervention and Stock Returns, with Andy Naranjo and
  Mahendrarajah Nimalendran

As part of their market intervention strategy, the Bank of Japan (BOJ) has been purchasing shares of ETFs tracking Japan's major stock indices, reaching as much as ¥16.3 trillion in holdings by December of 2017. We show that firms that end up with high BOJ ownership have 1.78% higher daily returns and alpha of 0.29% in the window of (-1, 1) around BOJ purchase days compared to firms with no ownership. We further show that there are significant price distortion effects as the BOJ purchases assets proportionally to their index weighting and not their market value. We analyze the Nikkei 225 as a price-weighted target index, and provide evidence that firms with high price-weightings but low market capitalization out-perform by 9.12% annually compared to the average firm. We show evidence that this out-performance is due to higher Bank of Japan ownership.

Are Investors Paying (for) Attention?

I examine the informativeness of investor attention on pricing of assets by using a new proxy based on Google search data. In contrast to prior studies using Google data, my new proxy contains cross-sectional firm attention information in addition to time-series information. I focus on firms that consistently receive high or low attention, rather than attention-grabbing events. I find that firms with low attention outperform firms with high attention by 8.16% annually, and after isolating the unique information in search volume and removing the impact of attention-grabbing events, the outperformance is still statistically and economically significant at 6.36% annually.

OSPIN: Informed Trading in Options and Stock Markets, with Yong Jin, Mahendrarajah Nimalendran, and Sugata Ray

To gain a better understanding of the role of information in the price discovery of stock and option markets, we propose and estimate a joint structural model of trading in both markets, yielding correlated directional informed trading in both markets, informed volatility trading in the option market, and correlated (buy/sell) liquidity trades in both markets. The model parameters and the probabilities of informed and liquidity trading in both markets are estimated using signed high frequency stock and options trading data for different option contracts. We find that moneyness and maturity play an important role in informed trading and on the microstructure price discovery of the stock and options markets. Further, we find the high frequency informed trading measures in the options market spike just before earnings announcements and remain high for a few days after the announcement.

WORKS IN PROGRESS

Explaining the Cross-Section of Cryptocurrency Returns

Does Government Equity Market Intervention Affect Liquidity and Volatility?, with Andy Naranjo and Mahendrarajah Nimalendran

The Effect of Equity Market Intervention on Corporate Financing, with Andy Naranjo and Mahendrarajah Nimalendran

How do CEOs Respond to Public and Investor Scrutiny?, with Corbin Fox

Do Insiders Learn From Short Sellers?, with Corbin Fox

SOFTWARE PROJECTS

py-ex-latex (**Python Extends LaTeX**)   *14k LOC, 463 commits*

Create LaTeX documents using only Python. Rather than building a direct Python API to LaTeX, this package has its own, simpler API to creating documents. It is focused on creating professional-looking documents with little styling effort. It currently supports documents, presentations, graphics, letters, and resumes. All my papers, presentations, and even my CV are generated using py-ex-latex.

data-code (**Python Tools for Working with Data**)   *13k LOC, 402 commits*

Data pipelines for humans. Work with variables, sources, and pipelines rather than raw data. Also includes high-level tools to analyze, summarize, and transform data.

py-file-conf (**Python Configuration Manager**)   *8k LOC, 436 commits*

py-file-conf is a Python framework for flow-based programming and managing configuration. To use it, you register your main functions and classes, and config files are created automatically for them. It provides a way to run these functions individually, in a list, in sections, or a combination thereof. Configuration can be dynamically updated, enabling powerful scripting.

py-finstmt (**Python Financial Statement Tools**)   *5k LOC, 280 commits*

Work with financial statement data in Python. Can calculate free cash flows and help project financial statements, automatically balancing the balance sheet.

pysentiment (**Python Dictionary-Based Sentiment Analysis**)   *545 LOC, 23 commits*

Python dictionary-based sentiment analysis. Includes Harvard IV-4 and Loughran and McDonald Financial Statement dictionaries.

regtools (Python Regression Framework)
3k LOC, 78 commits

High-level tools for running regressions. Handles fixed effects, 2+ way clustering, hypothesis testing, lagged variables, differenced variables, interaction effects, iteration tools, and producing summaries for a variety of models including OLS, Logit, Probit, Quantile, and Fama-Macbeth.

sensitivity (Python Sensitivity Analysis)
950 LOC, 34 commits

Python sensitivity analysis - run models with varying inputs to produce visualizations including gradient DataFrames and hex-bin plots

fin-model-course (Financial Modeling Course)
105k LOC, 453 commits

Financial modeling course using Python and Excel.

py-research-workflows (Python Research Workflows Website)
325 LOC, 11 commits

A website containing examples of data munging, analysis, and presentation in Python.

cryptocompare-py (Cryptoasset Data Downloader)
4k LOC, 85 commits

A Python SDK for the CryptoCompare APIs which require an API key. Allows downloading price history, social information, and blockchain information for cryptoassets.

pd-utils (Python Pandas Functions)
3k LOC, 92 commits

High-level tools for common Pandas workflows

py-mixins (Python Mixin Classes)
483 LOC, 38 commits

This is package includes Mixin classes which may be added to your own project classes to add certain functionality to them.

datastream-excel-downloader-py (Datastream Excel Downloader)
1k LOC, 37 commits

Use this tool to drive Excel using the Thompson Reuters Eikon plugin to download Datastream data. Useful for downloading large amounts of data.

py-excel-driver (Python Excel Driver)
376 LOC, 14 commits

A tool used to work with Excel from Python. It currently mainly handles starting and stopping Excel, and getting the active Excel instance and workbook so that COM commands can be run on them.

capiq-excel-downloader-py (Capital IQ Excel Downloader)
1k LOC, 54 commits

A tool to drive Excel using the Capital IQ plugin to download Capital IQ data. Useful for downloading large data sets from Capital IQ.

py-process-files (Python File Processor)
386 LOC, 15 commits

Use this tool to select files of given file types in a folder, and track whether these files have been processed, regardless of whether the script needs to be run multiple times. Stores progress on the files as a text file in the same folder, so that a long-running operation on many files can be resumed where it left off if it was stopped. It will also automatically estimate time to completion.

pl-builder (Py-ex-latex Builder)
628 LOC, 36 commits

Document building framework built on Pyexlatex.

py-edgar-api (Python SEC EDGAR API) *294 LOC, 8 commits*

Download filings from SEC's Edgar using Python.

project-report (Project Report) *2k LOC, 77 commits*

A set of tools for describing software projects. Finds software projects, analyzes them, and outputs reports. This package helped generate this list of software projects.

repo-splitter (Repository Splitter) *1k LOC, 56 commits*

This is a GUI, Python, CLI tool for splitting repos. If you have a part of a repo which you would now like to be a separate repo, and you would like to separate the history of the two repos such that the new repo contains commits referencing its files and any references to those files in the old repo have been removed, then this is the tool for you.

pypi-latest-version-action (Github Actions Python Project Version) *36 LOC, 12 commits*

Github Action for getting the latest version of a PyPI package.

cookiecutter-pypi-sphinx (Python Project Template) *374 LOC, 26 commits*

A template to use for starting a new Python package which is hosted on PyPi and uses Sphinx for documentation hosted on Github pages. It has a built-in CI/CD system using Github Actions.

check-if-issue-exists-action (Github Actions Check Issue Existence) *109 LOC, 11 commits*

Github Action for checking whether a Github issue already exists.

bibtex-gen (LaTeX Bibliography Generator) *473 LOC, 17 commits*

Generate BibTeX reference objects from DOIs and strings

obj-cache (Python Object Cache) *463 LOC, 13 commits*

A very simple API to storing Python objects built on ZODB. Use the .store method to store an object at a path, and .get to retrieve an object from a path.

transforms-fin (Financial Data Transforms) *453 LOC, 14 commits*

A set of Transforms meant for financial analysis to be used with the datacode package

py-file-conf-gui (GUI for pyfileconf) *1k LOC, 44 commits*

Web GUI for pyfileconf

py-gh-archive (Python Github Archive Downloader) *973 LOC, 23 commits*

Python SDK to access Github Archive

pyfileconf-datacode (Integration between pyfileconf and datacode) *622 LOC, 26 commits*

pyfileconf plugin to support datacode operations

nick-derobertis-site (Personal Website) *22k LOC, 395 commits*

Nick DeRobertis' Personal Website, built with Angular Universal (TypeScript), FastAPI (Python), and Bootstrap. I designed and created the entire site from scratch besides the logo.

[derobertis-project-logo](#) (Logo Generator)   *809 LOC, 19 commits*

Nick DeRobertis' Project Logo Collection and Generator

[svelte-angular-example](#) (Integration between Svelte and Angular)   *18k LOC, 30 commits*

Example Angular application using a Svelte component, including an Angular Svelte wrapper component

REFERENCES

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