

The Course

B8026-001: Applied Fundamental Analysis with Alternative Data

General:

Fundamental analysis requires gathering information to acquire a firm understanding of a business and its investment value. Accounting information is essential but not sufficient. It is imperative to go beyond the numbers in financial statements with alternative data and information. Together they forecast the future earnings and cash flows that are the basis for valuation. This course guides the student in acquiring alternative data, extracting insight from it, and using it for projections, comprehensive business model evaluation, and determining fundamental underlying investment, project, or asset value that differs from the market perception.

There are many judgments in investment and business case analysis to achieve a fundamental understanding of a company or opportunity. Finding the ground truth regarding positioning, operations, and prospects of a company or opportunity is not a trivial task. In this course, we will learn to accept no predefined formula to identify, quantify, and project the challenges and opportunities in a complex organization operating in a constantly evolving global environment exists. The student will work with real datasets and will benefit from direct advice, experience, and practical insights from portfolio managers, research analysts, consulting data analysts, and others to derive value from the world of information in front of them.

Modern alternative data resources and techniques will be shared and applied. The course will give students the frameworks and tools to make thoughtful decisions on which data makes sense, how it fits into the context of financial statements and business models, and most importantly, when to ignore and question data. The student will leave with the ability to apply the practical macro, micro, and alternative data to their analysis, no matter the variant circumstances requiring their newfound skills. Students will master the ability to:

- use rigorous thought processes to optimize available information,
- justify their selection of relevant data,
- make conscious choices to go deeper or not into the data based on its application,
- uphold appropriate ethics and identify the consequences of using data that is available, and
- avoid pitfalls of blindly following data when presented with an associated compelling narrative.

Session Titles and Overview:

- Data Discovery and Use: What are data, sourcing data, and the ethics and proper use of data, independently source data, apply data ethically, and don't overstate its use cases.
- Macro Data and Mindset: Intro to macroeconomic data, appropriately interpret the data to build macro viewpoints with alternative data, detect when cyclical and monetary policy issues can outweigh the secular.
- Establish a Thesis: Using data to scope the available opportunity for companies and practically apply findings to unit economics.
- Real World Uses I: Hands-on use credit card spending information and corporate sales data to achieve transparency and answer corporate and consumer questions.
- Real World Uses II: Hands-on use of web scraping that reveals core asset information.
- Alternative Doesn't Mean Fancy: Framing and applying data in context.

The Instructor:

Short Bio:

Matt Dell Orfano – mmd2176@gsb.columbia.edu

Matt is a Senior Analyst at Discovery Capital, focusing on technology and global, special situations. Before joining Discovery in 2012, Mr. Dell Orfano was a Senior Analyst and Partner at Arch Capital Management, a Forbes 400 family investment subsidiary. At Arch, he contributed to managing a global long/short portfolio invested across multiple asset classes. Before his tenure at Arch, Mr. Dell Orfano was an analyst at Pike Capital, a long-biased, special situations fund. He steered research and restructured illiquid public investments predominantly in Asia. He joined Pike from the Citigroup Fixed Income Principal Desk. He led the diligence, valuation, and acquisition of Latin American charged-off receivables; additionally, he engaged in funding consumer finance institutions. Mr. Dell Orfano began his career at Citigroup's investment bank, focusing on esoteric, asset-backed finance. Mr. Dell Orfano serves on the advisory board of Knoema, an alternative data aggregator and analytical tool for corporate and financial services clients. He holds an MBA from Columbia University, from which he graduated with distinction, and a BA in Economics from the University of Michigan.

Course Logistics and Expectations

The Class:

This course will be a journey through the many data elements and how to apply them in financial analysis. In some cases, the application will be classic modeling examples; in others, to contextualize the data for appropriate use. Both are equally important. The critical element of success in this class will be to demonstrate a real-world understanding of business and put it in the context of the available data. There will be guest speakers for each class session to add context and application around the concepts we will study. This exposure and the class's interactive nature are of great value, and as such, attendance will be mandatory.

Learning Teams:

- Students will establish learning teams on the first day of class.
- Learning teams should be ~5 students and will be named for presentation purposes.
- This team will be the same as your zoom breakout rooms during class, should this be necessary.
- Questions via email should include the teams' name in the subject line and have all team members on the message.

Labs & Homework:

- The lab module exercises will be completed for a period in class.
- The homework will consist of a completion of the same and a summary of findings done in PowerPoint and submitted on Canvas.
 - Ensure that each group has a 1-5 slide presentation (not more than 5) that they can share in class when called on – we will debrief in the class.
 - Submitted as learning team.
 - Due the Monday after the Thursday afternoon class.
- There will be library resources and logins necessary (detailed below).

Attendance:

- Attendance during class time is mandatory and will be tracked.

- Please reach out directly to discuss a potential exception to the above.

Columbia Library Resource Requirements:

- The below are available through the library:
 - Library link (<https://library.columbia.edu/libraries/business.html>).
 - Email for setup and assistance: business@library.columbia.edu
 - Bloomberg Terminal access.
 - Capital IQ Login and Excel Plugin, download templated to excel.
 - Access to broker research through library agreements.
- Google Maps Timeline: Download Google Maps and turn on Timeline (this will be used in a later lab) <http://www.google.com/maps/timeline>

Grade & Assessment

Overview:

The primary goal of the course is to prepare an individual to conduct an analysis of a company or business opportunity using orthogonal real-world inputs in combination with financials to justify assumptions and guide your analytical process. A project demonstrating the use of the skills studied in class, including a company model, will be the core of the final evaluation. A passing grade in the final assessment will be necessary to pass the course.

Participation:

Participation, individual in-class contributions of quality, and the interactions with me and those industry experts that join the class will represent 25% of the grade. We will conduct some labs in class within learning teams and it is of great importance to share one team's assumptions and thoughts with the other teams. Quantity of participation without quality is not the objective, sharing experience, assumptions, and approaches is key.

Assignments:

Assignments and in-class activities that apply the techniques and new information learned during the sessions, through an exercise and a writeup will represent 50% of the grade.

Final:

Rubric elements regarding grading for the project are laid out in the Final Project detailed description. It is necessary to submit all elements to receive credit. All three elements of the final are necessary to achieve full credit. To allay any concerns around project completion suggested milestones are included to ensure completion by the due date. The final will represent 25% of the grade.

Should the student wish to offer their assignments and final projects to a broader audience, the instructor will select several for review by industry experts in investment, consulting, and alternative data.

Final Project

Due: Friday, December 17th, 2020

Project Description:

The final assignment consists of a basic model that incorporates the techniques developed in class. The project will integrate curated alternative data sets into a model. The expectation is that it will include (i) a writeup justifying the approach and exploring approaches that the student rejected or discounted, including information about revenue recognition and critical findings from the earnings transcripts and review of public filings that drove the thought process (ii) a brief presentation documenting the differentiation of your analysis relative to the method used by street analysts (the reports gathered from CBS library) and (iii) an annual projection of an income statement, balance sheet, and cash flow statement for the company using the provided template. The sheet should be lay out relevant assumptions in the cells adjacent to the projections highlighting the relevant lines/assumptions to explain your thought process and beliefs.

The project's objective is not to test the student's ability to build a 3-statement model or spreadsheet but rather the buildup of the line items in the context of the alternative information available. Making your thought process evident for the below elements is key to achieving top marks.

Key Rubric Elements:

Macro

1. Did the student use macroeconomic indicators or other sources to link general economic conditions to its prospects?
2. Identify the critical volume and price drivers evident in inflation data that might affect their revenues or costs?
3. Contemplate elements that affect the target company's consumers wherewithal to purchase their products?
4. Other relevant company-specific considerations.

Alternative data sample critique

1. Is there a clear understanding of the value of the data provided and what it does or does not provide for projections both near and long term?
2. What elements are identified are critical, if any, are the inferences from near-term projections that inform the longer-term prospects for the business?
3. Is there an explicit link to the financial statements?
4. Has the student correctly identified incremental data that would be useful to their process?
5. Other relevant considerations.

Income Statement

1. Does the student understand key drivers of revenue, how it is accounted for, and the relationship to the real-world data or business operations?
2. Is there a concept of $p \cdot q$ visible in the spreadsheet and clearly explained in the writeup to link real world insights to the data?
3. Did the student identify key drivers correctly? Alternative data may be an element of the analysis, were key drivers such as store growth, customer LTV, new business prospects, etc. identified inside and outside of the data? Is there proper weighting put on such drivers and the importance of elements outside of the alternative data?
4. Did the student link elements of volume and price to operating leverage assumptions?

5. Do the critical costs of driving revenue dollars flex with the topline assumptions (COGS etc.)
6. What were other operating expenses contemplated?
7. Labor costs and retention metrics are driven by sentiment analysis, other sources, and macro wage information observed? Did this include a p*q analysis and an understanding of labor needs and retention?

Balance Sheet

1. Is there a representation of new investment in systems, software, PP&E that are commensurate with growth?
2. How is the working capital contemplated?
3. Do assets match liabilities?
4. What are other capacity elements necessary?

Cashflow & Funding

1. Are there considerations for margins, CAPEX, and FCF appropriately scaled with the above elements and clearly explained?
2. Is the cost of funding contemplated in the context of history and in the context of macro explorations and the business conditions?
3. For companies with low valuations, can they raise capital as needed or generate cash to continue operations? For high valuation companies, are they consuming cash, and can they meet projections if there are tighter or less favorable funding environments?

Other Considerations

If the student wishes to do a project on a company that is not on the list, please email me separately. This does not provide extra credit; exploration of interests can be discussed but may not always be granted.

Should the student wish to offer their assignments and final projects to a broader audience, the instructor will select several for review by industry experts in investment, consulting, and alternative data; please indicate if this is of interest upon submission.

Final Project Company Choices:

Subject to change, but likely among KMX, MELI, CMG, SFIX, DPZ, F, SHOP, TTWO.

Suggested Weekly Project Milestones:

Post Class 1 Final Project Milestone:

1. Basic financial projection model, functional, 3 statements.
2. Exploration and documentation of unit drivers of business topline and preliminary integration into financial model.
3. Exploring and quantifying with data the macroeconomic elements in the markets may affect business performance from the top to the bottom of the income statement.

Post Class 2 Final Project Milestone:

1. Final project company selection from provided list:
 - a. KMX, MELI, CMG, SFIX, DPZ, F, SHOP, TTWO
 - b. Give basic bullet points on key drivers of business and revenue recognition.
2. Source key drivers and associated outside data for a company in your universe/circle of competence.
 - a. Think about family businesses, foreign companies with unfamiliar or novel business models or drivers, new digital business.
 - b. Can be a former employer, or nonprofit, what drives their revenues?

3. Submit datasets (or brief descriptions of the same) that the companies themselves use to plan operations, get competitive intel, or make management decisions. We will explore some in each class going forward, if you have something in mind, but need time to gather data to present, submit the idea, let me know when you can get the dataset.

Post Class 3 Project Milestone:

1. Summary of key drivers available in investment research from major banks as is available through the Columbia Library System
2. Summary of least 6 transcripts and earnings calls (think about company and competitors) identifying key drivers of the business.

Post Class 4 Project Milestone:

1. Explicit or implicit linkage and assumptions regarding the impact of macroeconomic variables.
2. Explicit or implicit linkage of variables from data for income statement.
3. Explicit or implicit linkage of business drivers on balance sheet needs.
4. Five bullet point summary/outline of your video presentation.

Post Class 5 Project Milestone:

- Explorations of data sets outside of financial information that have informed previous company performance.
- Explicit excel mechanism to integrate such drivers into projections.
- Exploration of income statement elements such as operating leverage and fixed costs (please be aware of amortized costs and revenues in your exploration).
- Exploration of potential alternative information that can be representative of cost elements for the business.

Classes & Modules

Ongoing

Timing Considerations:

This is an expected timeline for the course. Schedules subject to change.

Course Gantt Chart

Module	Title	Date	14:00	14:15	14:30	14:45	15:00	15:15	15:30	15:45	16:00	16:15	16:30	16:45	17:00	17:15
1	Data Discovery & Use	10/27/2022	Roadmap & Data Context					Break	Module 1 Lab				Speaker / Lecture			
2	Macro Data & Mindset	11/3/2022	Macro Data				HW Pres.	Break	Module 2 Lab				Speaker / Lecture			
3	Establish A Thesis	11/10/2022	Establish a Thesis				HW Pres.	Break	Module 3 Lab				Speaker / Lecture			
4	Real World Uses I	11/17/2022	Real World Uses I				HW Pres.	Break	Module 4 Lab				Speaker / Lecture			
5	Real World Uses II	12/1/2022	Real World Uses II				HW Pres.	Break	Module 5 Lab				Speaker / Lecture			
6	Alternative Doesn't Mean Fancy	12/8/2022	Intuition & Evidence				HW Pres.	Break	Module 6 Lab				Speaker / Lecture			
																Evaluation

Course Structure Visualization:

Data Discovery & Use: What is data, how is it used and what do we need to understand about the process.

Establish A Thesis: Understand the business and develop insights to properly measure it.

Real World Uses II: Explorations of data and process.



Macro Data & Mindset: What are the key macro indicators we should attend to, how are they influenced?

Real World Uses I: Explorations of data and process.

Alternative Doesn't Mean Fancy: Be practical and check your understanding of the business and environment to draw best conclusions.

Module 1

Thursday October 27th, 2021

Class Overview:

- What is data?
- Sourcing data.
- Data in a real-world context.
- The data does not drive the problem; the problem drives the data.
- Correlation does not equal causation.

Lab – Class & Home (Due Monday, November 1st):

1. Find a sample of communication and responses on social media regarding both opponents of a federal senate race and use an online sentiment analyzer such as monkeylearn.com to analyze the sentiment of responses.
 - a. What are the relevant observations?
 - b. What are the essential elements of the analysis?
 - c. What did you read to figure out what to do?
 - d. Where did you get your sample?
 - e. Did you look enough places?
 - f. How does it look over time?
2. Lending Club (public company)
 - a. <https://guides.library.columbia.edu/capitaliq> (get your account)
 - a. Using broker research reports accessible from significant banks through the library system to identify key revenue drivers, site which reports you looked at.
 - b. Use the capital IQ excel plugin, use their projections template (download in the plugin) to download the standard data for Lending Club, and populate the template.

Module 2

Thursday, November 3rd, 2021

Class Overview:

- CPI, PPI, PCE
- Seasonal Adjustment
- Retail sales data
- Census bureau
- ISM
- Housing Starts

Lab – Class & Home (Due Monday, November 8th):

1. Use the MAP function on Bloomberg to identify oil production resources. Use google maps or others to observe pictures of the fields down to the smallest detail.
 - a. <https://guides.library.columbia.edu/bloomberg> (make sure to schedule a time for terminal access)
 - b. What other essential elements of global oil infrastructure does MAP provide?
 - c. If you look at the pictures of the drilled areas in detail on Google maps, what do you see?
2. Use the BI function of Bloomberg to identify industry data for oil production and consumption in a large nation.
 - a. What are the key data points that matter?

Module 3

Thursday, November 10th, 2021

Class Overview:

- Taking context from diffuse sources of information – create a thesis.
- Using news sources to understand and frame a problem – what is a theme?
- Structured vs. unstructured data, making sense of it.
- Representative information around companies.
- Observing the real-world understanding of a company's operations.
- Framing your questions.

Lab – Class & Home (Due Monday, November 15th):

1. Look at personal credit card statements and identify as many attributes as possible in transactions.
 - a. Think about the merchant, city, state, amount, date, payment aggregator, etc.)
2. For the following use public filings, press releases, transcripts, and company presentations.
 - a. For VFC, locate and document the taxonomy of subsidiary brands in public filings, explain the relevance.
 - b. For PNRA, explain the co-owned vs. franchise business models.
 - i. What is the revenue recognition for each?
 - ii. What would one observe with regards to total topline vs. same store sales?
 - c. For LULU, what is the best way to find store growth?
 - i. Filings? Website?
 - d. For FIVE, where are stores located?
 - i. Why does the geographic footprint matter?
 - e. For SBUX, what is the significance of its loyalty program?
 - i. How does rev rec work when reloading onto a loyalty card?
 - f. For MCD, find management discussion regarding installing kiosks.
 - i. What is the impact on sales and measurement of sales?
 - g. For NYT subscription business model, what are the plans (digital, print + digital, gift, cooking +crossword, etc.)
 - i. How would this appear on your credit card, and how
 - ii. How do you identify churn + gross adds?
 - h. For GPS, how does gift card accounting work?
 - i. What about gift cards sold in CVS, etc.?
 - i. For AMZN 1P vs. 3P Marketplace
 - i. What is the revenue model for each?
 - ii. What happens when they acquire a business like WFM?
 - iii. Identify all sources of topline in AMZN's business; which line items would be identified and captured in external data like a CC transaction, what would not?
3. Calendars
 - a. What is the 4-5-4 calendar?
 - b. How long is the Holiday season? Is it the same every year?

Module 4

Thursday, November 17th, 2021

Class Overview:

- Taking context from diffuse sources of information.
- Using news sources to understand and frame a problem.
- Observing the real world to understand a company's operations.

Lab – Class & Home (Due Monday, November 25th):

1. Pick a product on Amazon.
 - a. Find every single attribute of the product that is made available to the user.
 - b. Is your list comprehensive? Did you think about comments, shipping warranty, seller info, shipping times, etc.?
2. Pick a product on EBAY.
 - a. Find every single attribute of the product that is made available to the user.
 - b. Is your list comprehensive? Did you think about comments, shipping warranty, seller info, shipping times, etc.?
3. Use the ODFL data in the file to create a quarterly output of people at their locations.
 - a. What needs to be investigated further?

Module 5

Thursday, December 1st, 2021

Class Overview:

- Where have you been in the physical world?
- Where are you going to the virtual world?
- Design and implementation of web scrape to match KPIs.

Lab – Class & Home (Due Monday, December 6th):

1. Frame the US GDP progression from 6/30/2019 to current.
 - a. Bring in data that shows the progression of GDP using information on Bloomberg, or other sources.
 - b. Look at the S&P 500 and Treasury yields in the US.
 - c. Look at the Investment Grade and High Yield spreads.
 - d. Write a narrative about the progression of the markets vs. the progression of the actual GDP indicators.
 - e. What is the market telling you that the data isn't?
2. Use a news search for understanding the background of the US / China trade war.
 - a. Specify the timeframe of the trade war.
 - b. Present macroeconomic data (import/export figures, etc.).
 - c. Consider the different GICS sectors in the market and how they traded relative to the S&P 500 as a whole.
 - d. Observe global commodities (oil, agricultural products that were relevant elements, etc.)
 - e. Write a narrative about the progression of the markets vs. the actual import/export data progression.
 - f. What is the market telling you that the data isn't?

Module 6

Thursday, December 8th, 2021

Class Overview:

- Knowing what you can and cannot do and being thoughtful about the choices.
- Do not take data at its face; following blindly is disastrously easy.
- The more, the better? Less data can be more valuable when the cost outweighs the benefit.
- Focusing on what is possible in an analysis, not what would be perfect.
- What are the key drivers of management incentives, are they aligned?

Lab – Class & Home (Due Monday, December 13th):

1. Pick two proxy statements for S&P 500 companies.
 - a. Compare and contrast the compensation incentive structures.
 - i. Revenue, profitability, return on capital, etc.
 - ii. How do you find out the last time they changed?