Artificial Intelligence & Unstructured Analytics in Finance

By Ritchie Ng
RITCHIE NG, CHIEF AI OFFICER
Head of Deep Learning and Systematic Trading Strategies

2 Core Revenue Streams

**FX Hedging**
Month-end hedging trades by AI algorithms

**FX Alpha Generation**
Daily directional FX trades by AI algorithms
RITCHIE NG, CHIEF AI OFFICER
Head of Deep Learning and Systematic Trading Strategies

> 3 billion
US Dollars

FX Trade Volume Year to Date
RITCHIE NG, CHIEF AI OFFICER
Head of Deep Learning and Systematic Trading Strategies

Core Front Divisions

Data Curation and Processing | AI Algorithms Design | Systematic Strategy Optimization
Top traders, programmers and quants (PhDs) associated with..

JP Morgan, Nomura, AIG,
NVIDIA, Facebook
PROBLEM

Too much unstructured data across financial institutions and non-financial institutions to effectively predict market regimes for alpha generation or hedging
TRILLION DOLLAR FX PROBLEM
Artificial Intelligence & Unstructured Analytics in Finance

CURRENT OUTDATED SOLUTION

Manual reading by thousands of traders, quants, researchers and analysts in banks, funds and corporations with differing abilities
AI SOLUTION?

- Supervised learning in predicting pre-defined market regimes in:
  - Broad themes like risk-on and risk-off environments
  - More concentrated themes of Dollar, Euro or Yen strength and weakness, to localized themes isolated regions like Turkey and Scandinavian regions.
“Beating the wisdom of the crowds is harder than recognizing faces or driving cars.”

Marcos Lopez De Prado,
Head of Machine Learning AQR
World's Second Largest Hedge Fund Managing 250 billion USD +
Unlike most problems capably solved by AI.

- In investments, there are thousands of extremely powerful, resourceful, and smart groups of people (institutions) attempting to make profits,
- Frequently predatory & most of the time unintentionally predatory.

**Key:** hundreds of thousands of players with no pre-defined logic and emotions aiming to survive
Types of Unstructured Data
Artificial Intelligence & Unstructured Analytics in Finance

DAILY
Research reports and daily briefs

SLOW-MOVING

FAST-MOVING

REAL-TIME
Market commentary, Private Institution Chats, Social Media, News Outlets
Types of Unstructured Data

Artificial Intelligence & Unstructured Analytics in Finance

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### EM investors positioning in ASEAN

| Country       | % by strategy               | % by country              | % by type of data | % by MSCI EM | Benchmark
|---------------|-----------------------------|--------------------------|------------------|--------------|------------
| Korea        | 19 (20)                     | 8 (20)                   | 4.1              | 0.5          | 11.8       
| China        | 16 (16)                     | 9 (16)                   | 7.5              | 0.3          | 7.7        
| India        | 16 (16)                     | 9 (16)                   | 7.5              | 0.3          | 7.7        
| Russia       | 16 (16)                     | 9 (16)                   | 7.5              | 0.3          | 7.7        
| South Africa | 16 (16)                     | 9 (16)                   | 7.5              | 0.3          | 7.7        
| Other EM     | 16 (16)                     | 9 (16)                   | 7.5              | 0.3          | 7.7        
| Malaysia     | 12 (12)                     | 7 (12)                   | 4.4              | 0.5          | 11.8       
| Thailand     | 12 (12)                     | 6 (12)                   | 3.7              | 0.3          | 7.7        
| Indonesia    | 12 (12)                     | 7 (12)                   | 4.4              | 0.5          | 11.8       
| Philippines  | 12 (12)                     | 7 (12)                   | 4.4              | 0.5          | 11.8       

Source: S&P/IFGP Global, MSCI, JPM Morgan Calculations. The survey covers 50 fund managers. The calculation of EM is greater than 3% of revenue including.

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**Additional Text:**

SLOW-MOVING

Research reports and daily briefs

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**Image Description:**

The image contains a chart with various data points and a table with several columns and rows, likely related to financial data and analyses. The chart includes data points that are visually represented. The table contains the following columns: Country, % by Strategy, % by Country, % by Type of Data, % by MSCI EM, and Benchmark.

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**Note:**

The text mentions that investors should be aware of any conflicts of interest that may affect the objectivity of the report and should consider the report as only a single factor in making their investment decisions.

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**Additional Details:**

- **J.P. Morgan:** The firm is known for its research and investment banking services.
- **Types of Unstructured Data:** This section discusses how artificial intelligence and unstructured analytics are used in finance.
- **EM investors positioning in ASEAN:** This section analyzes the positioning of EM investors in various ASEAN countries, including Korea, China, India, Russia, South Africa, and others, based on percentage by strategy, country, type of data, MSCI EM, and benchmark.
### EM investors positioning in ASEAN

#### Table 1: Survey of key EM managers positioning relative to MSCI EM – For major EMs

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<th>&lt; 2% OW</th>
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<th>EM</th>
<th>UV (%)</th>
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Source: EPFR Global, MSCI, J.P. Morgan calculations. The survey covers 51 fund managers. The calculation of OW is greater than 2% overweight versus...
European Views: Germany: Budget insulated from recent political events

In light of the results of the Hessen regional election, Chancellor Merkel announced her intention to step down after the 2021 federal elections. Also, she plans to hand over party leadership after the CDU party congress in December this year, bringing forward the succession process.

By Rosanne van Otterd, Alan Oster

EUROPE/CEMMEA
European Economics Daily: Euro area growth weaker than expected in Q3
31 Oct 2018 12:06 am (10pg)

European Views: BoE Preview — Suspended animation
30 Oct 2018 07:00 pm (15pg)

European Views: German headline inflation to be broadly in line
30 Oct 2018 06:36 pm (10pg)

GLOBAL
Global Markets Daily: US Treasuries Spreads Likely Nearing a Top (Korapathy)
30 Oct 2018 08:43 pm (10pg)

Global Markets Daily: China’s Bond Market: On track for inclusion into the Global Aggregate index from April 2019

Read the transcript: Equities and US growth, Italy vol, China

Top of Mind: Making sense of midterms

Oct 2018

Amid market volatility and questions about global growth, US midterm elections remain on investors’ radar. The consensus view, which we share, is that the Democrats will take the House while the Republicans will keep a slim Senate majority.

Read more
outperforming ‘Low P/E’ by 3.5% p.a.). It is interesting to note that within the ‘High P/E’ cohort, when firms have traded on extreme valuations (i.e. >100% premium to the market), they have typically underperformed by an average of -1.7% p.a. This factor more than any other suggests a more negative outlook for ‘growth’ stocks given 60% of our ‘High P/E’ portfolio currently sit in this bracket, 3x the typical level.

Exhibit 5: ‘Growth at Stretched Prices’ – DHG, NXT, TAH & WOR have 7 out of the 12 warnings signs that have predicted poor returns for ‘High P/E’ stocks.

Current list of ‘High P/E’ firms across the ASX 200. Sorted by those firms who score the highest (i.e. worst) under our ‘GASP’ framework. A tick indicates a company is exposed to a factor that is typically associated with poor performance from growth stocks (i.e. it ranks in the bottom third across the ASX 200 on that measure). The reverse is true for firms marked with a cross.

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<th>Low 3yr P/E</th>
<th>EPS Growth</th>
<th>Large Goodwill Balance (% of Market Cap)</th>
<th>High EPS Dispersion (P/E2 Cons)</th>
<th>High EPS Momentum (5th)</th>
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Types of Unstructured Data

Artificial Intelligence & Unstructured Analytics in Finance

FAST-MOVING

REAL-TIME

Market commentary, Private Institution Chats, Social Media, News Outlets
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<td>1.21</td>
<td>11.63</td>
<td>12.84</td>
<td>12.84</td>
<td>83.94</td>
<td>06:00</td>
<td>31-Oct-12</td>
<td>100.00%</td>
<td>5.33%</td>
<td>31-Oct-12</td>
</tr>
<tr>
<td>VWAP Full day</td>
<td>0.96</td>
<td>9.10</td>
<td>10.06</td>
<td>10.06</td>
<td>129.60</td>
<td>06:21</td>
<td>31-Oct-15</td>
<td>100.00%</td>
<td>3.03%</td>
<td>31-Oct-15</td>
</tr>
</tbody>
</table>

### Efficient Frontier by Strategy

![Efficient Frontier by Strategy Diagram](image)

### Intra-Trade Impact and Liquidity for POV 8%

![Intra-Trade Impact and Liquidity Diagram](image)
US Equity Strategy
Tracking The Sell-off
US equity selling from retail accounts, new shorts, and futures are a potential overbought, but fund inflows and options pressures should abate. And November's $170 bn of buybacks/dividends will help.

New Trade 1
303-988-1981

Neos Post
Which tone will the Bank of England convey on Thursday
Vote Now!

- Danish
- Hawish

In the maturing of an economic cycle, US equity valuations tend to rise. Barring recession, however, there are limits to how far such an spike can extend, and the market is nearing such limits. US term structure is inverted by nearly five points, making this one of 1.1 percent of extreme inversions since 2004. This episode is so far broader than usual, and S&P losses have been large. Hedge against continued high equity volatility by betting long $1m CAD/USD, or fade the move via short NASDAQ vol.

UBS Knowledge Network
The Struggle Continues
Investors are struggling across a number of asset classes. The recent sell-off in equities has hurt a wide range of funds as the long equity/short fixed income trade wanes. The timing of the move near to year-end further complicates things. Funds which have spent the past few months selling for their small returns find themselves back at square one year into next. The perils to chase performance could increase the longer this unwinds in markets. Yet even as headwinds build, the data remains solid, presaging any significant move in fixed income. North-end on Wednesday may keep investors looking for one last rally to sell into.

UBS Knowledge Network
Curious Complacency
The $S&P 500 options have apparently permitted complacency during this month's turmoil, with implied volatilities failing to show the sort of sharp rises that typically accompany a modest stock market pullback in the last few days. This was evident just again on Monday. The overall market is still in a long-term uptrend, so a correction is not likely. But anything that rises with a market 10% from its highs is at risk, and should not be the focus of your investment strategy.

UBS News
The Science Behind The Sell-off

History
Type to filter

# Default
New Column Structure
New Column Structure
New Row Structure
Recent (10)

S&P 500 options appear to have been trading at levels that would be considered unusual. This has led to a rise in implied volatilities, which suggest that the market is overvalued. However, it is worth noting that the VIX has been declining recently, which is a positive signal for the market. This may be due to the fact that investors are becoming more confident in the future performance of the market. The current level of volatility is expected to remain low for the time being.
Types of Unstructured Data
Artificial Intelligence & Unstructured Analytics in Finance

DAILY
Research reports and daily briefs

SLOW-MOVING

FAST-MOVING

REAL-TIME
Market commentary, Private Institution Chats, Social Media, News Outlets
SUPERVISED LEARNING: TEXTUAL
ON UNSTRUCTURED FINANCIAL DATA

- **Textual Data**
  - Slow-moving & Fast-moving
  - Mostly APIs & Manual OCR and REGEX Scrapping

- **Labelling**
  - Market Regime Labelling
  - Risk on, risk off, EUR, JPY, USD, yield differential expansion etc.

- **Training**
  - Attention Adversarial TCN/RNN/LSTM Classification
  - For market regime prediction

- **Backtest**
  - Combinatorial Purged Cross-Validation
  - Walk-forward backtesting has leakages, you need purging and embargos
GENERAL NOTES...
From systematically trading more than 3 billion this year.

• Models break frequently
  • Perpetually shifting correlations
• More than 80% of papers overfit
  • Unknowing feature snooping (economic data particularly)
  • Leakage in cross-validation
  • Slippage on scalability
  • And more...
• A wide divide in applying algorithms in real trades
  • Sharpe, Calmar, PNL to Max Drawdown critical over MSE/win-rate etc.
  • Ultimately it’s returns + “smoothness”
    • Strategy that returns –ve return on first month = axed anywhere