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Data Analytics, Machine Learning, and Investment Compliance

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Financial institutions that employ investment advisers to manage client portfolios and regulatory authorities that monitor those advisers have not fully harnessed the power of data analytics, artificial intelligence, and machine learning for compliance purposes. This article discusses how a compliance monitoring framework could be enhanced through these tools in a way that benefits investment advisers and their clients.

Often, compliance assessment methodologies that financial institutions use to evaluate controls designed to protect clients' interests are based on checklists and lack continuous, real-time monitoring of investment decisions. Financial institutions risk reputational harm and monetary loss should an investment adviser ignore or stray from regulatory requirements and accepted practices.

Regulatory authorities like the Financial Industry Regulatory Authority (FINRA) and the Securities Exchange Commission (SEC) are shifting their focus from single acts of investment adviser conduct and have launched initiatives to incentivize financial institutions to self-report violations and remediate affected customers.

The advent of AI has enabled machine learning algorithms and models to perform automated data analytics that can help financial institutions and regulatory authorities to continuously monitor investment advisers and proactively rectify investment-related issues. Continuous monitoring can also aid investment advisers by analyzing data-intensive return enhancement strategies.

Financial institutions can gradually increase their adoption of advanced data analytics starting with continuous monitoring of advisers' transactions using rule-based algorithms before investing in data and learning needed for AI implementations. A tiered approach will enable financial institutions to balance the investment and learning needed for AI implementation with the benefits from enhanced compliance.

Introduction

The investment adviser community includes entities providing advice about investing in securities, such as investment managers, wealth advisers, financial planners, investment counsel, asset managers, wealth managers, and portfolio managers. This sector collectively manages $83.7 trillion assets for more than 43 million clients, including 34.3 million individual clients, with a combined $10.5 trillion assets under management.

As an SEC research report suggests, many of these individual clients often lack resources and knowledge to analyze their investments and therefore rely on investment advisers for investment decisions and hence are at risk of receiving conflicted investment advice. The 2015 Council of Economic Advisers estimated the aggregate annual cost of conflicted advice to be $17 billion on a $1.7 trillion subset of retirement assets, or roughly 1 percentage point lower returns each year. For $10.5 trillion assets, held by individual clients, the aggregate cost of conflicted advice could be over $100 billion each year.

On June 5, 2019 the SEC issued a Standards of Conduct Rules package that included a release reaffirming an investment adviser's fiduciary duty obligations established under the Investment Advisers Act of 1940. The release was accompanied by three other releases, including one that establishes the best interest (Reg BI) standard for broker-dealers when acting for their retail customers.

Reg BI does not define "best interest" but does enhance the longstanding "suitability" obligation for recommendations, investment strategies, and account recommendations to retail customers. And according to SEC Chairman Jay Clayton, it draws from "fiduciary principles" and is expected to protect retail clients from conflicted advice.

Fulfilling Requirements

Financial institutions have relied on a "checklist" approach to help assess whether they are fulfilling regulatory and compliance requirements. For example, the checklist requires investment advisers to develop an Investment Policy Statement that includes, among other things, investing goals and objectives, strategies that the investment adviser should use, information on risk tolerance, and liquidity requirements.

Similarly the checklist will require institutions to provide disclosure on the investment securities such as information about mutual fund classes, fees, and expenses. The checklist will include information of any discretionary authority given by the client to his/her investment adviser to make investment decisions without prior approval.

The financial institutions also obtain written consent or provide additional fee disclosures before investing in certain securities such as Class A mutual fund shares with front-end sales load. The Class A shares carry a load, or front-end sales charge, of up to 5-6% that the client pays at the time of purchase. However, these funds have lower operating expenses and become more economical in the long-term.

The SEC's Mutual Fund Fees and Expenses bulletin notes that a "sales load" is like a commission and is paid to the selling brokers. A 5% front-end sales load on a $10,000 investment would result in a $500 sales load, typically paid to a selling broker, and $9,500 to purchase fund shares for the client. These securities are therefore lucrative for brokers and investment advisers and increase the potential for conflicted advice.

Conflicted Advice Example

Once the consent is obtained and the checklist is completed, rarely is there further continuous monitoring of the client portfolio to see if the investment adviser is using the approved investment appropriately. The investment adviser could be selling front-end load "Class A" securities in a short period and reinvesting the proceeds in similar front-end loaded "Class A" securities and realizing significant commissions on each purchase. While the transactions are reported in monthly and quarterly statements, they appear among other security transactions which may make it difficult to identify and comprehend the charges. The lack of such continuous monitoring is evident from several FINRA Disciplinary Proceedings on the issue of short-term trading with load fees as referenced below.

Excerpts from FINRA Proceedings

- A 2006 FINRA complaint alleges that the financial adviser "recommended 484 short-term mutual fund transactions incurring sales charges and fees for clients while receiving large commissions."
- A 2007 FINRA complaint alleges that the investment adviser "executed approximately 38 variable annuity (VA) contract replacements or 'switches' involving 17 customers. While the customer received no significant benefit from these transactions, they paid surrender charges and the investment adviser received additional commission from the exchanges."
- In a 2014 FINRA complaint, an investment adviser engaged in short-term purchases and sales of 84 mutual fund Class A positions of which 47 transactions charged front-end sales loads ranging from four to five percent, resulting in higher commissions for the investment adviser. All but 17 of the 84 positions in Class A shares were held less than six months and 35 of them were held for less than three months and five were held less than a week.
- In a 2015 FINRA complaint, the allegations were that the financial adviser "engaged in a pattern of short-term mutual fund switch transactions in the accounts of customers, frequently selling Class A mutual funds he had recommended to or placed for the customers, after they had held those investments for only two to three months."

Data Analytics, Machine Learning, and AI

AI and machine learning technology is increasingly used by the SEC and FINRA in market surveillance and in detecting manipulation such as layering and spoofing. Layering is a form of market manipulation wherein limit orders are entered in the opposite side of an intended trade to move the market and obtain beneficial execution on the intended traded.

Spoofing refers to entering orders to entice other participants to join on the same side of the market at a price at which they would not ordinarily trade, and then trading against the other market participants' orders.

A report submitted to the Administrative Conference of the U.S. documented several "use cases" wherein AI and machine learning is used by the SEC for investigations and enforcement. A use case, per the report, is an instance in which the SEC "had considered using or had already deployed AI/ML technology to carry out a core function."

Some examples related to investigations and enforcement using AI and machine learning technology include: detecting fraud in accounting and financial reporting based on anomalous patterns in some 200 metrics tracked by the SEC's Corporate Issuer Risk Assessment (CIRA) dashboard; targeting trading-based misconduct, such as insider trading, using a pair of tools—Advanced Relational Trading Enforcement Metrics Investigation System (ARTEMIS) and the Abnormal Trading and Link Analysis System (ATLAS).

While FINRA's and SEC's primary focus has been on market surveillance, the underlying advances in data analytics, AI, and machine learning can be used by financial institutions for regulatory compliance and continuous monitoring of financial advisors. FINRA's white paper on AI discusses how the technology is transforming the financial service industry. In particular, financial institutions are increasingly deploying AI-applications for helping communications with customers (virtual assistants, email inquiries), aiding the investment process (holistic customer profiles, portfolio management, trading), and supporting operations functions (surveillance and monitoring, customer identification, regulatory intelligence management.)

While most of these applications are still in the evaluation phase and offer several potential benefits, they also involve potential challenges (model risk management, data governance,) costs, and regulatory requirement implications.

Furthermore, most regulatory and compliance related advances have focused on making existing systems better rather than developing new ways to monitor adviser conduct. One such avenue is to develop economic tools that can evaluate behavioral incentives of investment advisers by monitoring their transactions for clients. For example, going back to the front load fund example from earlier, a calculation of holding period for each long-term load/fee-oriented security and comparing it with break-even or optimum holding period based on cost differential with respect to no-load security, would help to identify potential instances of conflicted advice.

Similar methodologies and algorithms could be developed to address other practices such as churning and investing in mutual funds with excessive fees. Regulatory authorities such as FINRA and the SEC could require financial institutions or incentivize them to identify and report such recurring conduct. Both the SEC and FINRA have addressed recurring violations with initiatives to incentivize firms to self-report violations as seen from the SEC's 2018 Share Class Selection Disclosure Initiative and FINRA's 2019 529 Savings Plan Violations initiative.

Methodologies	***Allegations/Violations Identified***
Rule-Based	Class A shares; switching in other fee-based securities; churning; investing in funds with excessive fees
Machine Learning and Natural Language Processing	Identify new alleged violations; contract disputes; investment allocation disputes
Artificial Intelligence and Deep Learning	Predict investment adviser conduct based on historical patterns and current client/investment adviser information

While data analytics can help with conflicted-advice issues already identified, new practices are constantly being raised in the investment community and alleged in the courts. For example, recently there have been allegations of advisers marketing risky yield enhancement strategies to risk-averse clients. Furthermore, retail investors are increasingly being exposed to new investments such as allowing 401(K) plans to invest in private equity which increases the potential for misconduct.

To be at the forefront in identifying, evaluating, and restricting such practices, financial institutions would need to review a large number of court filings, FINRA complaints, press releases, and articles. This legal research can be streamlined by

using natural language processing (NLP). The use of NLP in legal research has been on the rise and lawyers have access to several advanced NLP-based research tools.

Financial institutions can use machine learning and NLP to identify new allegations, strategies, the securities involved, and develop methodologies and algorithms to locate similar behavior within its universe of investment advisers. The machine learning tools can identify such information and provide frequency of any alleged occurrence as well as the amount of damages.

Artificial intelligence and deep learning can also be used to predict investment adviser conflicted advice based on historical behavior and can be used to proactively increase monitoring of such accounts and advisers to avoid investor harm. Artificial intelligence and deep learning can potentially uncover complex patterns such as investor allocation changes, higher security fees, larger adviser remuneration, and others to identify and predict investor adviser conflicts. The compliance individual can then focus on the identified investment advisers to check for conflicted advice or alert them of increased risk so that the investment decisions and the rationale are properly documented to address any issues that may come up in the future.

The same artificial intelligence and deep learning tools can also benefit investment advisers by identifying opportunities to create excess alpha using techniques that are complex and data intensive. For example, enhancing returns using tax loss harvesting has been adopted by robo-advisers, but individual investment advisers are still slow in its adoption because it requires monitoring of multiple securities, their cost basis, alternatives to reinvest proceeds, and adherence to wash-sale rules.

Another example is the case of unexpected market-wide shocks, such as one experienced due to Covid-19, certain securities either changed their investment philosophy or risked bankruptcy. Having an AI monitoring tool that can watch for disclosures and news on securities in addition to their prices can provide a real-time monitoring of investments for the advisers. The compliance monitoring tools can enable investment advisers to deliver improved performance to their clients.

Implement a Tiered Approach

The use of AI and machine learning requires a significant amount of historical data on investment advisers, clients, allocations, returns, fees in addition to historical complaints, and issues alleged. All of this may not be easily available or accessible to financial institutions. Financial institutions can implement a tiered approach to enhance their compliance using advanced data analytics. They can start with developing rule-based algorithms to identify common investor complaints like short-term trading in funds with load fees, churning of securities resulting in excessive transaction cost, and investing in funds with excessive fees.

This can be done with data and information that already exists within the firm, such as investment transactions data, investment fees charged, etc. The analytics can be developed in conjunction with compliance, business and IT departments within the firm or obtained from securities litigation/economic consulting firms. Some of this data analytics may help broker-dealers meet the Reg BI requirements demonstrating effective compliance procedures that could reduce litigation expense and regulatory exposure.

Next, financial institutions can use NLP to uncover new allegations and develop algorithms and strategies to identify potential exposure to their financial advisers. Financial institutions can use automated tools from third party legal research companies to identify new violations and focus on enhancing their rule-based data analytics. In developing such decision algorithms, firms should consider four key issues identified in the recent Federal Trade Commission guidance—tools should be transparent, explainable, fair, and empirically sound.

The use of AI for predicting investment adviser conflicted advice needs significant resources and data and should be considered after using the rule-based methodologies to its fullest. The tiered strategy can aid companies develop data analytics/AI methodologies and practices that are compliant, ethical, fair and nondiscriminatory. Companies should also consider third party expert opinion to independently test their algorithms for potential problems.

A collaborative effort from financial institutions, regulatory authorities, consulting, and fintech companies can aid in furthering clients' interest and reinforcing clients' confidence in their financial institutions and regulatory authorities.