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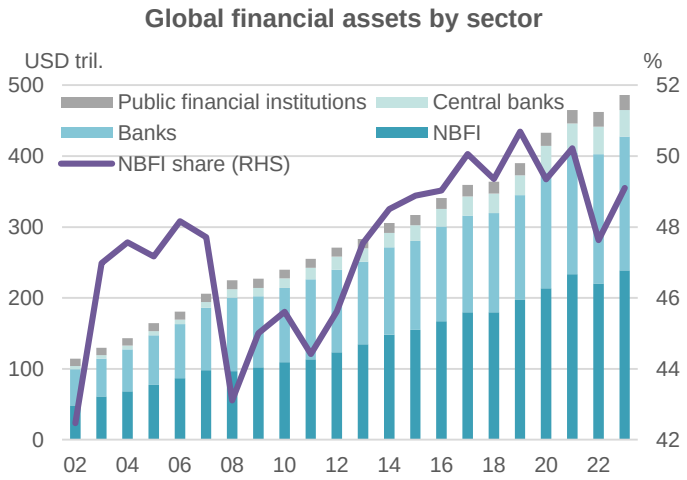
NBFI Sentiment Analysis and Negative News Monitoring using Generative AI Technology

Motivation of using AI-based tool: pain points in gathering MI about NBFIs

- NBFI sector has been growing fast, accounting for ~**half of global financial assets**, and is worth monitoring.
- However, **difficult to gather trusted information** about potentially risky NBFIs:
  - They are **not subject** to the same level of **regulation** like banks i.e. lack of regulatory handle to gather information.
  - Most of them such as hedge funds are **privately held** i.e. without publicly available financial information.
- Explore **innovative** ways to **gather market intelligence** about potentially risky NBFIs via **news** and **assess the market sentiment** towards them. With a sea of news online, **AI is helpful** to separate useful insights from noise.

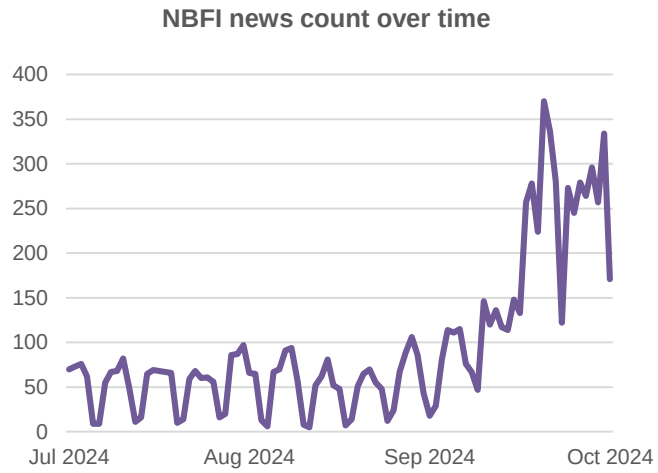
NBFIs accounting for 49.1% of total global financial assets



Source: Financial Stability Board (2024).

Identify negative news and analyse market sentiment towards individual NBFIs

Possible to see a few hundred news articles related to NBFIs active in HK in any single day



Four-step process for NBFI sentiment analysis using GenAI

- The sentiment analysis consists of four steps, namely:
  1. sourcing relevant news via web scraping
  2. assessing market sentiment in news headlines using GenAI tool
  3. converting sentiment into a score
  4. assigning a rating to each NBFI
- Through these four steps, each NBFI will be given a sentiment rating as an input for the risk assessment of that NBFI in our surveillance framework.
- In addition to sentiment analysis, GenAI is helpful to identify negative news articles about NBFIs for deep-dive and assessment as to whether they may pose financial stability concern.

Sourcing relevant NBFI news via web scraping

- **Gather MI via news**
  - Web scraping of NBFI news via Google News (with plan to expand into other sources).

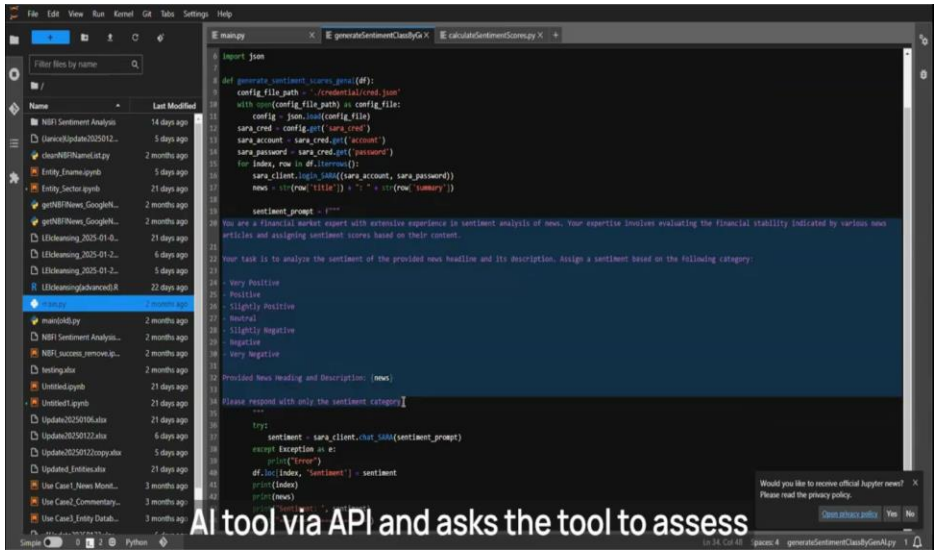
A list of NBFIs active in HK
(Based on OTC derivatives data reported to the Hong Kong Trade Repository HKTR)

Search and download relevant news using script

	date	title
0	09/07/2024	3D Investment Partners offers to take Japanese...
1	09/07/2024	3D Investment Partners Issues Open Letter and ...
2	09/07/2024	Japan???s Tohokushinsha, Co-Producer of ???L...
3	09/07/2024	Shareholder Offer From 3D Investment Partners ...
4	09/07/2024	KKR Secures About a Third of Fuji Soft, Dousin...
...	...	...
8743	07/10/2024	Archegos Founder Hwang Guilty in Massive Fraud...
8744	07/10/2024	Why was Archegos worse than the Fed???s five-...
8745	07/10/2024	DOJ said to beef up scrutiny of banks hit by A...
8746	07/10/2024	Archegos founder Bill Hwang convicted at crimi...
8747	07/10/2024	Jury begins deliberating at Archegos founder's...

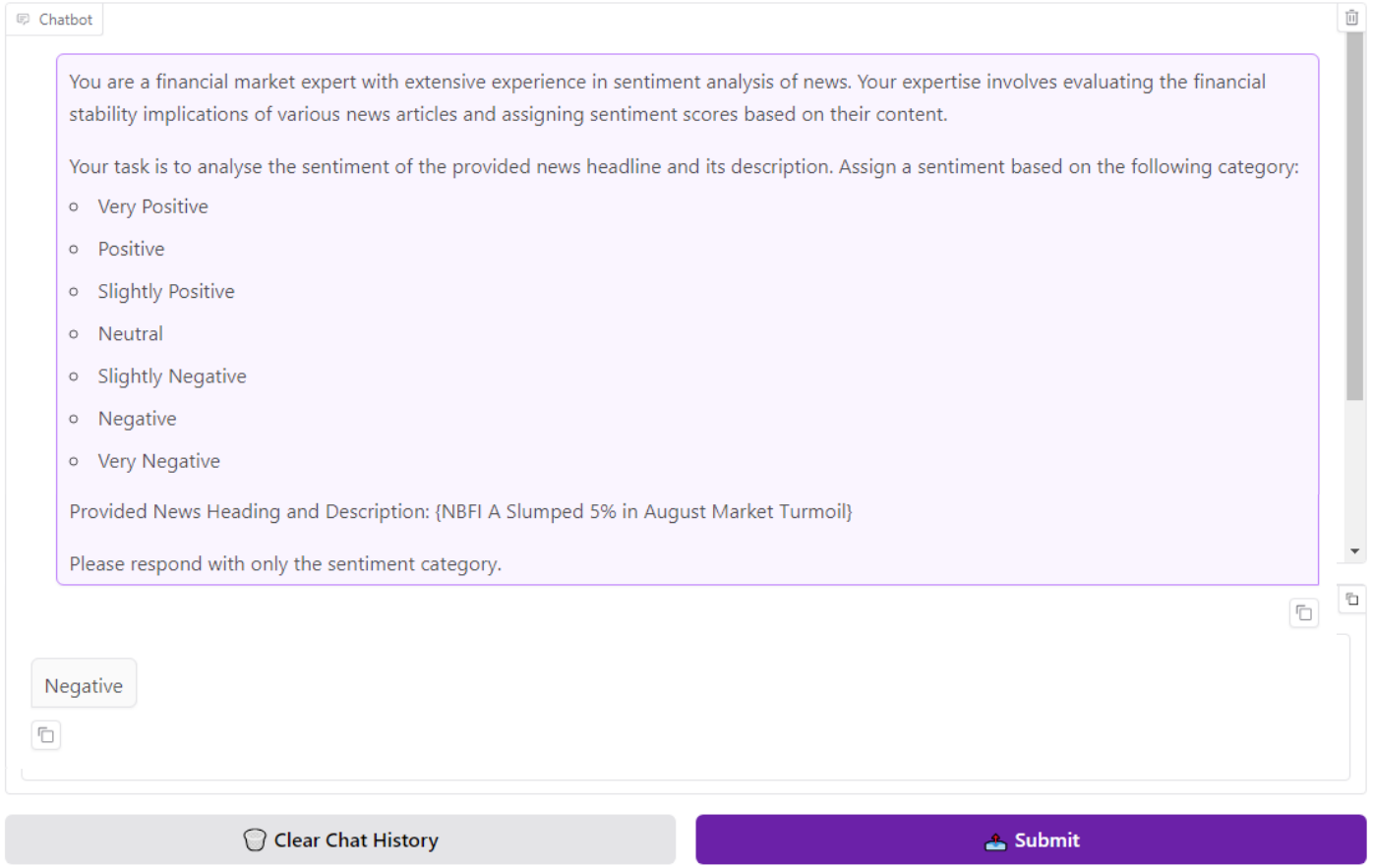
8748 rows × 6 columns

Connect with GenAI tool via API
Load the news for GenAI's assessment



HKMA's Secured Artificial intelligence Research Assistant (SARA)

- HKMA's first in-house GenA.I. application built on open-source models and hosted entirely on-premises to ensure **security, privacy, and control**. Help summarise reports, draft documents, and analyse trends, etc.
- **Features highlight**: HKMA knowledge base, evolving, Chinese content compatible.



Assessing market sentiment in news headlines using GenAI tool

- **Conduct sentiment analysis using GenAI:** Leverage in-house GenAI tool to interpret the news and quantify sentiment based on nuance in language and context.
- **Benefits:** GenAI offers more accurate sentiment interpretations than traditional keyword-based methods by having a deeper understanding of context and nuance in language.

Load the news for GenAI's assessment

HKMA in-house GenAI tool

Prompt: You are a financial market expert with extensive experience in sentiment analysis of news. Your task is to analyse the sentiment of the provided news headline.

Assign a sentiment based on the following categories:
- Very/Slightly Positive
- Positive
- Neutral
- Negative
- Very/Slightly Negative

Provided News Heading: *"Archegos founder Bill Hwang convicted at fraud trial over fund's collapse."*

Please respond with the sentiment category.

HKMA

Negative

SARA

Note: In the pilot stage, only news heading is fed into GenAI for analysis. In future, we may consider feeding the whole article for analysis.

Output sentiment of each news

NBFI-related news articles

Date: 16 Sep 2024 Sentiment: Negative

"NBFI B" Slumped 5% in August Market Turmoil

Date: 25 Oct 2024 Sentiment: Negative

"NBFI C" Among Hedge Funds Losing Money Over Failed China Deal

Date: 15 May 2024 Sentiment: Slightly Negative

Ex-traders of **"NBFI D"** Cite Pay Upset in Secrets Countersuit

Source: Google News

Comparison of sentiment approach

Note: NBFI A, D, I had negative news and deserved a score of more negative sentiment.

How the pool of news articles of an NBFI is converted to a sentiment rating

1. Assign a sentiment score to each news heading based on GenAI's assessment of how positive/ negative the market sentiment is about an NBFI.

Sentiment	Sentiment score
Very positive	1.0
Positive	0.7
Slightly positive	0.5
Neutral	0.0
Slightly negative	-0.5
Negative	-0.7
Very negative	-1.0

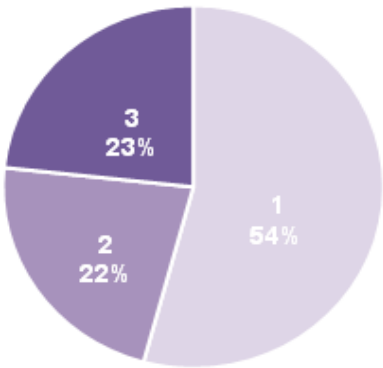
Range: -1.0 to +1.0

2. Sum up the sentiment scores of all **negative** news headings related to an NBFI to arrive at an overall sentiment score. (Focus on negative news to avoid potential dilution of negative market sentiment by positive news.)

NBFI	Date	News heading	Sentiment	Score
Hedge Fund A	18 Sep 2024	Hedge fund A experienced losses for 2 quarters	Negative	-0.7
	2 Oct 2024	Hedge fund A made a wrong bet on US interest rate cut	Slightly negative	-0.5
			Overall sentiment score	**-1.2**

3. Rank the overall sentiment scores of all NBFIs and assign a sentiment rating to each NBFI based on the distribution of their scores. This rating is one of the indicators for assessing an NBFI's vulnerability.

Rating	Sentiment scores
1	**-x ≤ median**
2	**median < -x ≤ 3rd quartile**
3	**-x > 3rd quartile**

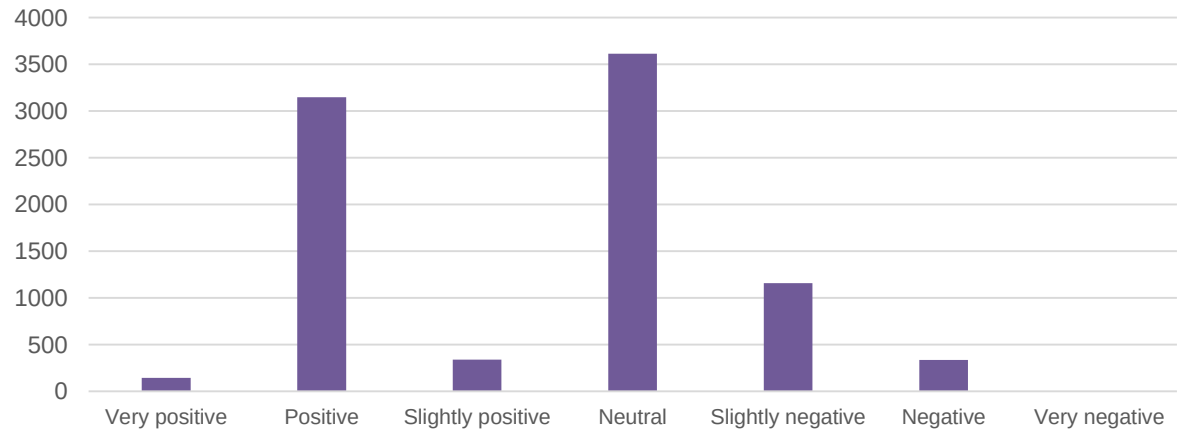


Note: x represents the sentiment score of an NBFI. –x is the absolute value. A rating of 3 means a very negative sentiment for an NBFI. The rating distribution was based on relevant NBFI news articles on Google News from 9 Jul to 7 Oct 2024.

NBFI negative news monitoring

- GenAI tool helps us identify the negative news articles about NBFIs for **deep-dive analysis**.
- Once the GenAI tool identifies a list of negative news articles for an NBFI, we can assess whether that NBFI poses a financial stability concern given the negative news.
- **Reduces manual effort** and allows us to **focus on a small group of NBFIs** with relatively high risk (from a market sentiment perspective).

Distribution of sentiment scores of NBFI news articles



Source: Author calculation based on a sample of 8,748 news from 09 Jul 2024 to 07 Oct 2024.

Example

Headline

"Prime brokers suspend equity trading with hedge fund X on block trade concerns"

Sentiment

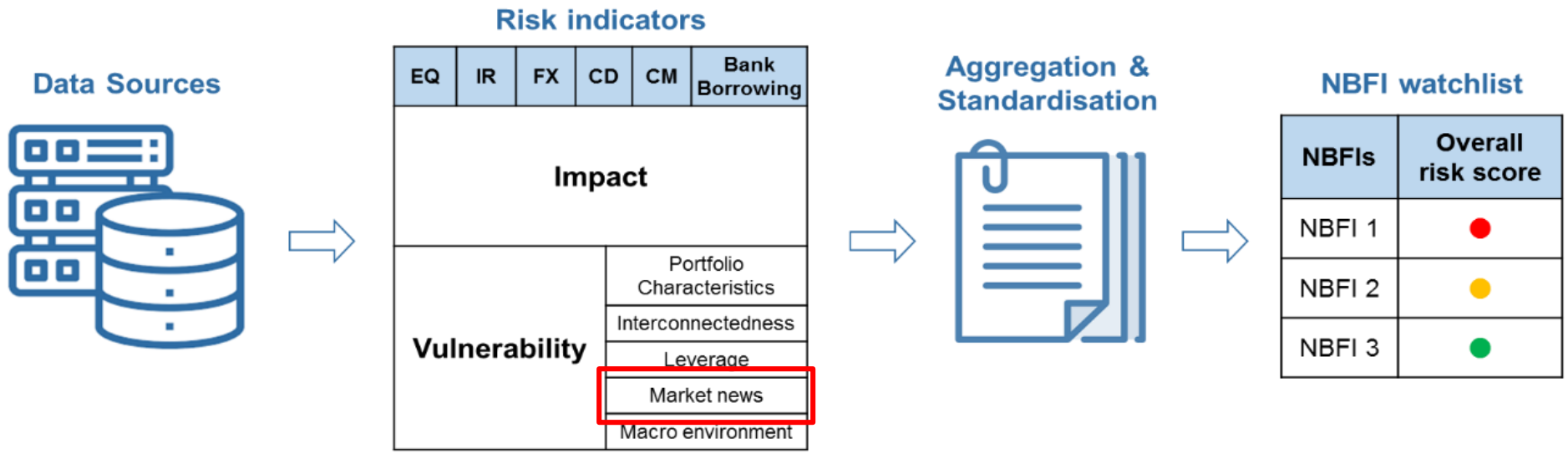
GenAI tool assigns a very negative sentiment

Surveillance

Take a deeper look at hedge fund X's potential impact and vulnerability according to HKMA's NBFI surveillance framework.

Non-bank financial institutions (NBFI) surveillance framework

- The NBFI framework incorporates diverse data sets from HKTR and granular banking data to news, to compute a set of **risk indicators** to quantify potential **impact** and **vulnerability** of an NBFI.
- Risk indicators are standardised and aggregated to produce impact and vulnerability scores for each NBFI.
- Output is a watchlist, ranking the top NBFIs based on their scores.
- **Red-amber-green illustrate the NBFIs' riskiness** (high-medium-low).



BIS Papers No 137, Building an integrated surveillance framework for highly leveraged NBFIs – lessons from the HKMA, August 2023
https://www.hkma.gov.hk/media/eng/publication-and-research/research/external-publications/2023/WP137_NBFI_paper_final.pdf

Challenges and way forward for AI-based financial stability monitoring

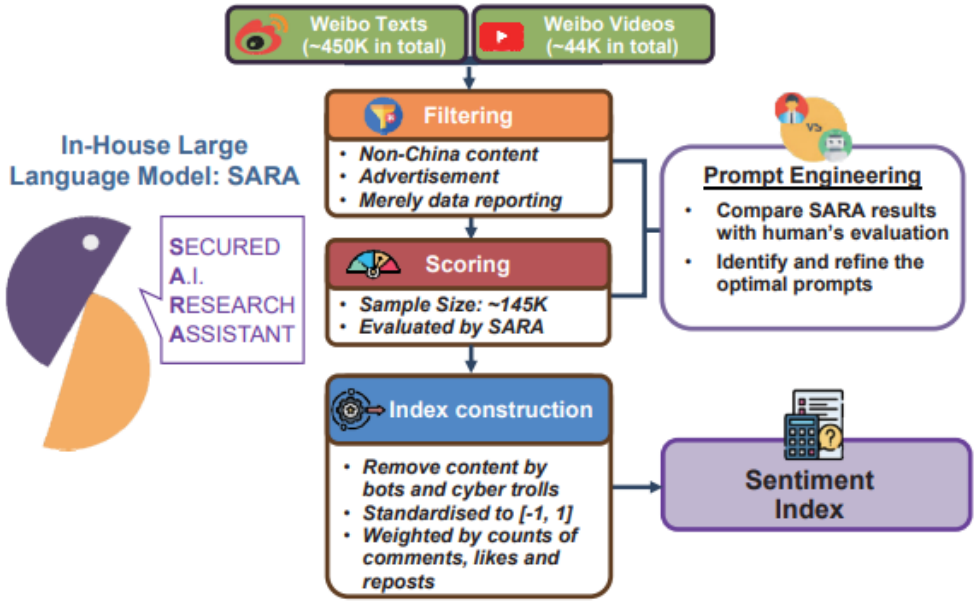
- One challenge is the **demand for computing power** and the **time needed to process** numerous articles.
  - E.g., sentiment analysis of news articles related to 1,000+ NBFIs in the last 3 months took half a day.
- A high frequency or volume of web scraping requests may lead to **websites blocking access**.

- Despite the challenges, the benefits of using GenAI encourage us to further develop the tool.
  - Expanding the analysis to include **entire news articles** instead of just headlines.
  - Connecting to more **commercial news databases** for diverse sourcing.
  - Exploring **other use cases** outside the NBFI space, such as sentiment analysis on HKD.

Annex: Other use cases of GenAI tool

- Tracking Mainland China's housing market sentiment using social media big data and GenA.I.

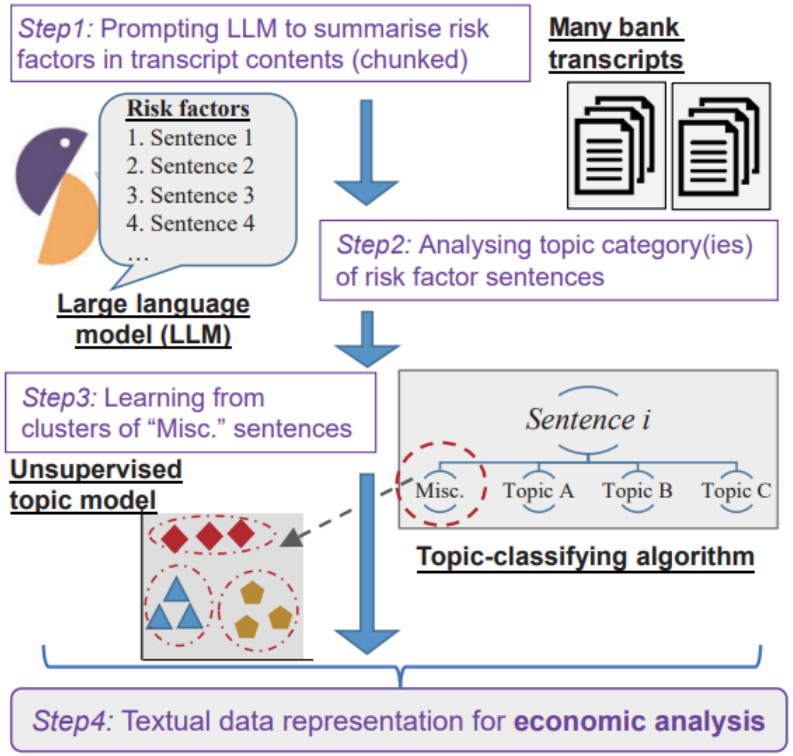
The development process of the GenA.I.-driven housing market sentiment index



Source: HKMA staff illustration.

- Monitor systemic risks in global banking using earnings call transcript data

Schematic diagram of the GenA.I.-powered monitoring framework



Note: "Misc." indicates the group of summarised risk sentences that the topic-classifying algorithm assigns as 'miscellaneous'.

Half-Yearly Monetary & Financial Stability Report, HKMA, Mar 2025
https://www.hkma.gov.hk/media/eng/publication-and-research/quarterly-bulletin/qb202503/E_Half-yearly_202503.pdf

NBFI Sentiment Analysis and Negative News Monitoring using Generative AI Technology

Henry Chan and Silvia Pezzini

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Draft

Abstract

The increasing importance of non-bank financial institutions (NBFIs) in the global financial system, coupled with limited information and regulatory oversight, necessitates innovative approaches to monitor this sector. This paper describes how the Hong Kong Monetary Authority (HKMA) applied generative artificial intelligence (GenAI) technology in analysing news articles to assess market sentiment towards individual NBFIs and to identify negative news of NBFIs that may flag financial stability concern, as part of the NBFI surveillance framework. This use case is shared as a reference for other central banks and regulators exploring the use of GenAI for analysis.

Keywords: Generative artificial intelligence, NBFI, sentiment analysis
JEL classification: C45, D83, G15, G28, O33

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Contents

1. Executive Summary

Non-bank financial institutions (NBFIs) are playing an increasingly important role in the global financial system. To monitor their financial stability risks, the Hong Kong Monetary Authority (HKMA) have established a surveillance framework in 2021. With technological advancement in AI space, we have started to apply generative AI (GenAI) technology to support the NBFI monitoring through sentiment analysis and negative news monitoring.

The sentiment analysis consists of four steps, namely (i) sourcing relevant news via web scraping, (ii) assessing market sentiment in news headlines using GenAI tool, (iii) converting sentiment into a score and (iv) assigning a rating to each NBFI. Through these four steps, each NBFI will be given a sentiment rating as an input for the risk assessment of that NBFI in the surveillance framework. In addition to sentiment analysis, GenAI is helpful to identify negative news articles about NBFIs for deep-dive and assessment as to whether they may pose financial stability concern.

Using GenAI for NBFI sentiment analysis and negative news monitoring have both benefits and challenges. While it can analyse a large number of news articles and understand better the context and nuances in news content for a more accurate assessment of market sentiment from a financial stability perspective, its demand for computing power and potential blockage of web scraping by the news websites can be challenging.

As a way forward, we plan to expand the scope of sentiment analysis to cover entire news articles, rather than just news headlines and to connect to more commercial news databases to source more diverse news.

2. Introduction

The global financial system has undergone significant changes in recent years, with NBFIs playing an increasingly important role. According to FSB (2024), NBFIs accounted for approximately half of global financial assets as of 2023 (Chart 1). This growth has led to increased interconnectedness and spill-over risks, as exemplified by the Archegos case (Box 1). The case highlights the potential risks associated with NBFIs, particularly those that are not subject to the same level of regulatory oversight as banks.

However, limited publicly available information and regulatory oversight pose significant challenges in monitoring NBFIs. Most high risk NBFIs such as hedge funds are privately held, making it difficult to access their financial data. Furthermore, NBFIs are not subject to the same level of regulation as banks or outside the regulatory perimeter, limiting the availability of information. Even if some NBFIs are registered or regulated by local securities regulators, their global positions may not be fully visible.

Studies have also identified significant challenges in monitoring NBFIs due to data availability. Claessens (2024) noted that analyses of NBFI-related financial stability are primarily conducted ex post, focusing on the causes and consequences of past stress events rather than adopting a forward-looking approach essential for policymakers. He highlighted several issues: first, existing data is often limited and lacks comparability across countries, which restricts analyses and insights into the effectiveness of policy measures. Additionally, improved data sharing is necessary; more data should be accessible to supervisory agencies in a timely and usable manner. Furthermore, regulatory data deficiencies for NBFIs are substantial, hindering regulators' ability to assess and monitor systemic risks (IMF, 2023).

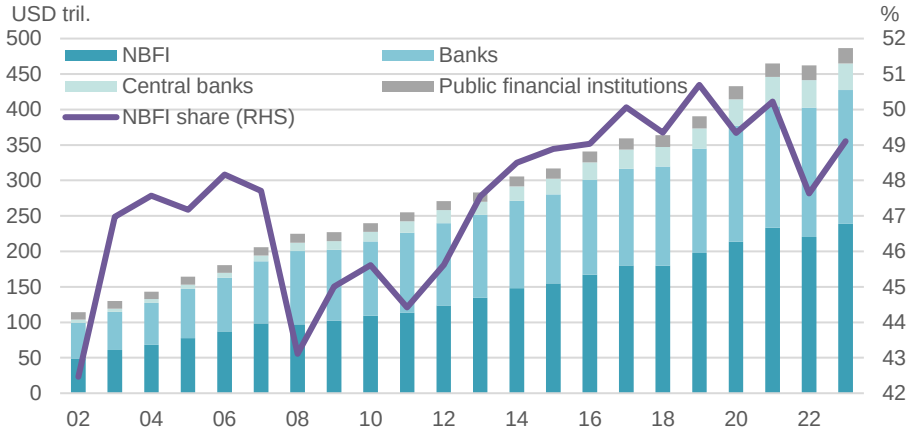
In light of these challenges, central banks have been actively utilising AI techniques for financial stability surveillance, capitalising on their strengths in handling granular and unstructured datasets (Araugo et al., 2024; Vučinić & Luburić, 2024; Gambacorta et al., 2024). Specifically, fine-tuned large language models (LLMs) can summarise economic narratives over extended periods and analyse sentiment, as demonstrated by the BIS's central bank language models (CB-LMs) project, which outperforms general LLMs in the central banking context (BIS, 2024). In addition, natural language processing (NLP) techniques can be used to analyse unstructured data by classifying documents, assessing sentiment, and identifying trending topics, as seen in the ECB's NLP AI tool “Athena”.

In the HKMA, we have established a surveillance framework for NBFIs in 2021[1], to monitor their financial stability risks. One of the indicators in the surveillance framework is about sentiment score to factor in negative news about specific NBFIs as reported in the financial press. This indicator was based on traditional textual analysis using a news database with a wide coverage i.e. the Global Database of Events, Language, and Tone (GDELT).

As GenAI is becoming more popular, we have started to leverage this state-of-the-art technology to analyse the market sentiment of NBFIs. This paper describes our use of GenAI technology to gather market intelligence about NBFIs for sentiment analysis and negative news monitoring. By analysing news articles, we can assess market sentiment towards individual NBFIs and identify potential financial stability risks.

The rest of the paper is structured as follows. Section 3 describes the detail of NBFI sentiment analysis and negative news monitoring using GenAI. Section 4 summarises the benefits and challenges of using GenAI. Section 5 discusses the way forward and concludes.

Chart 1: Growth of global financial assets by sector



Source: Financial Stability Board (2024).

[1] BIS Papers No 137, Building an integrated surveillance framework for highly leveraged NBFIs lessons from the HKMA, August 2023 https://www.hkma.gov.hk/media/eng/publication-and-research/research/external-publications/2023/WP137_NBFI_paper_final.pdf

Box 1: Case of Archegos Capital

Archegos was a highly leveraged family office that collapsed in 2021. It held large positions concentrated in a number of US stocks such as ViacomCBS and Discovery and a few Chinese stocks like Baidu and Tencent Music. Some of the positions were held via total return swaps, a type of derivative that allowed it to take big leveraged stakes without disclosing these positions in public. Its bets started to incur losses after ViacomCBS's stock offering fell apart. Archegos failed to pay additional margins to its derivatives counterparties, prompting a massive fire sale of stocks as some of its counterparties rushed to exit from the fund's positions. Since Archegos' market footprint was substantial in those stocks, the simultaneous exits led to sharp falls in asset prices in those market segments. The failure of Archegos resulted in more than USD 10 billion in losses across several large banks, including Credit Suisse and Nomura, which were affected the most.

Sources: News reports; "Leverage and derivatives - the case of Archegos", European Securities and Markets Authority, May 2022.

3. NBFI Sentiment Analysis and Negative News Monitoring

The sentiment analysis consists of four steps, namely (i) sourcing relevant news via web scraping, (ii) assessing market sentiment in news headlines using GenAI tool, (iii) converting sentiment into a score and (iv) assigning a rating to each NBFI. Through these four steps, each NBFI will be given a sentiment rating as an input for the risk assessment of that NBFI in our surveillance framework.

Sourcing relevant news via web scraping

First, we web-scrape the news articles related to a list of 1,000+ NBFIs active in Hong Kong[2] in the last 3 months from public news sources such as Google News using our Python script. A snapshot of the web scraping results is shown in Figure 1.

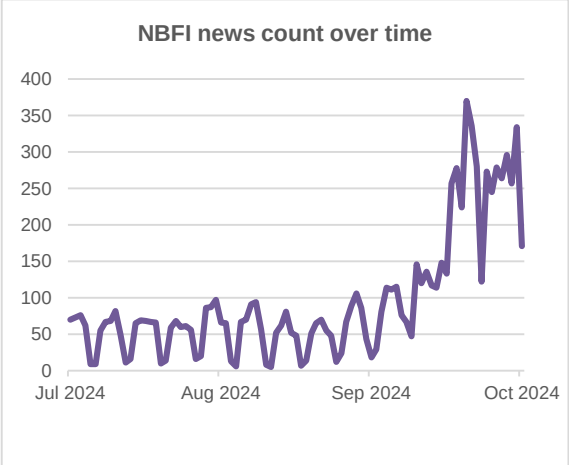
In Q3 2024, there were around 8,800 news articles related to those NBFIs. On a single day, there could be more than 350 news articles related to those NBFIs, as shown in Chart 2. With a sea of news online, GenAI is helpful to separate useful insights from noise.

Figure 1: Snapshot of web scraping results

	date	title
0	09/07/2024	3D Investment Partners offers to take Japanese...
1	09/07/2024	3D Investment Partners Issues Open Letter and ...
2	09/07/2024	Japan???s Tohokushinsha, Co-Producer of ???L...
3	09/07/2024	Shareholder Offer From 3D Investment Partners ...
4	09/07/2024	KKR Secures About a Third of Fuji Soft, Dousin...
...	...	...
8743	07/10/2024	Archegos Founder Hwang Guilty in Massive Fraud...
8744	07/10/2024	Why was Archegos worse than the Fed???s five-...
8745	07/10/2024	DOJ said to beef up scrutiny of banks hit by A...
8746	07/10/2024	Archegos founder Bill Hwang convicted at crimi...
8747	07/10/2024	Jury begins deliberating at Archegos founder's...

8748 rows × 6 columns

Chart 2: Count of news articles of NBFIs active in HK



Note: Relevant NBFI news articles on Google News from 9 Jul to 7 Oct 2024.

[2] Based on OTC derivatives data reported to the Hong Kong Trade Repository (HKTR).

Assessing market sentiment in news headlines using GenAI tool

Once we gather all relevant news articles, we then pass them to the HKMA's internal GenAI tool - Secured Artificial Intelligence Research Assistant (SARA) (Box 2) via API.

Using prompt engineering, we can use a specific prompt to request the GenAI tool to assess the sentiment of the news headlines from a financial stability perspective.

Sample prompt:

You are a financial market expert with extensive experience in sentiment analysis of news. Your expertise involves evaluating the financial stability indicated by various news articles and assigning sentiment scores based on their content.

Your task is to analyse the sentiment of the provided news headline and its description. Assign a sentiment based on the following category:

- Very Positive
- Positive
- Slightly Positive
- Neutral
- Slightly Negative
- Negative
- Very Negative

Provided News Heading and Description: {news}

Please respond with only the sentiment category.

With LLMs, the GenAI tool is able to differentiate between subtle differences in language and context. For example, the tool is able to distinguish between a news headline that is negative and one that is slightly negative, as shown in Table 1.

Box 2: HKMA's internal GenAI tool — SARA

SARA is the HKMA's inaugural in-house generative AI tool, designed to perform a diverse range of tasks, including comprehensive news summarisation and information extraction through the SARA API. SARA utilises the HKMA knowledge database to enhance its understanding of sentiment evaluation from a financial stability perspective.

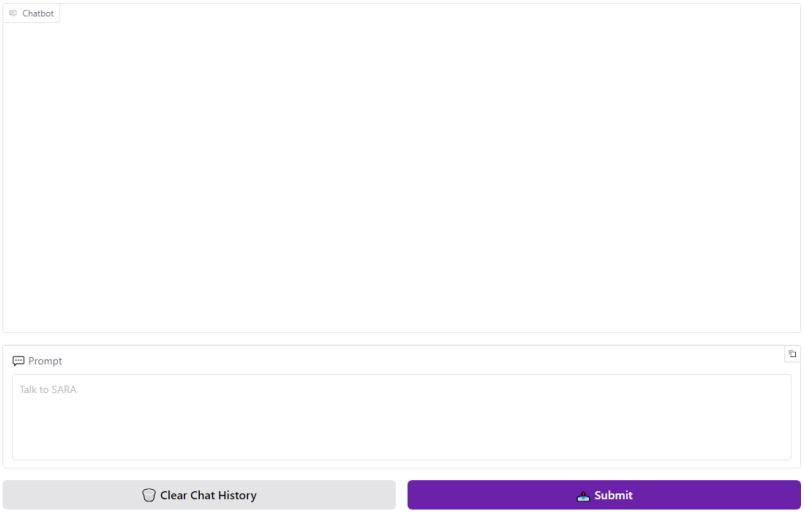


Table 1: Sample output of GenAI's assessment of news headlines: slightly negative versus negative

NBFI	News headline	Sentiment
NBFI A	NBFI A Slumped 5% in August Market Turmoil	Negative
NBFI B	CEO of NBFI B warns politicians as hedge funds feel regulatory heat	Slightly Negative

This process also helps us scan the sea of news articles and identify the negative news about the NBFIs of our interest for further analysis (Box 3).

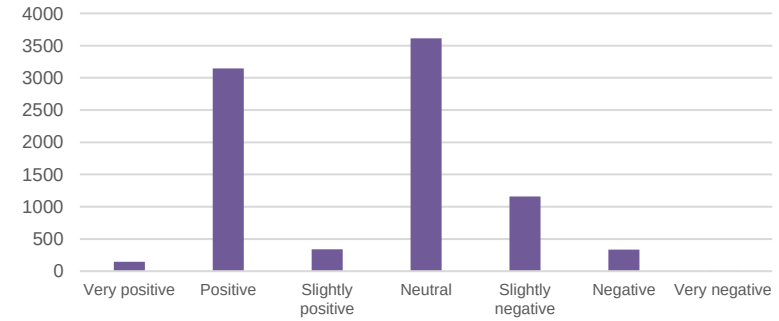
Box 3: NBFI Negative News Monitoring

GenAI tool helps us identify the negative news articles about NBFIs for deep-dive analysis. The tool conducts sentiment classification on each news headline, allowing us to identify those articles that are negative in tone without the need to manually scan the newspaper for negative news related to NBFIs. In Q3 2024, out of approximately 8,800 NBFI news articles, over 300 (or 4%) were classified as negative or very negative (see Chart 3).

Once the GenAI tool identifies a list of negative news articles for a particular NBFI, we can analyse whether that NBFI could pose financial stability concern given the negative news. Negative news monitoring using GenAI significantly reduces the amount of manual efforts and helps us focus on a small group of NBFIs with relatively high risk from market sentiment perspective.

For example, if the GenAI tool assigns a very negative sentiment to a news headline of an NBFI "Prime brokers suspend equity trading with hedge fund X on block trade concerns", we will take a deeper look at hedge fund X's potential impact and vulnerability according to our NBFI surveillance framework. If necessary, we also share the information with the securities regulator in Hong Kong as an alert or for further discussion.

Chart 3: Distribution of sentiment categories of NBFI news articles



Source: Author calculation based on a sample of 8,748 news from 09 Jul 2024 to 07 Oct 2024.

Converting sentiment into a score

We assign a sentiment score, in the range of -1 to +1, to each news headline based on the GenAI tool's assessment of the market sentiment, according to predefined mapping (Table 2).

The scores of all news headlines of each NBFI are then summed up to arrive at an overall sentiment score for that NBFI (Table 3). Here we only focus on negative news to avoid potential dilution of negative market sentiment by positive news. The overall sentiment

score is a measure of the market sentiment towards an NBFI, with more negative scores indicating a more negative sentiment.

Table 2: Mapping of sentiment and scores

Sentiment	Sentiment score
Very positive	1.0
Positive	0.7
Slightly positive	0.5
Neutral	0.0
Slightly negative	-0.5
Negative	-0.7
Very negative	-1.0

Table 3: How sentiment scores add up for a particular NBFI

NBFI	Date	News headline	Sentiment	Score
NBFI X	02/08/2024	A	Slightly negative	-0.5
	16/09/2024	B	Slightly negative	-0.5
	16/09/2024	C	Negative	-0.7
	16/09/2024	D	Slightly negative	-0.5
	16/09/2024	E	Slightly negative	-0.5
	03/10/2024	F	Slightly negative	-0.5
	03/10/2024	G	Slightly negative	-0.5
	06/10/2024	H	Negative	-0.7
			Total	-4.4

Assigning a rating to each NBFI

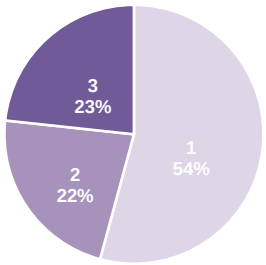
Finally, we rank the overall sentiment scores of all NBFIs and assign a sentiment rating to each NBFI based on the distribution of their scores (Table 4). For the NBFIs active in HK, around a quarter of them carried a very negative market sentiment (a rating of 3) in Q3 2024 (Chart 4).

Table 4: Mapping of overall sentiment scores to sentiment rating

Rating	Sentiment scores
1	-x ≤ median
2	median < -x ≤ 3rd quartile
3	-x > 3rd quartile

Note: x represents the sentiment score of an NBFI. –x is the absolute value. A rating of 3 means a very negative sentiment for an NBFI.

Chart 4: Distribution of NBFIs with various sentiment ratings



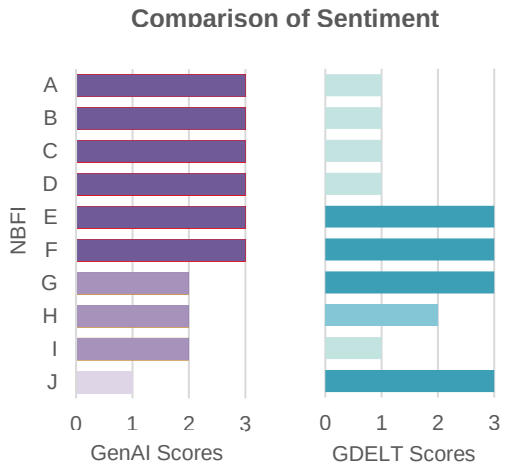
Note: Based on relevant NBFI news articles on Google News from 9 Jul to 7 Oct 2024.

4. Benefits and Challenges of using GenAI

There are both benefits and challenges of using GenAI technology in NBFI sentiment analysis and negative news monitoring.

On the positive side, first of all, GenAI is able to understand the context and nuances in news to analyse complex sentiment patterns. This allows for a more accurate assessment of market sentiment than the traditional keyword-based approach, which can be limited in their ability to capture the nuances of financial market sentiment. For example, if we compare the sentiment score output from GenAI tool and that from the traditional textual analysis of news database i.e. Global Database of Events, Language, and Tone (GDELT), we can identify some NBFIs with more negative sentiment under GenAI approach (Chart 5). For prudence's sake, we would take the worst of the two sentiment ratings as the final NBFI sentiment ratings as the input for our NBFI surveillance framework.

Chart 5: Gen AI vs GDELT



NBFI A, D, I had negative news and deserved a score of more negative sentiment.

NBFI	News headline	Sentiment
A	Date: 16 September 2024 NBFI A Slumped 5% in August Market Turmoil	Negative
D	Date: 25 October 2024 NBFI D Among Hedge Funds Losing Money Over Failed China Deal	Negative
I	Date: 31 July 2024 NBFI I Face Profit Risk as India Moves to Curb Options Boom	Slightly Negative

Second, GenAI can be asked to evaluate sentiment from a financial stability perspective rather than conducting a general assessment. This provides a more informed assessment of market risks.

Third, GenAI is able to analyse a large number of news articles without human intervention, reducing the manual efforts in monitoring.

However, there are also challenges associated with using GenAI technology such as the demand for computing power and the time required for processing thousands of articles. For example, it took half a day to complete the sentiment analysis of news articles related to 1,000+ NBFIs in the last 3 months.

Another challenge is not directly related to GenAI but linked to web scraping. If the frequency or volume of web-scraping requests is too high, it is likely that the website will block the requests. This leads to our way forward to explore more commercial news databases.

5. Conclusion

This paper demonstrates the potential of GenAI technology in monitoring NBFIs through sentiment analysis and negative news monitoring. Our experience highlights the benefits of using GenAI, including its ability to understand context and nuances in news headlines and evaluate sentiment from a financial stability perspective.

As a way forward, we will explore several areas for future research and development.

- First, we plan to expand the scope of the analysis to include entire news articles, rather than just news headlines.

- Second, we plan to connect to more commercial news databases to source more diverse news.

- Third, we plan to explore other use cases outside NBFI space, such as analysing sentiment on HKD.

By continuing to develop and refine this approach, we believe that GenAI technology can play a critical role in monitoring NBFIs and identifying financial stability risks in various areas.

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