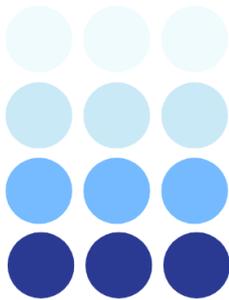




IADI Fintech Briefs provide high-level overviews and key takeaways on Fintech topics of relevance to deposit insurers.



NO. 14

FINTECH BRIEF

THE USE OF FINTECH IN ENHANCING THE
SUPERVISION OF INTERNET-ONLY BANKS
IN CHINESE TAIPEI

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THE USE OF FINTECH IN ENHANCING THE SUPERVISION OF INTERNET-ONLY BANKS IN CHINESE TAIPEI

Executive Summary

The Central Deposit Insurance Corporation (CDIC) has introduced a reporting method for internet-only banks platform to conduct real-time monitoring and generate visualized analytical reports. The tool is based on an application programming interface (API).

In alignment with the international Suptech development and acting in accordance with the policy of the Chinese Taipei Financial Supervisory Commission, CDIC established the Internet-only Banking Supervisory System (IBSS). This is an API-based platform, to which internet-only banks must file certain reports periodically and abnormal event notifications in real-time.

This new monitoring and supervision fashion is in line with the IADI Core Principle 13 on “Early Detection and Timely Intervention”, which calls for a framework in which deposit insurers and financial authorities can detect potential threats in an early stage and intervene timely.

The IBSS triggers an instant message alert to the CDIC and other financial safety net members upon an abnormal event to raise vigilance. In addition, the data collected through IBSS are made available to the relevant financial safety net members for use in supervision and risk monitoring.

1 Background

The banking culture in Chinese Taipei has been unique. Customer visits to bank branches have remained frequent and density of bank branches in Chinese Taipei remains high. In 2020, on average, there were 17 bank branches per 100,000 adults, 1.5 times as much as 10.6 in East Asia and Pacific region and 10.8 in the globe.¹ Also, bank customers regularly use banking services in post offices or convenient stores, whose density was second highest around the world.²

Further, Chinese Taipei’s banking market has been known for its high degree of competition and oversaturation, as it is now having over 400 deposit-taking institutions, including domestic banks, credit cooperatives, credit departments of farmers’ and fishermen’ associations and branches of foreign banks. All these institutions are serving a population of 23 million people.

Though the banking sector has been competitive, the Financial Supervisory Commission (FSC), the bank supervisor in Chinese Taipei, gave the green light to the establishment of three internet-only banks in 2018³, in response to growing digitalisation and in hopes of encouragement of financial innovation. These banks have started operations successively since 2020. They provide customers with basic financial services as other conventional banks do, such as deposits and loans at the initial stage of their business. However, they aim at building an ecosystem of strategic partnerships, a business model adopted by digital banks in other jurisdictions, which differentiates them from conventional banks.

The internet-only banks have specific features different from those of conventional banks because the former have no physical branches and all financial services are conducted online without restrictions on transaction time or locations. The fast and painless banking is embraced by the youth and the tech savvy population, and is expected to see an increased adoption by a wider range of users going forward.

Conventional banks in the island have, however, long created brand value with a dominant market position and a more stable, less volatile fund flow as opposed to the newly established internet-only banks. In addition, deposits, as crucial

¹ World Bank (2020)

² Taipei Times (2020)

³ [Chinese Taipei's FSC press release](#)

sources of funding for most banks, may flow out of internet-only banks quickly and in large amounts for various reasons, such as promotional rate offers coming to an end, online rumour spreading etc., and this may be exacerbated due to less well-known brand names of internet-only banks. These may lead to liquidity problems at the initial stage of business operation for the internet-only banks.

Taking all factors discussed above into considerations, the FSC determined to enhance the resilience of the internet-only banks through additional supervisory reporting requirements on liquidity and certain events. Hence, the bank supervisor commissioned the CDIC to use modern and matured technologies such as API and Data Cube, to develop a system, called the Internet-only Banking Supervisory System (IBSS), for collection and analysis of certain data reported by internet-only banks.⁴ The IBSS effectively assists the financial safety net (FSN) members in enhancing risk monitoring through such features as real-time notification of abnormal events and instant alerts for the said event, and provides the FSN members with early detection of, and timely intervention in the incident before it becomes worse.

API stands for Application Programming Interface, a software intermediary that enables applications to communicate with each other according to pre-defined specifications and protocols. APIs play the role of bridges between applications, systems, or devices, effectively conveying information between parties while at the same time improving efficiency.

2 Internet-only Banking Supervisory System

2.1 Chinese Taipei's regulatory reporting systems

Two regulatory reporting platforms are currently in place. They operate independently, serve for different purposes and cover conventional and internet-only banks to a different degree.

First, to avoid duplication of data requests and lessen reporting burden for regulated institutions, the FSC in 2008 developed and established a regulatory reporting platform, called the Single Window Financial Reporting System (SWFRS), for data collection and management purposes. The SWFRS, run by the FSC, is a gateway for reporting institutions to submit report data and requires user login credentials. As the internet-only banks are subject to the same regulatory requirements⁵ as conventional banks, both conventional and internet-only banks all are required to file financial and regulatory reports with the FSC via this platform on a regular basis.

Second and in addition to the SWFRS, the Internet-only Banking Supervisory System (IBSS) was developed and built throughout 2021 and expanded its functionality in 2022 for monitoring the internet-only banks specifically on liquidity and certain aspects of business performance for the reasons expounded earlier. The IBSS, run by the CDIC, is an API-powered solution with a lightweight data interchange format which consumes less memory space as well as with established data transmission security protocols. The API reporting mechanism facilitates automated data processing from IT systems of reporting institutions to the CDIC's system.

In the meantime, the internet-only banks (not: conventional banks) are requested to periodically file liquidity and other additional supervisory data with the CDIC via this new system. This platform is also used by these banks to submit real-time abnormal event notifications, illustrated later.

2.2 Legal framework

The legal basis for demanding insured institutions more frequent and granular data can be found in the Deposit Insurance Act (The Act).

In accordance with Article 22 of the Act, for the purpose of insurance risk control, and in the event that it is necessary to collect or analyse an insured institution's financial or business information, the CDIC shall obtain the information through the information-sharing mechanism set up with the competent authority, the central competent authority of agricultural finance, and the central bank. If the information is in any way insufficient, the CDIC may require the insured institutions to make additional factual reports.

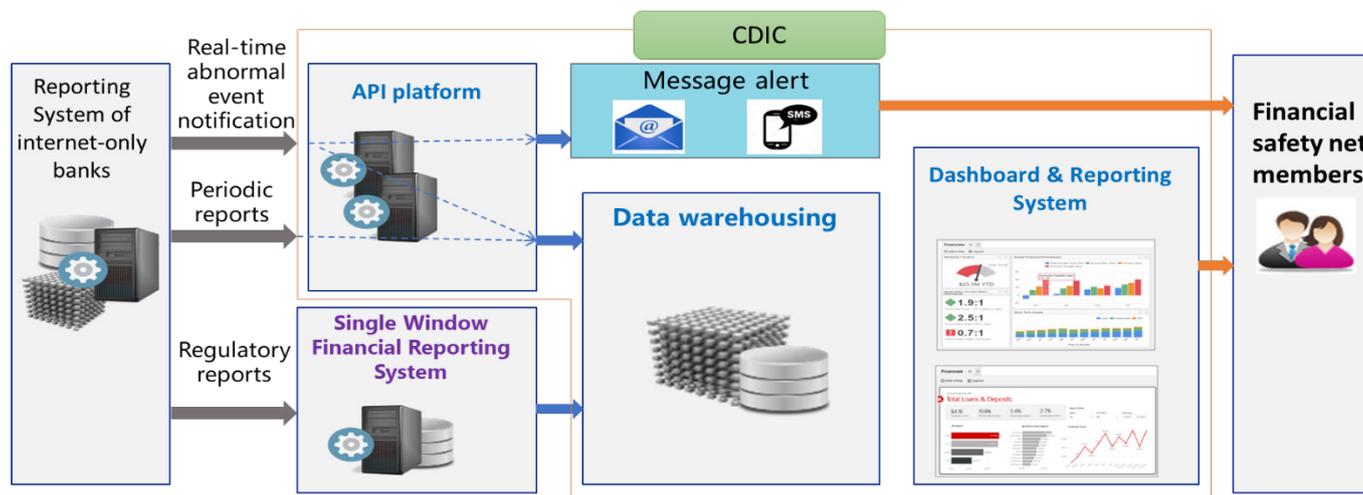
⁴ Although additional resources were allocated in regulating and supervising the internet-only banks, their future development is in line with the national agenda, one aim of which was to keep up with fast development of digitalisation and encourage Fintech development.

⁵ [Standards Governing the Establishment of Commercial Banks](#)

Acting pursuant to the FSC’s policy for supervising internet-only banks, the CDIC identified data needed to monitor the risks associated with possible liquidity shortage and to better apprehend the business models of internet-only banks. Thus, it requested internet-only banks to submit data on a predetermined basis to fulfil the oversight responsibilities.

2.3 Introduction of the Internet-only Banking Supervisory System

The internet-only banks are required to file regulatory data via the FSC’s SWFRS and the CDIC’s IBSS, as shown in the diagram below. The discussion will be focused on the system architecture of the latter, which is an API-based data collection system and enables automation of the submission process.



2.3.1 Periodic data reporting and real-time notification of abnormal events and instant alerts

2.3.1.1 Periodic regulatory data reporting

Besides report filing with the FSC, the internet-only banks are also requested to file the following data at different frequencies:

- Daily: total deposits and loans, liquidity reserve ratio.
- Weekly: net available fund, estimated fund flow in a week’s time etc.
- Bi-weekly: granular data on deposits.
- Monthly: analysis of different deposits, statutory ratios etc.
- Quarterly: risk-weighted assets.

The collection of these data aims to capture the landscape of these banks’ fund flow management and business operation.

2.3.1.2 Real-time notification of abnormal events and instant alerts

In addition to regular reporting, the IBSS features functions of real-time notification of abnormal events and instant alerts, which are designed to enable the CDIC and other financial supervisors to carry out monitoring and take appropriate measures as soon as possible.

Under the following scenario, the internet-only banks shall submit a real-time notification of abnormal events via the IBSS:

- A deposit transaction goes unexecuted for more than 10 minutes. When such an incident occurs, the name of the reporting institution, a description of the incident, the cause of the excessive processing time and the time at which the transaction is restored shall be contained in the notification report submitted to the CDIC. The causes of such incidents include software or hardware incidents, cyberattacks and employees’ misconducts etc. Information on measures taken by the institution for the event shall also be provided.

In addition, the IBSS will send a notification when the level of the interbank fund transfer guarantee special account⁶ dips beneath the required minimum amount.

Upon notification, all relevant personnel in the CDIC will receive an instant alert and act in accordance with an internal response procedure, starting with an immediate investigation and analysis of the event, reporting to directors and senior executives, taking actions as instructed, and following up on the issue until it is resolved. These instant message alerts are sent by e-mail and Short Message Service (SMS), or other communication channels. These alerts are intended to notify the financial safety net members in a prompt manner, raise their vigilance and keep track of the incidents reported.

2.3.2 Data warehousing

Once data reported by the internet-only banks have been processed with the extraction, transformation and loading, they are stored in the data warehouse established by the CDIC.

As described above, the data stored in the data warehouse sources from two regulatory reporting systems with different data types, including traditional reporting data and granular data. Also, data storage formats include relational database, which housed data in a traditional table format, as well as data cubes, a multi-dimensional data model supporting online analytics and processing, to facilitate the data analyses from different angles and decision-making.

With the adoption of the matured technology, the CDIC has more detailed and better quality data and is in a better position to conduct risk monitoring.

2.3.3 Risk control dashboards

The final stage of the system architecture centres at the fundamental part of the project: the generation of analytical tools and dashboards that assist in data-based decision-making. The risk control dashboards are presented in visualized forms and with variables of most concerned. They are designed based on the CDIC's monitoring needs and allow to have a comprehension of these banks' business performance and risk exposure. For instance, the visualized tools can be designed to demonstrate rate charts on deposits offered by the internet-only banks, which might be raised for attracting new customers, or to show the charts of changes in deposits received by these banks.

2.3.4 Data transmission security

To ensure the data is protected appropriately in transmission, the CDIC also employs several data security methods for this regulatory reporting framework. A mutual authentication, or two-way authentication, is applied to verify identity of each side, the CDIC and the internet-only banks, rather than only one communication party verifying the other, prior to data transfer. Also, the CDIC validates the pre-designated IP addresses of the internet-only banks via two lines of defence, firewall and software application, before receipt and processing of data. Further, all the messages are encrypted before sending via the internet.

2.3.5 Information sharing among financial safety net members

The data reported by the internet-only banks will be also shared with other financial safety net members. In addition to sharing real-time abnormal event notifications, the risk-focused supervisory information to be shared includes:

- alerts on the breach of statutory ratios.
- over-concentration in particular assets or products.
- excessively high interest rates.
- Analysis of abnormal business operation.

The monitoring items can be modified, added or removed, depending on the overall financial circumstance and supervisory needs.

⁶ This special account is opened by financial institutions with the Central Bank, for the purposes of making required reserves against deposits and the settlements of funds among financial institutions.

3 Challenges and Opportunities for the CDIC

3.1 Challenges

The CDIC was fortunate to have embarked on the journey of leveraging new technology to keep track of the insured institutions, and will continue to align its technological capability with international Suptech development.

The development and establishment of the IBSS took the CDIC over one year and involved complex discussion-making as well as intense communications with interested parties. Challenges certainly existed both prior to and after the internet-only banks opened for business and several of them are presented here.

First, data consistency is a challenge and to ensure this, the CDIC formulated rules governing data format, definitions and the content of reported data. It also engaged in simulation exercises with affected banks in a constrained timeframe.

Second, the IBSS involved a multiple number of affected parties beyond the CDIC, including the internet-only banks, their information services provider but also other financial safety net members. This process was relatively complex and required parties involved to have sufficient technical capabilities if this mechanism was to function smoothly.

Third, it is crucial for the developer of this new system to be proficient in information technological skills, and beyond that, to have financial industry experience so as to better communicate on technical issues with the CDIC staff and manage the project effectively.

Fourth, the internet-only banks would launch new online products and relevant software applications after opening for business, and financial supervisors need to enhance digital capability to keep up with the pace of change of the financial industry. Furthermore, it's also necessary to stay updated on industry standards of cybersecurity management.

3.2 Opportunities

Though having to put tremendous efforts to address issues presented above, the CDIC has been witnessing the upside of implementing supervisory technology, particularly after the outbreak of the COVID-19 pandemic. The pandemic has accelerated the digital transformation in the banking sector, and facilitated financial authorities to enhance Suptech capabilities, not only for improvement of operational efficiency but also effective monitoring of supervised institutions. In the CDIC's case, instead of additional burdensome manual intervention, the further adoption of Suptech allows for automation with the end results better fitting to monitoring needs⁷.

Further, Suptech provides a stepping stone for future digital supervision. The IBSS processes granular data, enabling the CDIC to conduct in-depth analysis and observe overall business operation of the banks. This type of supervision is tech-savvy and more prompt than the supervision of conventional banks.

In conclusion, a deposit insurer should take the opportunity to keep pace with the digitalisation so as to perform duties and responsibilities more effectively as insured institutions are partnering with tech companies for digital transformation on their business.

⁷ [A Discussion of the Development of Supervisory Technology in Taiwan \(in Chinese\)](#)

4 Resources

[Standards Governing the Establishment of Commercial Banks \(link\)](#) Chinese Taipei FSC's press release on [establishment of internet-only banks \(link\)](#)

Tsang, C. Y., (2019), A Discussion of the Development of Supervisory Technology in Taiwan” (in Chinese), *Deposit Insurance Information Quarterly* vol. 32(4), 50-77

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