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From process to remedy: rethinking corporate accountability architecture for virtual asset intermediaries in Asia's leading financial jurisdictions*

Do processo à reparação: repensando a arquitetura da responsabilização empresarial dos intermediários de ativos virtuais nas principais jurisdições financeiras da Ásia

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Abstract

This article examines the corporate accountability architecture governing virtual asset intermediaries in Japan, Singapore, Hong Kong and South Korea. Methodologically, the article adopts a qualitative, comparative legal and documentary approach, based on the analysis of statutes, regulatory guidelines, supervisory and enforcement documents, and selected cases drawn from the four jurisdictions. Drawing on gatekeeper theory and process-based regulation, it organises the governance duties imposed on intermediaries into three analytical tiers including prevention, detection and remedy, and evaluates the extent to which the resulting frameworks provide a complete accountability structure. The comparative analysis identifies a consistent pattern across all four jurisdictions: prevention duties are relatively developed and convergent, detection duties are more uneven and remedy mechanisms remain structurally weak. The article argues that this imbalance is not merely an implementation failure but a consequence of process-based governance itself, which focuses on regulating intermediary conduct rather than guaranteeing investor recovery. It identifies three categories of harm that existing frameworks inadequately address such as investor loss arising despite formal compliance, harm caused by actors outside the regulatory perimeter and systemic contagion without a clearly identifiable responsible actor. To address these gaps, the article proposes three recommendations including a statutory private right of action, intermediary liability mechanisms targeting regulated actors connected to unlicensed platforms and a mandatory compensation fund for cases in which no effective recovery pathway exists.

Keywords: Virtual asset intermediaries; corporate accountability; process-based governance; ex-ante governance duties; investor protection; access to remedy; Asia.

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Resumo

Este artigo examina a arquitetura da responsabilização empresarial aplicável aos intermediários de ativos virtuais no Japão, em Singapura, em Hong Kong e na Coreia do Sul. O estudo adota uma abordagem qualitativa, jurídico-comparativa e documental, com base na análise de leis, orientações regulatórias, documentos de supervisão e de aplicação das normas e casos selecionados nas quatro jurisdições. Com base na teoria dos intermediários como agentes de controle (gatekeepers) e na regulação baseada em processos, o artigo organiza os deveres de governança impostos aos intermediários em três dimensões analíticas — prevenção, detecção e reparação — e avalia em que medida os regimes examinados oferecem uma estrutura completa de responsabilização. A análise comparada identifica um padrão comum às quatro jurisdições. Os deveres de prevenção são relativamente desenvolvidos e convergentes, os de detecção são mais desiguais e os mecanismos de reparação permanecem estruturalmente frágeis. O artigo sustenta que esse desequilíbrio decorre da própria governança baseada em processos, que se concentra em regular a conduta dos intermediários e oferece garantias limitadas de reparação aos investidores. Os regimes vigentes respondem de forma insuficiente a três categorias de danos: perdas sofridas por investidores apesar do cumprimento formal das normas, danos causados por agentes fora do perímetro regulatório e contágio sistêmico sem um responsável claramente identificável. Para enfrentar essas lacunas, o artigo propõe instituir por lei o direito de ajuizar ação individual, criar mecanismos de responsabilização dos intermediários regulados vinculados a plataformas sem licença e estabelecer um fundo obrigatório de compensação para os casos em que inexista uma via efetiva de reparação.

Palavras-chave: intermediários de ativos virtuais, responsabilização empresarial, governança baseada em processos, deveres de governança ex ante, proteção dos investidores, acesso à reparação, Ásia.

1 Introduction

The collapse of FTX Trading Ltd in November 2022 led to markedly different outcomes for investors depending on the jurisdiction in which their accounts were held. Customers of FTX Japan, operating under the licensing and supervisory framework of Japan's Financial Services Agency, were able to recover their assets within months. By contrast, customers in many other jurisdictions faced years of uncertainty, with some recovering little or nothing. The distinction did not lie in the scale of the losses, the speed of insolvency proceedings or the effectiveness of liquidators. It lay in the underlying legal architecture. Japan's Payment Services Act required the segregation of customer assets from the exchange's own funds and because those requirements had been complied with, the assets remained identifiable and recoverable[1]. This contrast illustrates the central proposition developed in this article: the accountability outcomes available to virtual asset investors depend not only on the conduct of intermediaries, but more fundamentally on the governance architecture within which those intermediaries operate.

Virtual asset markets have expanded rapidly across Asia's leading financial jurisdictions, drawing substantial retail participation while generating repeated episodes of large-scale investor harm, from the collapse of Mt. Gox in 2014 to the cascading market failures of 2022. In response, regulators in Japan, Singapore, Hong Kong and South Korea have developed increasingly sophisticated governance regimes for virtual asset intermediaries, imposing extensive ex-ante obligations relating to asset segregation, cold storage, capital adequacy, market surveillance and managerial oversight. These frameworks have attracted significant scholarly attention, particularly within the fields of financial regulation and fintech governance. Existing research has focused mainly on the classification of virtual assets, the design of licensing systems and the implementation of anti-money laundering/countering the financing of terrorism obligations across different jurisdictions[2]. Comparative studies on anti-money laundering have examined how requirements for virtual asset service providers (VASPs), including licensing, customer due diligence,

[1] UNITED STATES BANKRUPTCY COURT, SOUTHERN DISTRICT OF NEW YORK. In re FTX Trading Ltd., Case No. 22-11068 (filed 11 November 2022). Available at: https://restructuring.ra.kroll.com/FTX/. Access on: 26 Apr. 2026.

[2] See generally ARNER, Douglas W.; ZETZSCHE, Dirk A.; BUCKLEY, Ross P.; KIRKWOOD, Jamieson M. The financialization of crypto: designing an international regulatory consensus. *Computer Law and Security Review*, v. 53, 2024; ZETZSCHE, Dirk A.; ARNER, Douglas W.; BUCKLEY, Ross P. Decentralized finance. *Journal of Financial Regulation*, v. 6, n. 2, p. 172-203, 2020.

record keeping and suspicious transaction reporting, differ across jurisdictions[3]. Meanwhile, business and human rights scholarship has begun to question whether due diligence regimes focused on procedural compliance can effectively ensure access to remedy[4]. Far less attention has been given to whether these frameworks, when viewed together from the perspective of corporate accountability, are actually capable of doing all three things that an effective governance system should do, namely preventing harm, detecting harm and ensuring that investors can recover when harm occurs.

Against this background, the article addresses the question whether the ex-ante governance duties imposed on virtual asset intermediaries across Asia's leading financial jurisdictions collectively constitute a coherent corporate accountability architecture and if so, what structural gaps does this architecture leave unaddressed. The article argues that these duties form a relatively coherent framework for prevention and detection, but remain incomplete at the remedy stage. This imbalance stems from the way process-based governance is structured, rather than simply from shortcomings in implementation.

This article makes three main contributions to the comparative legal scholarship on virtual asset governance. First, it develops a temporal analytical framework that organises governance duties into three functional stages, namely prevention, detection and remedy, thereby providing a structured basis for evaluating the completeness of accountability frameworks across jurisdictions. Second, it examines documented cases of investor harm alongside the applicable rules to show whether, and to what extent, the existing framework allows affected investors to seek recovery. Third, it identifies a structural remedy deficit that exists within domestic regulatory systems and shows how this reflects a similar imbalance at the international level. While AML/CFT obligations are supported by an established international standard setter, no equivalent institution exists to support investor access to remedy. In response, the article proposes three complementary reform mechanisms aimed at addressing the specific categories of harm that process-based governance alone cannot adequately resolve.

The article uses a qualitative methodology based on comparative legal analysis and documentary research. The comparison is functional in nature, focusing on how each jurisdiction assigns responsibility for preventing, detecting and remedying investor harm, instead of simply comparing the terminology used in their rules. Since the selection and treatment of sources are central methodological issues in comparative law[5], the study clearly defines its documentary sources. These include primary legislation and subordinate rules; regulatory guidelines, consultation papers and parliamentary replies issued by the FSA, MAS, SFC and FSC; and official enforcement, judicial and insolvency records. The FSB High-level Recommendations (2023) provide a common benchmark for the comparison. The four jurisdictions were selected because each has established a dedicated licensing regime for virtual asset intermediaries, each is a FATF member subject to the same international standards and together they represent different regulatory approaches, ranging from Japan's incremental, crisis-driven reforms to South Korea's rules-based statute. The illustrative cases (FTX Japan, Coincheck, DMM Bitcoin, Three Arrows Capital, JPEX and Terra/Luna) were selected based on three criteria: they involve centralised intermediaries within the scope of the article; they resulted in significant investor losses; and they are documented in official regulatory, judicial or insolvency sources. These cases illustrate how the formal framework operates when harm occurs, but they are not used to measure its effectiveness empirically. The article's conclusions therefore focus on the structural design of these frameworks, with no claim to measure their actual outcomes.

The article is organised as follows. Part 2 develops the theoretical framework, drawing on gatekeeper theory and process-based regulation to explain the relationship between governance duties and accountability outcomes. Part 3 applies that framework comparatively

[3] VAN STADEN, Niesa; KILIAN, Elsabe; McINTYRE, Jacqui-Lyn. A comparative dive into virtual asset legislation in South Africa, Mauritius, Namibia and the UK. *Journal of Money Laundering Control*, v. 28, n. 7, p. 50-64, 2025; BEEBEEJAUN, Ambareen; MAHADEW, Bhavna. Virtual assets and the prevention of money laundering: a critical and comparative analysis of the laws of Mauritius, Japan and South Africa. *Journal of Money Laundering Control*, v. 27, n. 4, p. 790-802, 2024.

[4] DZNELADZE, Elene; MARX, Axel. Human Rights Due Diligence and Access to Remedy: a comparative analysis of twenty-six due diligence laws and proposals. *Revista de Direito Internacional*, Brasília, v. 22, n. 1, p. 168-188, 2025. DOI: 10.5102/rdi.v22i1.9788

[5] GODOY, Arnaldo; RIBEIRO, Gustavo. O Direito Comparado: resgate historiográfico, conceitos e problemas metodológicos. *Revista de Direito Internacional*, Brasília, v. 17, n. 1, p. 25-40, 2020. DOI: 10.5102/rdi.v17i1.6252

to the four jurisdictions, examining the extent to which their virtual asset regimes provide mechanisms of prevention, detection and remedy. Part 4 analyses the structural gaps of the remedial mechanism, focusing on three categories of investor harm that process-based governance cannot adequately address. Part 5 proposes three complementary reform recommendations which direct toward a distinct dimension of the remedy gap identified in Part 4. Part 6 concludes.

2 Theoretical framework

2.1 Intermediaries as accountability anchors

In financial markets, corporate accountability has traditionally been supported by intermediaries performing what legal scholarship characterizes as gatekeeping functions, namely the ability of strategically positioned third parties to identify misconduct, refuse cooperation that facilitates it, or increase the costs of wrongdoing for primary actors. In the framework most clearly developed by Reinier Kraakman, gatekeepers are not defined by their institutional identity, but by their structural role as actors whom the law can leverage to promote compliance because they occupy key control points through which wrongful conduct must pass[6].

Applied to virtual asset markets, the central issue is whether any participants meet this functional definition. The answer is not straightforward. In fully decentralized systems, where protocols operate autonomously through code without a discernible controlling entity, the application of gatekeeping theory becomes problematic, as there is no identifiable third party capable of exercising meaningful oversight or control[7]. These settings fall outside the scope of this analysis. By contrast, in the case of centralized exchanges, custodians and other licensed intermediaries, the analogy is considerably more direct. These actors manage the principal entry and exit points between fiat currency and crypto-assets, hold customer assets, maintain transactional data, and possess operational knowledge not accessible to regulators or retail users. They are also technically equipped to deny services, freeze accounts, block suspicious transactions, and retain relevant records. These are functions that closely correspond to the control mechanisms associated with gatekeeping.

Nevertheless, an important distinction remains. Traditional gatekeepers, such as auditors, underwriters, or rating agencies, typically operate as independent external actors who assess or certify conduct from outside the primary firm. In contrast, many centralized VASPs do not occupy such an external position. Instead, they often combine multiple roles including providing market infrastructure, safeguarding customer assets, determining listing criteria and, in some cases, acting as counterparties in transactions. This degree of vertical integration means that a VASP may function not only as a gatekeeper, but also as a source of the very risks it is expected to manage[8]. This feature does not undermine the relevance of the gatekeeping framework, but it does require a more careful application. In this article, gatekeeping is therefore understood not as a fixed status applicable to all VASPs, but as a function attributed to actors that control critical points such as market access, information flows, asset custody, or governance structures. This functional approach is consistent with recent scholarship, which links corporate responsibility to the roles companies perform and the power relations arising from those roles, not merely from their formal status[9].

2.2 The case for process-based governance

Having shown that centralized virtual asset intermediaries perform gatekeeping roles that justify placing accountability obligations on them, the next step is to explain why regulators across Asian jurisdictions have favored ex-ante process-based duties over ex-post liability mechanisms. This preference is not incidental but reflects structural characteristics of virtual asset markets that limit the effectiveness of traditional liability frameworks.

[6] See generally KRAAKMAN, Reinier. Gatekeepers: the anatomy of a third-party enforcement strategy. *Journal of Law, Economics and Organization*, v. 2, n. 1, p. 53-104, 1986.

[7] ZETZSCHE, Dirk A.; ARNER, Douglas W.; BUCKLEY, Ross P. Decentralized finance, above cited.

[8] FINANCIAL STABILITY BOARD. *High-level Recommendations for the Regulation, Supervision and Oversight of Crypto-asset Activities and Markets: Final Report*. July 2023. p. 11-12. Available at: https://www.fsb.org/uploads/P170723-2.pdf. Access on: 27 Apr. 2026.

[9] MACCHI, Chiara; BIRCHALL, David; BERNAZ, Nadia. Rethinking Corporate Human Rights Responsibility: A Functional Model. *Revista de Direito Internacional*, Brasília, v. 22, n. 1, p. 60-81, 2025. DOI: 10.5102/rdi.v22i1.9819

Ex-post liability, whether grounded in tort, contract, or statute, depends on demonstrating that a defendant's conduct caused a particular harm suffered by an identifiable claimant. In the context of virtual asset markets, each component of this requirement raises significant challenges. Establishing causation is especially difficult, as investor losses may stem from the actions of a specific VASP, wider market volatility, failures in underlying protocols, or a combination of these factors, which are not easily disentangled[10]. In addition, ex-post liability presupposes that the defendant retains sufficient assets to satisfy a judgment. Experience with large-scale VASP failures shows that, once financial distress begins, assets can quickly be dissipated, commingled, or otherwise rendered unavailable[11].

Process-based governance seeks to address these difficulties by acting before harm occurs. This approach reflects what regulatory theory calls management--based or process-based regulation. Instead of focusing on outcomes, it seeks to shape how organisations plan and carry out their activities. This form of regulation is particularly suitable when regulated entities differ significantly and their outcomes are difficult to monitor[12]. To be specific, requirements such as client asset segregation, minimum capital thresholds, internal control systems, and ongoing regulatory oversight establish a framework that does not depend on proving causation after the fact, does not require individual enforcement actions by investors, and does not rely on the continued solvency of the regulated entity. In this respect, ex-ante duties operate as functional substitutes for the conditions, namely informational transparency, accessible dispute resolution, and asset availability, that ex-post liability assumes but which are not consistently present in virtual asset markets.

At the same time, it is necessary to recognize the limits of this approach. By focusing on how VASPs operate rather than on the outcomes they produce, process-based governance establishes accountability for conduct rather than for results. A VASP may fully comply with applicable process requirements and still generate substantial investor losses, for example, due to product failures that were not misrepresented, market conditions beyond its control, or design choices not captured by existing rules. In such cases, the framework offers no direct corrective mechanism as without a breach of duty, there is no automatic basis for enforcement or remediation. Coglianese and Lazer point out that this approach leaves considerable uncertainty about what qualifies as "good management". Compliance with prescribed procedures therefore does not necessarily mean that the intended public objectives have been achieved. The implications of this limitation are considered further in Part 4.

2.3 An analytical framework for assessing governance duties

The theoretical considerations outlined above, namely the role of intermediaries as focal points of accountability and the rationale underlying process-based governance, result in a specific approach to evaluating the regulatory frameworks developed across the jurisdictions examined in this article. The issue is not merely which obligations are in place, but whether, taken together, they address the entire lifecycle of accountability, understood as the sequence of stages at which regulatory intervention can meaningfully affect the protection of investors.

Process-based regulation may operate at three distinct stages along the causal pathway between corporate conduct and investor harm. These stages provide the analytical structure for the comparative discussion in Part 3.

The first stage arises prior to the occurrence of harm. At this point, regulatory measures are designed to reduce the likelihood that harm will occur. These may be described as prevention duties, rules that shape how VASPs manage client assets, organise internal governance, and ensure the competence of their personnel.

[10] FINANCIAL STABILITY BOARD. *The Financial Stability Implications of Multifunction Crypto-asset Intermediaries*. November 2023. p. 27. Available at: https://www.fsb.org/uploads/P281123.pdf. Access on: 27 Apr. 2026.

[11] The dissipation of customer assets following the collapse of FTX Trading Ltd. is documented in United States Bankruptcy Court, Southern District of New York. *In re FTX Trading Ltd.*, Case No. 22-11068 (filed Nov. 11, 2022). Available at: https://restructuring.ra.kroll.com/FTX/. Access on: 27 Apr. 2026. Similar patterns were observed in the collapses of Celsius Network and Voyager Digital in the same period.

[12] See generally COGLIANESE, Cary; LAZER, David. Management-based regulation: prescribing private management to achieve public goals. *Law & Society Review*, v. 37, n. 4, p. 691-730, 2003; BALDWIN, Robert; CAVE, Martin; LODGE, Martin. *Understanding regulation: theory, strategy, and practice*. 2nd ed. Oxford: Oxford University Press, 2012.

Requirements relating to asset segregation, cold storage, capital adequacy, and fit-and-proper standards for management fall within this category. Their shared objective is to limit, or eliminate where possible, the conditions under which investor harm may occur, rather than to address such harm after the fact.

The second stage occurs as risk begins to materialise, for instance, when a VASP faces financial stress, when irregularities in market activity suggest manipulation, or when transaction patterns raise concerns about potential misconduct. At this point, regulatory obligations are aimed at generating the visibility necessary for timely intervention. These may be characterised as detection duties, including ongoing transaction monitoring, reporting of suspicious activities, periodic proof-of-reserves disclosures, and independent audit requirements. Their function is not to prevent the emergence of risk conditions, but to identify them at a stage where corrective action remains possible.

The third stage arises once harm has already occurred, such as where investors have suffered losses, a VASP has entered insolvency, or misconduct has been formally established. Here, regulatory duties determine whether affected investors have access to recovery mechanisms. These may be described as remedy duties, encompassing requirements such as mandatory insurance, compensation funds, or statutory restitution frameworks. Their underlying purpose is to ensure that accountability translates into tangible recovery for harmed investors, rather than being limited to sanctions that primarily serve public enforcement interests.

These three categories are not externally imposed classifications, but reflect the internal logic of process-based regulation itself. If accountability is pursued through governance obligations rather than outcome-based liability, its effectiveness depends on whether such obligations extend across all stages of the lifecycle[13]. A framework that is strong in prevention but lacking in remedial mechanisms may reduce the overall incidence of harm, yet still leave investors without recourse when harm occurs, particularly in cases where losses arise independently of any identifiable failure in process.

This framework performs two key functions in the analysis that follows. *First*, it provides a set of comparative criteria for assessing the governance regimes of Japan, Singapore, Hong Kong, and South Korea in Part 3, allowing for a structured comparison based on accountability functions rather than regulatory categories. *Second*, it highlights, in advance, the dimension along which these jurisdictions may exhibit the greatest limitations, and where the article's broader argument concerning structural incompleteness is most directly engaged.

2.4 International standards as regulatory context

The governance obligations examined in this article are not derived solely from domestic regulatory choices. Rather, they largely reflect the incorporation of transnational standards that have shaped shared expectations regarding the regulation of virtual asset intermediaries across jurisdictions.

The Financial Action Task Force (FATF) has been particularly influential in establishing the baseline obligations applicable to VASPs in the four jurisdictions considered here. FATF Recommendation 15, revised in 2019 and further updated in 2021 to explicitly address virtual assets and related service providers, requires member states to regulate and supervise VASPs for anti-money laundering (AML) and countering the financing of terrorism (CFT) purposes. These obligations include licensing or registration requirements, customer due diligence, transaction monitoring, and record-keeping[14]. Given that all four jurisdictions are FATF members, Recommendation 15 effectively sets a common minimum standard that shapes the regulatory approach to VASPs across the region. It also helps explain why prevention and detection duties show a relatively high degree of convergence, whereas remedy-related obligations, falling outside FATF's scope, remain more fragmented.

[13] See generally BALDWIN, Robert; CAVE, Martin; LODGE, Martin. *Understanding regulation: theory, strategy, and practice*. 2nd ed. Oxford: Oxford University Press, 2012. The three-stage framework applied here differs from the lifecycle approach adopted by IOSCO in its Policy Recommendations for Crypto and Digital Asset Markets (November 2023), IOSCOPD747, which organises regulatory coverage according to CASP activities rather than stages of investor harm accountability.

[14] FINANCIAL ACTION TASK FORCE. *Recommendation 15 and interpretive note to recommendation 15 on virtual assets and virtual asset service providers*. Updated October 2021. Available at: https://www.fatf-gafi.org/en/publications/Fatfrecommendations/Guidance-rba-virtual-assets-2021.html. Access on: 27 Apr. 2026.

Normative convergence around Recommendation 15 does not necessarily translate into comparable levels of effectiveness. The FATF's monitoring reports reveal persistent gaps in implementation. Its 2024 targeted update found that 75% of assessed jurisdictions were rated partially compliant or non-compliant with Recommendation 15, with particular difficulties in conducting risk assessments and supervisory inspections[15]. The 2025 update likewise highlighted uneven implementation and ongoing challenges in mitigating the risks associated with offshore VASPs[16]. Comparative scholarship on anti-money laundering regulation reinforces this point, showing that formally similar obligations may differ in their substantive scope, including the range of customer due diligence measures they require[17].

More recently, the Financial Stability Board (FSB) issued its High-level Recommendations for the Regulation, Supervision and Oversight of Crypto-asset Activities and Markets in July 2023, which were subsequently endorsed by the G20 at its New Delhi summit in September 2023[18]. These recommendations articulate governance expectations for crypto-asset service providers in terms that correspond closely to the prevention and detection dimensions of the analytical framework adopted in this article. They emphasise, among other things, the protection of client assets, the implementation of robust risk management systems, the establishment of market surveillance mechanisms, and the maintenance of sufficient financial resources to meet potential liabilities. In the same period, IOSCO released its Policy Recommendations for Crypto and Digital Asset Markets, applying established principles of securities regulation to crypto-asset service providers across key areas such as conflicts of interest, custody arrangements, and retail investor protection[19].

Within this article, these transnational standards perform two main analytical roles. *First*, they serve as a common reference point for assessing domestic regulatory frameworks in Part 3, allowing for comparison based on shared international benchmarks rather than criteria independently constructed. *Second*, they reveal a structural gap at the international level that parallels the gap identified in domestic frameworks in Part 4. None of the key instruments requires jurisdictions to establish mechanisms enabling investors to recover losses arising from conduct that complies with existing rules. The absence of effective remedial mechanisms in Asian regulatory systems therefore reflects not only domestic regulatory choices, but also a limitation embedded in the international standards themselves. AML/CFT obligations for VASPs are supported by an established international framework that sets common standards, assesses compliance through mutual evaluations and follow-up reports and monitors implementation publicly, with ratings and listing consequences. Investor redress in the virtual asset context lacks a comparable institutional foundation. Although the FSB and IOSCO recommendations address the protection of client assets, they do not establish a common investor compensation standard subject to peer review of similar intensity. As a result, prevention and detection benefit from an international monitoring mechanism that is largely absent for remedies. This institutional difference helps explain why preventive obligations have become more aligned across jurisdictions, while remedial arrangements remain fragmented.

3 Comparing virtual asset governance frameworks

The framework developed in Part 2 distinguishes three layers of accountability duties, namely prevention, detection, remedy, and suggests that a governance regime for virtual assets is complete only if all three are sufficiently addressed. This Part applies that framework

[15] FINANCIAL ACTION TASK FORCE. *Targeted update on implementation of the FATF standards on virtual assets and virtual asset service providers*. Paris: FATF, 2024. Available at: https://www.fatf-gafi.org/en/publications/Fatfrecommendations/targeted-update-virtual-assets-vasps-2024.html. Access on: 15 Oct. 2026.

[16] FINANCIAL ACTION TASK FORCE. *Targeted update on implementation of the FATF standards on virtual assets and virtual asset service providers*. Paris: FATF, June 2025. Available at: https://www.fatf-gafi.org/en/publications/Fatfrecommendations/targeted-update-virtual-assets-vasps-2025.html. Access on: 15 Oct. 2026.

[17] VAN STADEN, Niesa; KILIAN, Elsabe; McINTYRE, Jacqui-Lyn. A comparative dive into virtual asset legislation in South Africa, Mauritius, Namibia and the UK. *Journal of Money Laundering Control*, v. 28, n. 7, p. 50-64, 2025.

[18] FINANCIAL STABILITY BOARD. *High-level recommendations for the regulation, supervision and oversight of crypto-asset activities and markets: Final report*. July 2023. Available at: https://www.fsb.org/uploads/P170723-2.pdf. Access on: 27 Apr. 2026.

[19] INTERNATIONAL ORGANIZATION OF SECURITIES COMMISSIONS. *Policy recommendations for crypto and digital asset markets: Final report*. November 2023. Available at: https://www.iosco.org/library/pubdocs/pdf/IOSCOPD747.pdf. Access on: 27 Apr. 2026.

to the four jurisdictions examined, evaluating the obligations imposed on virtual asset intermediaries and, where documented incidents illustrate their operation, how they have functioned.

3.1 Prevention duties

Japan's prevention framework follows a learning-from-failure trajectory, in which each major market disruption has triggered targeted regulatory adjustments that progressively expand the scope of preventive safeguards. The 2016 amendment to the Payment Services Act, adopted after the Mt. Gox collapse and the Financial Services Agency's subsequent review process, introduced foundational requirements such as registration, minimum capital standards and the segregation of customer assets from exchange funds[20]. The Coincheck hack in 2018 led to industry-wide inspections by the FSA and resulted in further amendments in 2019. These reforms prohibited the commingling of customer and exchange assets, required the use of cold storage through trusted third parties, and extended regulatory coverage to derivatives and custodial activities[21]. A subsequent round of reform followed the Terra/Luna collapse. Amendments taking effect in June 2023 established a dedicated stablecoin framework, restricting issuance to banks, licensed fund transfer service providers, and trust companies already subject to prudential oversight, while requiring full reserve backing and segregated custody[22]. Overall, this framework adopts a clearly issuer-focused, licensed-entry model. By limiting issuance to specific entities already subject to prudential supervision, Japan emphasises systemic stability and consumer protection over ease of market entry, positioning its regime among the more restrictive approaches to stablecoin regulation globally[23].

Singapore's Payment Services Act 2019 adopts a modular, risk-based and "right-sized" regulatory approach[24]. The 2021 amendments expanded the scope of regulated digital payment token services, while licensed payment institutions remain subject to fit-and-proper criteria, minimum base capital requirements, and, in the case of major payment institutions, security deposit obligations[25]. Digital payment token service providers must also comply with Monetary Authority of Singapore (MAS) requirements on AML/CFT. Singapore has also taken early steps in developing prevention-focused rules for stablecoins. In August 2023, MAS finalised a regulatory framework for single-currency stablecoins issued in Singapore, requiring reserve assets to be held in low-risk and highly liquid assets, valued at at least 100% of stablecoins in circulation, and segregated with eligible custodians, while also ensuring redemption at par within five business days[26]. These requirements seek to reduce risks relating to reserve adequacy, value stability and redemption. In contrast to Japan's issuer-focused model, Singapore adopts an approach that is more open in terms of market participation, while imposing stringent requirements on how that participation is carried out. This balance is consistent with its broader role as an internationally oriented financial centre.

Hong Kong's regime can be characterised as a stringent, gatekeeper-based prevention model built around the licensing and close supervision of centralised trading platform operators. Under the Securities and Futures Ordinance and the Anti-Money Laundering and Coun-

[20] JAPAN. *Payment Services Act* (Act No. 59 of 2009, as amended). Available at https://www.japaneselawtranslation.go.jp/en/laws/view/3078/en. Access on: 28 Apr. 2026.

[21] FINANCIAL SERVICES AGENCY (JAPAN). *Regulating the crypto assets landscape in Japan*. December 2022. p. 5. Available at: https://www.fsa.go.jp/en/news/2022/20221207/01.pdf. Access on: 28 Apr. 2026.

[22] JAPAN. *Act for Partial Amendment to the Payment Services Act, etc. for the purpose of establishing a stable and efficient funds settlement system* (passed June 2022, entering into force June 2023). For detailed analysis of the Electronic Payment Instruments framework, see KAWAI, Ken et al. *Amendments to the Payment Services Act and the Act on Prevention of Transfer of Criminal Proceeds, etc. (Introduction of Regulations on Stablecoins)*. Anderson Mori & Tomotsune Financial Services & Transactions Group Newsletter. September 2022. Available at: https://www.amt-law.com/asset/pdf/bulletins2_pdf/220927.pdf. Access on: 28 Apr. 2026.

[23] GEORGETOWN JOURNAL OF INTERNATIONAL LAW. *Reserve standards vs. issuer restrictions: the GENIUS Act's comparison to global stablecoin norms*. October 2025. Available at: https://www.law.georgetown.edu/international-law-journal/blog/geniusact/. Access on: 28 Apr. 2026.

[24] MONETARY AUTHORITY OF SINGAPORE. *A guide to the essential aspects of the Payment Services Act 2019*. December 2019 (revised July 2024). Available at: https://www.mas.gov.sg/-/media/mas/regulations-and-financial-stability/regulations-guidance-and-licensing/payment-service-providers/guide-to-the-payment-services-act-2019.pdf. Access on: 28 Apr. 2026.

[25] SINGAPORE. *Payment Services (Amendment) Act 2021 (No. 1 of 2021)*. Available at: https://sso.agc.gov.sg/Acts-Supp/1-2021/Published/20210301?DocDate=20210301. Access on: 28 Apr. 2026.

[26] MONETARY AUTHORITY OF SINGAPORE. *MAS finalises stablecoin regulatory framework*. Media Release. 15 August 2023. Available at: https://www.mas.gov.sg/news/media-releases/2023/mas-finalises-stablecoin-regulatory-framework. Access on: 28 Apr. 2026.

ter-Terrorist Financing Ordinance[27], any centralised platform conducting business in Hong Kong or actively targeting Hong Kong investors is required to obtain a licence, reflecting the Securities and Futures Commission (SFC)'s broader principle of "same business, same risks, same rules"[28]. This framework extends traditional financial regulatory safeguards to virtual asset activities through detailed ex-ante requirements covering governance, financial soundness, custody arrangements, market surveillance and operational resilience. Licensed operators must meet minimum capital thresholds, including paid-up share capital of HK$5,000,000 and liquid capital of at least HK$3,000,000[29]. They are also required to hold client assets on trust through an associated entity, retain 98% of client virtual assets in cold storage[30]. Nevertheless, its effectiveness depends on the scope of the regulatory perimeter. As illustrated by the JPEX incident[31], significant investor harm may still occur through unlicensed or misleadingly marketed platforms operating outside the formal licensing framework.

South Korea's Virtual Asset User Protection Act (VAUPA), which came into force in July 2024, represents the most detailed statutory approach to prevention among the four jurisdictions examined[32]. Under this framework, VASPs must separate users' fiat deposits from their own funds by placing them with banks or other designated custodians, maintain distinct custody of users' virtual assets apart from proprietary holdings, and keep at least 80% of the economic value of customer assets in cold wallets[33]. This threshold is calculated on a monthly basis using average daily KRW conversion rates, leaving no operational discretion in its application. The level of precision in these requirements, specifying not only the objective of safe asset management but also the exact technical methods and quantitative thresholds, reflects a clear legislative choice to favour a rules-based prevention model over a principles-based approach. Compared with Japan's issuer-focused regime and Singapore's more flexible, risk-calibrated framework, South Korea's model stands out as the most prescriptive. It imposes detailed ex-ante obligations on asset segregation and custody practices, significantly limiting the discretion available to operators in meeting core prevention standards.

Taken together, the prevention frameworks across the four jurisdictions reveal a clear pattern of substantive convergence around a shared set of core obligations, namely asset segregation, cold storage, capital adequacy, fit-and-proper criteria, and licensing requirements while differing markedly in their regulatory approaches. This convergence reflects the combined influence of FATF-driven compliance expectations, competitive pressures among financial centres, and the cumulative lessons drawn from successive market failures, each of which led to targeted regulatory responses to address specific weaknesses revealed in practice. However, this convergence is primarily normative. It indicates that the four jurisdictions have adopted similar categories of obligation, but does not establish that these obligations are equally effective in practice, an issue this article does not measure. This distinction is important to the argument that follows. The remedy deficit identified in Part 3.3 persists regardless of how effectively preventive duties are enforced because even when those duties are properly implemented, an effective pathway for recovering investor losses may still be absent.

3.2 Detection duties

Japan's detection framework operates through two complementary channels. The first consists of AML/

[27] HONG KONG. *Anti-Money Laundering and Counter-Terrorist Financing Ordinance* (Cap. 615, as amended 2022), Part 5B. Available at: https://www.legco.gov.hk/yr2022/english/ord/2022ord015-e.pdf. Access on: 28 Apr. 2026.

[28] SECURITIES AND FUTURES COMMISSION (HONG KONG). *"A-S-P-I-Re" for a brighter future - SFC's regulatory roadmap for Hong Kong's virtual asset market*. Executive Summary 26. February 2025. Available at https://www.sfc.hk/-/media/EN/files/ER/ASPIRe/ASPIRe-roadmap-for-Hong-Kongs-virtual-asset-market-Eng.pdf?rev=1ff2b9ab976f482e924b1d911c55b27a&hash=ABF3EDC5C737FE8435568222D04417EA. Access on: 28 Apr. 2026.

[29] SECURITIES AND FUTURES COMMISSION (HONG KONG). *Guidelines for virtual asset trading platform operators*. June 2023. Paragraphs 6.2-6.3. Available at: https://www.sfc.hk/-/media/EN/assets/components/codes/files-current/web/guidelines/Guidelines-for-Virtual-Asset-Trading-Platform-Operators/Guidelines-for-Virtual-Asset-Trading-Platform-Operators.pdf. Access on: 28 Apr. 2026.

[30] Ibid. Para 10.6.c

[31] SECURITIES AND FUTURES COMMISSION (HONG KONG). *Statement on JPEX*. September 2023. Available at: https://www.sfc.hk/en/News-and-announcements/Policy-statements-and-announcements/Statement-on-JPEX. Access on: 28 Apr. 2026.

[32] SOUTH KOREA. *Act on the Protection of Virtual Asset Users* (Act No. 19563 of 2023). Arts 6,7. Available at: https://elaw.klri.re.kr/eng_mobile/viewer.do?hseq=63752&type=part&key=23. Access on: 29 Apr. 2026.

[33] FINANCIAL SERVICES COMMISSION (SOUTH KOREA). *Press release: FSC proposes rules on the protection of virtual asset users*. December 2023. Available at: https://www.fsc.go.kr/eng/pr010101/81217. Access on: 29 Apr. 2026.

CFT-focused monitoring. Under the Act on Prevention of Transfer of Criminal Proceeds, crypto-asset exchange service providers are required to carry out know-your-customer procedures, retain transaction records, and submit suspicious transaction reports to the Japan Financial Intelligence Center[34]. The second channel is supervisory oversight. FSA conducts on-site inspections of registered exchanges, supported by the monitoring activities of the Japan Virtual and Crypto Assets Exchange Association, which is formally recognised by FSA as a self-regulatory organisation[35]. The way this framework has evolved points to a historically incident-driven approach to operational risk detection, from the Coincheck hack in 2018 triggered industry-wide inspections by the FSA[36] to the DMM Bitcoin hack in 2024, followed by a business improvement order in September 2024[37] and broader reform discussions concerning new intermediary categories and stronger regulation of crypto-related service providers and critical system vendors[38]. More recently, the FSA has sought to move away from this reactive pattern by reinforcing proactive cyber-supervisory measures. These include guidance encouraging real-time monitoring tools, regular threat-led penetration testing, and participation in industry-wide threat and vulnerability information-sharing mechanisms[39].

Singapore's detection framework is centred on MAS Notice PSN02, which requires digital payment token service providers to maintain continuous transaction monitoring systems, submit suspicious transaction reports to the Suspicious Transaction Reporting Office of the Singapore Police Force, and carry out periodic account reviews based on each customer's money laundering and terrorism financing risk profile[40]. The accompanying Guidelines to PSN02 clarify that monitoring should not be limited to individual transactions, but should also trace the history of digital payment token transfers as far as necessary to determine whether activity appears unusual or suspicious, with enhanced scrutiny required for higher-risk customers and counterparties[41]. This framework is primarily focused on financial crime risks, including money laundering, terrorism financing, and sanctions evasion, rather than on market integrity or solvency concerns[42]. This focus reflects MAS's broader regulatory approach, which emphasises risk-based calibration rather than imposing uniform monitoring obligations across all aspects of VASP activity. A key limitation of Singapore's detection framework, particularly from an investor protection perspective, lies in the absence of mandatory market surveillance obligations comparable to those imposed on licensed securities intermediaries. It is reflected in the observation that digital payment token (DPT) service providers are not currently required under the Payment Services Act to implement real-time monitoring for practices such as wash trading, spoofing, or artificial price manipulation.

A distinguishing feature of Hong Kong's framework lies in its dual-track structure, which sets it apart from

[34] JAPAN. *Act on Prevention of Transfer of Criminal Proceeds* (Act No. 22 of 2007, amended in 2024). Arts. 10-11. The 2024 amendments fully implemented the travel rule for crypto-asset exchange service providers.

[35] FINANCIAL SERVICES AGENCY (JAPAN). *Guideline for Supervision of Crypto-Asset Exchange Service Providers*. June 2021. Section III. Available at: https://www.fsa.go.jp/common/law/guide/kaisya/e016.pdf. Access on: 29 Apr. 2026.

[36] FINANCIAL SERVICES AGENCY (JAPAN). *FSA Weekly Review No. 285*. March 2018. Available at: https://www.fsa.go.jp/en/newsletter/ weekly2018/285.html. Access on: 29 Apr. 2026.

[37] FINANCIAL SERVICES AGENCY (JAPAN). *Administrative Action against DMM Bitcoin Co., Ltd.* September 2024. Available at: https://www.fsa.go.jp/news/r6/sonota/20240926/20240926.html. Access on: 29 Apr. 2026.

[38] FINANCIAL SERVICES AGENCY (JAPAN). *Discussion paper: examination of the regulatory systems related to cryptoassets*. April 2025. Available at: https://www.fsa.go.jp/en/news/2025/20250410_2/01.pdf. Access on: 29 Apr. 2026; FINANCIAL SYSTEM COUNCIL (JAPAN). *Working Group on Crypto-asset Systems: report and recommended regulatory revision*. February 2026. Available at: https://www.fsa.go.jp/en/ refer/councils/singie_kinyu/20260216/ 02.pdf. Access on: 29 Apr. 2026.

[39] FINANCIAL SERVICES AGENCY (JAPAN). *Guidelines on cybersecurity for the financial sector*. October 2024. Available at: https://www.fsa.go.jp/common/law/cybersecurity_guideline_en.pdf, Access on: 29 Apr. 2026.

[40] MONETARY AUTHORITY OF SINGAPORE. *Notice PSN02: Prevention of Money Laundering and Countering the Financing of Terrorism — Digital Payment Token Service*. April 2024 (revised 30 June 2025). Available at: https://www.mas.gov.sg/regulation/notices/psn02-aml-cft-notice---digital-payment-token-service. Access on: 29 Apr. 2026.

[41] MONETARY AUTHORITY OF SINGAPORE. *Guidelines to MAS Notice PSN02 on Prevention of Money Laundering and Countering the Financing of Terrorism — Digital Payment Token Services*. April 2024. Available at: https://www.mas.gov.sg/-/media/mas-media-library/regulation/guidelines/amld/guidelines-to-notice-psn02-on-aml-and-cft---dpt/guidelines-to-psn02-dated-2-april-2024.pdf. Access on: 29 Apr. 2026.

[42] MONETARY AUTHORITY OF SINGAPORE. *Consultation paper on proposed regulatory measures for digital payment token services*. October 2022. Available at: https://www.mas.gov.sg/-/media/mas/news-and-publications/consultation-papers/2022-proposed-regulatory-measures-for-dpt-services/consultation-paper-on-proposed-regulatory-measures-for-digital-payment-token-services-v3.pdf. Access on: 29 Apr. 2026.

Singapore's more narrowly focused AML/CFT approach. The first track mirrors the requirements imposed on traditional licensed corporations, including customer due diligence, ongoing transaction monitoring, suspicious transaction reporting, and compliance with the travel rule, all governed by the SFC's AML/CFT Guidelines[43]. The second track, more specific to the virtual asset context, requires licensed VATPs to operate independent market surveillance systems capable of identifying manipulative or abusive trading activities[44]. In addition, licensed operators must undergo independent technology audits at least once a year, as well as cybersecurity assessments conducted prior to launch or any significant modification, and on a periodic basis thereafter[45]. The main limitation of Hong Kong's detection framework lies not in the depth of obligations imposed on licensed operators, but in its dependence on the licensing perimeter. As the JPEX case illustrates, even repeated warnings and inclusion on alert lists may not be sufficient to prevent significant harm where an unlicensed platform continues to attract users outside the regulatory framework[46].

South Korea's VAUPA sets out the most explicit and forward-looking detection obligations among the four jurisdictions examined. VASPs are required to operate continuous monitoring systems for abnormal transactions, track unusual movements in price or trading volume that may indicate market manipulation or insider dealing, and promptly report suspicious activity to the Financial Supervisory Commission (FSC) and the Governor of the Financial Supervisory Service (FSS)[47]. The Act requires virtual asset transaction records to be retained for 15 years after the relevant transactional relationship has terminated[48], while subordinate regulations and FSC guidance provide further detail on the types of abnormal transactions to be monitored, as well as the procedures for reporting and investigation[49]. In this respect, South Korea's detection framework appears to be the most comprehensive, particularly in its extension beyond AML/CFT compliance to include real-time market integrity surveillance. This approach closely mirrors the market abuse regimes applied in traditional securities markets and reflects the VAUPA's positioning of virtual asset regulation as a mechanism for both consumer and market protection, rather than solely as a tool for financial crime control. Its main limitation, however, is one it shares with the other jurisdictions. In detail, the framework applies only to registered service providers, leaving activities conducted through unregistered platforms, over-the-counter channels, or offshore operators beyond its effective reach[50].

Across the four jurisdictions, detection duties vary more significantly than prevention measures. Despite these differences, all four frameworks share a common structural limitation. Detection mechanisms are designed to identify recognised patterns of risk and are therefore unable to capture risks that have not yet been understood by regulators. This limitation reflects a recurring concern in the literature on AML regulation of virtual assets. Customer identification and transaction monitoring help intermediaries establish who is conducting a transaction and identify unusual patterns, but they do not assess whether the asset itself is soundly designed. These measures also depend on the relevant activity passing through a regulated intermediary. Scholars have noted that virtual asset AML regulation relies heavily on centralised intermediaries as control points[51], leaving peer-to-peer transactions and unregulated channels beyond the reach of these detection duties. Because AML detection mechanisms were designed primarily to identify illicit financial flows rather than protect investors from harm, extending them to market surveil-

[43] SECURITIES AND FUTURES COMMISSION (HONG KONG). *Guideline on Anti-Money Laundering and Counter-Financing of Terrorism for Licensed Corporations and SFC-licensed Virtual Asset Service Providers*. June 2023. Chapter 12. Available at: https://www.sfc.hk/-/media/EN/assets/components/codes/files-current/web/guidelines/guideline-on-anti-money-laundering-and-counter-financing-of-terrorism-for-licensed-corporations/AML-Guideline-for-LCs-and-SFC-licensed-VASPs_Eng_1-Jun-2023.pdf. Access on: 29 Apr. 2026.

[44] SECURITIES AND FUTURES COMMISSION (HONG KONG). *Guidelines for Virtual Asset Trading Platform Operators*, above cited.

[45] Ibid. Paras 12.7, 12.13

[46] SECURITIES AND FUTURES COMMISSION (HONG KONG). *Statement on JPEX*, above cited.

[47] SOUTH KOREA. *Act on the Protection of Virtual Asset Users, above cited, art. 12(2)*

[48] Ibid. Art. 9(1)

[49] SOUTH KOREA. *Enforcement Decree of the Act on the Protection of Virtual Asset Users*. July 2024. Arts. 15-18.

[50] FINANCIAL SERVICES COMMISSION (SOUTH KOREA). *Virtual Asset User Protection Act: key provisions and implementation*. Press Release. July 2024. Available at: https://www.fsc.go.kr/eng/pr010101/82683. Access on: 29 Apr. 2026.

[51] SCHMIDT, Alicia. Virtual assets: compelling a new anti-money laundering and counter-terrorism financing regulatory model. *International Journal of Law and Information Technology*, v. 29, n. 4, p. 332-363, 2021.

llance in Hong Kong and South Korea addresses this limitation only in part.

3.3 Remedy duties

Japan's remedy mechanism is the one most clearly illustrated by documented insolvency events among the four jurisdictions, built on the asset segregation requirements of the Payment Services Act and related supervisory rules. Customer funds must be held in trust, user crypto-assets must be separately managed, and compliance is subject to audit and ongoing supervisory oversight[52]. As a result, compliant crypto-asset exchange service providers hold customer assets in a form that is more readily recoverable if the firm fails. The FTX Japan case offers a clear illustration of how this model operates in practice. Japanese customers were able to recover their assets relatively quickly, supported not only by segregation requirements but also by administrative measures, including an order requiring assets to be retained within Japan[53]. At the same time, the mechanism has an inherent limitation. Its effectiveness depends on prior compliance and the actual recoverability of assets. Where segregation obligations are breached and the provider becomes insolvent, Japan does not rely on a general investor compensation fund to address the resulting shortfall. Therefore, recent reforms have sought to strengthen this framework. The 2025 reform direction introduces asset-retention powers under the Payment Services Act, aimed at improving the likelihood that domestic users' assets can be returned even in insolvency situations[54].

Unlike Japan, which emphasises recoverability through asset segregation, South Korea seeks to develop a more explicit statutory remedial architecture, particularly through insurance and reserve requirements for operational risks and by linking user protection to a relatively comprehensive market-abuse enforcement framework. Under the country's VAUPA, VASPs must obtain insurance or set aside reserves to cover losses resulting from hacking incidents or network failures. The required level of coverage is calibrated to the scale of hot-wallet exposure: for KRW-market exchanges, the total must exceed either 5% of the value of customer virtual assets held in hot wallets or KRW 3 billion, whichever is higher, while other VASPs must meet a minimum threshold of KRW 500 million[55]. In addition, users' deposits must be kept separately at banks, and VASPs may incur liability to compensate users for damages caused by unjustified blocking of deposits or withdrawals[56]. Its main limitation, however, lies in the scope of coverage. The insurance and reserve requirements are designed to address operational risks, such as hacking or system failures, but do not extend to losses arising from market fluctuations, product design failures, or conduct that complies with existing regulatory obligations.

Singapore's remedial framework is best characterised as one focused on regulatory discipline and asset protection rather than direct investor compensation. Under the Guidelines on consumer protection measures, DPT service providers must comply with requirements on asset segregation, trust-based safeguarding, record-keeping and consumer protection, all of which improve the likelihood that assets can be recovered in cases of insolvency or operational failure[57]. In addition, Singapore has introduced a more targeted remedial mechanism for MAS-regulated single-currency stablecoins, requiring issuers to maintain fully backed reserves and to redeem at par within five business days[58]. These measures, however, do not amount to a comprehensive statutory compensation scheme for virtual asset losses. Singapore law does not appear to provide a specific investor cause of action for breaches of Payment Services Act obligations, meaning that affected users must generally rely on contractual claims, insolvency proceedings, or other forms of private law. The Three Arrows Capital case

52 JAPAN. *Payment Services Act, above cited*

53 KANTO FINANCE BUREAU (JAPAN). *Administrative punishment for FTX Japan Corporation*. November 2022. Available at: https://lfb.mof.go.jp/kantou/kinyuu/pagekthp202211103297.html. Access on: 30 Apr. 2026.

54 FINANCIAL SERVICES AGENCY (JAPAN). *Discussion paper: examination of the regulatory systems related to cryptoassets*, above cited

55 FINANCIAL SERVICES COMMISSION (SOUTH KOREA). *Press release: FSC proposes rules on the protection of virtual asset users,* above cited.

56 Ibid

57 MONETARY AUTHORITY OF SINGAPORE. *Guidelines on the provision of consumer protection safeguards by digital payment token service providers*. April 2024. Available at: https://www.mas.gov.sg/-/media/mas-media-library/regulation/guidelines/pso/ps-g03-guidelines-on-consumer-protection-measures-by-digital-payment-token-service-providers/guidelines-on-provision-of-consumer-protection-safeguards-by-digital-payment-token-service-providers.pdf. Access on: 30 Apr. 2026.

58 MONETARY AUTHORITY OF SINGAPORE. *MAS finalises stablecoin regulatory framework*, above cited.

illustrates this structure from a different perspective. While MAS took strong enforcement action, including reprimands and nine-year prohibition orders against the founders[59], these measures primarily served public regulatory objectives and did not, in themselves, create a direct pathway for investor recovery.

Meanwhile, Hong Kong's remedial framework appears to be relatively segmented. Within the licensed regime, it incorporates meaningful compensation-oriented protections, but outside that boundary, the prospects for investor recovery are far less certain. For SFC-licensed virtual asset trading platform operators, the regulatory framework requires an SFC-approved compensation arrangement to cover potential losses of client virtual assets, including 50 per cent of assets held in cold storage and 100 per cent of those held in hot or other forms of storage[60]. In this respect, Hong Kong goes further than Singapore by embedding an insurance-like recovery mechanism within the licensed custody structure. However, the effectiveness of this model is closely tied to the scope of the licensing regime. The JPEX case illustrates this limitation clearly. Where a platform operates without a license and outside the formal regulatory framework, although the SFC had already issued warnings and placed JPEX on its alert list, affected users were ultimately left to rely on uncertain avenues such as criminal asset recovery, tracing in insolvency-type proceedings, or general civil claims once losses occurred[61]. In addition, the SFC's guidelines expressly confirm that the Investor Compensation Fund does not extend to virtual asset transactions[62], resulting in the consequence that virtual asset investors do not have access to a comparable collective compensation mechanism.

In general, remedy duties indicate the least alignment and the greatest distance between formal provisions and practical outcomes. This reflects the process--based approach discussed in Part 2, which focuses on regulating conduct rather than ensuring recovery.

3.4 A consistent structural pattern

The comparison across the three tiers and four jurisdictions reveals a pattern that is consistent enough to be described as a coherent regulatory architecture. Prevention duties are well developed in all four systems, with a clear degree of convergence shaped by international standards and lessons drawn from past market failures. Detection duties are also present, but show greater variation, reflecting differences in regulatory priorities and the range of risks each jurisdiction chooses to address. Remedy duties, by contrast, are the least developed across all jurisdictions. The documented incidents examined illustrate that strong prevention and detection, combined with weak remedial mechanisms, lead to accountability without effective recovery.

This pattern does not stem from regulatory oversight or omission. Rather, it follows from the logic of process-based governance. Rules that focus on regulating conduct tend to be effective at the prevention and detection stages, where compliance can be observed and enforced in real time. However, they do not automatically provide a mechanism for investor recovery when harm occurs despite compliance. This raises a further question, namely which types of limitations remain unaddressed and whether they can be addressed through additional process-based measures, which is explored in Part 4.

4 Limitations of process-based accountability

4.1 The compliance-harm paradox

The most basic limitation of a process-based governance framework follows from its own logic because a VASP may comply with all applicable duties and still cause substantial investor harm. When that happens, the framework offers no clear response. There is no breach to enforce and no automatic route through which recovery is triggered. This paradox arises because process--based duties regulate conduct rather than outcomes.

[59] MONETARY AUTHORITY OF SINGAPORE. *MAS issues prohibition orders against Three Arrows Capital's Zhu Su and Kyle Livingston Davies*. September 2023. Available at: https://www.mas.gov.sg/regulation/enforcement/enforcement-actions/2023/mas-issues-prohibition-orders-against-three-arrows-capital-zhu-su-and-kyle-livingston-davies. Access on: 1 May. 2026.

[60] SECURITIES AND FUTURES COMMISSION (HONG KONG). *Guidelines for virtual asset trading platform operators,* paras 10.22-10.26, above cited.

[61] SECURITIES AND FUTURES COMMISSION (HONG KONG). *Statement on JPEX*, above cited.

[62] SECURITIES AND FUTURES COMMISSION (HONG KONG). *Guidelines for virtual asset trading platform operators,* Schedule 2: Risk Disclosure Statements, above cited.

They are stipulated to reduce the likelihood of harm by prescribing how VASPs manage assets, structure their operations and report to regulators. They do not assess whether the products offered are inherently sound. The gap between these two objects of regulation, namely intermediary conduct and product design, is where the compliance-harm paradox takes shape.

The collapse of the Terra/Luna ecosystem in May 2022 highlights this gap, although it must be framed with some care. Terraform Labs was a corporate entity registered in Singapore and subject to the digital payment token regime under the Payment Services Act, placing it within the category of centralized intermediaries considered in this article. While the stabilisation mechanism it developed operated through decentralised smart contracts, the underlying design remained a corporate decision attributable to the entity itself. It is at this level that the compliance–harm paradox becomes most apparent as no applicable process duty required Terraform Labs to assess, in advance, whether its product design could withstand conditions of market stress.

At the time of the collapse, MAS had made clear that the regulatory regime for digital payment token services "primarily targets money laundering/terrorism financing and technology risks"[63]. Within that framework, no obligation required an assessment of whether the algorithmic stabilisation mechanism of TerraUSD, based on arbitrage between UST and LUNA to maintain its dollar peg, was capable of withstanding a loss of market confidence. In a parliamentary reply dated 1 August 2022, MAS acknowledged the need for a new framework tailored to the specific risks of stablecoins, recognising that existing process-based obligations did not address these issues[64]. The stablecoin regime finalised in August 2023, with requirements on reserve composition, redemption rights and disclosure of stabilisation mechanisms[65], confirms that product design risk constitutes a distinct regulatory concern that cannot be accommodated within the general duty framework governing DPT intermediaries. At the international level, the FSB reached a similar conclusion. In its October 2022 review, it found that reliance on algorithmic or arbitrage-based mechanisms is not an effective means of maintaining stability[66], framing the failure as one of product design rather than conduct or compliance. The later finding by a US jury that Terraform and its co-founder were liable for securities fraud[67] does not alter this point. Fraud and design failure may coexist, but they are analytically distinct. Even in the absence of misrepresentation, an identical algorithmic model would not have been subject to any process-based obligation requiring prior assessment of its structural resilience. As reflected in both MAS and FSB analyses, such duties may require disclosure of how a mechanism operates, but they do not ensure that it will function as intended.

This limitation is not confined to stablecoins or to a particular regulatory moment. Whenever new product categories emerge beyond the reach of existing duties, the framework will continue to operate as designed, yet harm may still arise without any breach to trigger enforcement or any mechanism to support recovery. The compliance-harm paradox is therefore likely to recur with each new form of product risk that falls outside the scope of established regulatory understanding.

4.2 Harm beyond the regulatory perimeter

A second limitation arises not from conduct within the regulatory system, but from its reliance on a licensing mechanism that can be bypassed. Process-based governance assumes the presence of an identifiable, licensed intermediary to whom duties can be assigned. Where harm originates from actors operating outside that perimeter, the framework has no effective response, not because duties have been breached, but because no duties apply in the first place.

The JPEX case in Hong Kong provides a clear illustration. JPEX operated without a license under the vir-

[63] MONETARY AUTHORITY OF SINGAPORE. *Reply to parliamentary question on extent of Singaporeans' exposure to recent collapse in value of TerraUSD stablecoin and Luna token*. August 2022. Available at: https://www.mas.gov.sg/news/parliamentary-replies/2022/reply-to-parliamentary-question-on-extent-of-singaporeans-exposure-to-recent-collapse-in-value-of-terrausd-stablecoin-and-luna-token. Access on: 2 May. 2026.

[64] MONETARY AUTHORITY OF SINGAPORE. *Reply to parliamentary question*, above cited

[65] MONETARY AUTHORITY OF SINGAPORE. *MAS finalises stablecoin regulatory framework*. August 2023, above cited.

[66] FINANCIAL STABILITY BOARD. *Review of the FSB high-level recommendations of the regulation, supervision and oversight of global stablecoin arrangements*. October 2022. p. 3-7. Available at: https://www.fsb.org/uploads/P111022-4.pdf. Access on: 2 May .2026.

[67] UNITED STATES SECURITIES AND EXCHANGE COMMISSION. *Terraform and Kwon to pay $4.5 billion following fraud verdict*. June 2024. Available at: https://www.sec.gov/newsroom/press-releases/2024-73. Access on: 2 May. 2026.

tual asset trading platform regime, was placed on the SFC's Alert List as early as July 2022, and continued to attract users through aggressive marketing, including collaborations with social media influencers that created a misleading impression of regulatory approval[68]. When the platform collapsed in September 2023, around 2,000 investors reported losses estimated at HKD 1.6 billion. The SFC issued warnings, and the Hong Kong Police initiated criminal investigations, leading to multiple arrests[69].

While these actions demonstrate accountability in an enforcement sense, they do not function as mechanisms of recovery. No statutory compensation scheme applied, no insurance requirement covered an unlicensed operator, and no tailored private right of action specific to virtual asset harm was available under the virtual asset trading platform framework, although general civil avenues remained available. While criminal proceedings may eventually result in convictions or asset confiscation, translating those outcomes into actual recovery for investors remains uncertain and often slow.

The perimeter problem is not confined to investor protection but also a recognised challenge in the AML regulation of virtual assets. The FATF has identified offshore and unlicensed VASPs as a persistent obstacle to effective implementation[70], while the AML literature has noted that a regulatory model centred on licensed intermediaries cannot reach activities conducted outside these channels[71]. The JPEX case illustrates how this structural weakness can affect both regulatory regimes at the same time. Because JPEX operated outside the licensing perimeter, it was subject neither to the AML/CFT obligations imposed on licensed platforms nor to the custody, insurance and compensation arrangements available to their clients. The same failure of regulatory coverage therefore created both a gap in financial crime prevention and a gap in investor redress. Stronger enforcement of licensing requirements can help address both problems, but it cannot by itself secure the return of assets once investors have suffered losses. That requires a dedicated recovery mechanism.

4.3 Systemic harm and distributed responsibility

The third limitation is the most difficult to capture within any framework built on entity-level accountability. Process-based duties are directed at individual VASPs and do not extend to harms that emerge from the interactions among multiple providers, rather than from the conduct of any single entity.

The sequence of failures in the second half of 2022 illustrates this structural limitation. The collapse of Terra/Luna in May 2022 triggered the insolvency of Three Arrows Capital, whose concentrated exposure left it acutely vulnerable[72]. The failure of Three Arrows Capital in turn transmitted stress to other centralised intermediaries, most clearly Voyager Digital, which had extended substantial credit to Three Arrows Capital and later entered Chapter 11 after Three Arrows Capital defaulted and customer withdrawals intensified[73]. This pattern is significant not because no corporate actor can be identified, but because responsibility is distributed across interconnected firms rather than contained within a single breach-remedy chain. Based on the materials examined, none of the four jurisdictions appears to have implemented a clear ex-ante framework for monitoring cross-platform exposure of this kind, and subsequent international standards highlighting the need to track interconnections within the crypto-asset ecosystem point to the significance of this gap[74]. Similarly, no dedicated investor-recovery mechanism was available for losses caused by systemic contagion as such.

The problem of systemic harm results in a deeper misalignment between the unit of regulation in pro-

[68] SECURITIES AND FUTURES COMMISSION (HONG KONG). *Statement on JPEX*, above cited

[69] LEGALINK. *Hong Kong Police Arrest Suspects in JPEX Scandal*. November 2023. Available at: https://www.legalink.net/en/publications/newsletters/hong-kong-police-arrest-suspects-in-jpex-scandal/3592/. Access on: 2 May. 2026.

[70] FINANCIAL ACTION TASK FORCE. *Targeted update on implementation of the FATF standards on virtual assets and virtual asset service providers*. Paris: FATF, June 2025, above cited.

[71] SCHMIDT, Alicia, above cited.

[72] REUTERS. *Bankrupt Three Arrows' liquidators seek $1.3 billion from fund's founders*. June 2023. Available at: https://www.reuters.com/technology/bankrupt-three-arrows-liquidators-seek-13-bln-funds-founders-source-2023-06-27/. Access on: 3 May. 2026.

[73] EHRLICH, Stephen. *Declaration of Stephen Ehrlich, Chief Executive Officer of the Debtors, in Support of Chapter 11 Petitions and First Day Motions*. In re: Voyager Digital Holdings, Inc. et al., Case No. 22-10943, United States Bankruptcy Court, Southern District of New York. July 2022. p. 4-5. Available at: https://cases.stretto.com/public/ x193/11753/PLEADINGS/ 1175307062280000000036.pdf. Access on: 3 May. 2026.

[74] FINANCIAL STABILITY BOARD. *High-level Recommendations for the Regulation, Supervision and Oversight of Crypto-asset Activities and Markets: Final Report*, Recommendation 8, above cited.

cess-based governance, namely the individual VASP, and the level at which systemic risk actually emerges, the network of interconnected actors. This gap cannot be closed simply by adding more duties for individual providers, because the risk often stems from the cumulative effect of conduct that may be compliant when viewed in isolation but becomes dangerous in aggregate. Addressing this issue would require either some form of network-level monitoring which remain absent in virtual asset regulation, or a collective recovery mechanism that does not depend on identifying a single liable entity.

4.4 Accountability without remedy

The three categories of unaddressed harm identified above, including the compliance–harm paradox, perimeter failure, and systemic contagion, indicate a common structural issue. In each case, the process-based governance framework produces accountability at the level of conduct, but does not provide a pathway for investor recovery. A VASP may be accountable for how it operates under the current architecture, however, it is not necessarily responsible for harm that arises in the absence of any breach of its operational duties.

These limitations are not the result of poor design or an oversight that can be corrected through incremental adjustments. It follows directly from the choice of process-based governance as the primary accountability model for virtual asset intermediaries. Such duties are intended to reduce the likelihood of harm, not to address its consequences. Where prevention fails, or where harm arises from sources beyond the reach of these duties, the framework may still function as designed, yet leave affected investors without a route to compensation. This pattern is not unique to virtual asset regulation. Comparative research on human rights due diligence legislation has found considerable variation in whether process-based corporate duties are accompanied by effective access to remedy for those harmed[75]. In Asia's virtual asset sector, the same problem is more pronounced: regulatory duties are detailed and actively enforced, yet effective mechanisms for translating compliance failures into recovery for affected investors remain largely undeveloped.

[75] DZNELADZE, Elene; MARX, Axel, above cited.

5 Recommendations toward a complete accountability architecture

5.1 Statutory private rights of action

The first structural gap identified in Part 4, harm arising from conduct that is formally compliant but still causes investor loss, cannot be addressed simply by adding further process duties. Where losses result from the design or structural risk of a virtual asset product, rather than from operational failures such as asset mismanagement or custody breaches, investors should not have to rely entirely on proving that an intermediary violated a governance obligation. Existing virtual-asset frameworks are primarily designed around licensing, supervision and compliance enforcement. They are far less effective as mechanisms for direct investor recovery where harm arises despite formal compliance.

A more appropriate response would be the creation of a statutory private right of action directed specifically at virtual asset intermediaries. Under such a model, liability would not depend on proving broad negligence or a general breach of duty. Instead, the focus would be narrower and more practical: whether the intermediary made, authorised, distributed materially misleading statements or omitted material information about the relevant product, including matters such as reserves, redemption mechanisms, liquidity risks, governance arrangements or conflicts of interest; whether investors relied on that informational environment; and whether the resulting loss fell within the scope of the undisclosed or misstated risk. This approach would reduce the evidentiary burdens that currently make recovery difficult in virtual asset disputes, while still preserving an important limit on liability. Intermediaries that provide full, fair and intelligible disclosure of product risks would retain protection against claims arising solely from market volatility or ordinary investment loss. The purpose of the mechanism is therefore not to guarantee investment outcomes, but to close the gap between public regulatory compliance and private investor recovery where intermediaries have failed to disclose material product risks adequately.

This recommendation is also consistent with the broader logic of financial regulation. In securities law,

statutory liability regimes already recognise that investors should have a direct route to recovery where losses are connected to material misstatements or omissions in investment-related disclosures[76]. Extending a similar disclosure-based model to virtual asset intermediaries would therefore indicate an adaptation of established investor-protection logic to the digital asset context.

5.2 Facilitating intermediary liability

The second category of unaddressed harm, losses caused by unlicensed operators, cannot be solved simply through sanctions directed at the unlicensed platform itself. Criminal law already provides mechanisms to punish unlicensed activity and fraud. The problem is that these mechanisms do not necessarily provide effective recovery for investors once harm has occurred. The accountability gap therefore lies not in the absence of public enforcement, but in the absence of civil liability extending to regulated intermediaries that materially enabled unlicensed platforms to operate within the market.

It is proposed to impose explicit statutory civil liability on intermediaries that facilitate the activities of unlicensed virtual asset platforms while failing to verify their regulatory status. The focus is on intermediaries operating within the regulatory perimeter, particularly licensed financial institutions and payment service providers that process deposits, withdrawals or fund transfers connected to unlicensed platforms. The rationale is based on what the intermediary actually does rather than its formal legal role. If a regulated intermediary helps an unlicensed platform reach investors or continue operating in practice, it should not avoid responsibility simply because it was not directly involved in the underlying misconduct[77].

The proposed standard is not one of strict liability. Liability would arise only where the intermediary knew, or reasonably ought to have known, that the relevant platform was operating without a license and nonetheless continued to provide services that materially supported the platform's activities. This approach draws on the logic of aiding-and-assisting liability already recognised in securities and financial regulation, while adapting it to the virtual asset context. Importantly, it also differs from existing AML/CFT obligations. Current reporting duties require intermediaries to identify and report suspicious transactions, but they do not create a direct recovery pathway for affected investors. The mechanism proposed here would bridge that gap by allowing investors to pursue civil claims against intermediaries whose support clearly contributed to the operation of an unlicensed platform.

5.3 A mandatory compensation fund

The third category of unaddressed harm, losses arising from systemic contagion without a clearly responsible actor, indicates an issue that investor recovery cannot realistically depend on ordinary liability rules because there may be no identifiable defendant capable of compensating the losses. The mechanism proposed here is therefore a mandatory compensation fund designed to provide collective recovery even where conventional liability-based claims are ineffective. The proposal draws on an established logic already familiar in the field of insurance. Deposit insurance schemes and investor compensation funds operate on the assumption that individual users cannot reasonably predict which institution or intermediary will fail and that a collective industry-funded mechanism is preferable to leaving recovery entirely dependent on the remaining assets of the failed entity.

In case of losses spread across multiple platforms without any single entity bearing complete responsibility, the proposed fund would be triggered. The sequence of failures following the collapse of Terra/Luna in 2022 illustrates this problem clearly. In detail, losses were propagated through interconnected firms and liquidity relationships[78], creating widespread harm that no ordinary entity-based liability mechanism could comprehensively address.

[76] HONG KONG. Securities and Futures Ordinance (Cap. 571). s. 108. Available at: https://www.elegislation. gov.hk/hk/cap571!en/s108?_lang=en. Access on: 12 May. 2026; JAPAN. Financial Instruments and Exchange Act (Act No. 25 of 1948, as amended). Arts. 17, 18, 21 and 21-2. Available at: https://www.fsa.go.jp/common/law/ fie01.pdf. Access on: 12 May. 2026; SINGAPORE. Securities and Futures Act 2001 (No. 42 of 2001, as amended). Ss. 253-255. Available at: https://sso.agc.gov.sg/ Act/SFA2001?ProvIds=pr253-,pr254-. Access on: 12 May. 2026.

[77] SECURITIES AND FUTURES COMMISSION (HONG KONG). *Statement on JPEX*, above cited. The SFC noted that social media influencers and OTC shops actively promoted JPEX's products, making false or misleading statements suggesting JPEX had applied for a VATP licence. Criminal proceedings were commenced against multiple individuals in this category.

[78] EHRLICH, Stephen. *Declaration of Stephen Ehrlich, Chief Executive Officer of the Debtors, in Support of Chapter 11 Petitions and First Day Motions*, above cited.

To reduce moral hazard and maintain sustainability, the fund would incorporate several safeguards. Compensation would be capped per investor, providing meaningful protection for retail users without guaranteeing speculative returns. The fund would also acquire subrogation rights against responsible parties, allowing it to recover amounts through confiscated assets, insolvency proceedings, or civil judgments where available. In addition, contributions would be financed primarily through levies imposed on licensed VASPs according to factors such as custody holdings and trading activity, supplemented by regulatory penalties and recovered assets. This structure ensures that the industry benefiting from investor confidence bears the primary cost of the protection mechanism rather than public funds.

6 Conclusion

This article examined how ex-ante governance duties imposed on virtual asset intermediaries in four major Asian financial jurisdictions including Japan, Singapore, Hong Kong and South Korea as mechanisms of corporate accountability. It argued that, while the resulting frameworks are comparatively coherent at the prevention and detection stages, they remain structurally incomplete at the remedy stage.

The comparative analysis supports the central claim developed in the theoretical framework. The accountability gaps identified across the four jurisdictions are not simply implementation problems that can be solved by imposing more process duties. Rather, they reflect the underlying logic of process-based governance itself. Duties directed at conduct can regulate how intermediaries operate, monitor risk and safeguard assets, but they do not necessarily create recovery mechanisms for investors who suffer harm outside the breach of those duties. This structural limitation becomes visible through three recurring categories of harm identified in the article, namely compliant but harmful conduct, failures beyond the regulatory perimeter and systemic contagion across interconnected entities. In each case, the framework is capable of producing accountability in a regulatory sense without ensuring investor recovery.

For comparative legal scholarship, these findings suggest that virtual asset governance frameworks should not be assessed solely by the breadth or sophistication of their preventive and supervisory obligations. A more complete measure of accountability is whether the framework addresses the full sequence of investor protection, from prevention and detection to effective recovery once harm occurs. The analysis in this article indicates that the remedy dimension remains underdeveloped across all four jurisdictions examined. For regulatory design, the findings point toward the need for complementary remedial mechanisms that process-based governance alone cannot provide. The article therefore proposed three responses directed at the specific structural gaps including a statutory private right of action for investors harmed by materially misleading disclosures, intermediary liability mechanisms that connect accountability more directly to investor recovery and a mandatory compensation fund capable of operating where no effective defendant or recovery pathway exists.

The article's documentary approach also has limitations. It examines regulatory frameworks and illustrative cases rather than measuring actual outcomes. Further empirical research comparing recovery rates across jurisdictions would help complement the analysis. The article also recognises two broader questions that remain unresolved. The first concerns genuinely decentralised systems, where no identifiable intermediary exists to bear responsibility or contribute to collective recovery mechanisms. The second concerns the cross-border nature of virtual asset harm, which cannot be addressed fully through domestic regulation alone and requires coordination at the international level. These issues remain important areas for future research and for the continued development of international regulatory standards, where the absence of meaningful remedy mechanisms is not only a domestic problem but also an international one.

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