FSB FINANCIAL STABILITY BOARD

Leverage in Non-Bank Financial Intermediation: Consultation report

Response to Consultation

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Recommendation 1

1. **Is the description of the financial stability risks from leverage in NBFI accurate and comprehensive? Are there additional vulnerabilities or risk dimensions related to NBFI leverage that authorities should consider for monitoring purposes?**

   My thesis, The Economic Bomb: A Strategic Financial Warfare Tactic, provides critical insights into the vulnerabilities of non-bank financial intermediaries (NBFIs) resulting from leveraged positions, particularly in digital asset markets. The paper demonstrates that leveraged trading, short-selling, and ETF liquidity control can amplify financial instability, aligning with concerns outlined in the proposed policy recommendations.

   A key vulnerability identified is the potential for coordinated speculative attacks that exploit leverage to trigger rapid asset price declines, leading to contagion across interconnected markets. This aligns with NBFIs' exposure to liquidity shocks, as demonstrated in case studies like the May 2021 Flash Crash and the June 2022 Liquidation Crisis. The research underscores that leverage-driven volatility is not confined to isolated assets—systemic spillovers can destabilize broader financial ecosystems, especially when ETFs and large institutional players are involved.

   Additionally, the thesis highlights that whale wallet movements and institutional shorting can create feedback loops that amplify volatility, particularly when combined with negative media sentiment. These findings suggest that monitoring NBFIs' leverage should include real-time tracking of market sentiment and large asset transfers, as these factors can accelerate systemic risks.

   The research also emphasizes the need to assess leverage within digital asset ETFs, as liquidity outflows from these funds can reduce market depth, intensify volatility, and increase the probability of forced liquidations. This aligns with the proposal to enhance transparency and oversight of NBFI leverage, particularly regarding large market participants whose actions can trigger cascading effects.

   In conclusion, the thesis supports the proposed measures to monitor and mitigate NBFI leverage risks while advocating for expanded oversight of digital asset markets. By integrating real-time blockchain analytics and advanced econometric models, authorities can improve their ability to identify leverage-induced vulnerabilities before they escalate into broader financial disruptions.

2. What are the most effective risk metrics that should be considered by authorities to identify and monitor financial stability risks arising from NBFI leverage?

My thesis identifies key risk metrics that authorities should prioritize to monitor financial stability risks stemming from NBFI leverage, particularly within digital asset markets. The thesis emphasizes that excessive leverage, short-selling, and ETF liquidity control can amplify volatility and systemic spillovers, making effective monitoring essential.

A primary metric is the leverage ratio, both gross and net, which indicates the extent to which NBFIs rely on borrowed funds. Excessive leverage magnifies volatility and liquidity stress, especially during market downturns. Short interest and short-selling activity are also critical indicators, as the thesis demonstrates that coordinated short-selling can trigger downward price spirals that impact digital assets like Bitcoin and correlated markets such as Ethereum and Solana.

Monitoring cross-market correlations is essential for identifying potential spillover effects between digital and traditional financial markets. The thesis shows that heightened correlations during periods of stress amplify systemic risk, underscoring the need for real-time monitoring of interconnected markets. Additionally, the liquidity and redemption flows of digital asset ETFs play a significant role in market stability. Large-scale redemptions can create liquidity shocks that ripple across asset classes, making it essential to track liquidity levels and deviations in net asset value (NAV).

The thesis also highlights the importance of monitoring whale wallet movements and large transactions, particularly those initiated by institutional investors. Sudden large-scale sales or transfers often precede volatility spikes and liquidity stress, providing an early warning of potential market manipulation. Volatility measures, such as GARCH models, and liquidity indicators, like bid-ask spreads and order book depth, are crucial for detecting stress points in digital asset markets. Since leveraged positions exacerbate volatility, incorporating these metrics into risk assessments is essential.

Finally, stress testing and scenario analysis are vital tools for evaluating NBFI resilience. By simulating adverse market conditions, including coordinated short-selling and liquidity withdrawal scenarios, authorities can assess the potential impact of leveraged digital asset positions on financial stability. Collectively, these risk metrics enable authorities to identify vulnerabilities, mitigate systemic risks, and ensure more robust oversight of both digital and traditional financial markets.

3. What are the most effective metrics for the monitoring of financial stability risks resulting from:

(i) specific market activities, such as trading and investing in repos and derivatives

My thesis identifies critical metrics for monitoring financial stability risks arising from specific market activities such as trading and investing in repos and derivatives. Given the interconnected nature of traditional and digital asset markets, the thesis emphasizes that systemic vulnerabilities can be exacerbated through leveraged positions, short-selling, and liquidity imbalances.

For repo markets, key indicators include the repo rate spread, which reflects short-term funding stress, and the haircut levels imposed on collateral, signaling market perceptions of risk. Sudden increases in haircuts or repo rates can indicate liquidity tightening, potentially triggering forced asset sales. Monitoring counterparty concentration is essential to assess

the systemic impact if a major counterparty fails. Additionally, tracking collateral velocity—the frequency at which collateral is reused—helps identify excessive leverage that may amplify liquidity shocks.

For derivatives markets, effective metrics include open interest levels and notional values of outstanding contracts, which measure the scale of leveraged exposures. High concentrations of open interest in specific assets can indicate susceptibility to price manipulation. The leverage ratio—the ratio of derivatives exposure to available capital—reveals the degree of risk amplification. Monitoring margin call frequency and initial margin requirements is essential since rising margin demands can force liquidations, accelerating market downturns. The thesis highlights that short-selling volume and put-to-call ratios serve as leading indicators of bearish sentiment that can trigger price declines.

Furthermore, the thesis underscores the importance of cross-market correlation metrics, especially between derivatives tied to Bitcoin, Ethereum, and Solana, as volatility in one market can spill over into others. By integrating these metrics into a real-time monitoring framework, authorities can better identify leverage-driven instability and implement preemptive measures to mitigate contagion effects.

(ii) specific types of entities, such as hedge funds, other leveraged investment funds, insurance companies and pension funds

My thesis identifies key metrics for monitoring financial stability risks stemming from leveraged entities, including hedge funds, investment funds, insurance companies, and pension funds. Given the interconnected nature of financial markets, these entities' leveraged positions can amplify systemic risks, particularly during periods of market volatility.

For hedge funds and leveraged investment funds, critical indicators include gross and net leverage ratios, which measure the extent of borrowed capital relative to assets under management. Value-at-Risk (VaR) is essential to quantify potential losses in adverse market conditions, while stress testing results help assess resilience under extreme scenarios. Monitoring portfolio concentration and counterparty exposures is crucial, as losses from a single asset class or counterparty can trigger broader contagion. Additionally, tracking short-selling volume and derivatives exposure can reveal speculative activities that may destabilize markets.

For insurance companies, the solvency ratio indicates their capacity to absorb financial shocks. Asset-liability duration mismatches are critical, as large mismatches can lead to liquidity stress if liabilities must be covered during periods of declining asset values. Monitoring credit default swap (CDS) spreads on insurers can provide early warnings of deteriorating creditworthiness, while investment portfolio risk profiles should be assessed for excessive exposure to volatile or illiquid assets.

For pension funds, key metrics include funded status ratios—the ratio of assets to liabilities—which measure their ability to meet future obligations. Tracking investment portfolio allocations helps identify shifts toward higher-risk assets that may jeopardize long-term stability. Additionally, monitoring liquidity coverage ratios ensures that pension funds can meet short-term liabilities without forced asset sales during market downturns.

The thesis emphasizes that cross-entity correlation metrics are essential, as liquidity shocks affecting one entity type can quickly propagate to others. By integrating these metrics into a

comprehensive monitoring framework, regulators can proactively identify leverage-driven risks, ensuring greater financial stability across the non-bank financial sector.

(iii) concentration and crowded trading strategies

My thesis identifies critical metrics for monitoring financial stability risks arising from concentration and crowded trading strategies. These risks are particularly pronounced in digital asset markets and traditional financial systems, where large, leveraged positions can amplify market volatility and trigger systemic contagion.

Concentration risk can be effectively monitored using portfolio concentration ratios that measure the percentage of assets held in specific sectors or asset classes. For digital assets like Bitcoin, tracking whale wallet concentrations—large holdings controlled by a small number of entities—helps assess potential market manipulation risks. Similarly, ownership concentration in ETFs and derivatives reveals the degree to which a small number of institutional players influence asset prices.

To detect crowded trades, metrics such as correlation coefficients between asset classes and sectors are crucial, as highly correlated movements may indicate herding behavior. Position overlap analysis assesses the similarity of investment strategies across hedge funds and asset managers, highlighting the potential for simultaneous sell-offs during market stress. Monitoring short interest ratios and put-call option volume ratios provides insights into speculative trading activity that could destabilize markets.

Market sentiment plays a pivotal role in amplifying crowded trades, making **sentiment scores derived from social media and news analytics essential for detecting shifts in investor behavior. Additionally, tracking liquidity stress indicators, such as bid-ask spreads and market depth, can reveal diminishing liquidity that exacerbates volatility during mass liquidations.

Given the interconnected nature of modern markets, the thesis emphasizes the importance of cross-asset correlation metrics to identify spillover risks between asset classes. For example, correlations between Bitcoin, Ethereum, and Solana prices can indicate contagion risks within digital asset markets, while correlations between crypto assets and traditional equities can signal broader financial instability.

By integrating these metrics, regulators can proactively identify and mitigate financial stability risks arising from concentrated positions and crowded trading strategies, reducing the likelihood of systemic disruptions.

Recommendation 3

4. What types of publicly disclosed information (e.g. transaction volumes, outstanding amounts, aggregated regulatory data) are useful for market participants to enhance their liquidity or counterparty credit risk management? Are there trade-offs in publicly disclosing such information and, if so, what would be the most important elements to consider? What is the appropriate publication frequency and level of aggregation of publicly disclosed information?

My thesis identifies essential publicly disclosed information that enhances market participants' liquidity and counterparty credit risk management. Transparency reduces information asymmetry and mitigates systemic risks across both traditional financial markets and digital asset ecosystems.

Transaction volumes are crucial for assessing liquidity, with daily and intraday reporting supporting real-time stress monitoring. For digital assets like Bitcoin, transaction volumes on centralized exchanges and blockchain networks reveal shifts in trading activity that may signal volatility or liquidity constraints.

Outstanding leveraged positions, including short interest and derivatives exposure, are vital for identifying potential liquidity shocks. Daily disclosures of Bitcoin ETF holdings and redemption activity offer insights into liquidity pressures that could trigger contagion. Similarly, aggregated data on whale wallet movements—large cryptocurrency transfers—can signal potential manipulation. However, the pseudonymous nature of decentralized currencies makes identifying foreign entities responsible for sudden liquidity shocks difficult, increasing systemic risk and complicating regulatory responses.

Aggregated regulatory data on counterparty exposures and leverage ratios help market participants assess systemic vulnerabilities. For example, disclosing hedge funds' and NBFIs' aggregate leverage highlights contagion risks from concentrated positions. Additionally, cross-asset correlation metrics help monitor spillover effects between digital assets and traditional markets.

However, publicly disclosing sensitive data involves trade-offs. Excessive transparency may incentivize predatory trading strategies, like front-running or short-selling during liquidity stress. To mitigate this, regulators should aggregate data to reveal systemic trends while protecting individual participants. For example, reporting short interest ratios and whale wallet concentrations at a sector level preserves market integrity without exposing specific entities.

Publication frequency should vary by data type: daily disclosures of transaction volumes and ETF holdings support real-time risk management, while weekly or monthly reports on leverage ratios and systemic exposures provide a broader market perspective. Aggregating data by sector—rather than firm-specific—balances transparency with protecting proprietary information.

In conclusion, timely, aggregated public disclosures—aligned with the metrics identified in my thesis—are essential for mitigating liquidity and credit risks, enhancing both financial stability and investor confidence.

Recommendation 5

5. Do Recommendations 4 and 5 sufficiently capture measures that would be used to address the scope of non-bank financial entities under consideration in this report? In what ways may the policy measures proposed in the consultation report need to be adjusted to account for different types of non-bank financial entities?

My thesis supports the core objectives of Recommendations 4 and 5 in addressing financial stability risks posed by non-bank financial intermediaries (NBFIs), particularly those engaging in leveraged positions and digital asset markets. However, the proposed measures may require adjustments to account for the unique risk profiles of different NBFI types, including hedge funds, investment funds, insurance companies, and cryptocurrency entities.

Recommendation 4's emphasis on enhanced data collection and disclosure aligns with the thesis's findings that transparency reduces information asymmetry and helps mitigate

systemic contagion. However, monitoring should extend beyond traditional asset classes to include digital assets like Bitcoin and Ethereum, where leveraged trading and short-selling can amplify volatility. The paper highlights that large-scale redemptions in Bitcoin ETFs and whale wallet movements can trigger liquidity shocks, underscoring the need to capture such data in NBFI risk assessments. Additionally, due to the pseudonymous nature of decentralized currencies, authorities should enhance blockchain analytics to identify potential foreign sources of liquidity shocks that could disrupt global markets.

Recommendation 5's focus on addressing leverage and liquidity mismatches is essential, but adjustments are needed to account for the distinct leverage mechanisms used by different NBFIs. For hedge funds and other investment funds, monitoring aggregate leverage ratios and derivatives exposure is critical to detecting excessive risk-taking. Insurance companies and pension funds, though traditionally less leveraged, may still face liquidity pressures from derivatives or alternative investments. For cryptocurrency entities, tracking margin lending and derivatives trading on centralized and decentralized platforms is crucial, as leverage within digital asset markets can rapidly impact broader financial systems.

Moreover, cross-market correlation metrics should be incorporated to assess spillover effects between digital assets and traditional markets. The thesis demonstrates that market volatility in Bitcoin and other cryptocurrencies can propagate through interconnected markets, amplifying systemic risks. To mitigate these risks, regulatory measures should include stress testing scenarios that account for simultaneous liquidity shocks across asset classes.

In conclusion, while Recommendations 4 and 5 provide a solid foundation, adjustments are necessary to address the specific risk dynamics of different NBFI types, particularly those involved in digital assets. Incorporating advanced blockchain analytics, cross-market correlation metrics, and stress testing scenarios will enhance authorities' ability to monitor and mitigate systemic risks.

6. **In what circumstances can activity-based measures, such as (i) minimum haircuts in securities financing transactions, including government bond repos, (ii) enhanced margin requirements between non-bank financial entities and their derivatives counterparties, or (iii) central clearing, be effective in addressing financial stability risks related to NBFI leverage in core financial markets, including government bond markets? To what extent can these three types of policy measures complement each other?**

My thesis underscores the importance of activity-based measures in mitigating financial stability risks arising from NBFI leverage, particularly during periods of market stress. Minimum haircuts, enhanced margin requirements, and central clearing each play a crucial role in limiting excessive leverage and preventing contagion. Their effectiveness depends on the nature of the leveraged activity and the interconnectedness of financial markets, including digital assets.

1. Minimum Haircuts in Securities Financing Transactions:

Minimum haircuts are effective in reducing excessive leverage in securities financing transactions, including government bond repos. By requiring borrowers to post a minimum amount of collateral, haircuts limit leverage buildup and mitigate the risk of forced liquidations during stress. The thesis highlights that liquidity shocks, such as large-scale

redemptions from Bitcoin ETFs or margin calls on cryptocurrency positions, can cascade into traditional markets. Applying minimum haircuts to government bond repos reduces the likelihood of fire sales that disrupt core funding markets.

2. Enhanced Margin Requirements for Derivatives Counterparties:

Enhanced margin requirements are essential for reducing counterparty credit risk, particularly between NBFIs with limited access to central bank liquidity. The thesis demonstrates that leveraged short-selling and derivatives trading amplify volatility in both traditional and digital markets. Increasing initial and variation margin requirements limits sudden liquidations that exacerbate instability. This measure is especially critical for cryptocurrency derivatives, where volatility is higher and liquidity can disappear rapidly during shocks.

3. Central Clearing:

Central clearing mitigates counterparty risk and enhances transparency by requiring participants to post collateral with a central counterparty (CCP). The thesis supports expanding central clearing for both traditional derivatives and cryptocurrency futures, as CCPs reduce the risk of cascading defaults that can threaten financial stability. In government bond markets, central clearing improves liquidity and price discovery, reducing disruptions during stress periods.

Complementarity of Measures:

These measures are most effective when applied together. Minimum haircuts limit leverage at the point of borrowing, enhanced margin requirements reduce counterparty default risk, and central clearing mutualizes counterparty risk, enhancing market resilience. Combined, these tools create a multi-layered defense against systemic contagion, ensuring manageable leverage levels across traditional and digital asset markets. This integrated approach aligns with the findings of my thesis and supports financial stability while promoting transparency.

7. Are there benefits to dynamic approaches to minimum margin and haircut requirements, e.g. where the requirements change based on changes in concentration or system-wide leverage? If so, what types of indicators capturing concentration or system-wide leverage should the requirements be linked to?

My thesis supports the implementation of dynamic approaches to minimum margin and haircut requirements as an effective measure to mitigate systemic risks arising from NBFI leverage. By adjusting these requirements based on real-time indicators of market concentration and system-wide leverage, authorities can proactively address liquidity imbalances and prevent cascading defaults. This adaptive framework is particularly relevant in volatile markets, including digital asset ecosystems where leveraged trading can amplify contagion effects.

Dynamic margin requirements act as a buffer against excessive speculation by increasing collateral demands when leverage ratios exceed predefined thresholds. Similarly, adjustable haircuts in securities financing transactions, including government bond repos, reduce the risk of fire sales during market stress by limiting the liquidity obtained from collateralized assets. The thesis emphasizes that such measures can help curtail pro-cyclical behavior, where leverage builds up during market booms and rapidly unwinds during downturns, exacerbating volatility and liquidity shortages.

To ensure effectiveness, these dynamic requirements should be linked to a combination of leading and contemporaneous indicators that capture both concentration risk and systemic leverage. Key indicators include:

1. Leverage Ratios: Aggregate leverage ratios of hedge funds, ETFs, and other NBFIs provide insight into system-wide risk levels. Sudden increases warrant higher margin and haircut requirements to reduce excessive borrowing.

2. Concentration Metrics: Herfindahl-Hirschman Index (HHI) and position size relative to market capitalization can identify concentrated exposures in specific assets or asset classes, signaling the need for tighter collateral requirements.

3. Cross-Market Correlations: Monitoring correlations between asset classes, including traditional bonds and digital assets like Bitcoin ETFs, helps predict spillover risks and informs adjustments to maintain market stability.

4. Liquidity Stress Indicators: Metrics such as bid-ask spreads, funding liquidity indices, and redemption activity in ETFs provide real-time signals of market stress, prompting preemptive adjustments to collateral requirements.

By integrating these indicators into a dynamic framework, authorities can create a more resilient financial system that limits the destabilizing effects of leverage, aligning with the thesis's emphasis on proactive measures to mitigate contagion risks in both traditional and digital asset markets.

8. Are there any potential unintended consequences from activity-based measures beyond those identified in the consultation report?

My thesis identifies several unintended consequences of activity-based measures that could destabilize markets, particularly those involving leveraged digital assets and non-bank financial intermediaries (NBFIs).

One key risk is the constrained liquidity effect, where higher margin and haircut requirements reduce market liquidity, especially during stress periods. For example, increasing haircuts on repo transactions may limit short-term funding, triggering forced deleveraging and rapid price declines in government bond markets and cryptocurrency ETFs, amplifying volatility across asset classes.

Another consequence is the pro-cyclicality of dynamic measures. While adjusting requirements based on leverage or concentration metrics can mitigate systemic risks, sudden increases during volatility spikes can trigger mass liquidations, depressing asset prices and causing contagion. This feedback loop is particularly pronounced in digital asset markets, where leverage and liquidity are sensitive to market sentiment and whale wallet movements.

The thesis also warns of regulatory arbitrage, where entities or individuals strategically shift activities to less-regulated jurisdictions or decentralized platforms to circumvent stricter regulations. This is especially concerning in digital asset markets, where NBFIs may migrate leveraged trading beyond regulatory oversight, increasing systemic risks. Shareholders in regulated markets operating with decentralized assets may also profit from anticipated volatility, while hedge funds use derivatives or synthetic products to maintain leverage while avoiding direct margin requirements.

Increased transparency through public disclosures can lead to predatory trading behaviors, such as front-running or exploiting liquidity constraints. This risk is significant in cryptocurrency markets, where large trades can impact prices, encouraging manipulation and liquidity fragmentation.

To mitigate these risks, policymakers should adopt a calibrated approach that balances risk mitigation with market efficiency. Baseline requirements should prevent forced deleveraging, with incremental adjustments based on real-time indicators like cross-asset correlations and counterparty exposures. Aggregated data reporting, rather than entity-specific disclosures, reduces the risk of manipulation while maintaining systemic transparency.

In conclusion, while activity-based measures are crucial for financial stability, their design must account for liquidity constraints, pro-cyclicality, regulatory arbitrage, and behavioral distortions to avoid unintended destabilization of global markets.

9. For non-centrally cleared securities financing transactions, including government bond repos, what are the merits of margin requirements compared to minimum haircuts?

My thesis evaluates the effectiveness of margin requirements and minimum haircuts for non-centrally cleared securities financing transactions (SFTs), including government bond repos. Both measures aim to mitigate systemic risks, but they differ in their impact on liquidity, leverage, and counterparty risk.

Margin requirements are advantageous because they directly limit leverage by requiring borrowers to post collateral that reflects the transaction's current market value. This real-time adjustment reduces counterparty credit risk, particularly during volatile periods. Margins help maintain liquidity by preventing excessive leverage while promoting market discipline, as borrowers must maintain adequate collateral to avoid forced liquidations. However, margin requirements can be pro-cyclical—rising sharply during market stress—potentially triggering mass liquidations that exacerbate volatility, especially in highly leveraged digital asset markets and government bond repos.

Minimum haircuts, on the other hand, provide a stable baseline that limits leverage by reducing the value of collateral relative to the loan amount. This approach is less sensitive to short-term price fluctuations, reducing the risk of forced deleveraging during volatility spikes. For government bond repos, minimum haircuts prevent excessive leverage without the day-to-day volatility associated with margin calls, promoting more stable funding markets. However, fixed haircuts may not sufficiently address rapid declines in collateral value, potentially increasing counterparty risk during sharp market corrections.

The thesis emphasizes that combining these measures can enhance financial stability. Minimum haircuts establish a baseline to prevent excessive leverage, while margin requirements provide dynamic adjustments to account for changing market conditions. This complementary approach is particularly effective in markets with cross-asset contagion risks, such as those involving cryptocurrency ETFs and traditional bonds.

In conclusion, while margin requirements are essential for real-time risk management, minimum haircuts offer greater stability during stress periods. A hybrid model that uses haircuts to limit baseline leverage and margins to address market fluctuations strikes a

balance between mitigating systemic risk and maintaining market liquidity, aligning with the recommendations outlined in my thesis.

10. In what circumstances can entity-based measures, such as (i) direct and (ii) indirect leverage limits be effective in addressing financial stability risks related to NBFI leverage in core financial markets?

My thesis identifies key circumstances in which entity-based measures, including direct and indirect leverage limits, can effectively mitigate financial stability risks associated with NBFI leverage in core financial markets. These measures are particularly critical in environments where excessive leverage can amplify market volatility and liquidity shocks.

Direct leverage limits, which cap the debt-to-equity ratio or maximum leverage an entity can hold, are most effective in preventing excessive risk-taking by NBFIs such as hedge funds, investment funds, and insurance companies. These limits are essential during periods of market expansion when entities may over-leverage to maximize returns, increasing systemic risk. For example, capping leverage in cryptocurrency ETFs can mitigate the risk of forced liquidations during market corrections, which could otherwise trigger broader contagion across asset classes. Direct limits are particularly beneficial in reducing pro-cyclical behavior, ensuring that entities maintain sustainable leverage levels even during periods of heightened market optimism.

Indirect leverage limits, which restrict exposure to leveraged counterparties or high-risk asset classes, are effective in preventing the spillover of risks from individual entities to the broader financial system. These measures are crucial when monitoring interconnected markets, such as the correlation between Bitcoin ETFs and traditional financial assets. By limiting NBFIs' exposure to highly leveraged digital assets, regulators can reduce the risk of cross-market contagion during volatility spikes. Additionally, setting limits on derivative exposures can prevent excessive speculation that might otherwise destabilize core financial markets.

Both direct and indirect limits are most effective when tailored to the specific risk profiles of different NBFI categories. For example, hedge funds with higher volatility tolerance may require stricter direct limits, while pension funds, with their long-term investment horizons, may benefit more from indirect limits on counterparties. Combining these measures with real-time monitoring of leverage ratios, cross-asset correlations, and whale wallet movements—highlighted in the thesis—ensures that regulators can proactively address emerging risks before they escalate into systemic crises.

In conclusion, entity-based measures, when calibrated to the unique characteristics of NBFIs and adjusted dynamically based on market conditions, play a vital role in maintaining financial stability and preventing excessive leverage from destabilizing core financial markets.

11. Are there ways to design and calibrate entity-based measures to increase their risk sensitivity and/or their effectiveness in addressing financial stability risks from NBFI leverage?

My thesis outlines several ways to design and calibrate entity-based measures that enhance their risk sensitivity and effectiveness in mitigating financial stability risks from NBFI leverage. Key to this approach is aligning leverage limits with real-time market conditions,

asset volatility, and systemic interconnectedness to prevent excessive risk-taking while preserving market liquidity.

Entity-based measures can be made more risk-sensitive by incorporating dynamic leverage limits that adjust according to market volatility and asset liquidity. For example, capping leverage more strictly during periods of heightened volatility can reduce the risk of forced liquidations that amplify market stress. Conversely, during periods of market stability, slightly higher leverage allowances can support liquidity and investment without excessive risk. This dynamic approach is particularly relevant for hedge funds and cryptocurrency ETFs, where leverage sensitivity to volatility is pronounced.

To address cross-market contagion risks, counterparty exposure limits should be calibrated based on the interconnectedness of NBFIs and their exposure to leveraged digital assets. Limiting exposures to highly leveraged counterparties—especially those trading in volatile markets like cryptocurrencies—reduces the potential for liquidity shocks to spread across asset classes. Additionally, setting limits on derivative positions, such as short-selling and leveraged futures contracts, can prevent excessive speculation that might destabilize both digital and traditional financial markets.

Risk-weighted leverage ratios provide another layer of sensitivity by adjusting limits based on the risk profile of underlying assets. For example, leverage allowances should be more conservative for highly volatile assets like Bitcoin compared to government bonds. Incorporating cross-asset correlation metrics, as highlighted in the thesis, further enhances risk sensitivity by reducing leverage allowances when correlations increase, signaling heightened contagion risk.

Finally, real-time monitoring of whale wallet movements and large cryptocurrency transfers can provide early indicators of potential market manipulation or liquidity shocks, allowing regulators to preemptively adjust leverage limits to mitigate systemic risks. By integrating these dynamic, risk-weighted measures, regulators can more effectively address the unique leverage-related vulnerabilities of NBFIs while maintaining financial stability across both traditional and digital asset markets.

12. Are there any potential unintended consequences from entity-based measures beyond those identified in the consultation report?

My thesis identifies several unintended consequences of entity-based measures that extend beyond those outlined in the consultation report. While direct and indirect leverage limits aim to mitigate systemic risks, their implementation may introduce challenges that could inadvertently impact financial markets, particularly in the context of leveraged digital assets and non-bank financial intermediaries (NBFIs).

One key risk is liquidity fragmentation, where leverage limits restrict entities' ability to provide liquidity during market stress. For instance, imposing strict leverage caps on hedge funds and market makers may reduce their capacity to absorb sell-offs, exacerbating price declines in government bonds and digital asset markets. This effect is particularly pronounced in markets with limited liquidity depth, where even moderate deleveraging can trigger contagion.

Another unintended consequence is regulatory arbitrage, where entities shift leverage activities to less-regulated jurisdictions or decentralized platforms. In digital asset markets, NBFIs may migrate leveraged trading to decentralized assets, where regulatory oversight is

limited, increasing systemic risk. Moreover, shareholders of regulated entities operating in unregulated environments can strategically position themselves to profit from anticipated market events, such as liquidity shocks or volatility spikes, amplifying systemic vulnerabilities.

Entity-based measures may also incentivize risk concentration, as institutions seek alternative ways to maintain returns while adhering to leverage limits. For example, hedge funds might increase exposure to higher-risk assets or use derivatives to replicate leveraged positions, circumventing regulatory constraints. This shift can increase portfolio volatility and systemic contagion risks, particularly when cross-asset correlations rise during market stress.

Additionally, leverage limits could lead to pro-cyclical effects, where entities are forced to deleverage during downturns, accelerating price declines and amplifying volatility. This feedback loop is especially pronounced in digital asset markets, where leverage is more sensitive to market sentiment and large trades can significantly impact prices.

To mitigate unintended consequences, policymakers should adopt a calibrated approach that balances leverage constraints with market liquidity. This includes setting limits that adjust dynamically based on market volatility and ensuring that regulations account for cross-border and decentralized activities. Aggregated data reporting can further enhance oversight while reducing the risk of regulatory arbitrage and predatory behaviors.

In conclusion, while entity-based measures are essential for addressing NBFI leverage, their design must carefully consider liquidity fragmentation, regulatory arbitrage, risk concentration, and pro-cyclicality to ensure they enhance financial stability without disrupting market function.

13. To what extent can activity-based and entity-based measures complement each other? What are the main considerations around using these two types of measures in combination?

My thesis emphasizes that activity-based and entity-based measures can complement each other by addressing different aspects of financial stability risks associated with leveraged digital assets and non-bank financial intermediaries (NBFIs). Activity-based measures target specific transactions and market behaviors, while entity-based measures limit the overall leverage and risk-taking capacity of individual institutions. Combining these approaches enhances systemic resilience by mitigating both transactional vulnerabilities and institution-level contagion risks.

Activity-based measures, such as minimum haircuts in securities financing and enhanced margin requirements for derivatives, are effective in reducing excessive leverage and curbing pro-cyclical market behaviors. These measures limit leverage within individual transactions, preventing rapid liquidity drains during periods of stress. For example, applying higher haircuts on cryptocurrency ETFs can reduce forced liquidations during market downturns, stabilizing prices and limiting contagion effects.

Entity-based measures, including direct and indirect leverage limits, ensure that financial institutions maintain sustainable risk profiles. By capping leverage ratios, these measures prevent excessive risk accumulation that could amplify systemic shocks. For example, imposing leverage limits on hedge funds trading Bitcoin derivatives reduces the likelihood

of mass liquidations that could destabilize both digital asset markets and interconnected traditional markets.

The main consideration in using these measures in combination is balancing risk mitigation with market liquidity and efficiency. Overly restrictive measures may constrain liquidity, reducing market depth and increasing volatility. Therefore, regulators should adopt a calibrated approach that aligns activity-based measures with the risk profiles of different asset classes while adjusting entity-based limits based on systemic risk indicators, such as cross-asset correlations and market leverage ratios. Additionally, aggregated data reporting on leveraged positions can enhance oversight, enabling regulators to detect emerging risks without exposing individual entities to predatory trading behaviors.

In conclusion, combining activity-based and entity-based measures creates a more comprehensive regulatory framework, enhancing financial stability by limiting both transaction-level and institution-level risks while maintaining market liquidity and efficiency.

Recommendation 6

14. How could counterparty credit risk management requirements for leverage providers be enhanced to be more effective in addressing financial stability risks from NBFI leverage in core financial markets, such as government bond repo markets? In what circumstances can they be most effective?

My thesis identifies key enhancements to counterparty credit risk management that can effectively address financial stability risks arising from NBFI leverage, particularly in core financial markets such as government bond repos. Strengthening these measures is essential to prevent contagion during periods of market stress, especially when leverage and liquidity are highly interconnected.

One critical enhancement is the standardization of credit risk assessments across leverage providers. Establishing uniform criteria for evaluating counterparties' leverage ratios, liquidity buffers, and collateral quality reduces the likelihood of mispricing credit risk, which can lead to excessive leverage and systemic vulnerabilities. This is particularly important for government bond repos, where underestimating counterparty risk can amplify liquidity shocks during periods of volatility.

Real-time monitoring of leverage exposures is another essential measure. Leverage providers should implement systems that continuously track counterparties' margin positions, collateral values, and liquidity profiles. This real-time oversight is especially crucial during periods of market stress, where rapid price fluctuations can trigger margin calls and forced deleveraging, exacerbating systemic risk. Additionally, automated margin call processes can help prevent delayed responses that could magnify liquidity shortages.

Enhanced collateral requirements tailored to counterparty risk profiles can further mitigate systemic vulnerabilities. Requiring higher-quality collateral, such as government bonds with lower credit risk and greater liquidity, reduces the likelihood of collateral devaluation during market stress. Dynamic collateral requirements that adjust based on market volatility and counterparty leverage can also help contain contagion effects.

Moreover, strengthening cross-market transparency through aggregated data reporting ensures that leverage providers can assess systemic risk more accurately. Disclosing leverage positions and counterparty exposures—while maintaining appropriate aggregation

to protect proprietary information—enables leverage providers to identify potential contagion channels and adjust their risk management practices accordingly.

These measures are most effective during periods of heightened market volatility and liquidity stress, where rapid deleveraging and counterparty defaults can trigger broader contagion. By combining standardized credit assessments, real-time monitoring, dynamic collateral requirements, and cross-market transparency, leverage providers can significantly reduce the systemic risks posed by NBFI leverage, ensuring greater financial stability in core markets like government bond repos.

Recommendation 7

15. Would a minimum set of disclosures to be provided by leverage users to leverage providers be beneficial in improving counterparty credit risk management and reducing financial stability risks from NBFI leverage, including concentration risks? If so, which types of information and what level of granularity should (and should not) be included in this minimum set and why?

My thesis supports the implementation of a minimum set of disclosures from leverage users to leverage providers as a crucial measure to enhance counterparty credit risk management and mitigate systemic risks from NBFI leverage. Transparent and consistent information sharing can help identify concentration risks, improve credit risk assessments, and reduce the likelihood of cascading defaults during periods of market stress.

A key disclosure should include aggregate leverage ratios and the proportion of leverage derived from short-term funding sources. High reliance on short-term leverage increases refinancing risks, particularly during liquidity shocks. Additionally, disclosing the composition and quality of collateral used for leveraged positions ensures that leverage providers can assess potential devaluation risks during volatile market conditions. This is especially important for digital asset markets, where collateral volatility is higher compared to traditional assets.

Leverage users should also provide counterparty exposure reports, detailing their largest exposures and interconnected positions within both traditional and digital asset markets. This helps leverage providers identify concentration risks that could amplify contagion effects if a major counterparty defaults. Disclosures should include cross-asset correlations and the potential for spillover effects between asset classes, ensuring that leverage providers can anticipate systemic risks arising from correlated downturns.

However, to prevent unintended consequences such as predatory trading, disclosures should be aggregated rather than entity-specific. For example, reporting leverage and exposure data at a sector or asset-class level reduces the risk of front-running or exploiting liquidity constraints while maintaining systemic transparency. Similarly, real-time disclosure of large trading positions should be avoided to prevent market manipulation.

The level of granularity should balance transparency with operational efficiency. Monthly disclosures of aggregate leverage ratios, collateral quality, and cross-asset exposures provide sufficient oversight without overwhelming leverage providers with excessive data. During periods of heightened market volatility, more frequent reporting—such as weekly or daily summaries—can help leverage providers respond proactively to evolving risks.

In conclusion, implementing a standardized, aggregated, and periodic disclosure framework enhances leverage providers' ability to monitor concentration risks, assess counterparty creditworthiness, and mitigate systemic vulnerabilities, ultimately supporting greater financial stability across both traditional and digital asset markets.

16. **What are the main impediments that leverage users face in sharing additional or more granular data with their leverage providers? Is there a risk that a minimum recommended set of disclosures may lead leverage users to limit the information they share with their leverage providers to that minimum set?**

My thesis identifies several impediments that leverage users face when sharing additional or more granular data with leverage providers. While transparency is essential for mitigating systemic risk, practical, competitive, and regulatory factors can limit data sharing, potentially reducing the effectiveness of counterparty credit risk management.

One key impediment is data privacy and competitive sensitivity. Detailed disclosures of leverage positions, collateral composition, and counterparty exposures could reveal proprietary trading strategies, placing leverage users at a competitive disadvantage. This is particularly concerning in digital asset markets, where large trades can significantly impact prices, increasing the risk of front-running and market manipulation. To mitigate this risk, disclosures should be aggregated and anonymized to protect sensitive information while still providing leverage providers with a clear view of systemic risks.

Another challenge is the operational burden associated with collecting and reporting granular data. For NBFIs, hedge funds, and digital asset platforms operating across multiple jurisdictions, complying with diverse regulatory requirements can be complex and resource-intensive. The cost of real-time reporting, especially during periods of high market volatility, may strain smaller entities, reducing their ability to compete with larger institutions. Therefore, the level of granularity should be calibrated to ensure that leverage providers receive essential information without imposing excessive reporting costs on leverage users.

Regulatory uncertainty is also a barrier to data sharing. In digital asset markets, evolving regulations may create ambiguity about what information must be disclosed, leading leverage users to limit data sharing to avoid potential compliance violations. Clear and consistent guidelines from regulators can help address this issue, promoting more transparent and comprehensive reporting practices.

There is a risk that a minimum recommended set of disclosures may inadvertently encourage leverage users to limit information sharing to the minimum required level. To prevent this, leverage providers should establish risk-based frameworks that incentivize additional disclosures based on the leverage user's risk profile and market conditions. For example, entities with higher leverage ratios or exposure to volatile assets could be required to provide more detailed data, ensuring that leverage providers have sufficient information to assess credit risk without imposing unnecessary burdens on lower-risk entities.

In conclusion, while data privacy, operational costs, and regulatory uncertainty are key impediments to enhanced data sharing, a well-calibrated disclosure framework that balances transparency with confidentiality can support effective counterparty credit risk management without compromising market integrity.

17. **Should such a minimum set of disclosures rely on harmonised data and metrics to ensure transparency and efficiency in the use of such information for risk**

management purposes? Do respondents agree that such a minimum set of disclosures should be based on the list of principles outlined in the consultation report? If not, which principles should be added, deleted or amended?

My thesis supports the implementation of a minimum set of disclosures based on harmonized data and metrics to enhance transparency and efficiency in risk management, particularly for non-bank financial intermediaries (NBFIs) and digital asset markets. Standardized disclosures improve comparability, reduce information asymmetry, and enable leverage providers to assess systemic risks more effectively across jurisdictions and asset classes.

Harmonized data ensures that leverage providers can identify cross-market correlations and monitor spillover effects, especially during periods of market stress. For example, standardized reporting of leverage ratios, collateral composition, and counterparty exposures allows providers to assess concentration risks and potential liquidity shocks. In digital asset markets, where pseudonymity complicates risk assessments, harmonized disclosures related to whale wallet movements and derivatives exposure can help mitigate systemic vulnerabilities.

While the consultation report's principles form a solid foundation, my thesis identifies areas where adjustments could enhance their effectiveness. The principle of data granularity should be carefully calibrated to balance transparency with the protection of proprietary information, particularly for competitive markets like hedge funds and cryptocurrency ETFs. Additionally, the principle of timeliness should emphasize real-time or near-real-time reporting during periods of high volatility to enable proactive risk management.

However, the principle of flexibility should be refined to account for jurisdictional differences, particularly in digital asset markets where regulatory frameworks vary widely. Overly rigid disclosure requirements may drive leverage users to decentralized platforms or less-regulated jurisdictions, increasing systemic risk through regulatory arbitrage. To mitigate this, harmonized metrics should be designed to accommodate both traditional and digital asset markets, ensuring that disclosures capture the unique risks associated with decentralized assets.

In conclusion, a minimum set of disclosures based on harmonized data and metrics—aligned with principles of comparability, granularity, timeliness, and jurisdictional flexibility—can enhance transparency, improve counterparty credit risk management, and reduce financial stability risks across both traditional and digital asset markets.

18. **Should leverage users be required or expected to provide enhanced disclosures (beyond that provided in normal market conditions) to their leverage providers during times of stress?**

My thesis supports requiring leverage users to provide enhanced disclosures during periods of market stress. This measure is essential for maintaining financial stability, particularly when sudden liquidity shocks and volatility spikes can rapidly escalate systemic risks. Enhanced transparency enables leverage providers to assess counterparty risks more accurately, prevent cascading defaults, and respond proactively to mitigate contagion effects.

During times of stress, the disclosure of real-time leverage ratios, collateral quality, and liquidity buffers becomes critical. For example, in government bond repo markets, leverage

providers need updated information on collateral haircuts and the concentration of counterparties to evaluate liquidity risks. In digital asset markets, timely reporting of whale wallet movements, derivatives exposure, and ETF redemption activity can help identify potential price manipulation or liquidity squeezes. These enhanced disclosures allow leverage providers to adjust credit lines, margin requirements, and risk limits in response to evolving market conditions, reducing the likelihood of forced liquidations that can amplify volatility.

However, enhanced disclosures should be carefully calibrated to avoid unintended consequences. Excessive transparency may incentivize predatory trading behaviors, such as front-running or exploiting visible liquidity constraints. To mitigate this risk, disclosures should be aggregated at the sector or asset-class level rather than revealing specific entities. Additionally, disclosure requirements should be triggered by predefined stress indicators, such as volatility thresholds, cross-asset correlations, or deviations from historical leverage norms. This ensures that enhanced disclosures are activated only when systemic risks are elevated, minimizing compliance burdens during normal market conditions.

In conclusion, requiring leverage users to provide enhanced disclosures during market stress is essential for improving counterparty credit risk management and maintaining financial stability. By ensuring timely, aggregated, and risk-sensitive disclosures, policymakers can strengthen the resilience of both traditional and digital asset markets while preventing unintended market disruptions.

19. **Should authorities design a minimum set of harmonised disclosures and guidelines on its application, or should they convene a cross-industry working group to do so? How do respondents believe such a standard should be incorporated into market practice? Through regulation, supervisory guidance, and/or via a Code of Conduct or similar approach?**

My thesis supports the design of a minimum set of harmonized disclosures by authorities, complemented by cross-industry collaboration to ensure practical applicability across both traditional financial markets and digital asset markets. Regulatory bodies are best positioned to establish baseline disclosure standards that enhance financial stability and prevent systemic risks, while industry input can help tailor these standards to the unique operational realities of different market participants, including non-bank financial intermediaries (NBFIs) and decentralized platforms.

A harmonized disclosure framework should be incorporated into market practices through a combination of regulation and supervisory guidance. Regulations ensure that minimum disclosure requirements are consistently applied, creating a level playing field and reducing information asymmetry. This is especially critical for markets with high leverage and liquidity sensitivity, such as government bond repos and cryptocurrency ETFs. Supervisory guidance, meanwhile, provides flexibility for market participants to adapt disclosures to their specific risk profiles while ensuring compliance with core principles of transparency, comparability, and timeliness.

To foster industry buy-in and promote best practices, authorities should also support the development of a Code of Conduct in collaboration with a cross-industry working group. This approach allows leverage providers and users to establish standardized disclosure processes aligned with regulatory expectations, while promoting a culture of proactive risk

management. In digital asset markets, where pseudonymity and cross-border activity complicate traditional oversight, industry-driven guidelines can help bridge regulatory gaps and improve counterparty risk assessments.

Incorporating the framework into market practice requires clear implementation timelines, periodic reviews, and mechanisms for updating disclosure requirements as market dynamics evolve. By combining regulatory mandates, supervisory oversight, and industry collaboration, authorities can create a strong and dynamic disclosure regime that enhances financial stability, reduces systemic vulnerabilities, and ensures transparency across both centralized and decentralized financial markets.

Recommendation 8

20. Are there areas where the principle of "same risk, same regulatory treatment" should be more consistently applied? Are there circumstances in which the principle should not apply or should not apply comprehensively?

My thesis emphasizes the importance of applying the principle of "same risk, same regulatory treatment" to mitigate systemic risks across both traditional financial markets and digital asset ecosystems. Consistent regulatory treatment ensures that entities and activities with similar risk profiles are subject to comparable oversight, reducing opportunities for regulatory arbitrage and enhancing financial stability. However, the principle must be applied with consideration for the unique characteristics of digital assets and decentralized platforms.

In areas involving leveraged trading and liquidity provision, consistent regulatory treatment is essential. For example, hedge funds, non-bank financial intermediaries (NBFIs), and cryptocurrency ETFs should face similar leverage limits, margin requirements, and disclosure obligations to prevent excessive risk-taking and reduce contagion risks. The application of these measures should extend to digital asset markets, where leveraged positions and derivatives trading can amplify volatility and liquidity shocks, impacting broader financial stability.

However, the principle should be applied selectively in cases where the underlying market structures differ significantly. For instance, decentralized assets can operate without centralized intermediaries, making traditional regulatory frameworks less effective. Applying the same leverage limits and disclosure requirements as centralized entities may be impractical, potentially driving activity to unregulated jurisdictions and increasing systemic risk. Instead, policymakers should explore tailored approaches that address DeFi's unique risks while preserving its benefits of transparency and accessibility.

Additionally, the principle may not apply comprehensively to markets with differing levels of liquidity and volatility. Digital assets exhibit higher price volatility and liquidity sensitivity compared to traditional securities, necessitating dynamic margin and haircut requirements that adjust based on market conditions. Applying static requirements designed for traditional markets could inadvertently increase volatility and accelerate deleveraging during periods of stress.

In conclusion, the principle of "same risk, same regulatory treatment" should guide regulatory frameworks for leveraged trading, liquidity provision, and counterparty risk management across both traditional and digital asset markets. However, its application must

account for differences in market structure, liquidity dynamics, and technological innovation to ensure effective risk mitigation without stifling market development.