

Financial Risk Assessment and Mitigation in Saudi Debt Markets: A Governance-Based Framework for Vision 2030

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Abstract- The investment program outlined in Saudi Arabia's Vision 2030 is expanding the strategic role of sovereign and corporate debt while increasing the importance of disciplined financial-risk governance. This review brings together evidence that has been published between 2020 and 2025 regarding financial risk in Saudi local-currency bonds, sukuk, corporate financing, market liquidity, and governance. It presents a governance-based framework in which risk is not seen as a series of separate exposures but as a transmission system connecting interest-rate repricing, refinancing, credit quality, secondary-market liquidity, external funding, concentration, sukuk structure, and the quality of disclosure. A structured integrative review was conducted using 30 peer-reviewed and authoritative institutional sources published between 2020 and 2025, with source identification and screening procedures informed by PRISMA principles. The synthesis reveals that resilience in the Saudi debt market relies on three conditions: credible governance at the issuer level, a liquid market infrastructure supported by a diversified group of investors, and coordinated oversight by sovereign and regulatory bodies. The review's principal contribution is a governance-based framework that allocates risk ownership among boards, treasury functions, market intermediaries, regulators, and debt-management authorities; links leading indicators to escalation thresholds and corresponding actions; and integrates stress testing with disclosure, maturity management, liquidity safeguards, and Shari'ah governance. By doing so, the framework supports Vision 2030 in ensuring the continuity of financing without impeding productive leverage, while also identifying key research areas relating to issuer-level data, liquidity microstructure, and the resolution of sukuk distress.

I. INTRODUCTION

Saudi Arabia's economic transformation requires a debt market capable of providing the funding needed by the government, banks, corporations, infrastructure vehicles, and emerging sectors without allowing rapid

balance-sheet expansion to create latent financial vulnerabilities. The policy objective therefore extends beyond simply increasing the volume of debt issuance. For a market to be resilient it has to credibly price risk, maintain reliable access to refinancing across different interest-rate cycles, be able to absorb portfolio adjustments without causing a disorderly loss of liquidity, and at the same time keep investor confidence intact when the entities issuing the debt come under stress. This challenge has grown in importance as Vision 2030 has increased the financing requirements of both the public and private sectors and as Saudi issuers have raised their level of borrowing both at home and abroad. The Capital Market Authority (CMA) clearly regards the development of sukuk and debt instruments as a strategic goal, focusing on market size, liquidity, issuer access, and investor participation (CMA, 2024a). The Financial Sector Development Program does likewise by linking reduced trading frictions and greater participation to the diversification of financing sources (FSDP, 2023). The fact that the market has grown does not eliminate financial risk, merely altering the form of that risk. When global financial conditions become more stringent, both the Saudi government and corporate issuers are exposed to the risks of repricing and refinancing. Credit risk is determined by a number of factors including leverage, profitability, project cash flow, governance, and the legal or contractual structure of the claims. Liquidity risk occurs when the volume of securities outstanding increases faster than the depth of the secondary market. Even if currency mismatches are managed, international issuance makes the situation more sensitive to global risk appetite and to the timing of funding. Sukuk introduce an additional structural element since the asset linkage, the contractual rights, the Shari'ah governance, and the arrangements for dealing with distress can all affect valuation and the expectations

regarding recovery. Empirical studies of the Saudi debt market show that macro-financial stability and institutional quality are important for market development, while exchange-rate stability, foreign-debt stability, and debt-service stability have an impact on the outcomes of sukuk and government bonds (Boukhatem, 2021, 2022, 2024).

Governance is the factor that links these different channels. Corporate boards can influence the level of leverage and the process of moving towards the desired capital structure; risk committees are able to enhance supervision; and clear risk disclosures help to reduce the information gap between issuers and investors (Bazhair, 2023; Almulhim et al., 2024; Al-Sahali and Al-Adeem, 2024). At the market level, regulation, the structure of trading, market making, the diversity of investors, and hedging capacity determine whether shocks are absorbed or amplified. Evidence from international sources indicates that a deeper domestic base of investors and more developed hedging markets increase the resilience of liquidity in the government debt markets of emerging economies, although global tightening can still have a negative effect on the operation of bond and foreign-exchange markets (Van Doornik et al., 2024; Drehmann et al., 2023). The central research problem, therefore, is not whether Saudi debt markets are exposed to financial risk, but how governance mechanisms can identify and respond to interconnected risks early enough to preserve financing continuity and orderly market functioning.

II. AIM, OBJECTIVES AND REVIEW QUESTIONS

This review seeks to synthesise evidence published between 2020 and 2025 on the principal financial-risk channels in Saudi debt markets and to develop a governance-based approach for assessing and mitigating these risks in alignment with Vision 2030. The analysis is guided by three objectives: first, to categorise the risks at the levels of issuer, instrument, market, and system which affect sovereign bonds, corporate debt and sukuk; second, to examine the way in which board oversight, risk committees, disclosure, market infrastructure, regulatory policy and sovereign debt management influence the likelihood or severity of those risks; and third, to translate the evidence into

a practical framework comprising indicators, risk ownership, thresholds, escalation procedures, and mitigation measures. The review addresses the following questions: which risk channels are most relevant to the resilience of Saudi debt markets; which governance mechanisms can mitigate their transmission; and how should issuer- and system-level signals be integrated to support consistent decision-making?

III. REVIEW METHODOLOGY

A structured integrative review was adopted because the subject area spans corporate finance, sovereign debt management, Islamic finance, market microstructure, corporate governance, and financial regulation. A statistical meta-analysis was not considered appropriate because the existing literature reports heterogeneous outcomes, including market capitalisation, yield spreads, distance to default, leverage, disclosure indices, liquidity conditions, and qualitative distress mechanisms.

The review incorporated selected PRISMA-informed principles to enhance transparency in source identification and screening, while retaining an integrative rather than a systematic-review design (Page et al., 2021). Peer-reviewed literature was identified through publisher platforms and indexing routes associated with journals covered by Scopus and Web of Science, including Springer, Elsevier, Emerald, Wiley, SAGE, and MDPI.

Sources were included if they had been published between 2020 and 2025, provided that they contained a clear financial-risk or governance mechanism, and were either specifically focused on Saudi Arabia or could be applied to the governance of debt and sukuk in emerging markets. Official sources were included whenever they dealt with market structure, financial stability, regulatory priorities, debt management, or governance standards. Exclusions applied to research carried out before 2020, publications from 2026, duplicate versions, news comments that lacked analytical support, studies that dealt only with equity and did not include a link to debt risk, and technical pricing studies which gave no interpretable governance or risk implications. Following the application of these inclusion and exclusion criteria,

the final evidence base comprised 30 sources. Each source was assigned to eight risk areas and five governance functions: mandate and risk appetite; exposure measurement and disclosure; independent challenge and assurance; market infrastructure and positioning; and response, escalation, and learning. Sources were assessed for credibility and relevance based on methodological transparency, the authority of the publisher or institution, applicability to Saudi or comparable debt markets, and consistency between the claims presented and the supporting evidence.

3.1 Evidence Integration and Analytical Logic

The synthesis was structured in the form of a causal chain instead of carrying out a frequency count of the themes. First, each source was examined to identify the type of exposure addressed and the level at which that exposure operated—issuer, instrument, market, or financial system. Second, the relevant transmission variable was identified, such as debt service, yield spread, refinancing access, market liquidity, disclosure quality, or recovery uncertainty. Third, the evidence was mapped to a governance mechanism capable of influencing either the likelihood of the risk event or its financial severity. Finally, indicators were selected only where they could plausibly support management or regulatory decision-making. By following this approach, the synthesis avoids offering general risk lists and establishes a clear link from the evidence in the literature to the framework proposed.

IV. SAUDI DEBT-MARKET CONTEXT UNDER VISION 2030

The development of Saudi Arabia's debt market has progressed alongside the Kingdom's broader economic diversification under Vision 2030. According to the CMA, the market for sukuk and debt instruments had reached 18.3% of GDP by the end of 2023, with 70 instruments listed and almost 30 billion riyals raised through offerings that year (CMA, 2024b). By the fourth quarter of 2024, the Saudi Exchange reported a total sukuk and bonds issuance size of SAR 633.5 billion, while the value traded during the quarter was SAR 3.31 billion, illustrating the distinction between market size and secondary-market trading depth (Saudi Exchange, 2024). The CMA's strategy for the periods 2024 to 2026 therefore identifies liquidity, expanding the investor base,

facilitating regulation, and promoting sustainable debt instruments as its main development priorities (CMA, 2024a).

The sovereign balance sheet still acts as a key point of reference. According to its 2024 report and borrowing plan, NDMC places particular emphasis on the make-up of its portfolio, the maturity of its debt, the difference between domestic and international funding, and active financing as means of meeting fiscal needs and funding the Vision 2030 projects (NDMC, 2024). International debt issuance has also become a strategic priority. The IMF pointed out that Saudi Arabia had strong access to the world's debt markets and, in its 2025 consultation, stated that it was the largest emerging-market issuer of dollar-denominated debt in 2024, excluding China, while at the same time maintaining a relatively low level of public debt and having large financial buffers (IMF, 2024, 2025). While this situation provides scope for action, it also increases the importance of keeping an eye on refinancing concentrations, global investor sentiment, and the relationships between sovereign and corporate financing.

SAMA's 2024 Financial Stability Report shows that the banking system remained well capitalized in 2023, with a capital adequacy ratio of 20.1%, while corporate credit grew by 13.2% (SAMA, 2024). These developments suggest that the expansion of Saudi debt markets is occurring alongside, rather than simply replacing, bank intermediation. It is important because banks can act as issuers, investors, providers of liquidity, arrangers, and lenders within the same corporate ecosystem. The risk structure therefore needs to take into account cross-market concentration and funding substitution, not just the credit quality of individual securities.

V. FINANCIAL-RISK ARCHITECTURE IN SAUDI DEBT MARKETS

5.1 Interest-rate, repricing, and refinancing risk. Saudi issuers' exposure to global interest-rate cycles reflects the interaction of domestic monetary conditions, market benchmarks, and the cost of international funding. The financial impact depends not only on the overall level of debt but also on the timing and structure of repricing and maturities. Fixed-rate debt

can provide near-term debt-service predictability for issuers while creating mark-to-market sensitivity for investors, whereas floating-rate or frequently refinanced obligations transmit changes in market rates more rapidly to issuer cash flows. When refinancing access becomes constrained, a heavy concentration of maturities can transform an otherwise sound balance-sheet position into significant liquidity pressure. Evidence from emerging markets indicates that during periods of tightening bond-market liquidity can deteriorate even if overall resilience is still greater than in previous crises (Drehmann et al., 2023). In the case of Saudi governance, the suitable controls include a repricing ladder, limits on maturity concentration, a buffer of committed liquidity, pre-funding windows, and reverse stress tests which show the combination of rate and spread at which coverage or refinancing capacity becomes unacceptable.

5.2 Credit and default risk. Credit-risk exposure is shaped by issuer fundamentals, leverage, sector conditions, security structure, and governance quality. Research comparing bonds and sukuk shows that profitability, size, leverage, volatility, and interest coverage have different effects on yield spreads depending on the type of instrument (Saeed et al., 2021). Governance is important since it can help reduce agency problems and information asymmetry. Evidence from studies of conventional bonds and sukuk suggests that institutional ownership and board characteristics are associated with lower yield spreads, while research specifically on sukuk links governance characteristics with social sustainability and a greater distance to default (Mohd Saad et al., 2020; Ur Rehman et al., 2023; Li et al., 2024). In Saudi Arabia, the board's structure affects leverage adjustments, which means that credit-risk assessment should not be limited to accounting ratios; it should also look at how financing decisions are challenged, approved, disclosed, and corrected (Bazhair, 2023).

5.3 Secondary-Market Liquidity and Liquidity Risk. Even if the amount of debt outstanding is large, trading can still be thin and the issues can remain fragmented or investors can hold one-sided positions. Liquidity becomes a material financial risk when investors demand compensation for the difficulty of exiting positions, when price discovery deteriorates, or when forced selling generates disproportionate price

movements. According to evidence from the BIS covering emerging markets, a diverse domestic group of investors and more developed hedging markets contribute to better liquidity performance during times of stress (Van Doornik et al., 2024). Saudi policy measures aimed at reducing trading frictions and broadening market participation can therefore support both market development and liquidity-risk mitigation (FSDP, 2023). Useful indicators in this context are bid-ask spreads, turnover in relation to the outstanding value, trade frequency, issue concentration, the availability of repos, dealer inventory capacity, investor concentration, and the speed at which normal liquidity conditions return after a shock.

5.4 External financing, currency, and concentration risk. Although the riyal's peg to the US dollar limits SAR–USD exchange-rate volatility, international borrowing remains exposed to global liquidity conditions, cross-currency basis risk, credit-spread movements, and rollover risk. Oil price shocks and global uncertainty can have different effects on sukuk prices depending on the time horizon, showing that Islamic fixed-income instruments are not protected against international risk factors (Naifar et al., 2022). Saudi issuers also encounter concentration risk when their funding relies on a small number of banks, international investors, sectors, or benchmark windows. At the system level, overlapping funding requirements across the sovereign, the Public Investment Fund ecosystem, banks, and large corporations may create competition for investor and intermediary balance-sheet capacity. Governance should therefore combine the various exposures by investor type, currency, maturity, sector, and funding channel rather than looking at each issuance on its own. International liquidity indicators, the level of foreign participation, cross-currency funding costs, and correlated maturity calendars should all be included in the same dashboard.

5.5 The structural, Shari'ah, and resolution risks of sukuk. Sukuk should not be treated as economically or legally equivalent to conventional bonds, as their contractual structures, asset linkages, Shari'ah requirements, and investor rights can generate distinct risk characteristics. Research on sukuk pricing identifies market risk and information asymmetry as distinct factors, reflecting contractual and

informational characteristics that may not be fully captured by conventional fixed-income models (Uddin et al., 2022). Investigations into cases of default and those close to default show that guarantees, ratings, asset rights, the way the contract is drafted, Shari'ah governance, and the design of restructuring all influence both the risk assessment before an event and the recovery afterwards (Kalimullina and Hassan, 2022; Swandaru and Muneeza, 2024; Zaheer and van Wijnbergen, 2025). AAOIFI's 2024 Shari'ah governance standard reinforces the importance of formal oversight, independent review, transparent accountability, and harmonised governance practices (AAOIFI, 2024). With regard to issuers in Saudi Arabia, the risk register should differentiate between credit risk and structural enforceability, the link between asset performance and the sukuk, the risk of Shari'ah non-compliance, the servicing arrangements, and resolution uncertainty.

5.6 Disclosure, data, and model risk. Effective risk governance depends on the timely availability of reliable and decision-relevant risk information. Saudi evidence shows that financial-risk disclosure is uneven across listed firms and that board characteristics can influence disclosure quality (Al-Dubai, 2023; Al-Sahali and Al-Adeem, 2024). This has direct debt-market implications because investors price information uncertainty in addition to expected credit losses. Governance should require reconciled exposure data, clear definitions, version control, scenario assumptions, and explanations for exceptions. Model risk arises when probability-of-default, duration, stress-testing, or liquidity models are relied upon without sufficient consideration of data limitations, model uncertainty, or structural change. A strong framework therefore combines quantitative metrics with documented judgement, independent validation, and back-testing.

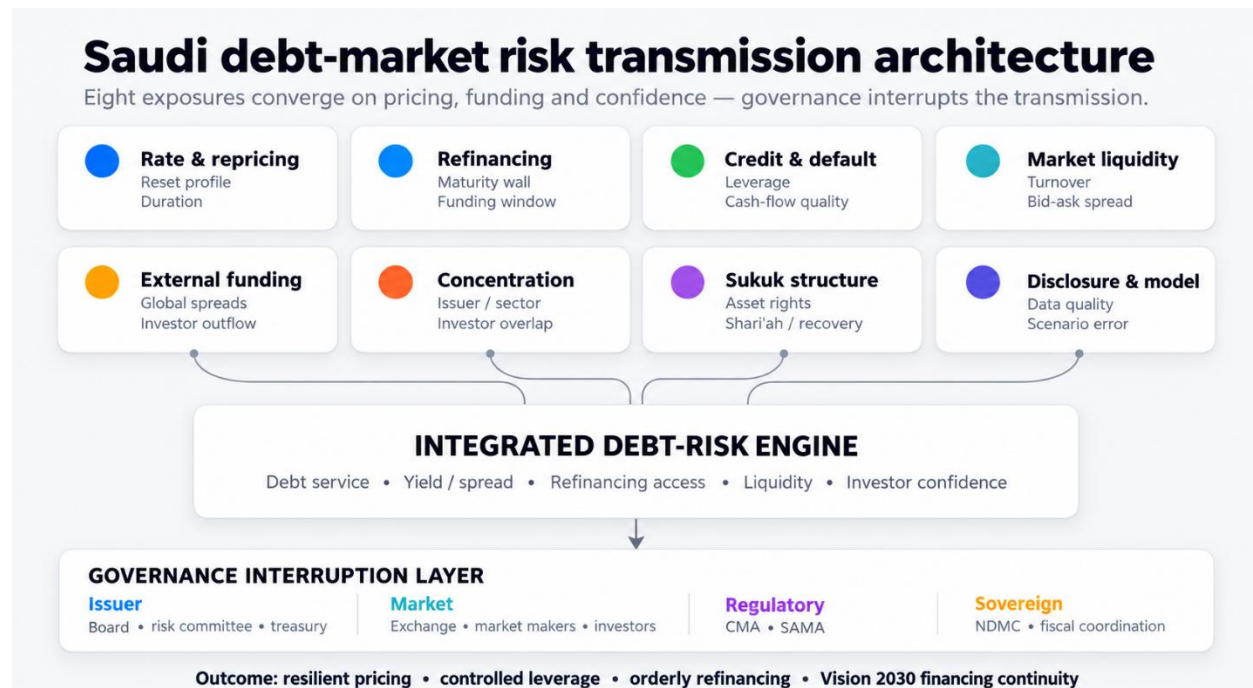


Figure 1. Governance-based risk transmission architecture for Saudi debt markets.

Table 1. Saudi debt-market financial risk and governance-control matrix.

Risk domain	Primary transmission	Leading indicators	Priority governance mitigation
Interest-rate / repricing	Floating resets, duration, benchmark shifts	Reset ladder; duration; interest cover	Fixed-floating limits; swaps/caps; stress testing
Refinancing / maturity	Maturity walls and closed funding windows	12/24/36-month maturities; committed liquidity	Pre-funding; staggered tenor; liability management
Credit / default	Weak cash flow, leverage, project underperformance	Leverage; coverage; rating migration; covenant headroom	Credit limits; covenant discipline; independent challenge
Market liquidity	Thin turnover and one-sided positioning	Bid-ask spreads; turnover; dealer capacity	Market making; benchmark reopening; repo / hedging depth
External funding	Global spreads, outflows, cross-border rollover	Foreign share; cross-currency cost; global spreads	Diversified investor base; funding-source/tenor limits; contingency funding
Concentration	Common issuers, sectors, investors, banks	Top exposures by obligor/sector/investor/maturity	Aggregate limits; correlated stress; alternative channels
Sukuk structure	Asset, servicing, Shari'ah and resolution uncertainty	Structural exceptions; servicing; compliance reviews	Clear documentation; Shari'ah oversight; resolution planning
Disclosure / model	Incomplete data, information asymmetry, model error	Data breaks; late disclosure; forecast/model variance	Reconciliation; validation; transparent risk reporting

VI. GOVERNANCE MECHANISMS FOR RISK MITIGATION

The first governance mechanism is a clearly defined, board-approved risk appetite aligned with the financing strategy. Boards must convert their financing strategy into specific, measurable limits such as the maximum level of refinancing concentration each year, the acceptable proportion of fixed to floating rate debt, the minimum interest or fixed-charge cover, the minimum amount of committed liquidity, restrictions on unsecured or foreign-currency funding, and the thresholds for investor or sector concentration. These limits should be forward-looking and based on the projected increase in projects under the Vision 2030 plan rather than being determined solely from historical ratios.

The risk-appetite framework should also define exception-approval authorities and escalation requirements. If management can breach or override approved limits without documented justification, independent challenge, and appropriate approval, the framework becomes primarily a reporting mechanism rather than an effective governance control.

The second governance mechanism is informed and independent challenge of financing and risk decisions. Evidence from Saudi Arabia concerning financial firms shows that the existence, independence, expertise and level of activity of the risk committee can lead to a reduction in agency costs and contribute to improved performance (Almulhim et al., 2024). In debt governance, the risk committee should not replicate treasury's responsibilities for funding

execution, liquidity management, hedging, and market engagement. Its role is to challenge key assumptions, concentration levels, covenant headroom, and the design and severity of stress scenarios. Internal audit provides independent assurance on whether the governance arrangements, approved controls, data flows, valuation procedures, and escalation protocols are appropriately designed and operating effectively. The OECD's 2025 Saudi profile highlights requirements relating to internal audit units, audit planning and reporting, board training, and audit-committee oversight, reinforcing governance arrangements that are consistent with a clear separation of management, risk oversight, and independent assurance responsibilities (OECD, 2025). The third mechanism involves disclosure and information governance. Debt investors require up-to-date information regarding leverage, maturities, liquidity, covenants, security, project exposure, related-party dependencies, and any significant changes in risk. Improved disclosure reduces the scope for rumors or unsupported assumptions to substitute for reliable information, while strengthening management accountability by requiring risk owners to verify relevant data before publication. With respect to sukuk, disclosure must clearly outline the contractual structure, the underlying assets or activities, the servicing arrangements, the Shari'ah governance, and the distress rights. Thus, risk disclosure is not merely a compliance annex; it is an integral part of pricing efficiency and market resilience.

The fourth mechanism involves market infrastructure and regulatory coordination. The CMA has responsibility for disclosure, issuance, listing, investor access, and market conduct; the Saudi Exchange handles the trading and post-trade infrastructure; SAMA keeps an eye on the banking sector and the overall stability of the system; and NDMC determines the sovereign issuance calendar, the benchmark curve, and the portfolio structure. Although these institutions have distinct mandates, their responsibilities become interdependent when shocks extend across issuers, markets, or the wider financial system. A governance-based debt-market framework should therefore support appropriate information sharing and scenario coordination for system-wide risks. The IFSB highlights structural constraints affecting sukuk-

market liquidity, including a relatively narrow investor base, buy-and-hold behavior, structural differences, and limitations in available liquidity-management tools, reinforcing the importance of continued market development (IFSB, 2024). Regulatory coordination should concentrate on common vulnerabilities rather than on institutional boundaries.

The fifth mechanism is pre-agreed escalation. Effective escalation should occur before covenant breaches, failed issuances, or other severe stress events materialize. Early-warning indicators and predetermined triggers should prompt proportionate responses while viable mitigation options remain available. A light warning could result in monitoring being carried out more frequently or in the pre-funding period being extended. If the situation shows moderate deterioration, discretionary issuance should be reduced, liquidity buffers increased, the maturity structure rebalanced, or lenders and investors engaged. In cases of severe deterioration, available responses may include activating contingency funding, undertaking asset sales or liability-management measures, initiating covenant negotiations, or, where necessary, commencing formal restructuring procedures. With regard to sukuk, resolution planning must be compatible with both the contractual and Shari'ah requirements. Governance quality is therefore reflected not in the absence of reported risk, but in the timeliness, discipline, and accountability with which emerging risks are identified, escalated, and addressed.

VII. PROPOSED GOVERNANCE-BASED FRAMEWORK

Based on the evidence synthesized in this review, a four-layer governance framework is proposed. In the first layer, exposure is established by each issuer or authority recording the debt in terms of instrument, currency, benchmark, reset date, maturity, security, covenant, type of investor, and sukuk structure. The second layer is an integrated risk-assessment layer that translates rate shocks, spread widening, credit migration, rollover constraints, liquidity deterioration, investor outflows, and structural events into estimates of debt service, funding requirements, market value, collateral capacity, and covenant headroom. In the third layer, governance control is exercised by owners

comparing the outputs with their appetite limits and decision thresholds, while risk committees, internal auditors, arrangers, trustees, regulators, and debt-management authorities provide oversight, challenge, or assurance in accordance with their respective mandates. The fourth layer is concerned with mitigation and learning: the necessary actions are carried out, the outcomes are assessed, the assumptions are revised, and any recurring exceptions are fed back into the limits and strategy.

The framework deliberately distinguishes indicators from triggers. Indicators provide information on changing risk conditions, whereas triggers represent predefined thresholds or combinations of conditions that require a governance response. For instance, a wider bid-ask spread is informative, but a persistent combination of widening spreads, declining turnover, and constrained dealer capacity could trigger predefined liquidity responses. Likewise, a maturity concentration can be seen, but if a threshold is reached which combines near-maturities with weak interest coverage and reduced committed liquidity then it should trigger pre-funding or liability management. This separation helps to reduce both alarm fatigue and discretionary delays. The framework also makes use of compound stress tests since individual shocks do not adequately reflect the risks in the debt market. A plausible Saudi compound-stress scenario might combine higher global yields, lower oil prices, wider sovereign and corporate spreads, weaker project cash flows, and reduced foreign investor demand. Reverse stress testing can then identify the combination of conditions under which refinancing capacity or market functioning would breach defined tolerance levels and assess whether existing mitigations would remain effective.

At the market level, the same reasoning connects development policy with resilience. Greater involvement by investors, activities that help to create markets, access to repurchase agreements and hedging facilities, the use of transparent benchmarks, and predictable bond issuances all serve to reduce the likelihood that a single shock will lead to a liquidity spiral. At the level of the issuer, more effective boards, risk committees, internal audit functions, and clear reporting help to lessen information asymmetry and financing mistakes. The framework therefore treats

governance as an enabling mechanism for market resilience, transforming dispersed risk information and institutional responsibilities into timely and accountable decisions. Figures 1 and 2 together with Tables 1 and 2 put this architecture into practice.

7.1 Cross-Risk Interaction and Contagion

A central conclusion of the analysis is that these risks interact nonlinearly and can amplify one another through funding, valuation, and confidence channels. A rate shock may coincide with wider corporate spreads and weaker investor demand while simultaneously increasing the servicing cost of floating-rate debt. A liquidity shock may force asset sales, generate valuation or realized losses, reduce collateral values, and increase perceived credit risk. An external funding shock may increase issuers' reliance on domestic banks, potentially concentrating exposures within institutions that are also significant holders of government and corporate securities. Sukuk structural uncertainty can turn into a problem of market liquidity if investors are unable to evaluate the recovery rights in the event of distress. A governance system which lists each risk individually might therefore appear to have met all its limits while failing to identify the combined route to failure. Compound stress testing should intentionally link the variables that are driven by the same economic factor, and stress-testing assumptions should allow for stronger adverse co-movement among risk factors as market volatility increases.

It is important to focus on concentration since fast market expansion can lead to common exposures appearing before traditional credit indicators fail. The same contractor, project, sector, sponsor, investor group, or bank might be found in several different securities and facilities. The level of risk associated with each individual issue will not show this kind of dependence. For this reason, aggregation should be carried out by ultimate obligor, sponsor, sector, maturity bucket, currency, collateral type, and investor channel. The resulting concentration map becomes a governance tool by identifying where apparently diversified financing depends on common underlying exposures. It also strengthens contingency planning by showing which alternative funding channels are genuinely independent under stress.

7.2 Role Allocation and Accountability

Effective governance requires clear accountability and separation among risk ownership, independent challenge, assurance, and system-level oversight. At the issuer level, the chief financial officer and treasury function are responsible for funding execution, liquidity management, hedging, and investor engagement, while business units remain accountable for the operating and project performance that generates the cash flows supporting debt service. The board approves the financing strategy and risk appetite, while the risk committee provides oversight and challenges over material exposures, concentrations, risk-limit exceptions, and stress-testing assumptions. Internal audit provides independent assurance over the design and operating effectiveness of governance, risk-management, and control processes, including the reliability of risk data and adherence to approved policies. Arrangers, trustees, legal advisers, Shari'ah boards, and rating agencies perform distinct instrument-level roles relating to structuring, rights, compliance, disclosure, or credit assessment, but these roles do not replace issuer accountability. At the market level, the Saudi Exchange and market makers support trading quality and liquidity; CMA oversees disclosure and market conduct; SAMA monitors the transmission of shocks through the financial system; and NDMC manages the

sovereign portfolio and issuance strategy. Table 2 assigns the indicators and the responsibilities for escalation to these different parties so that material warning signals are assigned to a clearly accountable owner and escalation authority rather than remaining as shared information without defined action.

Effective accountability also requires forward-looking and time-bound governance. Instead of being given a historical compliance package, risk committees should be provided with a forward-looking maturity and liquidity horizon. Material treasury decisions that significantly alter duration, currency exposure, security or collateral structure, or investor concentration should be supported by documented rationale and subject to appropriate post-implementation review. Any substantial revisions to forecasts should automatically cause the covenant and liquidity stress tests to be updated. Approved exceptions should be time-bound rather than remain open indefinitely, and recurring exceptions should trigger reassessment of the underlying risk-appetite limit or the effectiveness of its implementation. In this way, governance evolves from periodic oversight into a continuous governance cycle in which decisions, supporting evidence, actions, and outcomes remain traceable.

Table 2. Governance responsibilities and escalation logic.

Actor / owner	Primary responsibility	Indicator / escalation condition	Priority response
Board / risk committee	Approve appetite; challenge leverage and stress	Limit breach; repeated exception; weak headroom	Rebalance funding; restrict risk; require remediation
CFO / treasury	Execute funding, liquidity and hedging strategy	Maturity concentration; cost spike; facility draw	Pre-fund; hedge; diversify tenor/investors; engage lenders
Risk Management / CRO	Independent risk oversight, aggregation, monitoring, and challenge	Limit breach; concentration increase; model weakness; deteriorating risk indicators	Challenge assumptions; escalate exposures; recommend mitigation; monitor remediation
Internal Audit	Independent assurance over governance, risk	Control failure; unreliable data;	Report assurance findings; escalate significant control weaknesses;

Actor / owner	Primary responsibility	Indicator / escalation condition	Priority response
	management, controls, and risk-reporting integrity	governance weakness; ineffective escalation	recommend corrective action; follow up remediation
Arranger / trustee / Shari'ah oversight	Instrument design, disclosure, investor rights	Structural ambiguity; covenant or compliance event	Clarify terms; investor communication; restructuring path
Saudi Exchange / market makers	Trading quality, price discovery, liquidity support	Wider spreads; lower turnover; dealer constraints	Support market-making activity; strengthen price discovery; facilitate liquidity-enhancing market mechanisms
CMA	Issuance/listing rules, disclosure, market conduct	Persistent illiquidity; disclosure gaps; conduct risk	Targeted supervisory or regulatory response; enhanced disclosure; market-development measures
SAMA	Financial-system stability and banking transmission	Funding pressure; concentrated credit; liquidity spillover	Supervisory response; financial-stability coordination; appropriate system-level liquidity measures
NDMC / fiscal coordination	Sovereign maturity, issuance and benchmark curve	Crowded calendar; rollover concentration; global-window risk	Pre-funding; tenor management; domestic/international mix

7.3 Indicator-to-Action Design

The framework is built on the principle that risk indicators should be linked to predefined escalation and response mechanisms rather than merely reported through dashboards. A practical dashboard should bring together slow-moving solvency indicators with fast-moving market signals. Solvency indicators include net leverage, interest coverage, free cash flow, debt-service capacity, secured-debt ratios, and covenant headroom. Refinancing indicators include debt due within twelve, twenty-four, and thirty-six months; committed facilities; pre-funding coverage; and the weighted maturity of the portfolio. Market indicators should include secondary spreads, bid-ask ranges, turnover, new-issue concessions, dealer inventories, foreign participation, and investor concentration. Sukuk indicators add asset performance, servicing, structural compliance, and Shari'ah review measures. No single measure should dominate the assessment; instead, decisions should be informed by combinations of indicators that capture different dimensions of risk. A traffic-light structure can provide a practical mechanism for translating indicator movements into graduated levels of

governance response. Green indicates that risk conditions remain within approved appetite and operating limits, with routine monitoring continuing. Amber indicates deterioration in one or more early-warning indicators and should prompt enhanced monitoring, defined escalation, and proportionate management action. Red indicates that a predefined trigger or tolerance threshold has been breached, requiring immediate escalation and implementation of the relevant contingency or mitigation response. Thresholds should be calibrated with reference to approved risk appetite, historical experience, and forward-looking stress analysis, and should be periodically reassessed as market conditions and structures evolve.

Response design must ensure that options remain available. Taking early action is worthwhile because funding options can disappear nonlinearly as confidence declines. Measures such as pre-funding before a maturity wall, extending bank commitments, diversifying tenor, repurchasing illiquid lines, reopening benchmark issues, arranging hedges, improving collateral documentation, or

communicating openly with investors can often be undertaken at lower cost before stress becomes acute. Once liquidity becomes scarce, however, the same actions may become costly or unavailable. The framework therefore gives priority to reversible early interventions and reserves more disruptive measures for severe situations. Each trigger should identify the responsible owner, state the deadline for action, specify the evidence required to close the alert, and indicate the authority required to override the

recommended response. Management judgement remains necessary; however, any override of predefined triggers or responses should be documented, justified, appropriately approved, and reported through the relevant governance channel. This approach combines systematic early-warning discipline with sufficient flexibility for informed judgement under changing market conditions.

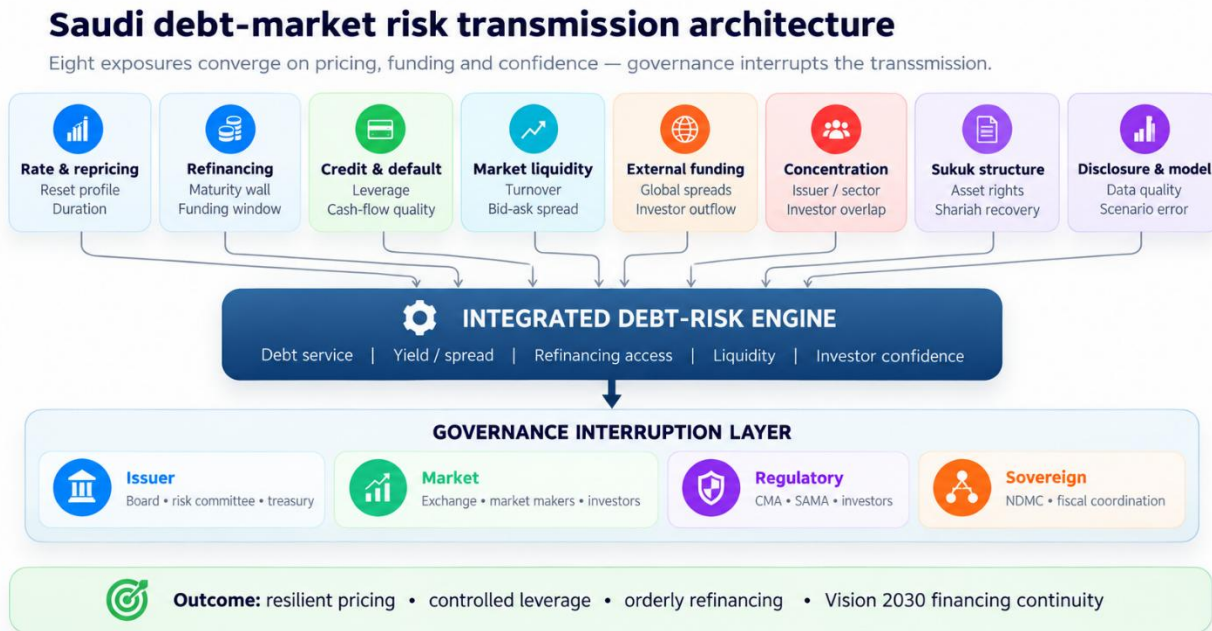


Figure 2. Governance risk assessment and mitigation cycle.

VIII. DISCUSSION: ALIGNMENT WITH VISION 2030

The framework proposed in this paper aligns with Vision 2030 financial-sector objectives by linking debt-market development with financial resilience. A larger debt market is not necessarily a stronger debt market. Its resilience depends on whether issuers can maintain access to funding under stress, whether investors can rely on timely and credible information, and whether governance institutions can respond before emerging vulnerabilities develop into broader financial stress. This is particularly relevant to Vision 2030, given the scale and duration of investment requirements and the corresponding need for

diversified long-term financing channels. Excessive reliance on bank lending could increase funding and concentration pressures within the banking system, reinforcing the importance of diversified capital-market financing. International debt markets can provide additional capacity, but they also expose Saudi issuers to global financial conditions. A deeper domestic debt market can therefore strengthen financing diversification and provide an additional source of resilience during periods of external market stress. Research into Saudi local-currency bonds indicates that macroeconomic stability, financial development, and institutional quality contribute to market growth, while financial-risk stability has an impact on the development of sukuk and government

bonds (Boukhatem, 2021, 2022, 2024). The policy conclusion is that debt-market depth and risk discipline should develop together.

The framework also clarifies the relationship between sovereign and corporate resilience. An improved government curve can support corporate price discovery, while a robust corporate market can broaden financing diversification. Stress may nevertheless be transmitted between the two through common investors, banks, and global funding conditions. The governance response is integrated visibility without abandoning institutional accountability. Although SAMA's stability mandate, the CMA's market-development mandate, the NDMC's debt-management mandate, and the responsibilities of issuer boards remain distinct, their risk signals should be sufficiently comparable to support coordinated judgement. The first policy implication is that market size should be assessed alongside measures of liquidity, diversification, refinancing resilience, disclosure quality, and investor participation. The second implication is that disclosure is a risk-control mechanism rather than simply a compliance requirement. The third implication is that regulatory and institutional coordination becomes increasingly important as the debt market expands and financial exposures become more interconnected. The fourth implication is that stress testing should extend beyond individual institutions to capture common exposures and transmission channels across issuers, banks, investors, and markets. The policy objective should therefore be to support continued debt-market development while strengthening the capacity of issuers, investors, and institutions to identify, absorb, and respond to financial stress.

8.1 Implementation Priorities

The implementation process should start with data harmonization, not with the establishment of new committees. Issuers should have a single, reconciled inventory of their debt that links together the legal terms, treasury data, accounting balances, covenants, hedges, information about investors, and the structural features of sukuk. Regulators and market operators should use consistent definitions for outstanding size, turnover, investor types and liquidity measures so that system signals can be compared over time. The next thing to focus on should be scenario governance: the

boards should approve a small number of severe but plausible compound scenarios, while management is left with the flexibility to add specific event tests. The last priority must be escalation discipline; warning thresholds should be reviewed following market shocks and financing exercises, in order to build up institutional memory rather than having to relearn the same vulnerabilities each time.

8.2 Performance Measurement

It is also necessary to separate market growth from market resilience when measuring performance. Although issuance volume, the amount of outstanding stock, and the number of listings are important indicators of development, they should be supplemented by data on turnover, bid-ask spreads, investor diversity, refinancing results, and the ability to recover from stress. This balanced scorecard would lessen the incentive to regard issuance as proof of maturity and would at the same time make governance outcomes visible in that successful risk management should be seen not only in compliance records but also in stable access, transparent disclosure, stable pricing, and orderly adjustments when conditions worsen.

IX. LIMITATIONS AND FUTURE RESEARCH

This study has several limitations. First, as an integrative review, it relies on secondary evidence and does not empirically validate the proposed framework using issuer-level or transaction-level data. Second, some of the evidence is drawn from international studies and may not be fully transferable to the Saudi context because of differences in market structure, regulation, institutional arrangements, and financing practices. Third, Saudi debt markets and their regulatory environment continue to evolve, meaning that institutional arrangements, market practices, and risk characteristics may change beyond the 2020–2025 review period. Future research should empirically test the proposed framework using issuer-, instrument-, and market-level data. Future studies should also examine which indicators and combinations of indicators provide the strongest early-warning signals and how trigger thresholds can be calibrated across different market conditions. Further research is also needed on sukuk-specific structural, legal, disclosure, and resolution risks, including how Shari'ah governance interacts with broader financial-risk

governance. Finally, future research should examine transmission and contagion channels across sovereign, bank, and corporate balance sheets, particularly under compound stress scenarios. Such empirical validation would help determine the predictive value, calibration requirements, and practical applicability of the proposed governance framework.

X. CONCLUSION

Saudi Arabia's debt market is assuming an increasingly important role in financing economic diversification and long-term investment. This expanding role creates significant financing opportunities while also increasing exposure to interconnected financial risks that can transmit across issuers, investors, intermediaries, and markets. The review shows that interest-rate, refinancing, credit, liquidity, external-funding, concentration, sukuk-specific, disclosure, data, and model risks are closely interconnected and can amplify one another under stressed conditions. The principal contribution of this paper is a governance-based framework that integrates risk identification, ownership, leading indicators, escalation triggers, and mitigation responses within a coherent decision-making structure.

The framework emphasizes that effective financial-risk governance extends beyond risk measurement to encompass clear ownership, independent challenge, assurance, escalation, and timely action. An approach based on governance connects exposure data with the organization's risk appetite, independent challenge, market infrastructure, and previously agreed escalation procedures. Boards and risk committees retain decision-making and oversight responsibilities; internal audit provides independent assurance over governance, risk management, controls, and information integrity; market participants influence liquidity and price discovery; and the CMA, SAMA, NDMC, the Saudi Exchange, and national financial-sector programs contribute within their respective mandates to system resilience. The practical objective is to strengthen financing resilience by preserving reliable access to debt funding under changing market conditions while ensuring that leverage remains transparent, serviceable, and responsive to early-warning signals. In this respect, stronger debt-market governance can support the financial-sector objectives

associated with Vision 2030 by enabling financing diversification while strengthening market resilience. Ultimately, the resilience of Saudi debt markets will depend not only on their capacity to expand, but also on the ability of governance institutions to identify emerging vulnerabilities, assign accountability, and act before financial stress becomes materially disruptive.

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