

III. Diagnosing Financial Ecosystems: Making Systemic Vulnerabilities Legible to Governance

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Contents

Preface	4
Executive Summary	5
1. Why Diagnostics Matter Once Governance Is Explicit	8
1.1 Governance Without Diagnostics Is Blind	8
1.2 Diagnostics as a Consequence of Stewardship	8
1.3 Why Data Abundance Does Not Produce Legibility	9
1.4 Why Vulnerabilities Remain Invisible Without Structure	9
1.5 Diagnostics as an Input to Governance, Not a Substitute	10
1.6 The Ordering Problem	10
1.7 Section 1 Takeaway	10
2. Diagnostics as a System-Level Function.....	11
2.1 From Measurement to Interpretation.....	11
2.2 Signals, Symptoms, and Structural Causes	11
2.3 Diagnostics in Complex Adaptive Financial Systems	12
2.4 Boundary and Interface Problems.....	12
2.5 Diagnostics as a Collective Interpretive Function	13
2.6 Implications for the Remainder of the Report.....	13
2.7 Section 2 Takeaway	14
3. Mapping Vulnerabilities Across the Five-Layer Ecosystem.....	14
3.1 Information Layer: Distorted Signals and Interpretive Fragility	14
3.2 Infrastructure Layer: Hidden Concentration and Single Points of Failure	15
3.3 Innovation Layer: Endogenous Risk Creation	15
3.4 Integration Layer: Contagion Through Connectivity	15
3.5 Governance Layer: Coordination and Accountability Gaps	16
3.6 Why Layer-Specific Diagnostics Are Insufficient.....	16
3.7 Vulnerability Migration Over Time	16
3.8 Section 3 Takeaway	17
4. Propagation, Amplification, and Non-Linearities	17
4.1 Vulnerability Becomes Systemic Through Propagation.....	17
4.2 Endogenous Amplification Mechanisms	18



- 4.3 Why Stability Can Mask Fragility..... 18
- 4.4 Non-Linearities and Threshold Effects..... 18
- 4.5 Interaction Across Layers as a Source of Non-Linearity 19
- 4.6 Implications for Diagnostic Practice..... 19
- 4.7 Section 4 Takeaway 19
- 5. Diagnostics, Governance, and Decision-Making 20
 - 5.1 Diagnostics as a Guide for Attention 20
 - 5.2 Interpretation as a Collective Governance Function 20
 - 5.3 Escalation and Prioritization Under Uncertainty 21
 - 5.4 Diagnostics and Accountability 21
 - 5.5 Avoiding Technocratic Substitution 21
 - 5.6 Preparing Governance Without Acting Prematurely 22
 - 5.7 Section 5 Takeaway 22
- 6. Limits of Diagnostics and the Role of Judgment 22
 - 6.1 Why Diagnostics Are Inherently Incomplete..... 22
 - 6.2 Model Risk Without Models 23
 - 6.3 Uncertainty, Ambiguity, and the Limits of Foresight 23
 - 6.4 Judgment as an Integral Component of Diagnostics 23
 - 6.5 Institutionalizing Judgment Without Personalizing It 24
 - 6.6 When Diagnostics Fail—and Why That Is Inevitable..... 24
 - 6.7 Section 6 Takeaway 24
- 7. From Diagnostics to Stress Testing 25
 - 7.1 Why Stress Testing Is Downstream of Diagnostics 25
 - 7.2 Diagnostics Discipline Stress Testing Without Pre-Empting It 25
 - 7.3 From Vulnerability to Conditional Exploration 25
 - 7.4 Avoiding Premature Quantification..... 26
 - 7.5 A Feedback Relationship, Not a Merger 26
 - 7.6 Section 7 Takeaway 26
- 8. Conclusion: Making Systemic Vulnerabilities Legible..... 27
- 9. References..... 28



Preface

Modern financial systems are increasingly complex, interconnected, and adaptive. Finance is no longer a neutral layer operating in the background of economic activity. It shapes incentives, reallocates risk, conditions investment decisions, and transmits shocks across sectors, borders, and time. Preserving financial stability therefore requires more than monitoring individual institutions or enforcing static rules. It requires **system-level stewardship under uncertainty**.

The preceding volumes in the **Financial Ecosystem Series** established the foundations of such stewardship. *Designing Financial Ecosystems* articulated a five-layer architecture for financial systems, clarified the non-neutrality of finance, and made explicit the irreducible trade-offs embedded in real-world system design. *Governing Financial Ecosystems* demonstrated why, once these trade-offs are acknowledged and authority is necessarily fragmented, governance becomes unavoidable. Governance was framed not as control, but as stewardship: the ongoing coordination of decentralized authority in a system that no single institution governs.

This volume begins where governance reaches its limits.

Stewardship presupposes visibility. To govern a complex financial ecosystem coherently, authorities must be able to form a shared understanding of where vulnerabilities are emerging, how they interact, and why certain tensions warrant attention before others. Yet such legibility does not arise automatically from markets, institutions, or data. In complex systems, vulnerabilities often accumulate quietly, migrate across layers, and remain obscured precisely because individual components appear sound in isolation.

Diagnosing Financial Ecosystems addresses this gap.

This volume reframes diagnostics as a **system-level interpretive function**. Diagnostics are treated neither as a technical toolkit nor as a predictive exercise, but as the means through which emerging fragility becomes intelligible to governance. Their role is to organize fragmented signals into coherent patterns, to distinguish symptoms from underlying structural vulnerabilities, and to situate observed developments within the architecture of the financial ecosystem as a whole.

The purpose of this report is not to measure risk, forecast crises, or prescribe action. Diagnostics do not decide, act, or test resilience. They inform attention and judgment, enabling governance to operate with awareness rather than assumption. In doing so, diagnostics prepare the ground for subsequent exploration under strain, without pre-empting it.

This is therefore a deliberately bounded contribution. Diagnostics cannot eliminate uncertainty, resolve trade-offs, or substitute for judgment. They operate upstream of stress testing and downstream of governance, occupying a distinct and necessary place in the architecture of financial ecosystem stewardship.

By clarifying what diagnostics are, why they matter, and where their limits lie, this volume establishes the conditions under which systemic vulnerability can be made legible. Understanding how such vulnerabilities behave once the system is strained is the task of the volume that follows.

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Executive Summary

Modern financial systems are increasingly complex, interconnected, and adaptive. Finance is no longer neutral. It shapes incentives, reallocates risk, and transmits shocks across institutions, sectors, and borders. As a result, financial stability can no longer be preserved through entity-level oversight or static rules alone. It requires **system-level stewardship under uncertainty**.

This report addresses a single, foundational question:

How do vulnerabilities in a complex financial ecosystem become legible to governance before stress materializes?

Why Diagnostics Matter

Once governance is explicit, diagnostics become unavoidable.

Governance, as developed in the previous volume, is the function through which fragmented authority is coordinated over time. But governance presupposes legibility. Without a shared understanding of where vulnerabilities are emerging, how they interact, and why certain tensions matter more than others, stewardship operates in partial darkness.

Diagnostics arise not from data availability or analytical ambition, but from **responsibility**. A system that is actively stewarded requires a way of seeing itself that goes beyond isolated indicators, institutional silos, or market signals.

What Diagnostics Are—and Are Not

This volume defines diagnostics as a **system-level interpretive function**.

Diagnostics are not a toolkit, a dashboard, or a forecasting exercise. They do not measure risk precisely, predict crises, or prescribe interventions. Their role is to organize fragmented signals into coherent patterns, to distinguish symptoms from underlying structural vulnerabilities, and to render systemic fragility intelligible to governance.

Measurement may inform diagnostics, but diagnostics are not reducible to measurement. In complex financial ecosystems, precision without interpretation produces false confidence rather than clarity.

Where Systemic Vulnerabilities Come From

Systemic vulnerability is **architectural and endogenous**, not episodic.

Fragility accumulates through interaction across the five layers of the financial ecosystem:

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- **Information**, where distorted signals and convergent narratives can mask growing uncertainty;
- **Infrastructure**, where efficiency and scale create hidden concentration and dependence;
- **Innovation**, where successful adaptation generates endogenous risk;
- **Integration**, where connectivity enables rapid transmission and synchronization;
- **Governance**, where fragmented authority and delayed coordination allow vulnerabilities to migrate unaddressed.

Each layer may appear robust in isolation. Systemic fragility emerges from **how vulnerabilities interact, migrate, and reinforce one another over time.**

Why Fragility Is Hard to See

Vulnerabilities rarely announce themselves directly. They often grow during periods of apparent stability, when leverage, convergence, and dependence appear rational and manageable.

Financial ecosystems are non-linear. Small changes can have disproportionate effects once thresholds are crossed. Stability can mask brittleness. Indicators can remain benign while resilience erodes.

Diagnostics address this problem by focusing not on outcomes, but on **structure, interaction, and drift**—making fragility legible before it becomes visible as stress.

Diagnostics and Governance

Diagnostics do not stabilize systems on their own. They inform governance.

Their primary function is to **discipline attention**: to help governance bodies decide what deserves sustained concern, what requires escalation, and what can be monitored. Diagnostics structure collective interpretation across fragmented authority, allowing disagreement to be treated as information rather than failure.

They also anchor accountability. When vulnerabilities are articulated clearly and shared across institutions, inaction becomes a conscious choice rather than an inadvertent omission.

Limits and the Role of Judgment

Diagnostics are inherently incomplete. Uncertainty, adaptation, and non-linearity impose hard limits on foresight. No diagnostic framework can eliminate surprise or determine outcomes.



Judgment therefore remains irreducible. Diagnostics inform judgment; they do not replace it. Responsible stewardship requires humility, contestation, and the institutionalization of interpretation under uncertainty.

From Diagnostics to Stress Testing

This volume concludes deliberately without closure.

Diagnostics establish legibility. They clarify **what matters and why**. Understanding how those vulnerabilities behave once the system is strained requires a different function.

That task belongs to **stress testing**.

The next volume in the series will explore how diagnosed vulnerabilities propagate, amplify, and interact under strain—without illusion, false precision, or claims of prediction.

Bottom Line

Diagnostics are a **public good**. They make systemic vulnerability visible, governable, and discussable across fragmented authority. Without diagnostics, governance is blind. With diagnostics, governance gains the capacity to anticipate, prioritize, and prepare—without claiming foresight.

Seeing clearly does not prevent crises.

But without legibility, stewardship cannot even begin.



1. Why Diagnostics Matter Once Governance Is Explicit

1.1 Governance Without Diagnostics Is Blind

Once governance is made explicit, diagnostics become unavoidable.

Governance, as established in the previous volume, is a function of stewardship exercised under conditions of fragmentation, uncertainty, and irreducible trade-offs. It operates by aligning decentralized authority, sequencing decisions, and managing tension over time. Yet governance cannot perform these functions coherently without legibility into the evolving condition of the system it stewards.

Absent diagnostics, governance relies on intuition, institutional memory, and episodic signals—none of which are sufficient in complex financial ecosystems. Fragmented mandates imply fragmented perspectives. Each authority observes a partial system, interprets developments through its own objectives, and acts within bounded responsibility. Without a shared interpretive frame, system-wide vulnerabilities remain diffuse, contested, or invisible.

Governance without diagnostics is therefore not inactive—but it is blind. It can preserve continuity, but it cannot reliably prioritize, anticipate, or act pre-emptively. The result is not governance failure in the narrow sense, but governance constrained by lack of legibility.

1.2 Diagnostics as a Consequence of Stewardship

Diagnostics do not arise from analytical ambition or data availability. They arise from responsibility.

Once governance is understood as stewardship rather than control, authorities implicitly accept responsibility for system-level coherence over time. That responsibility, in turn, creates a demand for visibility into where fragility is accumulating, how vulnerabilities interact, and why certain tensions warrant attention before others.

Diagnostics are therefore not an optional analytical add-on. They are a consequence of stewardship. A system that is actively stewarded requires a way of seeing itself that goes beyond entity-level supervision or market signals. The more fragmented authority becomes, the greater the need for shared interpretation.

This logic reverses a common misconception. Diagnostics are often treated as technical inputs that enable governance. In fact, governance defines the need for diagnostics. Without stewardship, diagnostics accumulate without consequence. With stewardship, diagnostics become indispensable.



1.3 Why Data Abundance Does Not Produce Legibility

Modern financial systems generate unprecedented volumes of data. Indicators proliferate, dashboards expand, and analytical sophistication increases. Yet crises repeatedly reveal that vulnerability was visible only in hindsight.

This is not a paradox. It reflects a category error.

Data abundance does not produce legibility because systemic fragility is not contained in individual signals. It emerges from patterns, interactions, and structural drift across the ecosystem. Indicators can reveal movement, but not meaning. They show activity, not coherence.

In the absence of diagnostics as an interpretive function, more data can reduce clarity rather than enhance it. Signals multiply, interpretations diverge, and governance attention fragments. What appears as analytical progress can, in practice, deepen uncertainty and delay prioritization.

Diagnostics address this problem not by adding information, but by organizing it. Their role is to reduce dimensionality, not to increase precision—to clarify what matters, not to measure everything.

1.4 Why Vulnerabilities Remain Invisible Without Structure

Systemic vulnerabilities rarely announce themselves directly. They accumulate quietly, often during periods of apparent stability, and frequently outside the scope of any single mandate.

Several structural features contribute to this invisibility:

- vulnerabilities arise from interaction rather than components,
- risks migrate across layers and jurisdictions,
- incentives encourage local optimization over system coherence,
- and governance legitimacy often depends on the absence of visible stress.

As a result, fragility can grow while surface indicators remain benign. Each part of the system appears sound in isolation. It is only through a system-level lens that accumulating tension becomes visible.

Diagnostics provide that lens. By anchoring interpretation in ecosystem structure rather than institutional boundaries, diagnostics make it possible to see vulnerabilities that would otherwise remain dispersed and unowned.



1.5 Diagnostics as an Input to Governance, Not a Substitute

Diagnostics do not stabilize financial systems. They do not resolve trade-offs, eliminate uncertainty, or dictate action. Their role is more fundamental and more limited: they inform attention and judgment.

Treating diagnostics as a substitute for governance—as objective arbiters that deliver clear signals or thresholds—creates false precision and misplaced confidence. Governance decisions remain inherently political, contested, and judgment-laden. Diagnostics do not remove this burden; they make it more tractable.

When properly positioned, diagnostics support governance by:

- clarifying where vulnerabilities are structural rather than episodic,
- distinguishing symptoms from underlying fragility,
- and enabling collective interpretation across fragmented authority.

Their value lies not in prediction, but in orientation.

1.6 The Ordering Problem

The relationship between governance and diagnostics is therefore one of ordering.

- Design defines the structure within which finance operates.
- Governance stewards that structure over time.
- Diagnostics make emerging fragility legible to governance.

Reversing this order—by treating diagnostics as autonomous or prior to stewardship—undermines their effectiveness. Diagnostics become either technocratic exercises detached from decision-making or early-warning rituals without ownership.

Once governance is explicit, diagnostics are no longer optional. They are the condition under which stewardship can move from reactive continuity to anticipatory coherence.

1.7 Section 1 Takeaway

Governance in a non-neutral financial ecosystem requires legibility. Without diagnostics, stewardship operates in partial darkness—capable of maintaining continuity, but constrained in its ability to prioritize, anticipate, and act pre-emptively.



Diagnostics arise not from data or technique, but from responsibility. They are the means through which systemic vulnerability becomes visible to governance before stress materializes. Recognizing this role is the necessary starting point for treating diagnostics as a distinct and indispensable function of financial ecosystem stewardship.

2. Diagnostics as a System-Level Function

2.1 From Measurement to Interpretation

Diagnostics, as understood in this volume, are not an extension of measurement. They are an act of interpretation.

Measurement answers the question of *what is observed*. Diagnostics address a different and more demanding task: *what those observations imply for the coherence and fragility of the financial ecosystem as a whole*. In complex systems, these two questions cannot be collapsed into one another. More precise measurement does not automatically yield better diagnosis.

System-level diagnostics therefore operate at a higher level of abstraction. They organize disparate observations into patterns, relate those patterns to underlying structure, and assess their relevance for governance. Their output is not a number or a signal, but an interpretive judgment about where vulnerability is accumulating and why it matters.

This distinction is not semantic. Treating diagnostics as measurement invites false expectations of objectivity, precision, and automation. Treating diagnostics as interpretation acknowledges uncertainty, contestation, and the irreducible role of judgment.

2.2 Signals, Symptoms, and Structural Causes

A central function of diagnostics is to distinguish among **signals**, **symptoms**, and **structural causes**.

Signals are observable developments: changes in prices, volumes, behaviors, or institutional conditions. They are often noisy, incomplete, and ambiguous. On their own, they do not constitute diagnosis.

Symptoms are recurring patterns that suggest underlying strain. They indicate that something may be misaligned, but they do not explain why. Symptoms can persist for long periods without triggering action, particularly when they remain within historically familiar ranges.

Structural causes reside deeper. They reflect features of system design, incentives, interactions, and governance arrangements that generate vulnerability over time. These causes



are rarely visible directly. They must be inferred through interpretation of how signals and symptoms relate to ecosystem structure.

Diagnostics are the process through which governance moves from observation to understanding—without assuming linear causality or complete knowledge.

2.3 Diagnostics in Complex Adaptive Financial Systems

Financial ecosystems are complex and adaptive. Participants respond to incentives, rules, and expectations. Innovations alter behavior. Governance actions feed back into market dynamics. As a result, vulnerabilities do not arise from static conditions but from evolving interaction.

In such systems, diagnostics cannot rely on equilibrium benchmarks or stable reference points. Fragility often emerges during periods of apparent stability, when incentives encourage convergence, concentration, or complacency. Conversely, visible volatility does not always indicate structural weakness.

System-level diagnostics therefore focus on **configuration**, not outcomes. They ask how the current arrangement of information, infrastructure, innovation, integration, and governance might behave if conditions were to change—not to predict those changes, but to understand exposure.

This perspective shifts attention away from exceptional events and toward ordinary functioning under altered constraints. Diagnostics examine how normal behavior can become destabilizing when structure and interaction drift.

2.4 Boundary and Interface Problems

A defining challenge for diagnostics is the problem of boundaries.

Traditional approaches implicitly assume that risks are contained within institutions, sectors, or markets. Financial ecosystems do not respect these boundaries. Vulnerabilities migrate across layers, mandates, and jurisdictions. They often accumulate precisely where responsibility is fragmented and visibility is lowest.

System-level diagnostics therefore concentrate on **interfaces**:

- between markets and infrastructures,
- between innovation and regulation,
- between domestic systems and cross-border integration,
- and between governance mandates.



These interfaces are not merely transmission channels. They are sites where incentives, interpretations, and responsibilities intersect. Misalignment at interfaces can allow vulnerabilities to grow without clear ownership or escalation.

Recognizing boundary problems is essential to understanding why vulnerabilities persist despite active oversight within individual domains.

2.5 Diagnostics as a Collective Interpretive Function

Because no single institution observes the full ecosystem, diagnostics cannot be centralized or automated. They are inherently collective.

Effective diagnostics depend on shared frameworks that allow diverse authorities to interpret developments in relation to a common structure. This does not require consensus or uniform views. Disagreement is expected and informative. What matters is that disagreement occurs within a shared interpretive space rather than across disconnected narratives.

Diagnostics therefore shape not only what governance sees, but how governance talks to itself. They provide a language for articulating concern, contesting interpretation, and escalating attention without prematurely prescribing action.

In this sense, diagnostics are institutional as much as analytical. Their effectiveness depends on governance's capacity to sustain interpretation as a continuous function rather than an episodic exercise.

2.6 Implications for the Remainder of the Report

Treating diagnostics as a system-level function has three implications that guide the remainder of this volume.

First, vulnerabilities must be examined in relation to **ecosystem structure**, not isolated indicators.

Second, diagnostics must focus on **interaction and drift**, not discrete events.

Third, interpretation and judgment must be treated as **constitutive elements**, not residual shortcomings.

With this foundation in place, the next section turns to the substance of diagnosis: how vulnerabilities arise, accumulate, and migrate across the five layers of the financial ecosystem.



2.7 Section 2 Takeaway

Diagnostics are not a technical apparatus layered onto governance. They are the system-level function through which governance makes sense of a complex, adaptive, and fragmented financial ecosystem.

By distinguishing signals from symptoms and structural causes, focusing on interaction rather than components, and recognizing boundaries as sites of vulnerability, diagnostics transform observation into legibility. They do not reduce uncertainty, but they render it governable.

3. Mapping Vulnerabilities Across the Five-Layer Ecosystem

System-level diagnostics require a structured way of locating vulnerability. In the Financial Ecosystem Framework, that structure is provided by the **five interacting layers: Information, Infrastructure, Innovation, Integration, and Governance**. Each layer hosts distinct sources of vulnerability. None, however, is sufficient on its own to explain systemic fragility.

This section maps how vulnerabilities arise within each layer, why they often remain invisible in isolation, and how interaction across layers allows fragility to accumulate and migrate over time. The objective is not classification for its own sake, but **legibility**: understanding where governance attention should be directed and why.

3.1 Information Layer: Distorted Signals and Interpretive Fragility

The Information layer encompasses prices, disclosures, data, expectations, and narratives through which the financial system observes itself. Vulnerability at this layer rarely stems from absence of information. It more often arises from **distortion, homogeneity, and misinterpretation**.

Signals can become misleading when they reflect short-term stability rather than underlying uncertainty. Risk premia may compress as leverage and concentration increase. Disclosures may expand while relevance declines. Narratives may converge, reinforcing shared assumptions and discouraging dissenting interpretations.

These vulnerabilities remain difficult to diagnose because informational coherence is often mistaken for informational quality. When signals align too neatly, governance may infer robustness where fragility is growing. Diagnostics must therefore attend not only to what information shows, but to **how it is produced, interpreted, and shared**.



3.2 Infrastructure Layer: Hidden Concentration and Single Points of Failure

The Infrastructure layer includes payment systems, clearing and settlement mechanisms, data platforms, and operational networks that enable financial activity. Vulnerabilities here are typically **structural and latent**, not cyclical.

Efficiency, standardization, and scale often produce concentration. Over time, critical functions may depend on a limited number of infrastructures, technologies, or providers. These dependencies are rarely problematic during normal operation. Their significance emerges only when disruption occurs or when stress propagates across interconnected systems.

Because infrastructure is designed to be reliable, its vulnerabilities are easy to overlook. Diagnostics must therefore focus on **dependency and substitutability**, not on observed performance. Fragility in this layer lies in the system's reliance on continuity that cannot be guaranteed indefinitely.

3.3 Innovation Layer: Endogenous Risk Creation

The Innovation layer encompasses new instruments, technologies, business models, and practices. Its defining diagnostic challenge is that vulnerability is often created **endogenously**, as a byproduct of successful adaptation.

Innovation can reallocate risk in opaque ways, alter incentives, and exploit gaps between existing governance arrangements and emerging practices. Early benefits tend to dominate attention, while systemic implications remain diffuse. As adoption scales, exposures converge, and innovations that were initially peripheral become systemically relevant.

Vulnerabilities in this layer remain invisible because innovation is typically assessed locally—by firm, product, or market—rather than systemically. Diagnostics must therefore ask not whether innovation is beneficial in isolation, but how it reshapes interaction across layers and over time.

3.4 Integration Layer: Contagion Through Connectivity

The Integration layer captures interconnections across institutions, markets, sectors, and borders, as well as linkages between finance and the real economy. Its vulnerabilities arise from **connectivity itself**.

Integration enables diversification, liquidity, and scale. It also increases the speed and reach of transmission. Shocks need not be large to become systemic when balance sheets, funding structures, and expectations are tightly linked. Correlations that appear low in tranquil periods can rise abruptly when conditions change.



These vulnerabilities are often underestimated because integration is typically evaluated in aggregate terms. Diagnostics must instead attend to **how connections operate**, which nodes are critical, and where synchronization may overwhelm buffering capacity.

3.5 Governance Layer: Coordination and Accountability Gaps

The Governance layer shapes how all other layers interact. Its vulnerabilities arise not from the absence of institutions or rules, but from **misalignment, fragmentation, and delayed collective interpretation**.

Authority is distributed across mandates, jurisdictions, and time horizons. When coordination mechanisms are weak or informal, vulnerabilities can accumulate in the spaces between responsibilities. Governance drift—where arrangements lag ecosystem evolution—can allow fragility to grow even in systems with active oversight.

These vulnerabilities are difficult to diagnose because they are institutional rather than financial. They become visible only when coordination fails or when legitimacy constraints delay action. Diagnostics must therefore treat governance itself as a source of vulnerability, not merely as a response mechanism.

3.6 Why Layer-Specific Diagnostics Are Insufficient

Each layer can appear robust when assessed independently. Informational signals may be stable. Infrastructure may function reliably. Innovation may enhance efficiency. Integration may support growth. Governance may appear active within mandates.

Systemic fragility emerges when **vulnerabilities interact**.

Distorted information can accelerate risky innovation. Infrastructure concentration can amplify integration-driven transmission. Governance gaps can allow risks to migrate unchecked across layers. These interactions are where fragility accumulates—and where diagnostics must focus. Layer-specific diagnostics miss these dynamics because they treat vulnerability as localized rather than relational. Ecosystem-level diagnostics restore legibility by making interaction explicit.

3.7 Vulnerability Migration Over Time

A defining feature of financial ecosystems is that vulnerability is **mobile**. It does not remain confined to the layer in which it originates.

Innovations reshape information and infrastructure. Integration alters the systemic relevance of local weaknesses. Governance responses can shift risk rather than resolve it. Over time, fragility migrates across layers, often becoming harder to trace to its source.



Diagnostics must therefore be dynamic. Their task is not to catalogue static risks, but to track how vulnerability evolves as the ecosystem adapts.

3.8 Section 3 Takeaway

Mapping vulnerabilities across the five layers provides the structural foundation for diagnostics. It clarifies where fragility originates, why it remains invisible in isolation, and how interaction allows it to accumulate and migrate over time.

Diagnostics at this level do not measure risk. They make **systemic vulnerability legible** by situating signals within ecosystem structure. With this mapping in place, the next step is to examine how interaction transforms vulnerability into systemic fragility.

4. Propagation, Amplification, and Non-Linearities

Systemic fragility does not arise solely from the presence of vulnerabilities. It emerges from **how vulnerabilities interact, how pressures propagate, and how amplification transforms local tension into system-wide instability**. Diagnostics must therefore move beyond identifying where vulnerabilities reside to understanding how they can combine and intensify over time—even before any explicit stress materializes.

This section explains why propagation and non-linearity are central to diagnosis, and why stability itself can conceal growing fragility.

4.1 Vulnerability Becomes Systemic Through Propagation

In a layered financial ecosystem, vulnerabilities do not remain contained. They propagate across interfaces—between markets and infrastructures, innovation and information, domestic systems and cross-border integration. This propagation is not episodic; it is continuous.

A distortion in one layer can reshape behavior in others. Informational misinterpretation can alter risk-taking incentives. Infrastructure dependence can magnify operational or liquidity sensitivity. Integration can transmit local imbalances across balance sheets and jurisdictions. Governance delays can allow tensions to spread without coordination.

Diagnostics must therefore focus not only on *where* vulnerabilities exist, but on *how they travel*. Systemic risk is fundamentally relational. It emerges from pathways of interaction, not from isolated weaknesses.



4.2 Endogenous Amplification Mechanisms

Propagation alone does not explain systemic fragility. What turns vulnerability into instability is **amplification**.

Amplification mechanisms are endogenous features of the ecosystem. They arise from incentives, expectations, and structural interdependence rather than from external shocks. Common forms include:

- feedback loops that reinforce prevailing behavior,
- convergence of exposures driven by benchmarking or standardization,
- reliance on shared infrastructures or narratives,
- and governance frictions that delay collective response.

These mechanisms can remain dormant for extended periods. Their presence does not imply immediate instability. Diagnostics must therefore identify **conditions under which amplification becomes likely**, rather than searching for triggers.

4.3 Why Stability Can Mask Fragility

A central diagnostic challenge is that fragility often accumulates during periods of apparent stability.

Stable conditions encourage leverage, concentration, and convergence. Risk appears manageable, volatility declines, and buffers are optimized. Over time, this stability can erode resilience by narrowing margins for error and strengthening feedback loops.

From a diagnostic perspective, stability is therefore ambiguous. It may reflect genuine robustness—or it may signal growing brittleness. Surface calm is not evidence of systemic health. Diagnostics must interrogate stability itself: asking whether it rests on diversification and redundancy, or on uniformity and dependence.

4.4 Non-Linearities and Threshold Effects

Financial ecosystems do not respond proportionally to pressure. Relationships that appear stable can change abruptly once thresholds are crossed. Correlations can shift. Liquidity can evaporate. Confidence can realign suddenly.

These **non-linearities** are not anomalies. They are inherent to complex adaptive systems. Thresholds are rarely visible *ex ante*. They emerge from cumulative interaction rather than discrete events.

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Diagnostics must therefore avoid linear extrapolation from recent conditions. Their task is to identify **where the system is becoming brittle**, not to predict when a transition will occur. This focus shifts attention from outcomes to structure: from “how bad” to “how fragile.”

4.5 Interaction Across Layers as a Source of Non-Linearity

Non-linear behavior rarely originates within a single layer. It arises when vulnerabilities across layers align.

For example:

- informational convergence can reinforce innovation-driven risk-taking,
- infrastructure concentration can amplify integration-driven transmission,
- governance gaps can allow feedback loops to strengthen unchecked.

These interactions can remain benign individually, yet become destabilizing collectively. Diagnostics must therefore be explicitly cross-layer. Non-linearity is a property of interaction, not of components.

4.6 Implications for Diagnostic Practice

Recognizing propagation and non-linearity has three implications for diagnostics.

First, diagnostics must be **forward-looking in structure**, even if not predictive in outcome. They examine how the system would respond to pressure, without specifying events or scenarios.

Second, diagnostics must prioritize **amplification pathways** over isolated vulnerabilities. A small weakness in a highly connected interface may be more consequential than a larger weakness in a contained domain.

Third, diagnostics must resist reassurance drawn from recent performance. Stability does not negate fragility; it can conceal it.

4.7 Section 4 Takeaway

Systemic fragility arises not from vulnerabilities alone, but from the way vulnerabilities propagate, amplify, and interact non-linearly across the financial ecosystem. These dynamics explain why crises often appear sudden and disproportionate—and why early warning based on isolated indicators repeatedly fails.

Diagnostics make these dynamics legible by focusing on interaction rather than events, structure rather than outcomes, and brittleness rather than volatility. With this understanding,



the next section turns to how such diagnostics should inform governance deliberation and decision-making under uncertainty.

5. Diagnostics, Governance, and Decision-Making

Diagnostics acquire meaning only when they enter the domain of governance. Outside a decision-making context, even the most coherent diagnosis remains inert. This section clarifies how diagnostics should inform governance deliberation—without creating false precision, technocratic substitution, or premature action.

The objective is not to prescribe decisions, but to explain **how diagnostics shape attention, interpretation, and collective judgment** under uncertainty.

5.1 Diagnostics as a Guide for Attention

The primary contribution of diagnostics is not instruction, but **orientation**.

Governance bodies operate under severe constraints of time, attention, and mandate. They face multiple, often competing signals and pressures. Diagnostics help governance decide *what deserves sustained attention, what can be monitored, and what can be deprioritized*.

This function is especially important in complex ecosystems where vulnerability does not present itself as acute stress. Diagnostics elevate structural fragilities that may otherwise remain overshadowed by more visible, but less consequential, developments.

In this sense, diagnostics discipline attention. They reduce the risk that governance reacts to noise while missing slow-moving sources of systemic fragility.

5.2 Interpretation as a Collective Governance Function

System-level diagnostics cannot be interpreted by a single authority. Fragmented mandates imply fragmented perspectives. No institution has full visibility into the ecosystem.

Diagnostics therefore operate as a **collective interpretive function**. Their effectiveness depends on governance arrangements that allow different authorities to interpret developments through a shared conceptual framework, even when views diverge.

Disagreement is not a failure of diagnostics. It is an informational signal. When interpretation diverges, it often reflects genuine uncertainty, competing objectives, or incomplete visibility. Diagnostics provide a common language through which such disagreement can be articulated, examined, and escalated.



Without this shared interpretive space, governance risks fragmentation of understanding even when coordination mechanisms formally exist.

5.3 Escalation and Prioritization Under Uncertainty

Governance must continuously decide which vulnerabilities warrant escalation and which do not. These decisions are rarely made with complete information.

Diagnostics support this process by clarifying:

- whether vulnerabilities are structural or transient,
- whether they are likely to interact with others,
- and whether they implicate multiple layers or mandates.

Importantly, escalation does not imply immediate action. It implies recognition, shared awareness, and preparedness. Diagnostics allow governance to escalate concern without committing to specific interventions.

This capacity is essential in systems characterized by non-linearity, where waiting for confirmation can mean waiting too long.

5.4 Diagnostics and Accountability

Diagnostics also shape accountability.

When vulnerabilities are articulated clearly and shared across governance bodies, inaction becomes a conscious choice rather than an inadvertent omission. Diagnostics create a record of what was visible and when, anchoring accountability in process rather than outcomes.

This does not imply blame for unforeseen events. It implies responsibility for attention, interpretation, and preparedness. Governance failures often arise not from incorrect decisions, but from unexamined assumptions and delayed recognition.

Diagnostics help make these assumptions explicit.

5.5 Avoiding Technocratic Substitution

A persistent risk is that diagnostics are treated as substitutes for governance rather than inputs to it.

When diagnostic frameworks are perceived as objective arbiters, governance may defer to them mechanically. This creates false precision and erodes accountability. Decisions appear justified by analysis rather than owned by institutions.



This volume explicitly rejects that model. Diagnostics inform judgment; they do not replace it. Their authority derives from relevance and coherence, not from technical complexity.

Maintaining this distinction is critical to preserving legitimacy under uncertainty.

5.6 Preparing Governance Without Acting Prematurely

Well-functioning diagnostics create **optionality**. They allow governance to prepare for potential developments—by clarifying exposure, sequencing deliberation, and aligning expectations—without acting prematurely.

This anticipatory posture is particularly important in complex ecosystems where reaction time can be shorter than decision time. Diagnostics help governance remain ahead of events without claiming foresight.

5.7 Section 5 Takeaway

Diagnostics shape governance not by dictating action, but by structuring attention, interpretation, and escalation under uncertainty. They enable collective sense-making across fragmented authority while preserving the irreducible role of judgment.

By clarifying what matters and why, diagnostics prepare governance for exploration under strain—without collapsing decision-making into technocracy or prediction.

6. Limits of Diagnostics and the Role of Judgment

Diagnostics are indispensable to financial ecosystem stewardship, but they are never sufficient. Their value lies in making fragility legible—not in eliminating uncertainty or determining outcomes. This section clarifies the inherent limits of diagnostics and explains why **judgment remains central** to governance even in the presence of robust diagnostic frameworks.

Recognizing these limits is not a weakness of diagnostics. It is a condition of their responsible use.

6.1 Why Diagnostics Are Inherently Incomplete

No diagnostic framework can fully capture a complex financial ecosystem.

Vulnerabilities arise from interaction, adaptation, and drift—processes that exceed any static representation. Information is always partial. Perspectives are fragmented. Structures evolve as actors respond to incentives and constraints.



As a result, diagnostics can never offer a complete or definitive picture of systemic fragility. They provide **orientation**, not closure. They illuminate patterns and tensions, but they cannot exhaust the space of possible futures.

This incompleteness is structural, not technical. It persists regardless of data availability, analytical sophistication, or institutional capacity.

6.2 Model Risk Without Models

Even when diagnostics avoid formal models, they still embed assumptions.

Choices about what to observe, how to structure interpretation, and which interactions to emphasize shape diagnostic outcomes. Over time, these choices can become implicit and self-reinforcing, creating a form of **model risk without models**.

This risk is particularly acute in stable periods, when prevailing interpretations appear validated by experience. Diagnostics can then harden into doctrine, narrowing the range of considered vulnerabilities.

Guarding against this requires continual challenge. Diagnostics must remain provisional, open to revision as structures evolve and new interactions emerge.

6.3 Uncertainty, Ambiguity, and the Limits of Foresight

Many of the most consequential threats to financial ecosystems fall under genuine uncertainty rather than quantifiable risk. Outcomes are not merely unknown; the space of possible outcomes itself evolves.

Diagnostics cannot assign probabilities, forecast timing, or rank vulnerabilities with confidence. Their role is instead to identify **exposure to uncertainty**—to clarify where resilience may be thin and where adaptation could fail under pressure.

This shift—from prediction to preparedness—is central to the ecosystem approach. It reframes the objective of diagnostics from foresight to **governability under uncertainty**.

6.4 Judgment as an Integral Component of Diagnostics

Because diagnostics are incomplete and uncertainty is irreducible, **judgment is not an external add-on**. It is an integral component of the diagnostic process itself.



Judgment integrates contextual knowledge, institutional memory, and understanding of political and social constraints. It allows governance to act when signals are ambiguous, interpretations diverge, or stakes are asymmetric.

Diagnostics inform judgment, but they do not constrain it mechanically. Where diagnostics end, judgment begins—not as intuition alone, but as disciplined interpretation informed by structure.

6.5 Institutionalizing Judgment Without Personalizing It

A central governance challenge is to rely on judgment without making it arbitrary or personal.

Effective stewardship embeds judgment in collective processes rather than individual discretion. Assumptions are articulated, dissent is recorded, and interpretations are revisited as conditions evolve.

Diagnostics support this institutionalization by providing shared reference points. They allow judgment to be exercised transparently and accountably, even when conclusions remain contested.

6.6 When Diagnostics Fail—and Why That Is Inevitable

No diagnostic framework will anticipate every crisis. Some failures will only become apparent in hindsight.

Such failures are inevitable in complex adaptive systems. They become problematic only when governance treats diagnostics as infallible or when warning signs are dismissed because they do not fit established frameworks.

Accepting the limits of diagnostics reduces the risk of surprise by maintaining humility and vigilance. It shifts governance from confidence in forecasts to resilience in decision-making.

6.7 Section 6 Takeaway

Diagnostics make systemic fragility legible, but they cannot resolve uncertainty or replace judgment. Their incompleteness is inherent and unavoidable.

By acknowledging these limits, governance can use diagnostics as they are meant to be used: as guides for attention and interpretation, not as substitutes for responsibility. Judgment remains the final, irreducible element of financial ecosystem stewardship.



7. From Diagnostics to Stress Testing

Diagnostics do not conclude the work of financial ecosystem stewardship. They prepare it. Once vulnerabilities are made legible, governance faces a further question: how might those vulnerabilities behave once the system is strained? That question belongs to a different function. This section clarifies the boundary between diagnostics and stress testing, and explains why the transition from one to the other is necessary but sequential.

7.1 Why Stress Testing Is Downstream of Diagnostics

Stress testing presupposes diagnosis.

Without prior legibility of vulnerability, stress testing lacks orientation. Scenarios become arbitrary, stresses are applied to the wrong structures, and results—however precise—fail to inform governance meaningfully. Stress testing in such cases becomes an exercise in simulation rather than exploration.

Diagnostics establish what matters. They identify where fragility resides, how vulnerabilities interact, and which structures are likely to transmit pressure. Only once this interpretive groundwork is in place does it become coherent to ask how the system behaves under strain.

The ordering is therefore not procedural, but conceptual. Diagnostics define relevance; stress testing explores consequences.

7.2 Diagnostics Discipline Stress Testing Without Pre-Emptying It

Diagnostics do not design stress tests. They discipline them.

By clarifying structural vulnerabilities and interaction pathways, diagnostics constrain the space of meaningful stress exploration. They prevent stress testing from defaulting to familiar events, historical analogies, or mechanically “severe” assumptions disconnected from current system architecture.

At the same time, diagnostics must not collapse into stress logic. They identify vulnerability without simulating its activation. This separation preserves the integrity of both functions. Diagnostics remain interpretive and upstream; stress testing becomes exploratory and conditional.

7.3 From Vulnerability to Conditional Exploration

The transition from diagnostics to stress testing marks a shift in question, not in purpose.

Diagnostics ask: *Where is the system becoming fragile, and why?*

Stress testing asks: *If these fragilities are stressed, how does the system respond?*



This shift introduces conditional reasoning without prediction. Stress testing does not assign probabilities or forecast outcomes. It explores system behavior under specified strains, informed by diagnosed vulnerabilities.

Maintaining this distinction is essential to avoiding false precision and overconfidence.

7.4 Avoiding Premature Quantification

A common failure in stress-testing practice is premature quantification. Numbers are introduced before relevance is established, and calibration substitutes for understanding.

Diagnostics resist this impulse by insisting on conceptual clarity first. They ensure that when stress testing is undertaken, it is anchored in structural insight rather than inherited templates or institutional habit.

This discipline is especially important in periods of structural change, when historical calibration offers limited guidance and system behavior may differ fundamentally from past experience.

7.5 A Feedback Relationship, Not a Merger

Although distinct, diagnostics and stress testing form a feedback loop.

Insights from stress testing—about unexpected sensitivities, overlooked interactions, or governance bottlenecks—should inform and refine diagnostics. Over time, this iterative relationship strengthens system understanding without collapsing interpretation into modeling.

Maintaining the distinction between functions is what allows learning to occur. When diagnostics and stress testing are conflated, both lose clarity and governance loses orientation.

7.6 Section 7 Takeaway

Diagnostics make systemic vulnerability legible. Stress testing explores how that vulnerability behaves under strain.

The transition from diagnostics to stress testing is therefore neither optional nor immediate. It is a necessary next step, undertaken only once fragility is understood and only if governance seeks to prepare for uncertainty without illusion.

This volume concludes with legibility, not closure. The task of exploring behavior under strain belongs to the volume that follows.



8. Conclusion: Making Systemic Vulnerabilities Legible

This volume has advanced a single, disciplined proposition: **systemic vulnerability must become legible before it can be governed**. In non-neutral financial ecosystems, where finance shapes real outcomes and risk accumulates through interaction, fragility does not present itself as discrete events or isolated failures. It emerges gradually, across layers, often during periods of apparent stability.

Diagnostics exist to make that fragility visible.

By treating diagnostics as a **system-level interpretive function**, this report has clarified how vulnerabilities arise from structure, interaction, and drift rather than from individual institutions or indicators. It has shown why fragility can grow while surface signals remain benign, why stability can mask brittleness, and why governance cannot rely on intuition or measurement alone.

At the same time, this volume has been explicit about the limits of diagnostics. Legibility does not eliminate uncertainty. Diagnostics do not decide, act, or test resilience. They organize attention, structure interpretation, and support collective judgment under conditions where foresight is inherently constrained. Their value lies not in prediction, but in preparedness.

This positioning matters for governance. Once diagnostics make vulnerabilities legible, inaction becomes a choice rather than an accident. Prioritization becomes possible even when outcomes remain uncertain. Disagreement can be treated as information rather than failure. In this sense, diagnostics function as a **public good**: they enable coordination and accountability across fragmented authority without collapsing decision-making into technocracy.

This volume therefore concludes deliberately without closure. Legibility is a necessary condition for stewardship, not its culmination. Understanding how a system behaves once its vulnerabilities are strained requires a different function—one that explores propagation, amplification, and non-linear response under adverse conditions.

That task belongs to the next volume in the series.

If *Diagnosing Financial Ecosystems* establishes **what matters and why**, *Stress Testing Financial Ecosystems* will explore **how those vulnerabilities behave once the system is put under strain**—without illusion, false precision, or claims of foresight.

Seeing clearly does not prevent instability.

But without legibility, governance cannot even attempt to preserve coherence over time.



9. References

Bank & Finance Consulting Group (2025). Designing financial ecosystems: A five-layer architecture for resilience, performance, and public value. Mexico City: Bank & Finance Consulting Group.

Bank & Finance Consulting Group (2025). Governing financial ecosystems: An institutional architecture for coordination, resilience, and systemic stability. Mexico City: Bank & Finance Consulting Group.

Bank for International Settlements (2010). Macroprudential policy frameworks. Basel: Bank for International Settlements.

Bank for International Settlements (2015). Global liquidity: Concept, measurement and policy implications. Basel: Bank for International Settlements.

Financial Stability Board (2011). Global shadow banking monitoring report. Basel: Financial Stability Board.

Financial Stability Board (2020). Holistic review of the March market turmoil. Basel: Financial Stability Board.

International Monetary Fund (2014). Risk taking, liquidity, and shadow banking. Global financial stability report. Washington, DC: International Monetary Fund.

International Monetary Fund (2022). Global financial stability report: Shockwaves from the war in Ukraine. Washington, DC: International Monetary Fund.

Minsky, H.P. (1986). Stabilizing an unstable economy. New Haven: Yale University Press.

OECD (2017). Systemic risk and the financial sector. Paris: OECD Publishing.

Taleb, N.N. (2012). Antifragile: Things that gain from disorder. New York: Random House.