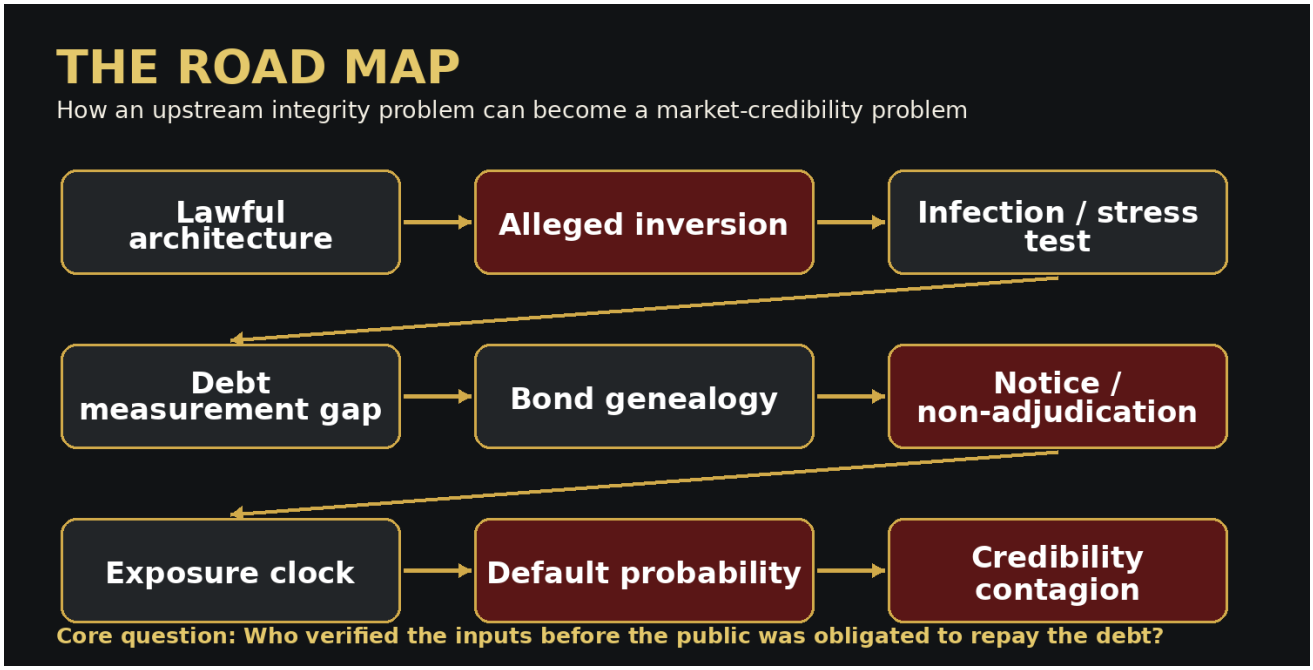
THE ROAD MAP TO PROBABILITIES OF BOND DEFAULT



THIS Q&A TELLS THE STORY. THE BOND CREDIBILITY CHAIN PRESENTATION PROVIDES THE PROOF MAP.

This Q&A is adapted from the 80-slide Bond Credibility Chain Presentation By Mitchell Vexler August, 2026

1. The Map — This Is a Credibility-Chain Problem

QUESTION

Before we get into formulas and bond documents, what is the simplest way to understand what you are saying?

ANSWER

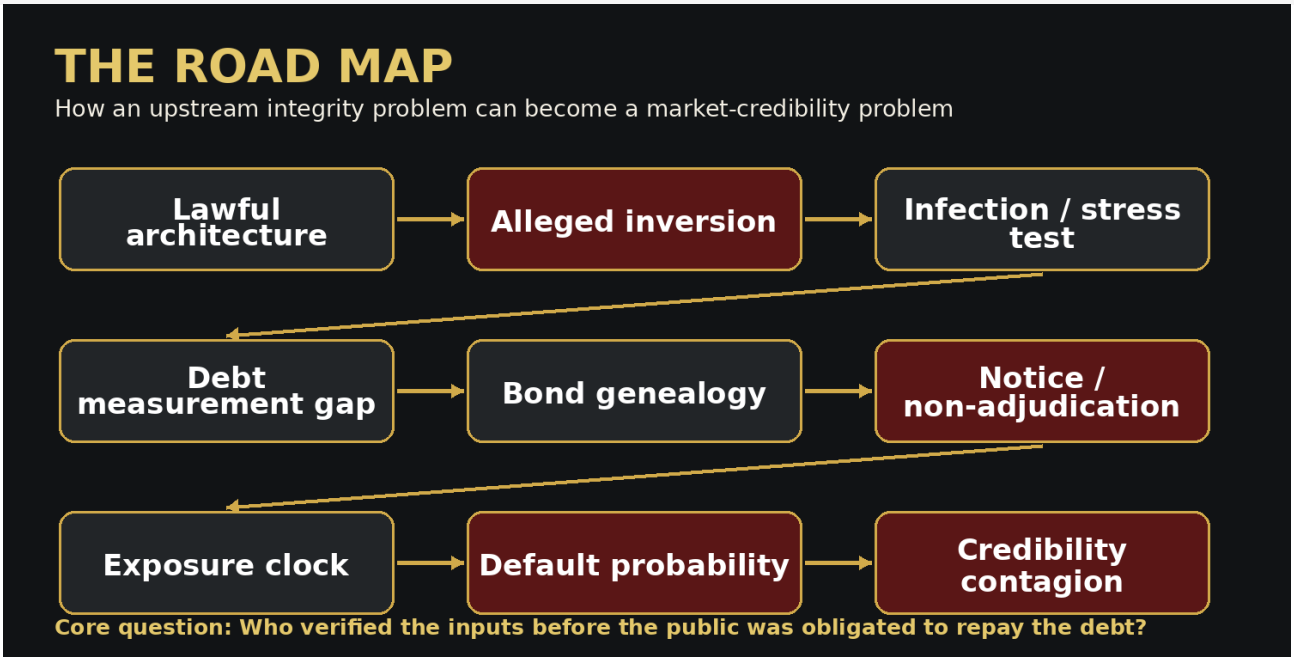
The simplest way is to stop looking at this as a collection of separate problems. The bond is at the end of a chain. Upstream you have property values, the certified tax roll, expected collections, the school-district budget, debt capacity, ratings, underwriting, legal opinions, and — in Texas — potentially the Permanent School Fund guarantee. Then the bond reaches investors, while the repayment burden reaches the taxpayer.

Our central question is very simple: **who independently verified the material inputs before the public was obligated to repay the debt?** If an upstream input is materially wrong and every downstream participant relies on it, a perfect calculation later in the chain does not repair the original defect.

The full presentation goes layer by layer. This video is the road map. I want the viewer to understand the

dependencies first: lawful architecture, the inversion of that architecture, the mathematical stress test, the debt-measurement question, bond genealogy, institutional notice and non-adjudication, the continuing exposure clock, default probability, and finally credibility contagion. Once you see the architecture, the individual documents make much more sense.

A useful way to hold the map in your head is to think about four possible failures: **input failure** — are the values, tax rolls, expenses and assumptions reliable (NO); **repayment failure** — was principal actually retired (apparently not); **guarantee or moral-hazard failure** — did payment protection reduce scrutiny of the underlying credit (YES); and **lineage failure** — can today's debt be traced back to what voters originally authorized (NO)? Those four questions are the spine of everything that follows.



WHO VERIFIED THE INPUTS BEFORE THE PUBLIC WAS OBLIGATED TO REPAY THE DEBT?

2. Three Pieces of Mathematics — and Three Different Questions

QUESTION

You started this work with a TEA formula. Why is the distinction among the formulas so important?

ANSWER

Because one of the easiest mistakes is to look at a correct formula and assume the formula proves the debt is safe. It does not. We are really dealing with **three separate pieces of mathematics**.

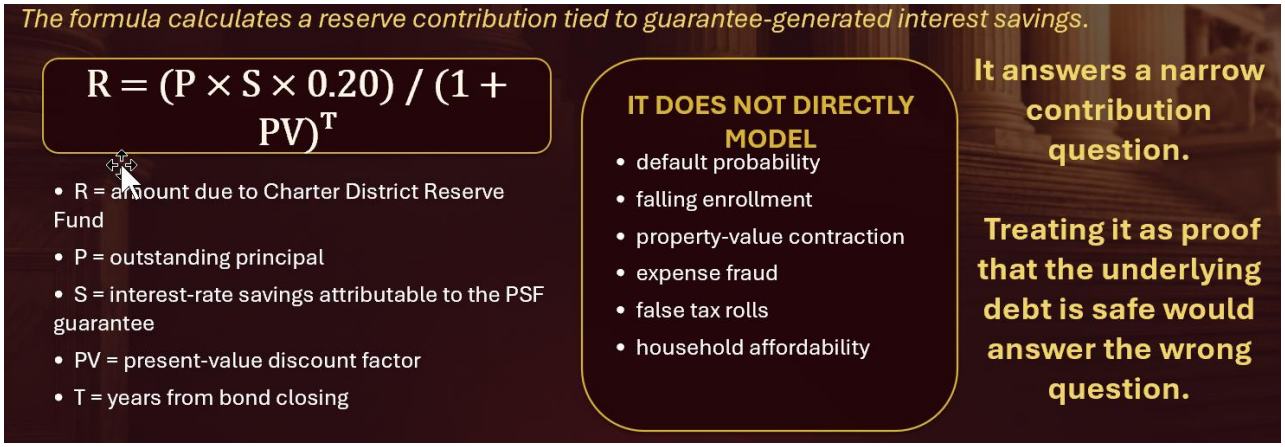
First is ordinary bond mathematics: what did we borrow, what is the interest rate, how long is the term, and what payment retires principal and interest? Principal is the money borrowed. Interest is the rent on the money. The essential test is whether principal actually reaches zero.

Second is the principal-retirement or sinking mechanism. If a large amount is due at maturity, either principal must be paid through scheduled maturities or money must be accumulated so the maturity can be paid. In Mom-and-Pop terms, it is a balloon mortgage plus the payoff account. If the required retirement mechanism is not there, the problem has not disappeared — it has become refinancing risk.

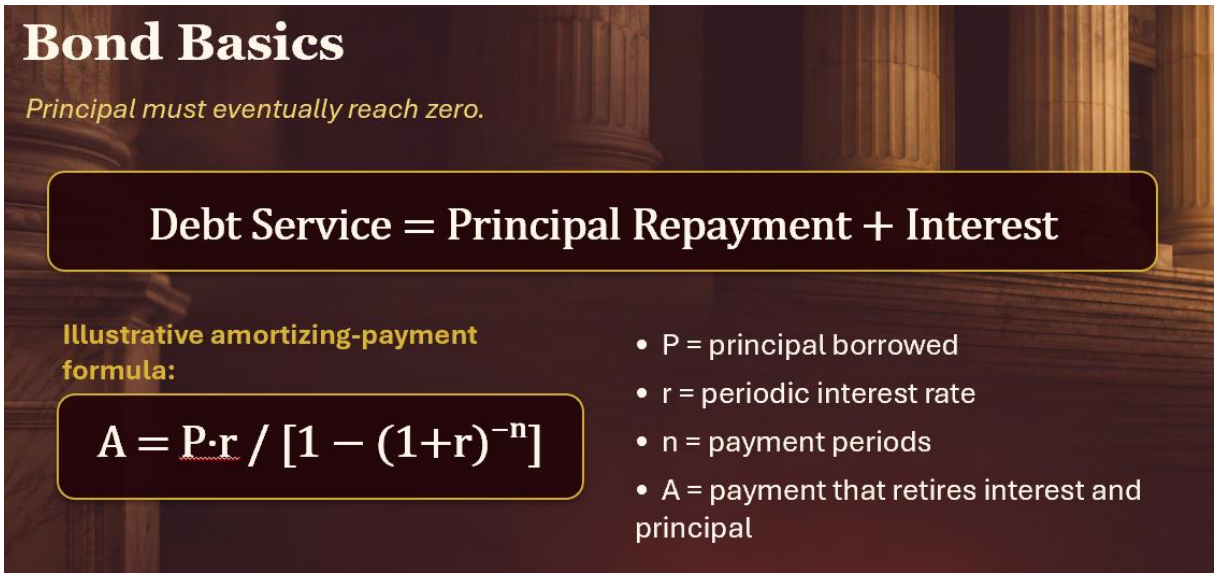
Third is the TEA formula we discussed for the Charter District Bond Guarantee Reserve Fund. That formula calculates a reserve contribution tied to guarantee-generated interest savings. It answers a narrow contribution question. It does **not** directly model falling enrollment, property-value contraction, expense irregularities, false tax rolls, household affordability, or default probability.

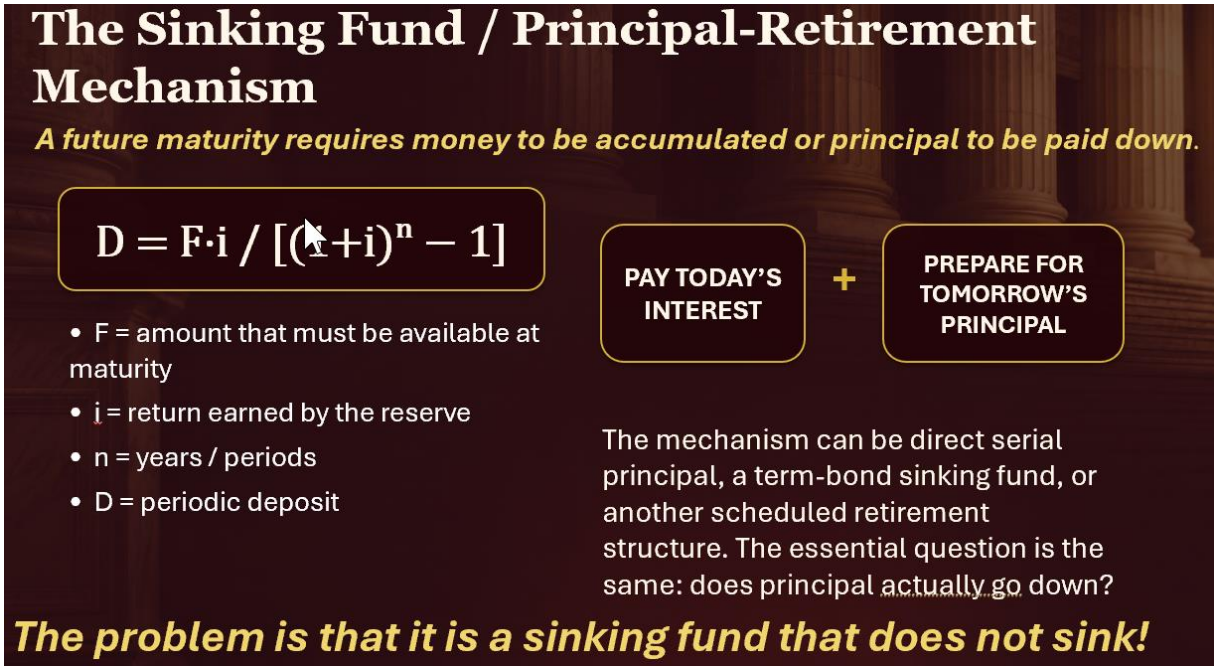
So the point is not that the arithmetic is defective. The point is that **the mathematics can be perfectly correct while answering the wrong question about systemic safety.**

The sinking-fund example makes the distinction concrete. If $100 million must be available 20 years from now and a reserve were earning 3%, the Discussion estimates that roughly $3.72 million would have to be accumulated each year. The exact number depends on the actual documents and structure, but the audit question does not change: where is the mechanism that makes principal disappear? A serial maturity, a true sinking fund, a defeasance escrow or another lawful retirement structure can do that. If the answer is simply another generation of debt, then we have to trace what was actually retired and what was merely carried forward.



Distinguishing the guarantee-reserve formula from default risk.





THE FORMULA CALCULATES THE PAYMENT. IT DOES NOT VALIDATE THE WORLD THAT MUST PRODUCE THE PAYMENT.

3. $100 Million — What Happens When Principal Is Carried Forward?

QUESTION

Give me the version a homeowner can understand.

ANSWER

Take a simplified example. A district borrows **$100 million at 4% for 20 years**. In an interest-only or balloon illustration, that is $4 million of interest every year, or $80 million over 20 years. If principal was not separately retired, the district can arrive at maturity after paying $80 million and still owe the original $100 million.

If the plan required money to be accumulated for that maturity and the money was not accumulated, there are only a handful of choices: raise cash, raise taxes, use other funds, sell assets, default, or refinance.

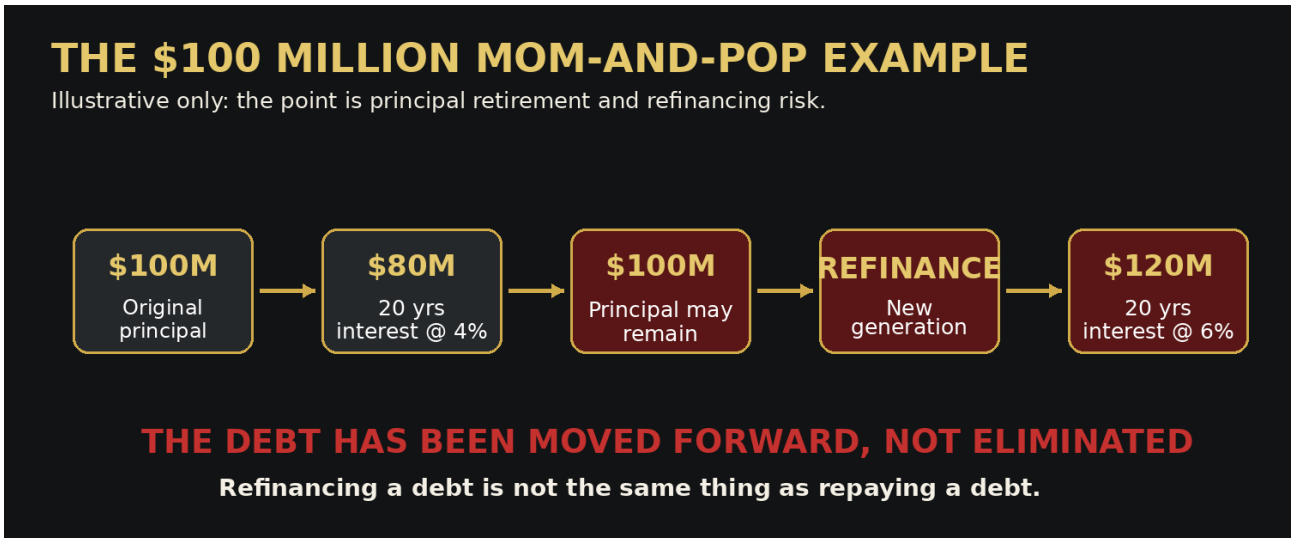
Now assume the $100 million is refinanced at 6%. In the same simplified illustration, that is another $6 million a year. Over another 20 years, another $120 million of interest can be paid while the economic problem began with the same underlying $100 million of principal. Add new borrowing, transaction costs, or longer maturities and the genealogy becomes even more complicated.

Interest greater than original principal is not, by itself, proof that a bond is improper; long-term mortgages can produce the same result. The danger is different: **debt is repeatedly extended or enlarged while the revenue base and household capacity needed to support it do not keep pace.**

That is why the line I want viewers to remember is this: refinancing changes the form and timing of the obligation. It does not magically prove that the original principal was economically extinguished.

And this is where terminology matters. A refinancing can be entirely legitimate and can even reduce total debt service. What the forensic review has to establish is the transaction history: the old CUSIPs, the call or defeasance, the escrow, the principal actually retired, the new money, the transaction costs, and the new

amortization schedule. The problem is not the word ‘refunding.’ The problem is losing the ability to reconcile the old obligation to the new one.



THE DEBT HAS BEEN MOVED FORWARD, NOT ELIMINATED.

FOLLOW-UP QUESTION

So your question is not “Was there a refinancing?” It is “What exactly entered the refinancing and what exactly disappeared?”

4. The Missing Variable — Taxpayer Solvency and Probability

QUESTION

Where does probability enter the analysis?

ANSWER

The ordinary bond formula knows principal, interest and time. The guarantee-reserve formula knows a different set of variables. But neither one asks the broader “what if” questions that determine whether the repayment world remains intact.

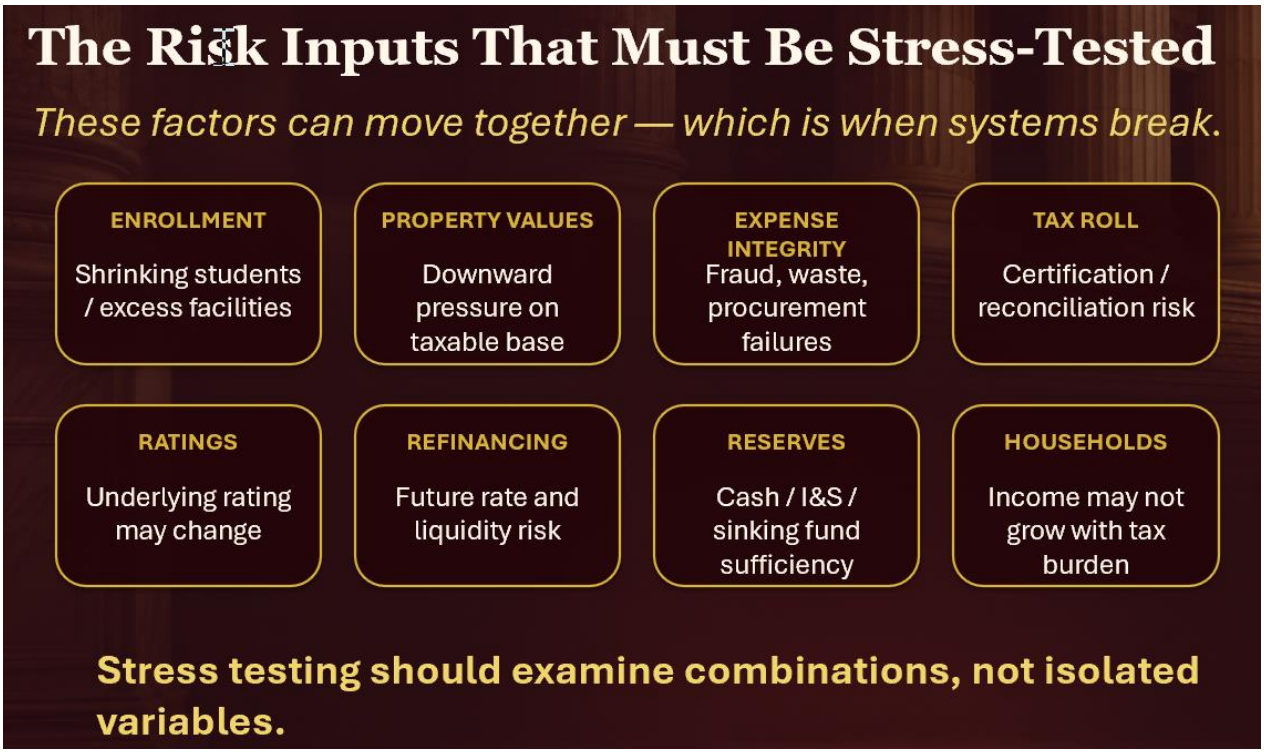
What if enrollment falls? What if property values contract? What if expenditures are unreliable? What if the certified tax roll cannot be reconciled? What if reserves are inadequate? What if refinancing that was modeled at 3% has to occur at 6% or 9%? And what if the household income supporting the property-tax burden cannot grow fast enough?

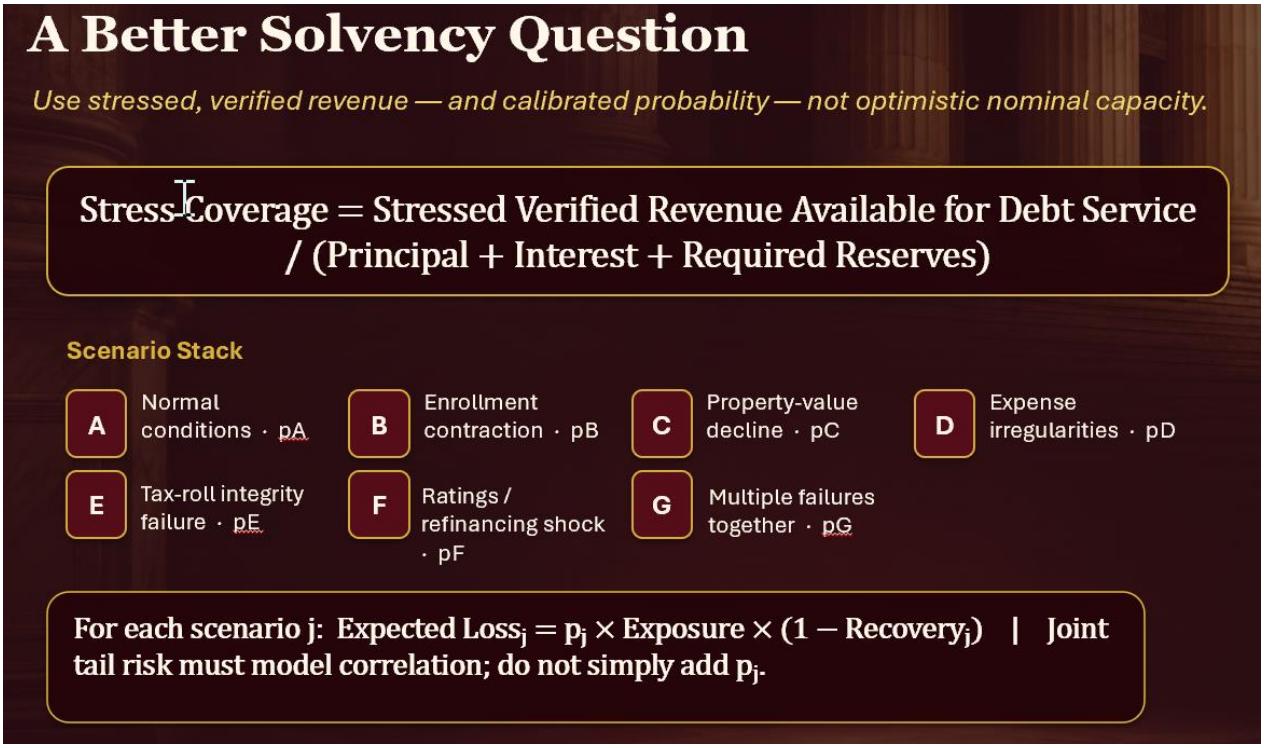
Those are not rhetorical questions. They can be treated as scenarios, and each scenario can be assigned a calibrated probability. That is why the presentation now uses a stressed-coverage concept and an expected-loss framework. The important point is that the failures can be correlated. Financial crises do not politely arrive one variable at a time.

The most important public variable may be **median household income**. Government can calculate whether the tax base has enough nominal value to support debt. A family has a different question: can our income support the tax bill? If the tax burden needed for debt service rises 6% a year while household income rises 3%, the relative burden roughly doubles over about 24 years in that simplified example.

So there are really two solvency tests: issuer solvency and taxpayer solvency. They are not the same calculation, and a system that tests only the first can miss the economic failure occurring underneath it.

That is why Slide 17 matters. For each scenario, we can move from a qualitative concern to a probability-and-loss question: **Expected Loss = probability × exposure × one minus recovery.** But the important warning is correlation. If enrollment contraction, property-value decline, expense irregularities and refinancing stress all worsen together, you cannot simply add isolated probabilities and pretend the tail risk is captured. The purpose of the equation is not to produce a magic percentage; it is to force the assumptions into the open and show which variables actually drive the default path.





GOVERNMENT ASKS WHETHER THE TAX BASE CAN SUPPORT THE DEBT. THE HOMEOWNER ASKS WHETHER INCOME CAN SUPPORT THE TAX BILL.

5. The Data Integrity Gate — Who Watches the Watcher?

QUESTION

So where should the safeguard have been?

ANSWER

Before new money, a refunding, a rating, or a guarantee, there should be a very simple threshold question: **are the material inputs true and independently reconcilable?**

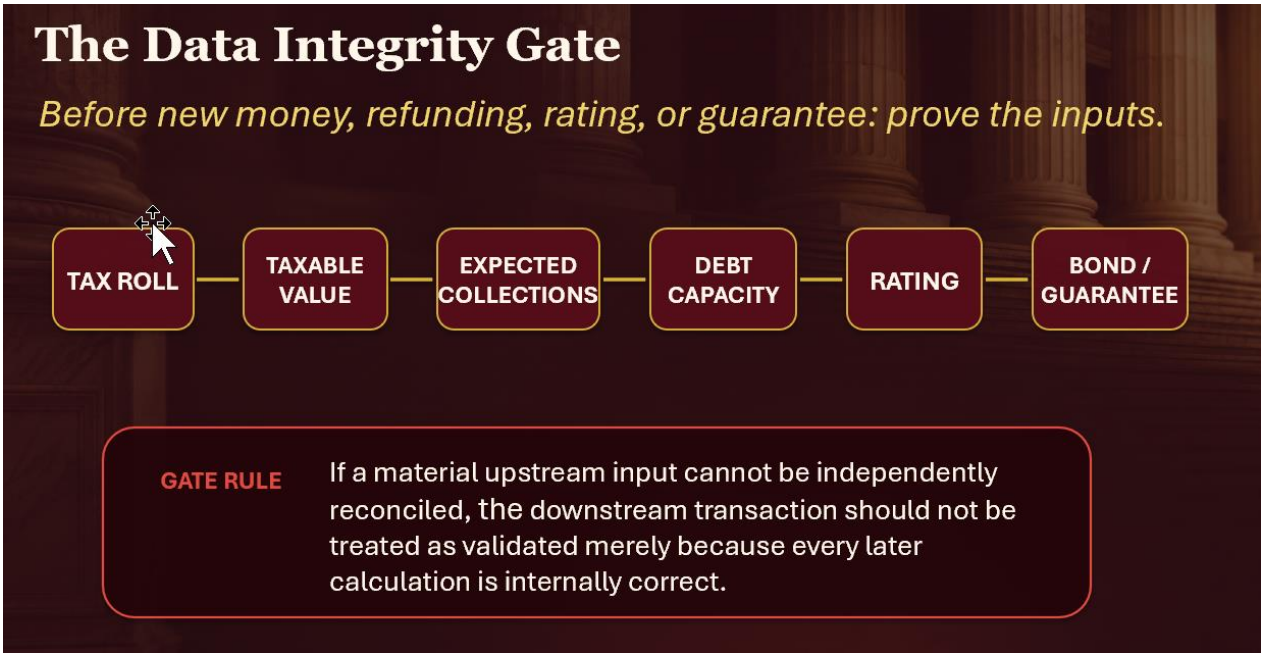
Think about the chain: tax roll, taxable value, expected collections, budget, debt capacity, rating, bond issue, guarantee. If the tax roll at the beginning is materially wrong, every later calculation can be internally correct and still reach a wrong conclusion. The same is true if the expenditure side is unreliable.

That is where Pattern and Practice Volume I and Volume II fit. The recurring question is not whether there are many institutions involved. There are. The question is whether any one of them independently validates the input it receives rather than relying on the certification, audit, rating, legal opinion, or approval immediately before it.

In engineering terms this resembles a series system. If one critical component fails and the others depend on it, you do not average the failure away. CAD to certified roll to district to auditor to rating agency to underwriter to bond counsel to TEA/PSF to investor: at every arrow, ask, **“Did you independently test what you received?”**

A chain can have many watchers and still have no end-to-end verifier. That is the institutional moral hazard we are trying to expose and test.

The issuer can say the auditor reviewed the statements. The auditor can say it audited what was presented. The rating agency can say it relied on disclosed information. The underwriter can point to counsel and the rating. Counsel can address legality of issuance. The state can say the applicable requirements were met. EMMA can publish what was submitted. Each participant can perform a narrow role — and after several refundings the citizen can still ask, **who reconstructed the transaction from the first dollar borrowed to the dollar owed today?** If nobody was assigned that job, the weakness is structural even before intent is proved.



FULL-SCREEN CHAIN: CAD → Certified Roll → District → Auditor → Rating Agency → Underwriter → Bond Counsel → TEA / PSF → Investor

A GUARANTEE GUARANTEES PAYMENT. IT DOES NOT GUARANTEE THE TRUTH OF THE INPUTS.

6. The CAD Connection — and Why Non-Adjudication Changes the Risk

QUESTION

Bring the bond discussion back to DCAD and the court case. How do those connect?

ANSWER

This is where the financial architecture and the constitutional issue meet. In the Vexler case, our position is that the DCAD property-tax fraud was known, proven and deemed admitted, yet the merits were not adjudicated. The federal-rights implications — including deprivation-of-rights under color of law. But economically, non-adjudication matters because the disputed inputs do not stop operating while the legal system waits.

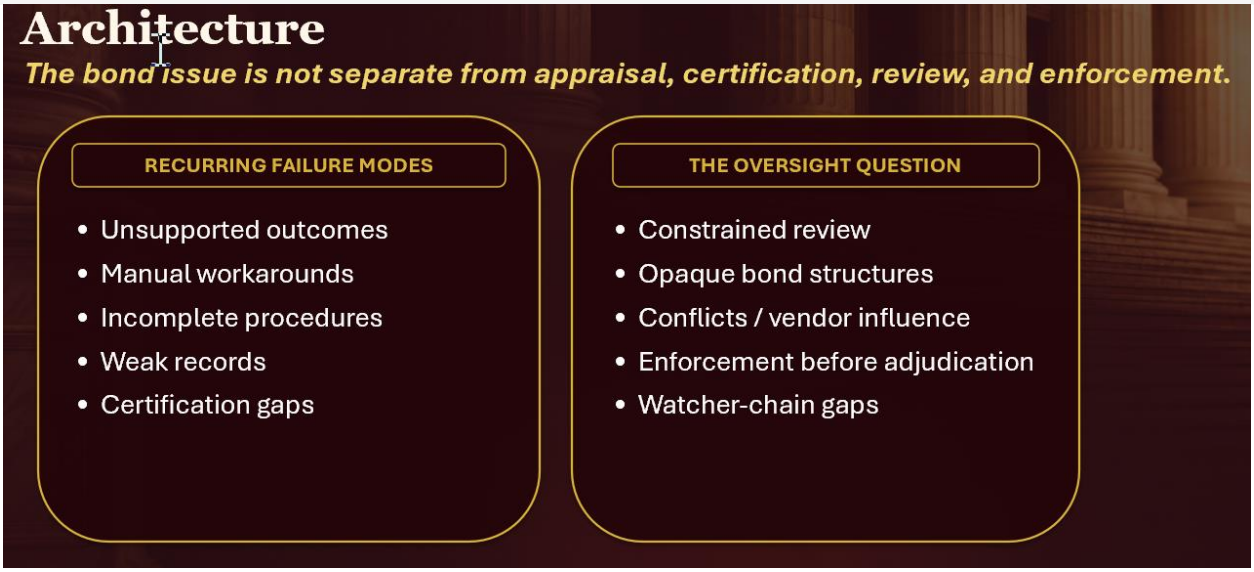
The connection is straightforward. School districts adopt budgets. The appraisal and tax system must produce the values and collections used to fund those budgets and debt service. If property values are materially false, the tax calculations derived from them are compromised. If those tax revenues are then part of the repayment story supporting long-term bonds, the issue moves downstream into debt capacity, disclosure, ratings, refinancing and the validity of the assurances surrounding the bonds.

Our **Infection Rate Spreadsheet** is intended as a falsifiable mathematical test of that architecture. Our project conclusion is that a CAD receiving a predetermined budget from a school district that issues bonds cannot simultaneously satisfy the asserted mass-appraisal, USPAP and legal constraints under the conditions modeled.

That is the key point: adjudication and investigation are not academic delays. If the disputed input continues to feed budgets, taxes and debt while the compound-cumulative clock continues to run, the size of the potential

correction grows. They are directly correlated. The audience does not have to accept the thesis on faith. The demand is simpler: we **put the evidence before you and before an institution that is allegedly capable of deciding it.**

The inversion is also important to explain carefully. In the lawful sequence, appraisal produces the tax base and the taxing entity uses that certified base in its budget and tax calculations. Our project theory is that when a taxing entity begins with a predetermined funding requirement and the appraisal system is effectively forced to supply enough taxable value to meet it, the direction of dependence has been reversed. That is the proposition the Infection Rate Spreadsheet is designed to test. The stronger presentation is not 'believe us'; it is 'here are the assumptions — reproduce the calculation and show us where it fails.'



THE RISK IS NOT STATIC WHILE ADJUDICATION IS BLOCKED. THE FINANCIAL ARCHITECTURE KEEPS OPERATING.

7. The PSF — The Guarantee Saves the Payment, Not the Underlying Economics

QUESTION

A lot of people hear "Permanent School Fund guarantee" and assume the district and taxpayer are protected. Are they?

ANSWER

That is one of the most important distinctions in the entire discussion. The Permanent School Fund Bond Guarantee Program is a credit-enhancement and bondholder-payment mechanism, paid for with your money. If a qualifying guaranteed district is about to miss scheduled principal or interest, the guarantee protects the scheduled bond payment, allegedly. The state then has recovery and intercept mechanisms against the district.

So the Mom-and-Pop sentence is: **the guarantee does not save the school district; it saves the bond payment, with your money.** The district can remain in financial distress. The taxpayer can remain liable. The underlying debt remains. The source of a payment may change temporarily, but the economics do not vanish.

The guarantee is also being "used" even when no default payment is triggered because the credit enhancement can support higher ratings and lower borrowing costs. That creates a legitimate structural question: does the

wrapper reduce the market signal that would otherwise force investors to scrutinize the underlying issuer more aggressively?

Every guaranteed bond therefore has two credit stories. The first is the underlying district: enrollment, tax base, debt, expenses, reserves, management and its underlying rating. The second is the PSF-wrapped security with the benefit of the guarantee. The question is: **which story does the market see first?**

The fund itself should also be described accurately. The financial statements distinguish net position and investments from cash; and the Texas Permanent School Fund Corporation has itself used the phrase "public education sovereign wealth fund." The point for this video is not to litigate every governance question. It is to show that the guarantee is one more layer in the credibility chain — and it cannot make a false upstream input true.

The intercept is the part most homeowners will understand immediately. If the PSF makes a scheduled payment for a guaranteed district, the underlying obligation has not been forgiven. The state can withhold amounts otherwise payable to the district and can require reimbursement mechanisms. In plain English, the investor can be protected while the district and taxpayer still face the underlying financial problem. That is why the words 'guarantee fund' can be misleading if the public hears them as 'district bailout.'

THE BOND HAS TWO CREDIT STORIES

UNDERLYING DISTRICT	PSF-WRAPPED BOND
Financial condition Enrollment Tax base Debt Expenses Management Reserves Underlying rating	Scheduled principal / interest payment protection Credit enhancement Market-access / borrowing-cost effect Separate guaranteed rating story

THE GUARANTEE DOES NOT SAVE THE SCHOOL DISTRICT. IT SAVES THE BOND PAYMENT.

8. Debt Without Lineage — and Why the Headline Numbers Must Be Reconciled

QUESTION

You keep using the term "bond genealogy." What exactly do you mean?

ANSWER

Imagine Bond A was issued in 2005 for a specific voter-authorized project. Ten years later Bond B refunds Bond A. Then Bond C refunds Bond B. Later Bond D partially refunds Bond C and adds new money. Twenty years later, a citizen sees a current balance — but that balance may contain several generations of principal, new borrowing, transaction costs, defeasance mechanics, different tax-base assumptions and different voter authorizations.

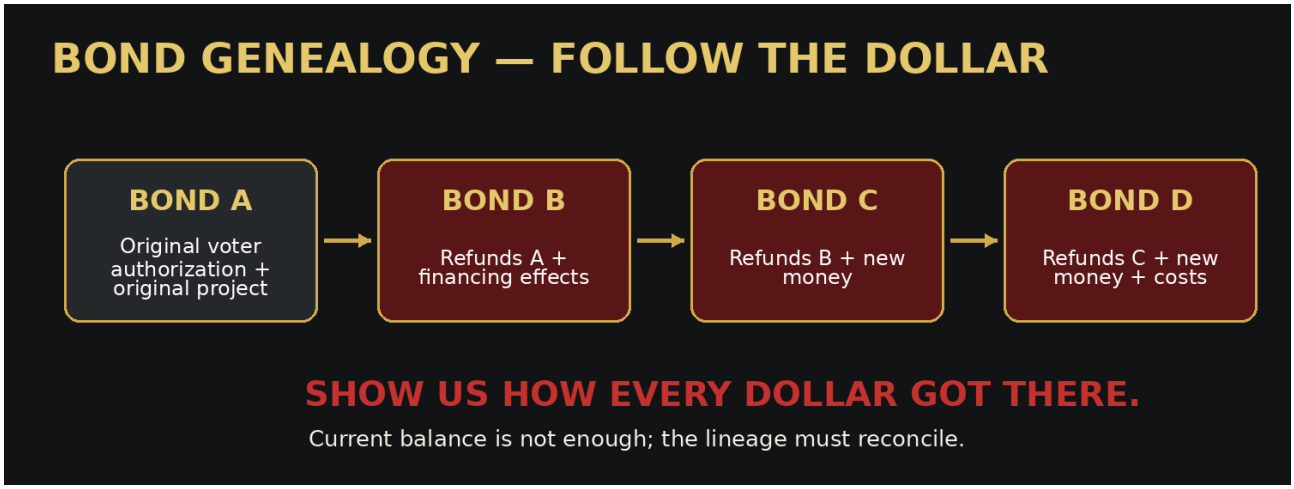
The audit question is not simply, "What does the current financial statement say we owe?" The question is: **show us how every dollar got there.** For every generation, what entered, what principal was actually retired, what was refunded, what new money was added, what costs were added, what asset or purpose remained, and

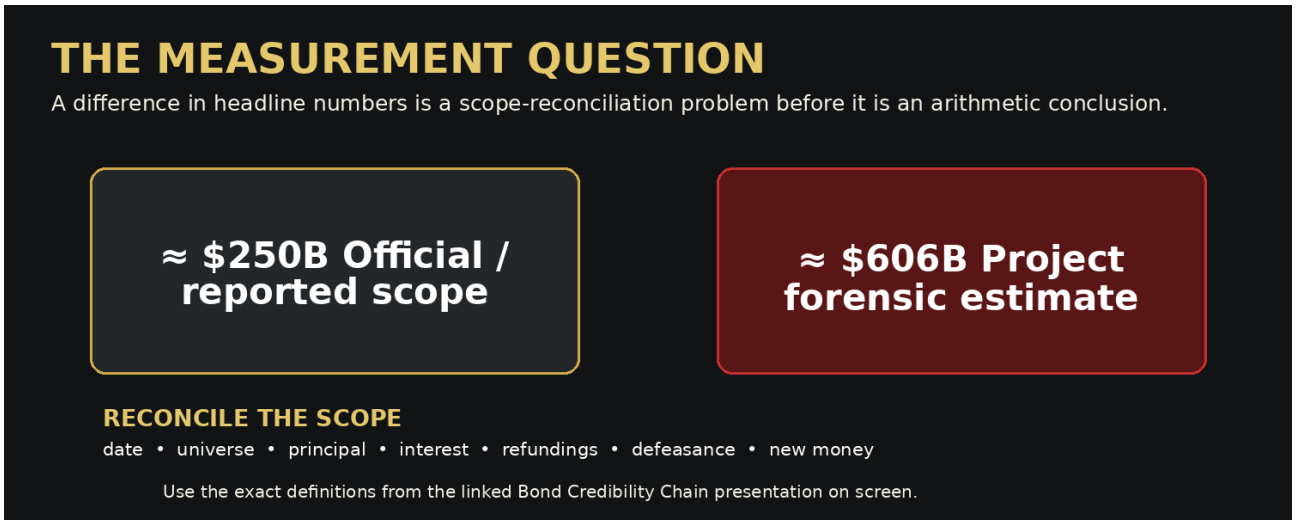
which records prove the step? That is the financial equivalent of chain of custody — a **chain of debt custody**.

EMMA is an essential public repository, but the Discussion notes that it does not guarantee every refunding or refinancing is represented there. So absence from EMMA is not proof that a record was destroyed. The investigative question is where the legally required original record resides and whether the chain can be reconstructed from the issuer, counsel, underwriter, trustee, paying agent, auditor, TEA, the Bond Review Board and other custodians.

This also explains the headline-number problem. We have discussed an official figure of roughly **$250 billion** and a project forensic calculation of roughly **$606 billion**. The video should not pretend those are automatically apples-to-apples. The powerful question is to reconcile the scope: same date, same universe, principal, remaining interest, refunding generations, new money, defeasance and what has actually been retired. If the official ledger and the forensic ledger measure different things, say so — and force the reconciliation.

Then classify the reconstructed chains instead of arguing in the abstract. **Green** means the authorization, issue, principal retirement, refundings and current balance close mathematically. **Yellow** means documents or reconciliation differences require follow-up. **Red** means material current debt cannot be traced to the supporting record. That lets the evidence tell us whether we have a few issuer-specific defects or a repeatable systemic failure. The Discussion also notes that Texas treats core bond administrative records and bond registers as long-lived or permanent records. So, the investigative question is not merely ‘why isn’t it on EMMA?’ It is ‘where is the legally required original record, and can the custodians produce it?’





CURRENT BALANCE IS NOT ENOUGH. SHOW US HOW EVERY DOLLAR GOT THERE.

9. The Exposure Clock — From Credit Risk to a Credibility Cascade

QUESTION

How do you get from school-district debt to a broader market-risk discussion without overreaching?

ANSWER

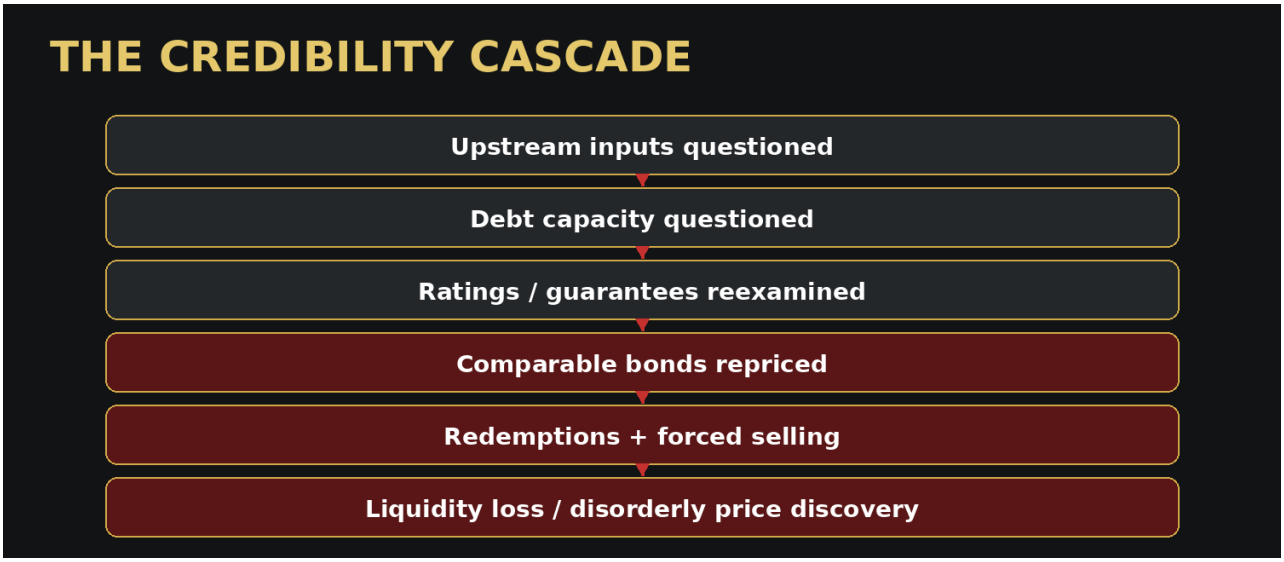
By separating the levels of risk and refusing to jump over the evidence. Our project has used a **$5.1 trillion school-district debt hypothesis** and an illustrative compound-cumulative accrual of roughly **$680 million per day**. Those figures must remain identified as project estimates until the underlying debt population is fully reconstructed. But the economic point does not depend on pretending the estimate is already adjudicated: if a large disputed debt base is compounding, delay increases the amount that eventually has to be reconciled.

Then separate contagion into levels. Level One is an issuer event: one district fails and that issuer is repriced. Level Two is a category event: investigators establish the same defect across many districts or states, investors question the asset class, spreads widen and redemptions increase. Level Three is an institutional event: evidence shows material notice to responsible institutions, identifiable authority or duty, and continued circulation of materially unreliable obligations. At that point investors may begin pricing the credibility of the institutions themselves.

Market history also tells us there are different regimes. In a normal flight to safety, risky assets sell and Treasuries can benefit. In a severe dash for cash, even Treasuries can be sold to raise liquidity — March 2020 demonstrated that mechanism. A still more serious sovereign-credibility scenario would require much stronger evidence. The direction and magnitude of Treasury repricing cannot responsibly be predicted in advance.

Our point is more fundamental: **credibility is an unpriced input until it is lost.** When investors no longer trust the tax base, disclosures, ratings, legal opinions, guarantees or regulators, the discount rate itself becomes uncertain. Then price discovery can become disorderly very quickly.

We have a real market example of the liquidity mechanism. In March 2020, municipal funds experienced severe redemptions and forced selling, dealer capacity tightened, and the Federal Reserve ultimately created the Municipal Liquidity Facility with authority of up to $500 billion. That episode does not prove our school-bond thesis; it proves that a credit market can move from valuation concerns to a liquidity problem faster than normal models assume. The responsible reason to raise contagion now is precisely to avoid making a deterministic prediction later: measure the affected population, reconstruct the debt, identify the institutions with notice, and stress-test the consequences before confidence is lost.



THE MOST VALUABLE ASSET IN THE BOND MARKET IS NOT THE BOND. IT IS CREDIBILITY.

FOLLOW-UP

So a “greater depression” is a stress scenario, not a prediction?

ANSWER

Exactly. The responsible point is that a sufficiently large credibility failure can create nonlinear repricing and liquidity stress. The exact market path cannot be known in advance. That is why the rational response is to verify the inputs and reconcile the debt before the market is forced to do it for us.

10. What Must Happen Next — Preserve, Reconstruct, Reconcile, Decide

QUESTION

If a viewer accepts nothing else today, what should happen next?

ANSWER

We don’t ask the viewer to accept every allegation. We provide a process and thought pattern from which you can prove or disprove them.

First, **preserve** the native records, versions, logs, closing transcripts and workpapers. Second, **reconstruct** the bond genealogy from original voter authorization to the current balance. Third, **reconcile** principal, interest, refundings, reserves, sources and uses. Fourth, **verify** the tax roll, valuations, enrollment, expenses, ratings, reserves and household burden. Fifth, **attribute** who had authority, who had notice, what each participant did, and what remedy exists. And finally, put the disputed facts before an institution capable of adjudicating them. This would be the normal course of affairs. The issue is that we are not dealing with “normal”.

The full Bond Credibility Chain presentation contains the detailed architecture, source map, guarantee mechanics, debt-lineage protocol, investigative lanes and the stress-testing framework. This video is meant to give people the map so they know what they are looking at when they open that presentation.

The closing question is the same one we began with: **who verified the inputs before the public was obligated to repay the debt?** If the answer is nobody, or if the answer cannot be demonstrated from the records, the

ledger has to be reconciled before more credibility is borrowed from the public.

Different institutions have different lanes in that process. Investigators can preserve and compel records. Securities regulators can examine disclosure and market conduct. State authorities can address local-government duties and records. TEA and the PSF can produce guarantee and application files. Courts can adjudicate the legal issues when jurisdiction exists. The point is not to decide guilt at the beginning. The point is to make every proposition falsifiable, preserve the evidence, and put the complete record in front of the institutions that actually have authority to decide it.

PRESERVE → RECONSTRUCT → RECONCILE → VERIFY → ADJUDICATE

ON-SCREEN CLOSE: "For the full evidence map, see the Bond Credibility Chain Presentation linked with this video."

Optional Reserve Q&A — Use Only If the Core Interview Runs Short

QUESTION

Is interest greater than principal proof of wrongdoing?

ANSWER

No. Long maturities can legitimately produce interest greater than original principal. The warning condition is repeated extension or enlargement of debt without verified principal retirement and without a revenue base capable of keeping pace.

QUESTION

Does a refinancing itself prove fraud?

ANSWER

No. A refinancing is a normal municipal-finance tool. The forensic issue is whether the lineage reconciles: what debt was retired, what debt was carried forward, what new money was added, what the documents disclosed, and whether the transaction complied with the governing requirements.

QUESTION

Does an EMMA gap prove destruction of records?

ANSWER

No. The Discussion identifies three possibilities: the record was not required on EMMA, it exists elsewhere but is not centralized, or a required record is missing. Intent and any destruction theory must be proved separately.

QUESTION

Why not simply call every affected bond fraudulent?

ANSWER

Because the strongest protocol is issuer-by-issuer and generation-by-generation. Reconstruct the debt, classify the chain, and let the records show whether the defect is isolated or systemic.

QUESTION

What is the simplest credibility test?

ANSWER

Ask whether the current debt can be traced from original voter authorization to present balance and whether every material input used to support repayment was independently verifiable at the time.

Graphic Index

These graphics are embedded in this guide.

Graphic	Use	Purpose
Road Map	Opening / Section 1	Nine-step dependency map
TEA Reserve Formula	Section 2	Narrow contribution formula vs. broader risk variables
Bond Basics	Section 2	Debt service = principal repayment + interest
Sinking Fund	Section 2	Pay today's interest + prepare for tomorrow's principal
$100M Rollover	Section 3	Mom-and-Pop timeline
Risk Inputs	Section 4	Enrollment, values, expenses, tax roll, ratings, refinancing, reserves, households
Better Solvency Question	Section 4	Stress coverage + probabilities
Data Integrity Gate	Section 5	Tax roll → bond / guarantee
Architecture	Section 6	Recurring failure modes / oversight question
Two Credit Stories	Section 7	Underlying district vs. PSF-wrapped bond
Bond Genealogy	Section 8	Bond A → B → C → D
Measurement Question	Section 8	$250B vs. $606B — scope reconciliation
Credibility Cascade	Section 9	Credit doubt → repricing → liquidity loss