

Improving Loan Performance with Collateral Risk Tools



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Collateral Risk Definition

The risk associated with

➔ the accuracy of a property valuation



➔ and the sustainability of that valuation over the life of the mortgage contract



due to the unique characteristics of the

➔ property,



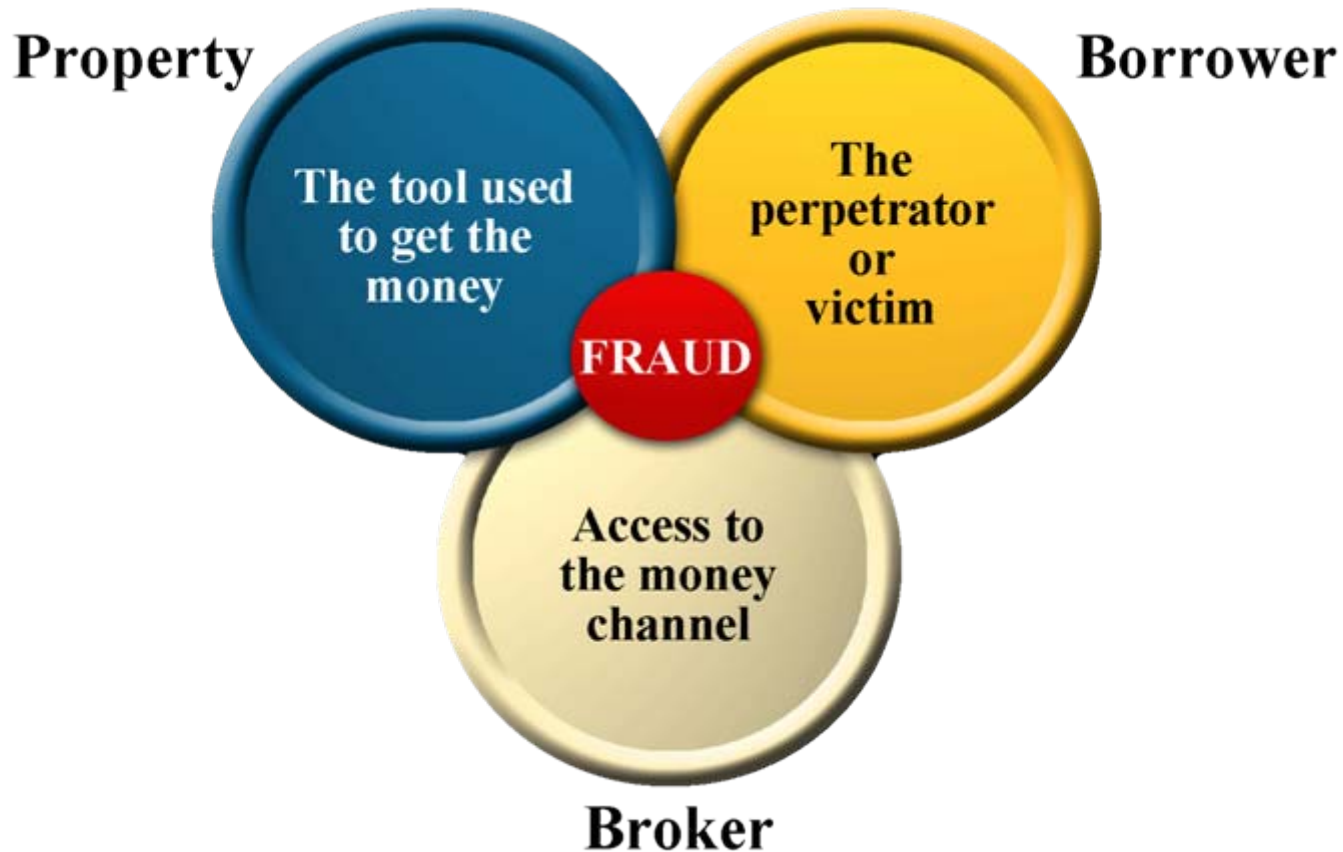
➔ market,



➔ and mortgage contract participants.



Collateral Risk Management-Participants



Collateral Risk Management

A Financial Options Theory Approach

- Mortgage instrument is a contract between the homeowner and lender (final holder of the mortgage risk)
- Borrower has the option to “call” or “put” the loan
- These options are a function of “traditional characteristics”
 - Loan characteristics (e.g. term, note rate, fixed or adjustable)
 - Borrower characteristics (e.g. FICO, DTI, self employed)
 - Collateral (e.g. LTV, owner occupied, property type)
- Traditional characteristics do not capture full risk-risk understated

What Determines Risk?

Is loan default/delinquency a sufficient measure of risk?

- Models measure likelihood of non paying state

What about the loss once in the delinquent state?

- Loss severity models measure unrecoverable percentages of UPB

Basel II capital requirements framework and risk based pricing generally combines these two concepts together

Risk Based Expected Loss:

Expected Loss = Probability(of Event) x Loss(given Event)

$$EL = PD \times LGD$$

Collateral Risk

Measurement error in the “V” of LTV

- Rural, Occupancy, Manufactured Housing, and Fraud indicators
- Likely error of Appraisal, AVM, BPO, etc.
- Is there something that identifies likely valuation “inaccuracy”?

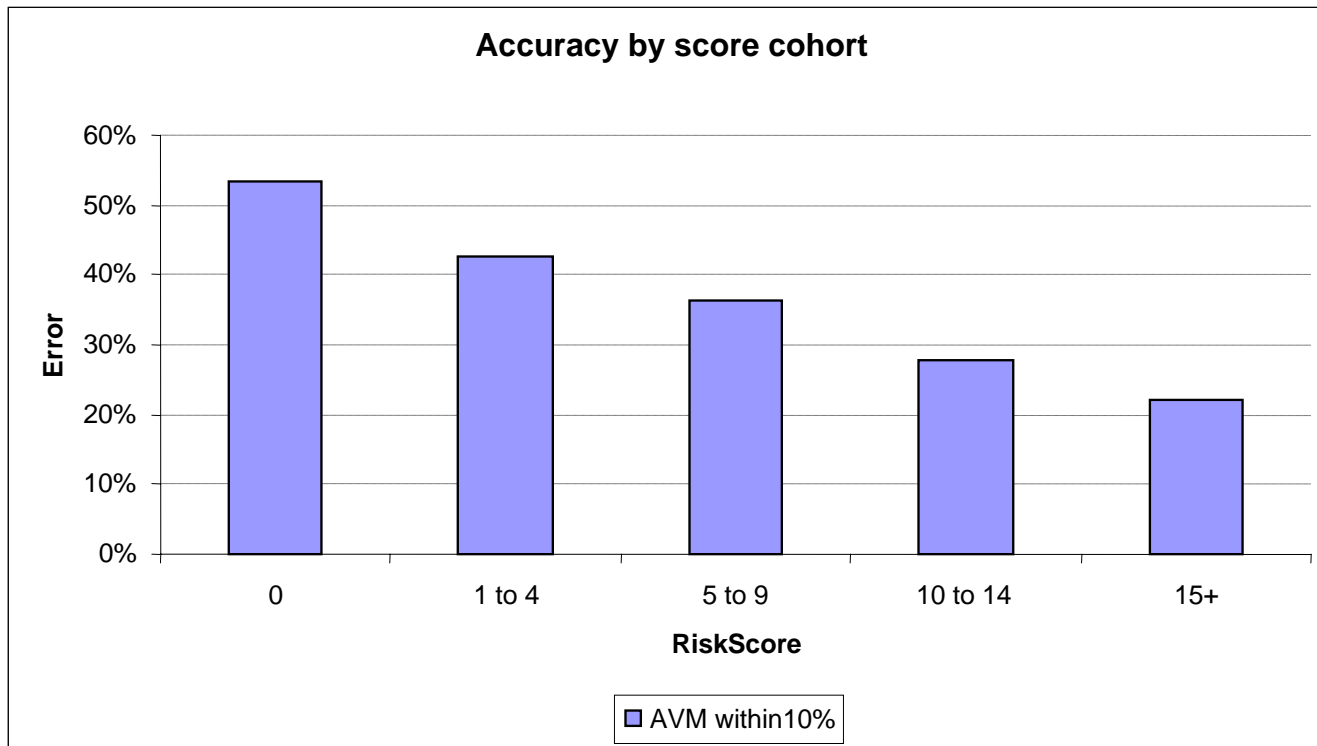
Sustainability of and Volatility of “V”

- Measures that identify the ability of the property to hold value over the average life of the loan.
 - Will a market with high foreclosure activity likely exhibit price appreciation?
 - Will properties well above market mean continue to outperform or “mean revert”?
- Measures that identify local market risk factors
 - + and – externalities (waterfront, rail lines etc.)

Collateral Risk- Measurement Error of “V”

AVMs are most accurate for the lowest collateral scores, within 10% roughly 50% of the time

Accuracy deteriorates significantly by collateral score



Collateral Risk - Sustainability of “V”

Sustainability has direct correlation to property EPDs and Foreclosures

Sustainability:

Market Value Position - Top/Mid/Bottom

Externalities:

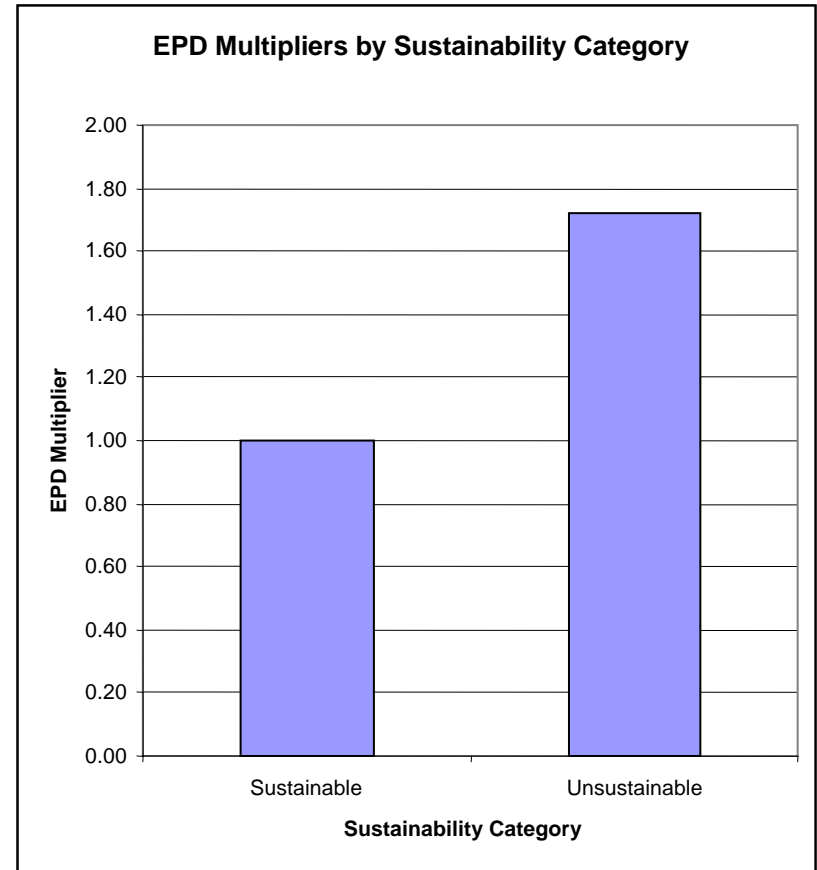
- + Golf, Waterfront, etc.
- - Rail, Interstate, etc.

Sustainable:

Overvalued and positive externalities

Unsustainable:

Overvalued and Negative Externalities



Collateral Risk-Predicting Delinquency Risk

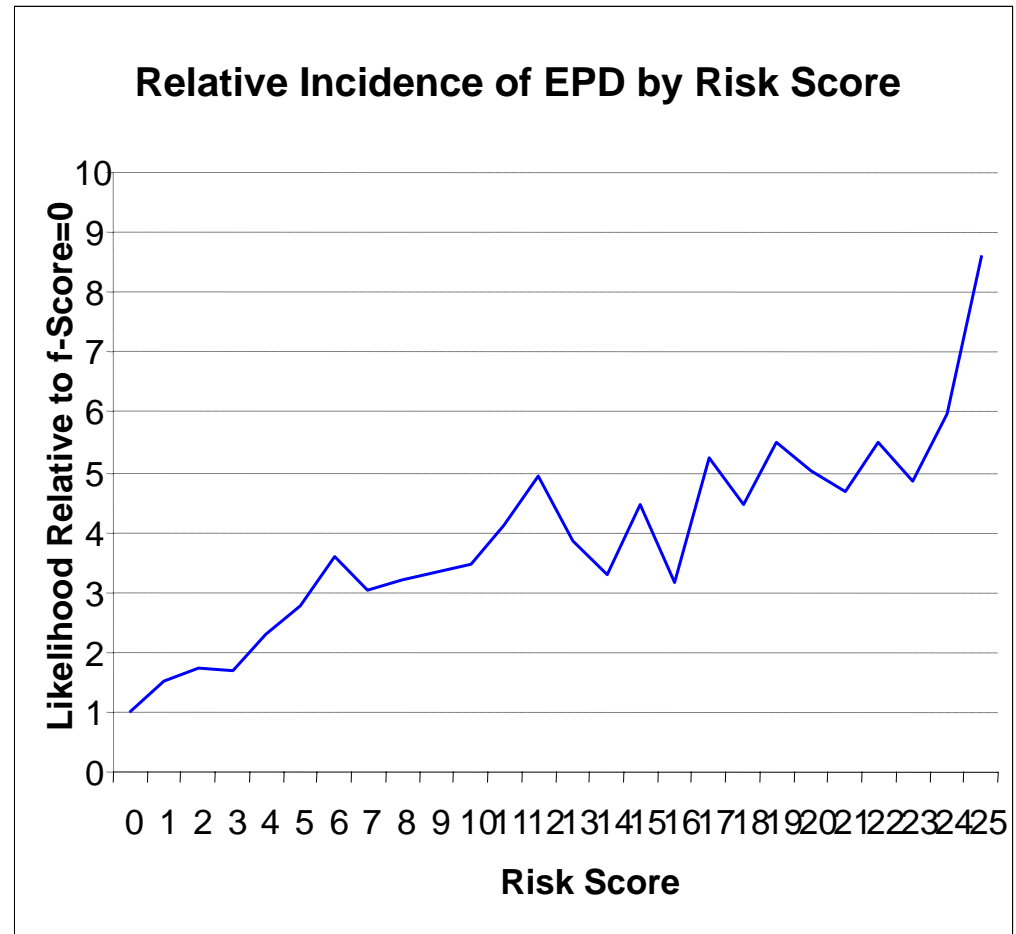
Predicting Early Payment Default (90+ in 1st year)

Analysis of 1.2 million loans

EPD incidents rise rapidly with higher collateral scores

Scores of 25 are near 9 times more likely to go EPDs than scores of 0

EPDs have direct correlation with fraudulent activity

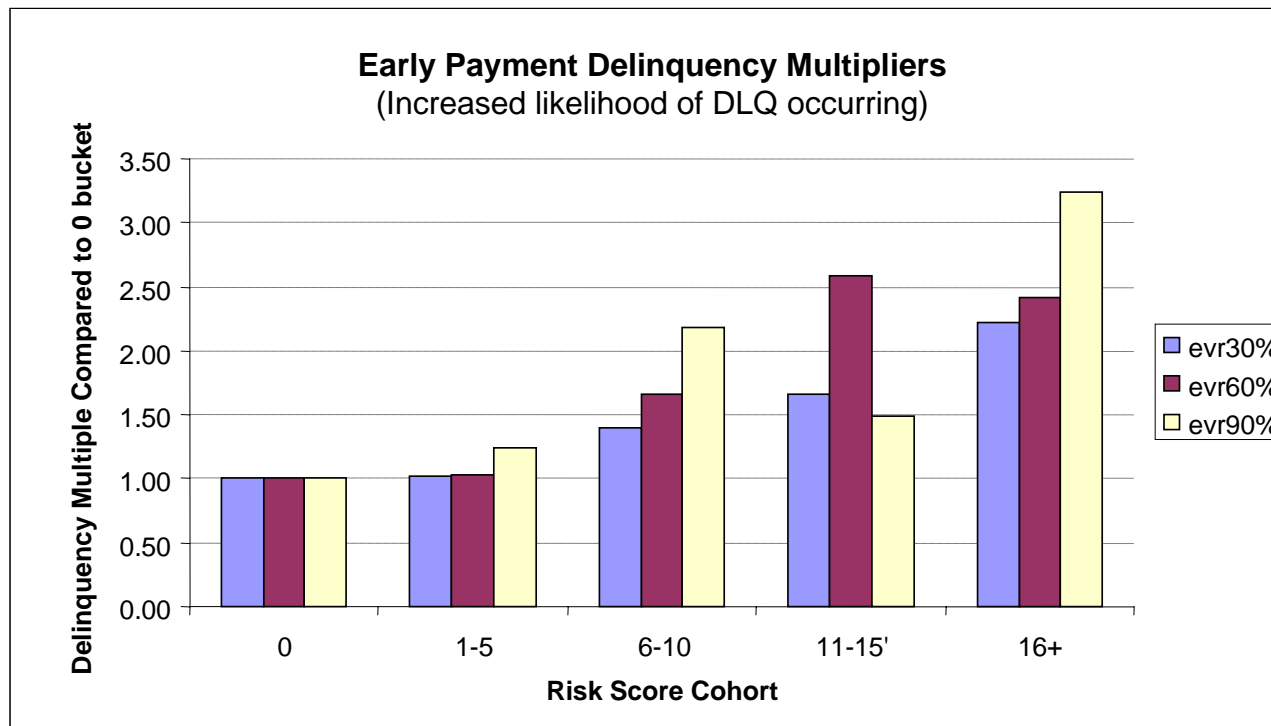


Collateral Risk - Early Delinquency Detection

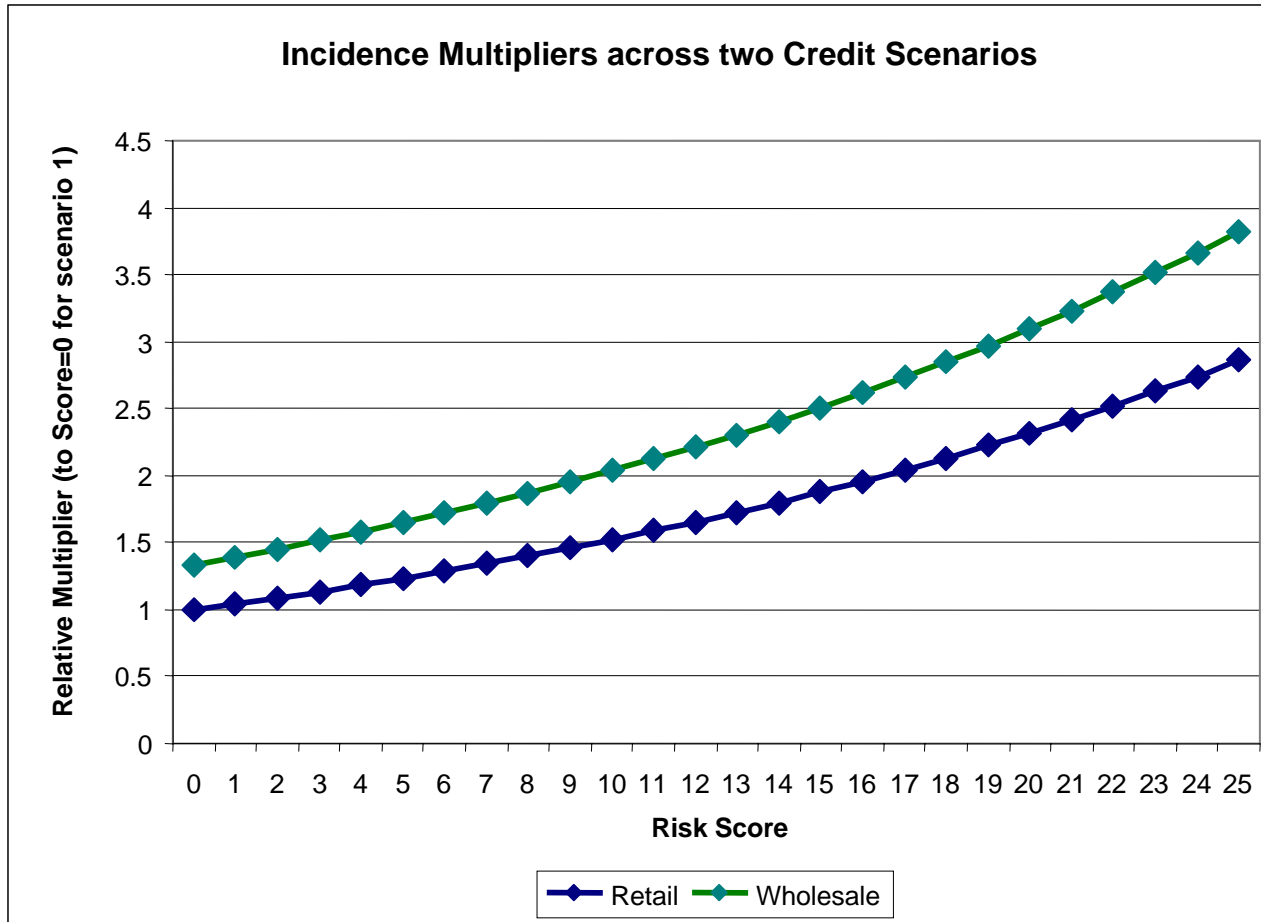
One Month of Lender Production- August '05

Monitored for Performance over last four months of 2005

Scoring is predictive of various levels of delinquency

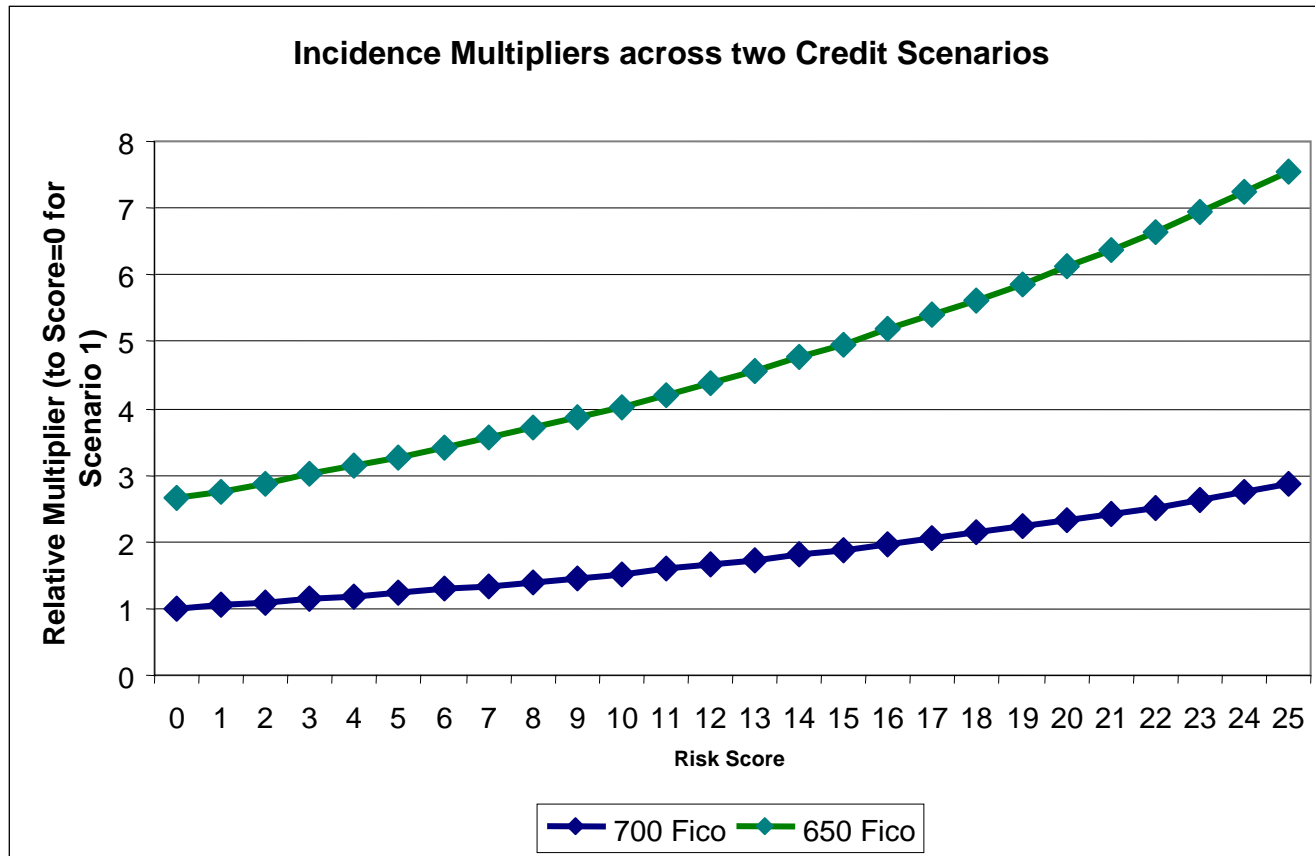


Collateral Risk By Credit Criteria



Incidence Model Constants: Owner Occupied, Fixed, Purchase, Not Self Employed, LTV=80, Loan FICO=720

Collateral Risk By Credit Criteria



Score of 25 \geq 50 point drop in FICO

Collateral Risk- Observed Losses

**Loss =
UPB at Resolution –
Net Proceeds**

Loans with a 21-25 score account for **22%** of total observed loss after one year of performance and severity accumulation.

Average Loss/LGD Loan

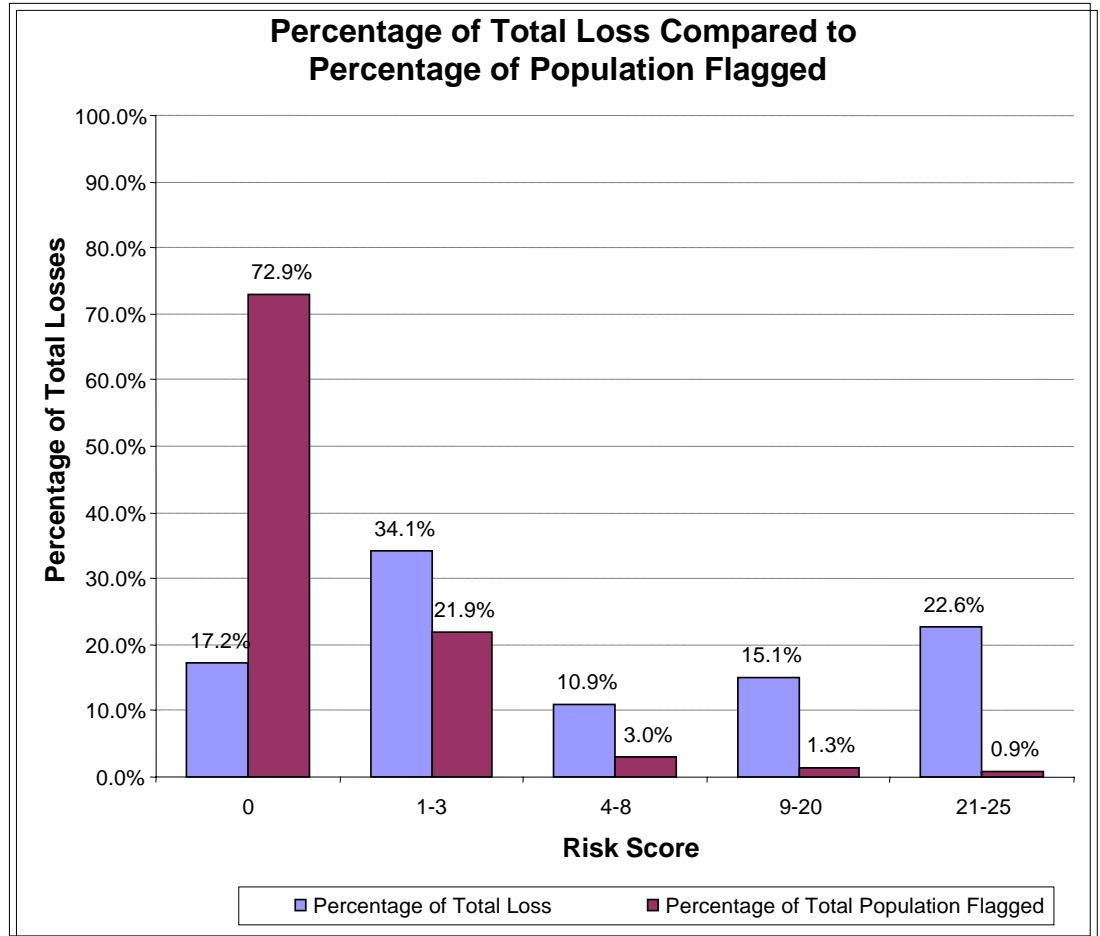
0 - \$ 1,500

1-3 - \$ 7,700

4-8 - \$ 8,000

9-20 - \$33,000

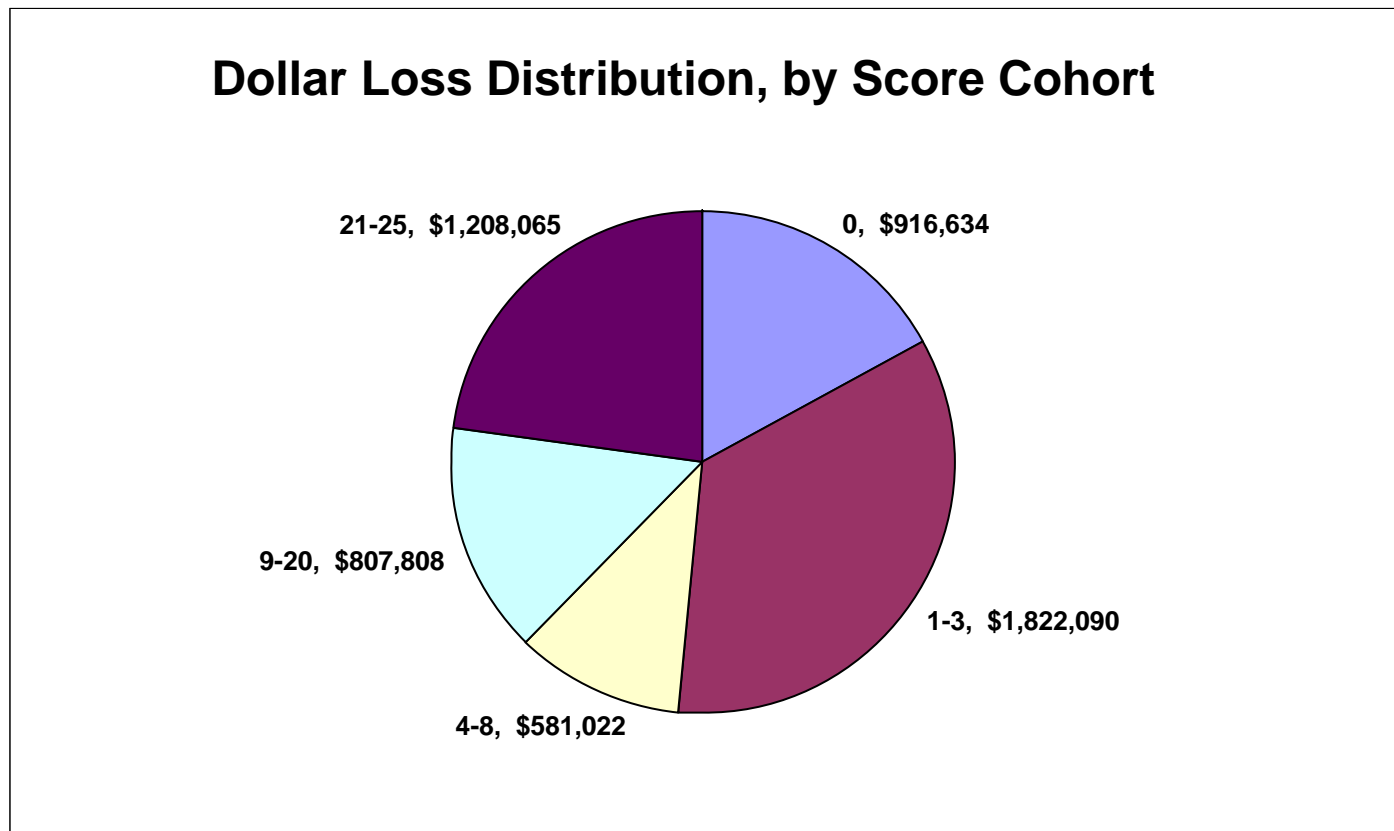
21-25 - \$52,000



Collateral Risk - Observed Loss Concentration

Dollar loss distribution on observed losses - 5.3 million dollars

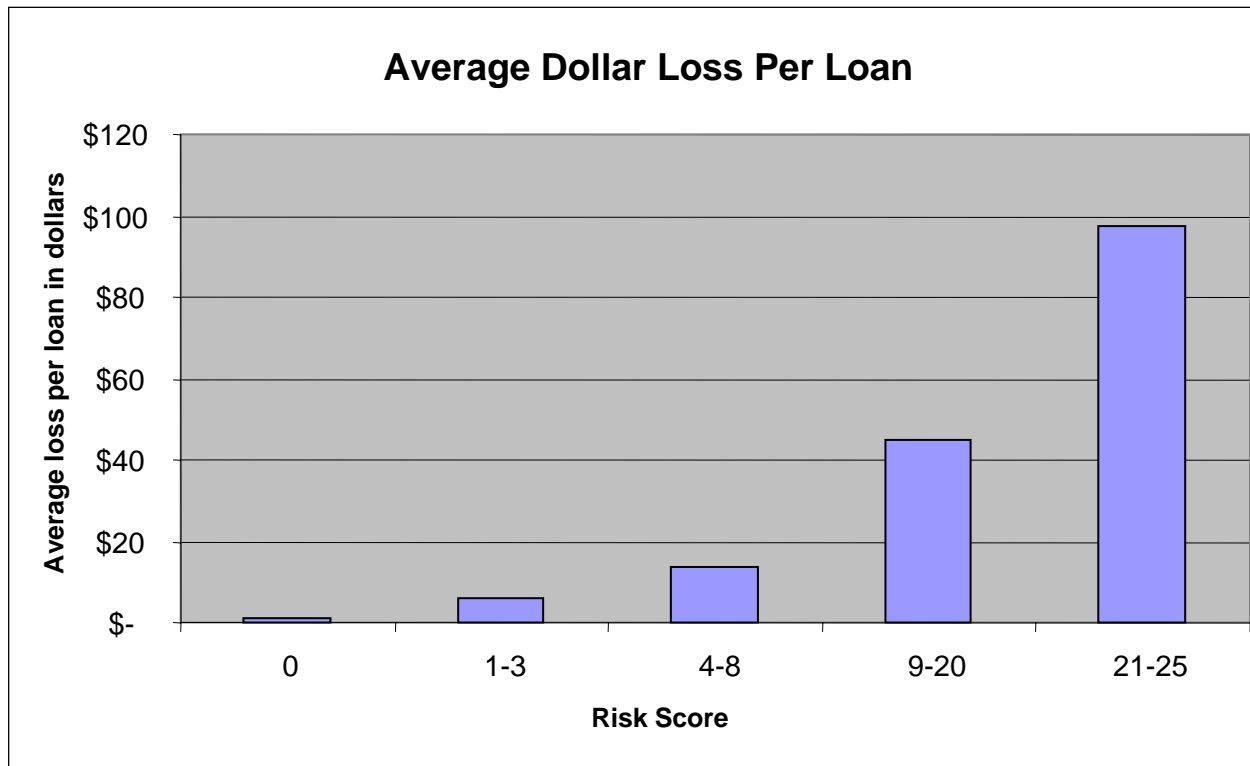
- Loans with a 21-25 score represent 1.2 million dollars of losses



Collateral Risk- Observed Loss Concentration

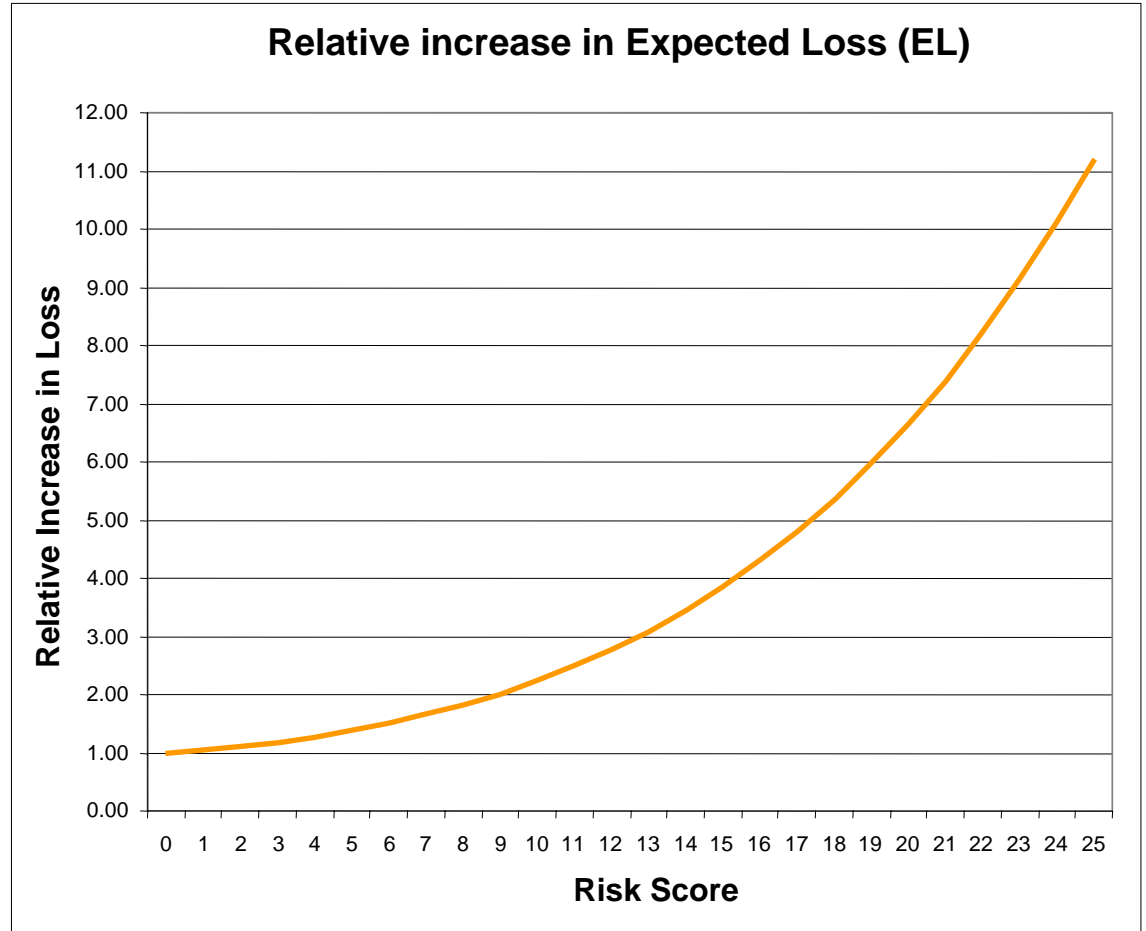
Average Loss per loan = total loss dollars observed in score cohort divided by number of all loans scored in cohort

Spreading all cohort loss dollars across all loans (performing and nonperforming) indicates 100x higher loss identification in 21-25



Collateral Risk - Expected Loss = PD*LGD

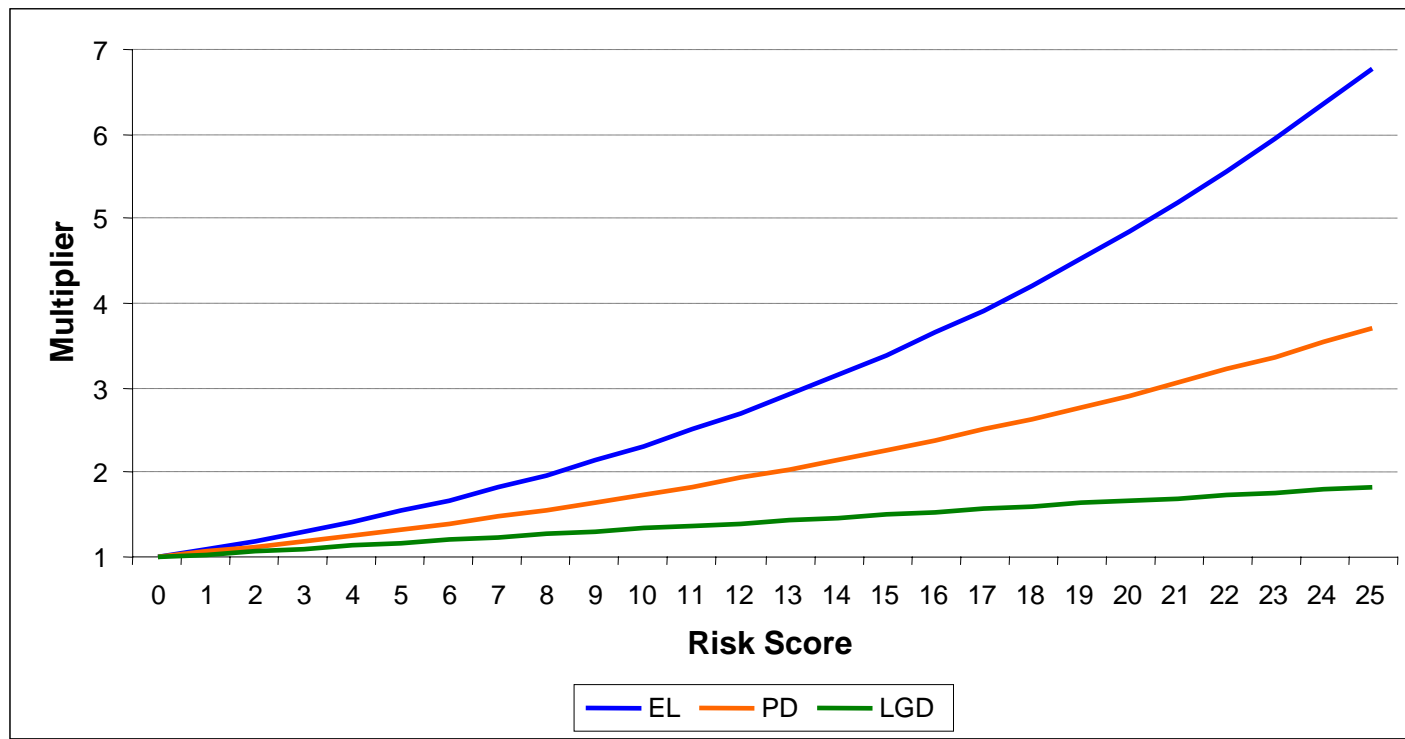
- **Exposure Risk** combines the incidence with the exposure given default
- **Expected Loss** is the risk based “credit price” for closing the loan.
- Loans can now be high risk because of incidence risk alone, exposure risk alone, or a combination of the two.
- **Controlling for credit characteristics** a L-Score = 25 has an expected loss 11 times higher than 0.



Credit Constant Collateral Risk Scores

Are collateral scores predictive of default, loss severity, and expected loss after controlling for traditional risk?

- Rating agency sample of loans with known performance
- Controls for traditional risk characteristics using rating agency risk model



Broker Scoring

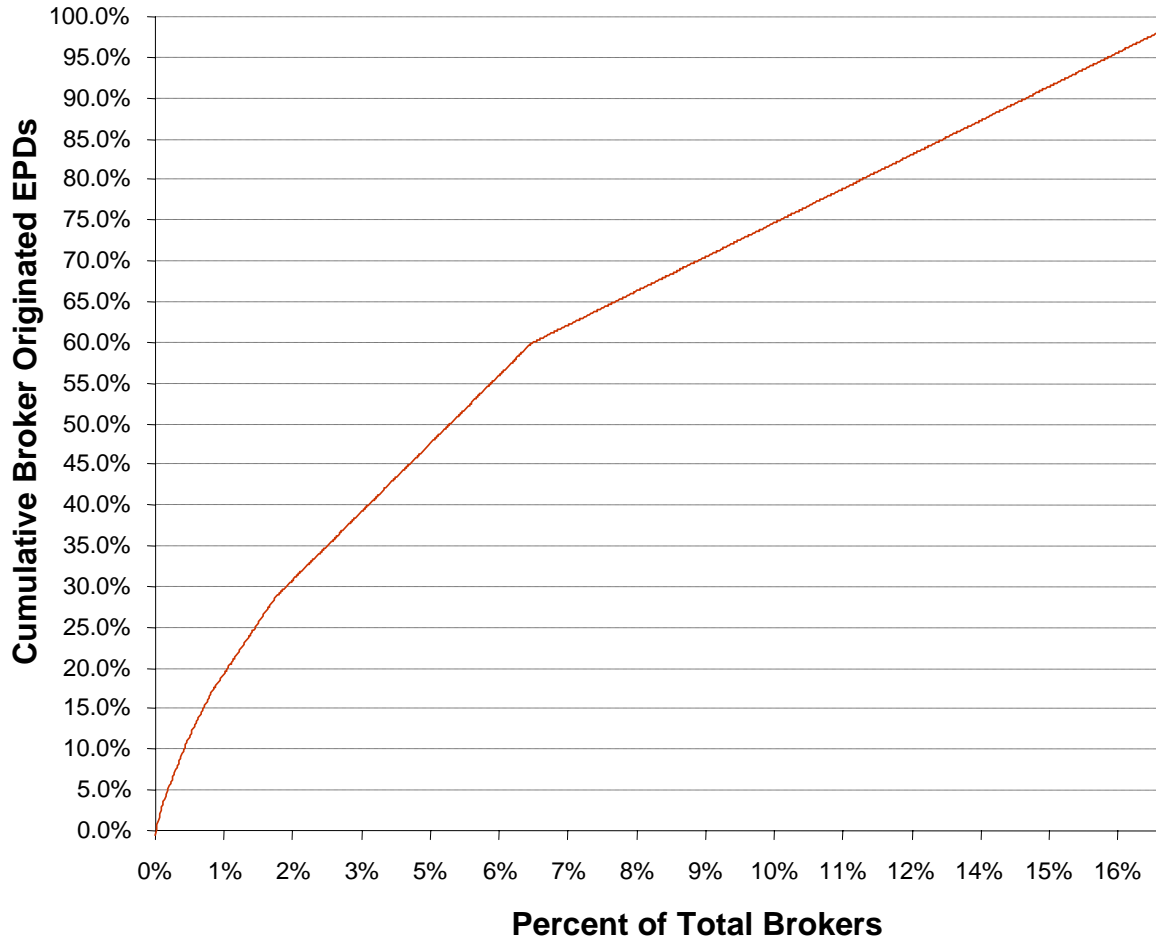
Data suggests that Broker originated loans are risky **BUT:**

- Evidence suggests ‘clustering’ of bad brokers
 - Fraction of all brokers account for majority of all delinquencies and fraud
 - Underwriting unfairly and inefficiently uses a wide brush to categorize third party originators
 - Industry wide broker performance is unknown variable

Goal is to identify pattern in ‘clustered’ brokers using the strength of collateral scoring and our extensive database

- Increase streamlining of Broker originated loans
- Pin point poorly performing brokers

Broker EPD Concentration



Caution Levels:

73% = LOW risk

20% = MEDIUM risk

7% = HIGH risk

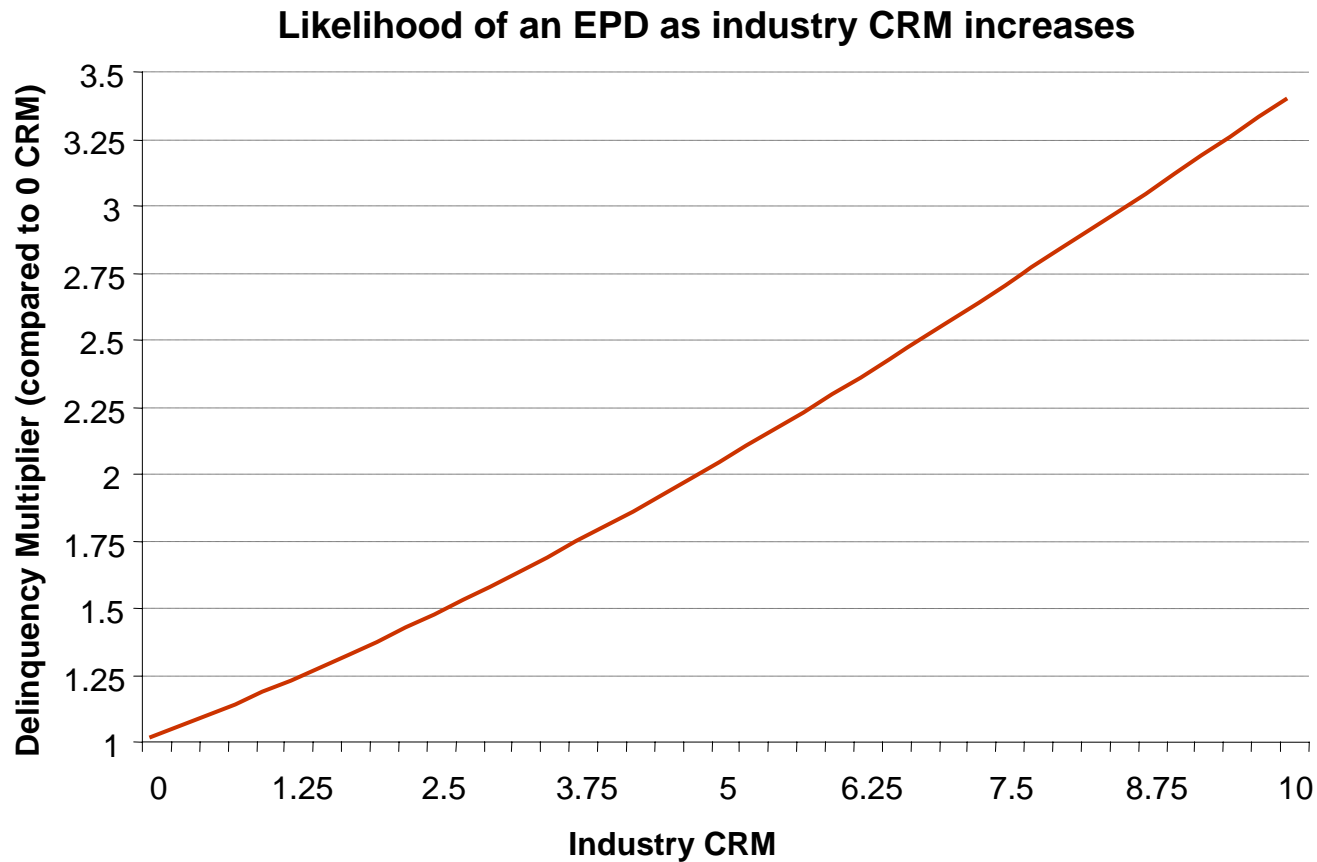
(funding 63% of EPDs)

0.5% = VERY HIGH risk

(funding 13% of EPDs)

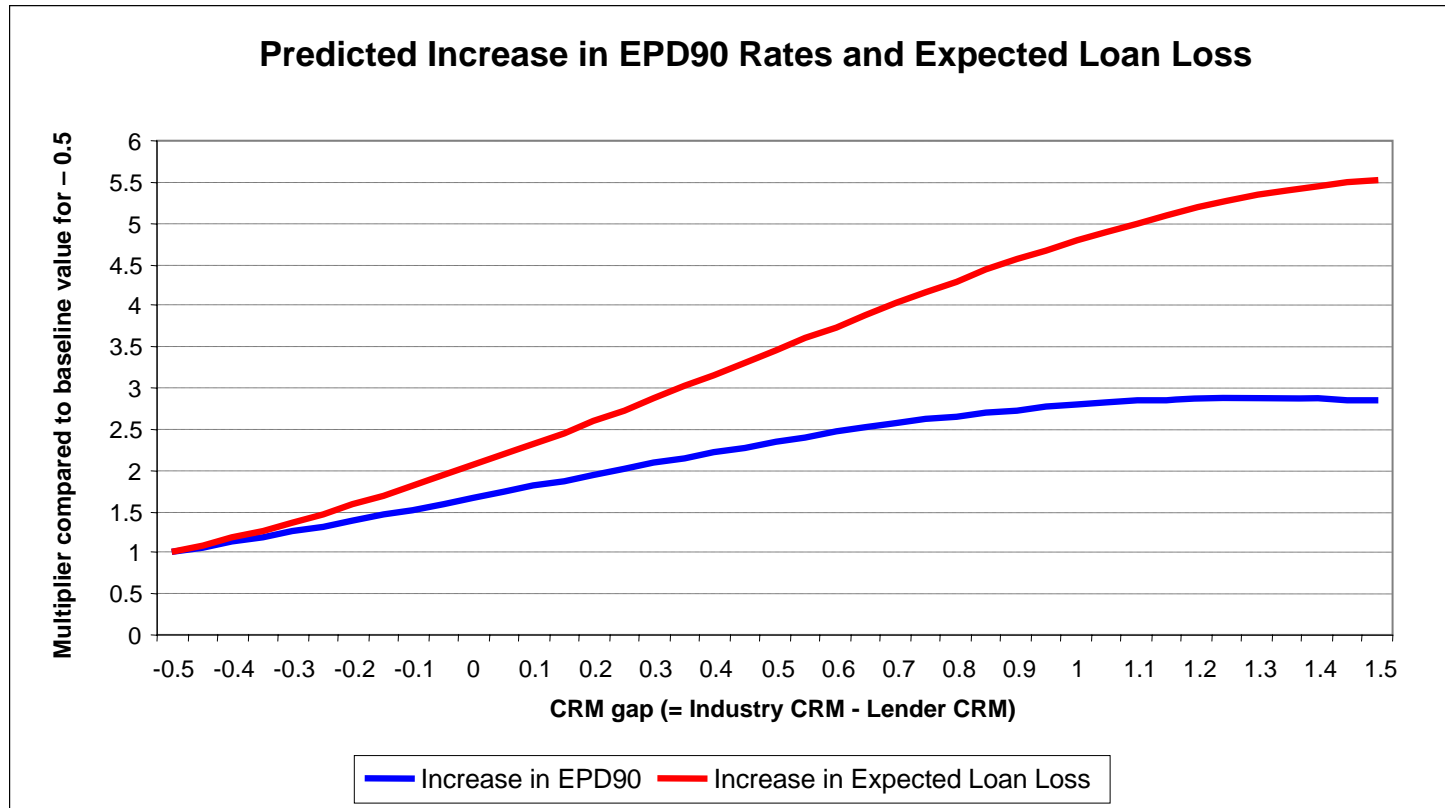
Broker Scoring-Industry Monitoring Risk

Broker CRM = average collateral risk score (f-Score) for the broker's applications to lenders and industry



Broker Scoring-Impact of Adverse Selection

Maintaining a lower than Industry level risk score

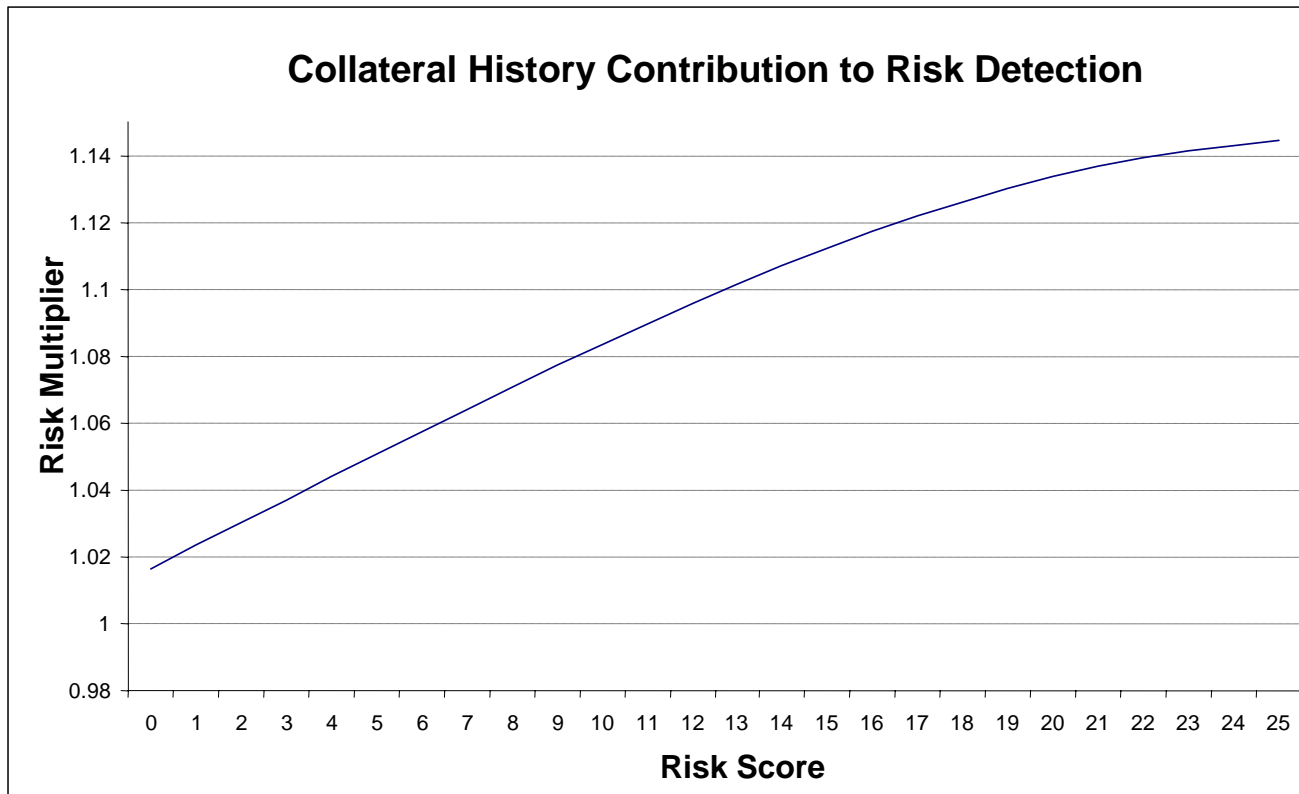


Lender B will experience **2.5 times** as many Early Payment Defaults, and **3.5 times** the expected loan loss on loan deliveries when compared to LenderA

Identity Scoring-Predictive Collateral History

Objective scoring provides efficiencies in lowering false positive rates

At score of 25, a high identity score is 15% more likely to be an EPD



Collateral Risk-Workflow Implementation

Workflow models incorporating Collateral Risk Scores

- Can be used to define prefunding due diligence, post funding QC, servicing levels, pricing, third party approval

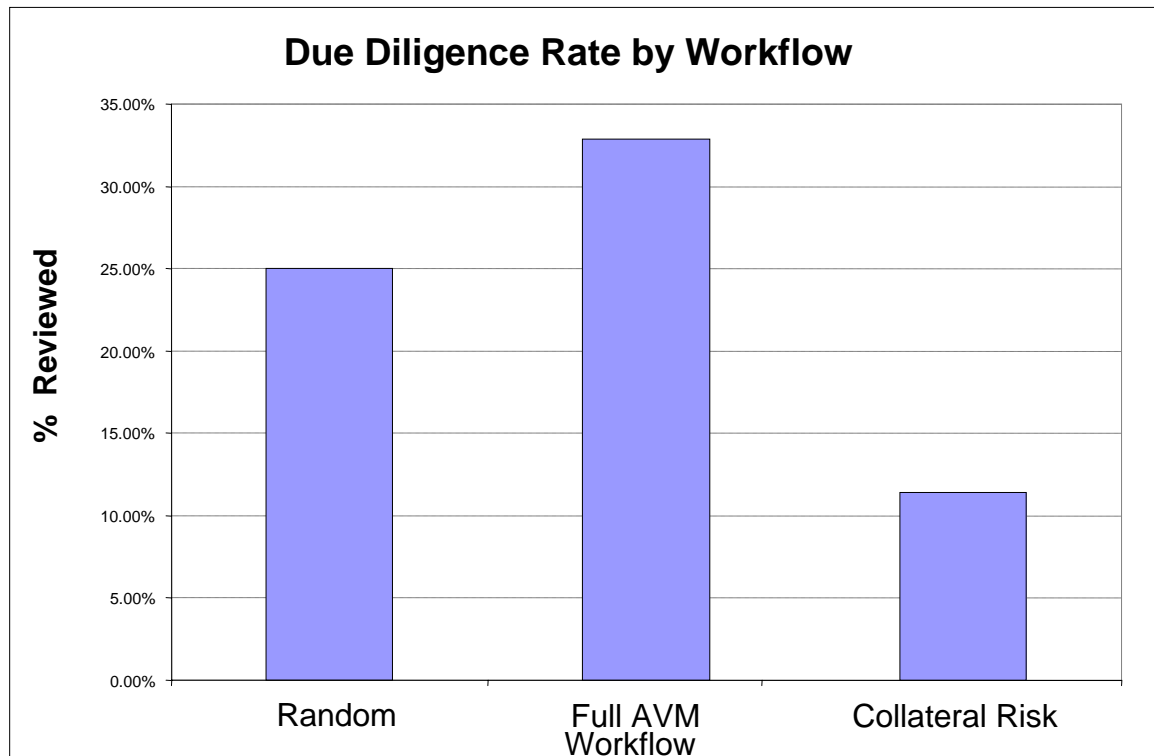
Illustrative example of benefit when performed on a sample of Prime loans:

- Random Sampling of “pipeline”, Full AVM utilization
- Collateral Risk workflow approach:
 - Low risk: Streamline 0 scores
 - Medium risk: AVM tolerance test on 1 – 9 scores
 - High Risk: Underwriting/Appraisal Review on $\geq 15\%$ variance and high risk collateral scores

Collateral Risk-Workflow Implementation

Because of AVM no hits and overall accuracy, the AVM generates a lot of due diligence

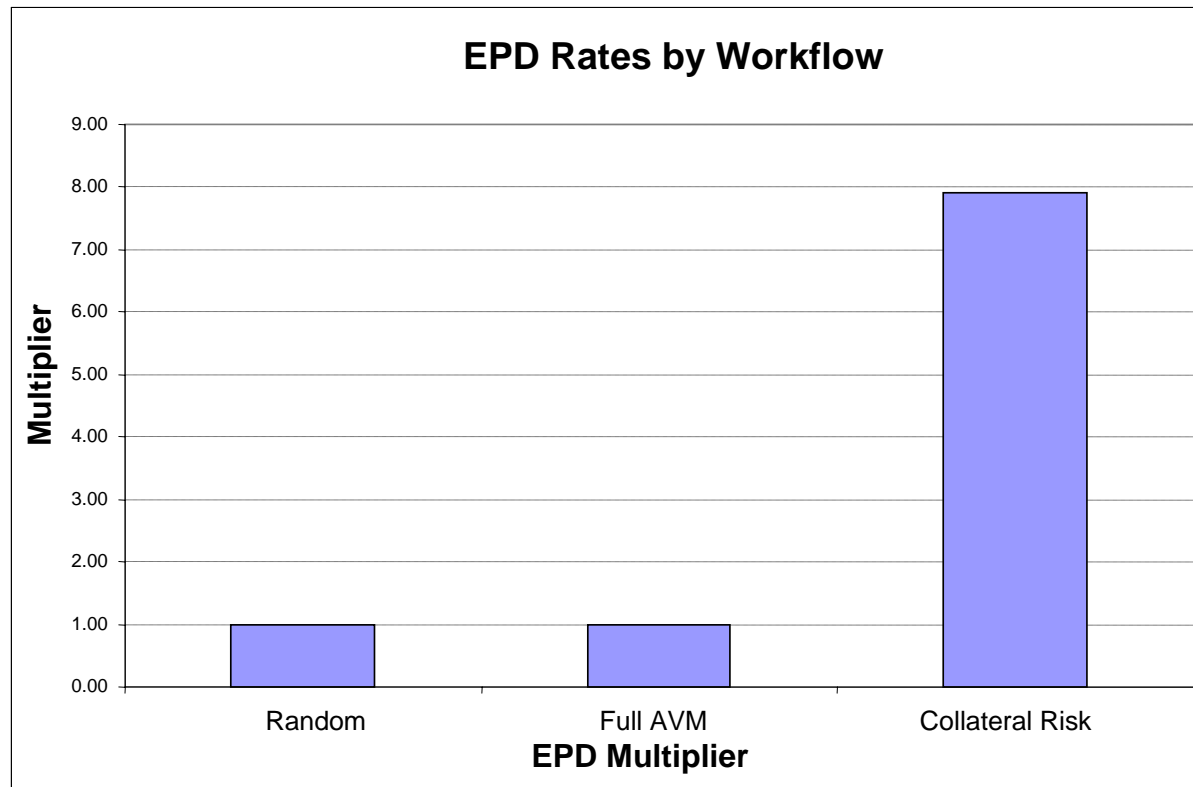
Depending on workflow option, due diligence can be dramatically reduced, but how does it manage risk?



Workflow Simulation

Reduced due diligence, due to Collateral Risk workflow also enhances risk identification

- Simulation on prime data resulted in 8 times as effective EPD detection rate in the reviewed sample



Conclusion

Collateral Risk Tools can be used to:

- Identify Delinquency and Default risk
- Identify Loss Risk
- Combine these risks into Expected Loss Framework
- Risk Based Pricing/Capital Requirements Allocation framework

Collateral Risk Efficiency Gains:

- Improves efficiency and flexibility of due diligence
- Lowers False Positive Rates, strengthens due diligence, increases streamline volume
- Reduces overall Risk Exposure

Risk arbitrage opportunities:

- Incorporating Collateral Risk tools into risk models allows users to adjust risk pricing, capital reserves, and facilitates sale to the secondary market.