Moody's Analytics

Credit Earnings Volatility and Share Price Performance: Implications of IFRS 9 and CECL

Portfolio and Balance Sheet Research

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PRESENTERS

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MODERATOR

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Anna Krayn heads the Risk, Accounting and Insurance Solutions in the Americas. Her team is responsible for solution structuring across Moody's Analytics products and services.

Does Risk Management Add Value?

In order for risk management to matter,

stable performance

must be valued at a premium,

compared to more volatile.

Enter CECL and IFRS 9

Today's Agenda

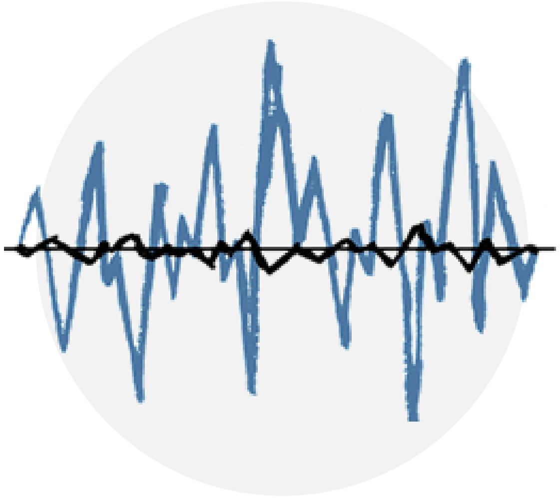
1 The relationship between accounting rules, credit earnings volatility and share price performance

– How does the market interpret the volatility in financials?

2 Implications of credit portfolio management on share price performance

– To what extent can credit portfolio management help address volatility under CECL and IFRS 9?

Why Earnings Volatility Matters



» Impacts capital surplus and solvency

» High volatility is associated with:
- Concerns of opacity and questionable business practices
- Concerns of questionable portfolio composition

» Ultimately, volatility:
- Impacts cost of capital
- Limits business opportunities
- Feeds into valuation and share price

Do Accounting Rules Add Value?

The Accounting Review
Forthcoming

Do the FASB's Standards Add Shareholder Value?

Khan, Li, Rajgopal, and Venkatachalam

Market reactions are higher for firms where estimation risk is reduced.

How Much Does Earnings Volatility Matter?

Journal of Financial Economics

Do investors value smooth performance?

Brian Rountree, James P. Weston, George Allayannis

Journal of Financial Economics

Volume 90, Issue 3 | March 2008

Do Investors Value Smooth Performance?

Rountree, Weston, and **Allayannis**

> "The magnitude of the effect is substantial with a 1% increase in **cash-flow volatility**, resulting in approximately a 0.15% decrease in firm value."

Observations From the Market

WE EXPLORE

the relationship between dynamics in financial statements and equity value of public US bank holding companies from 2002 to 2017; roughly, 6000 observations.

*… where **Equity Value = ratio of market value and book value***

WE WILL FOCUS ON

the impact of **credit earnings risk,** measured as:

- Volatility of Allowance
- Volatility of Net Charge Off

WE CONTROL FOR

- **Capital Structure**
  - Debt-to-Assets Ratio
- **Systematic Risk**
- **Financial Performance**
  - Earnings
  - Allowance
  - Charge Off
  - Interest Income
  - Interest Expense
  - Return on Assets
  - Book Value Growth
  - Volatility of Interest Income
  - Volatility of Interest Expense

Valuation and Components of Earnings Vol

Dependent Variable: Ln(Equity Value)	Beta	t value*
Ln(Volatility of interest income)	-0.028	-1.64
Ln(Volatility of interest expense)	-0.062	-4.22
Ln(Volatility of change in loss allowance)	**-0.080**	-4.69
Ln(Volatility of net charge off)	**-0.120**	-7.13
Ln(Total assets)	-0.220	-10.08
Assets growth	1.748	2.65
Debt-to-Asset ratio	0.752	3.80
Return on assets	9.519	8.90
Ln(Systematic risk)	0.404	12.55
Ln(Idiosyncratic risk)	0.031	0.95
Ln(Non-performing Assets)	-0.015	-3.28

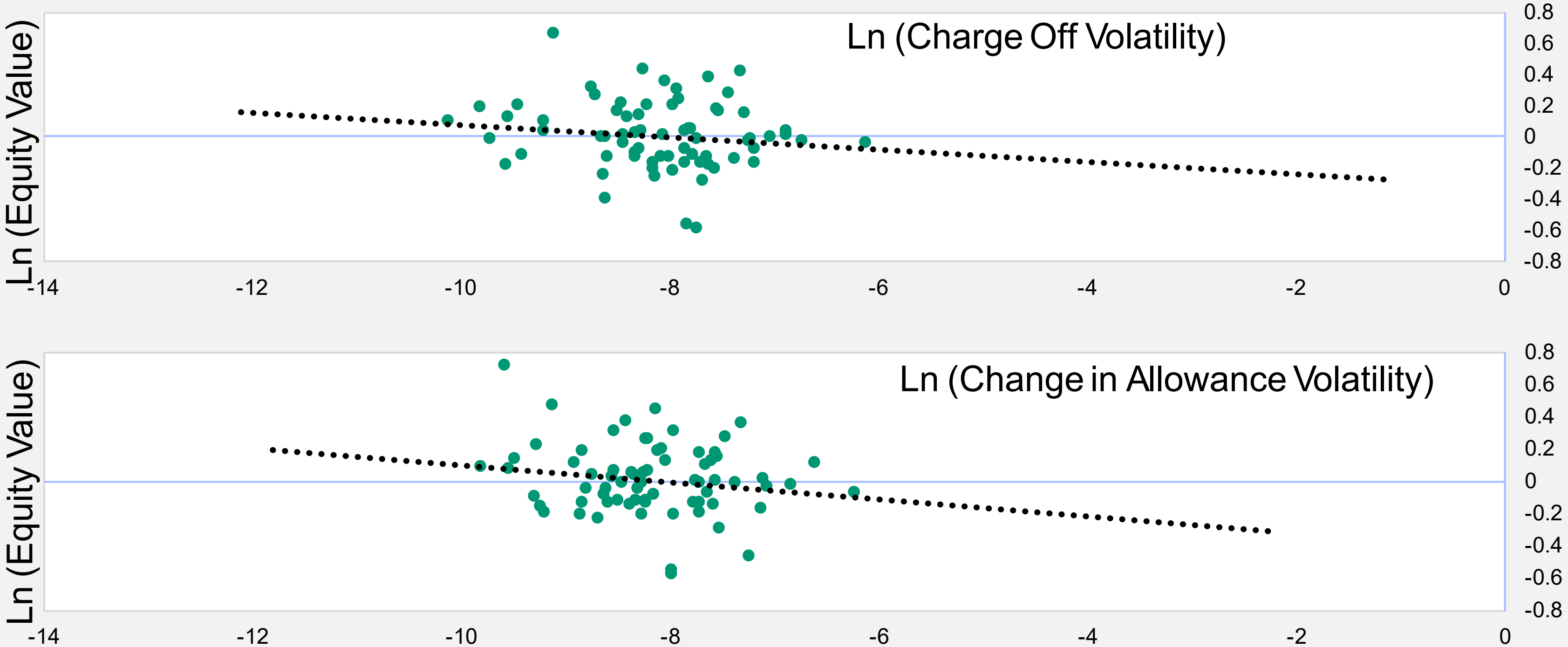
» A 1% increase in volatility of charge off will lead to a 12 bps decrease in stock price

» A 1% increase in volatility of change in loss allowance will lead to a 8 bps decrease in stock price

* Newey-West standard errors and accounting for time fixed effects

Equity Valuation and Volatility

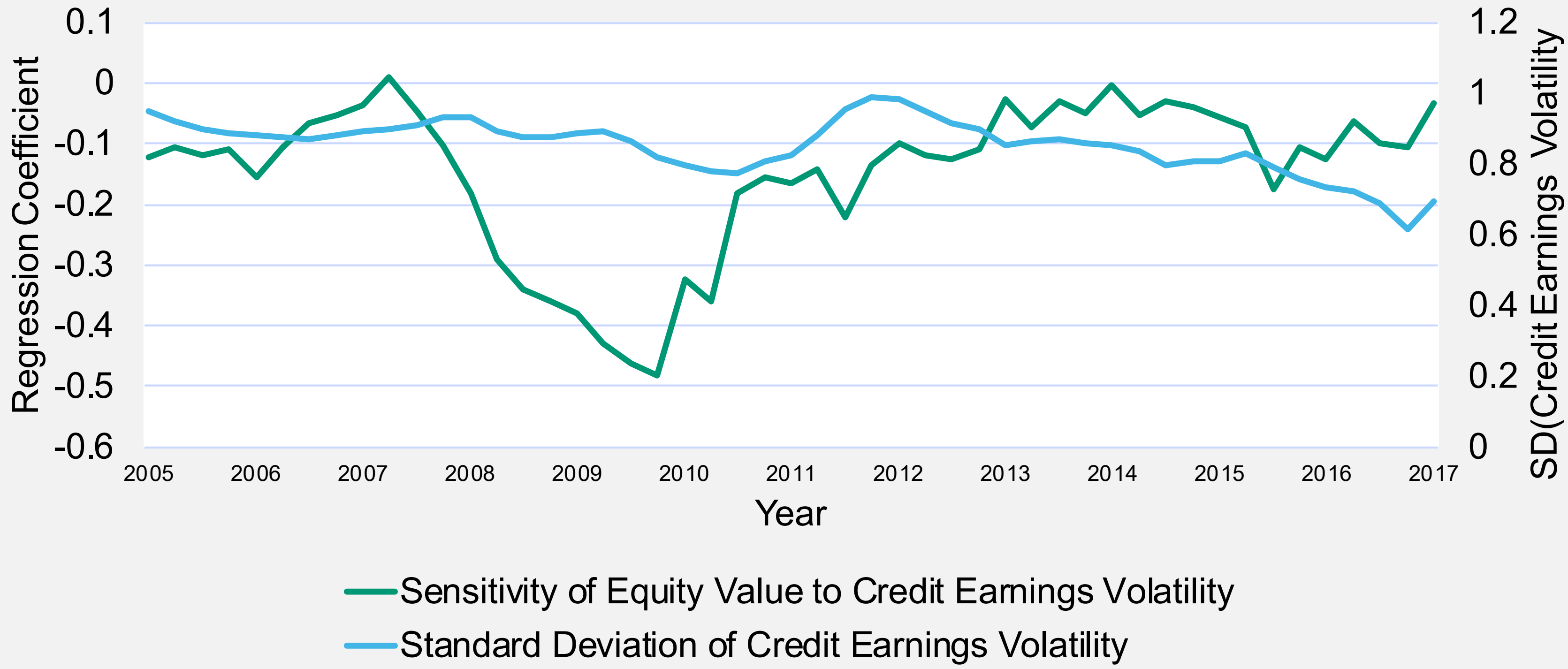
Cross Sectional contribution of credit earnings volatility in 2015 Q2



Values are controlled for: Financial Performance,
Capital Structure Systematic Risk, and Financial Risk

Sensitivity of Equity Value to Volatility

Variation across the credit environment



Sensitivity of Equity Value to Volatility

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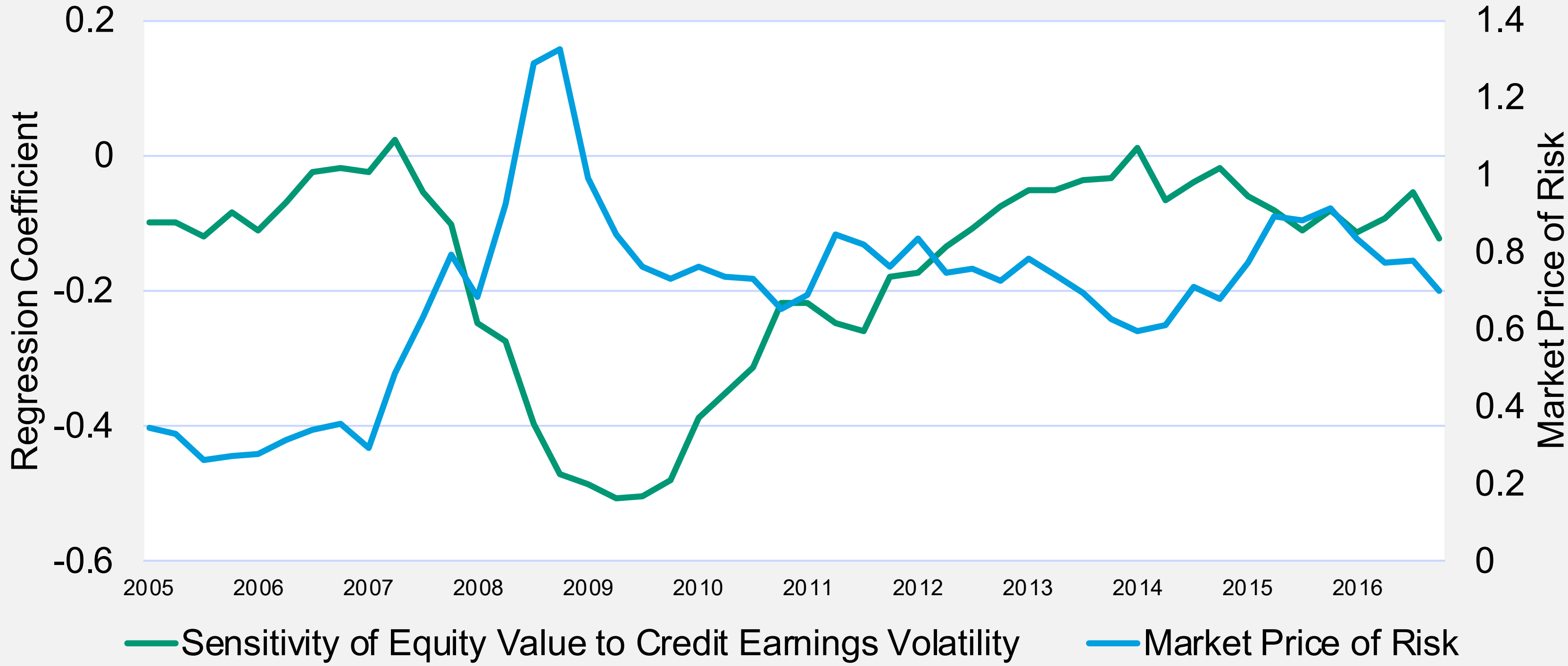

Enter CECL and IFRS 9

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The Value of Credit Risk Management

The negative relationship between earnings volatility and valuation motivates exploring how much value a prudent credit risk management practice can add to a financial institution.

We evaluate a credit risk management strategy:

- Start with the same initial portfolio as benchmark in the first period
- Starting in the second period, our CRM strategy updates the portfolio by optimally allocating free cash to minimize portfolio ex-ante earnings volatility while maintaining the profitability level as benchmark.

1 **CECL Benchmark**

Actual US banks' portfolio time series in the CRD/LAS dataset.

2 **IFRS 9 Benchmark**

Synthetic European loan portfolio time series consisting of all European public-firm borrowers.

Reinvestment Policies

Allocation of free cash-flow generated by a credit portfolio

Interest Income

\+ Recovery from Defaults

\+ Matured Loans

= Free Cash is Used to Originate Loans

→ Optimized reinvestment policy: Minimize earnings volatility

Data for CECL Benchmark Portfolios

Seven US banks' portfolios from Moody's CRD/LAS database

- There are seven US banks with data from 2005 to 2016, covering both pre and post crisis periods.
- The benchmark bank portfolios include non-real estate term loans and revolvers that have bank-provided net balance, coupon rates and maturity as well as Moody's Analytics RiskCalc PDs.
- Loss given default is set to be 25% for secured loans and 45% for non-secured loans.
- Portfolio performance over time is evaluated under CECL rules.

Data for the IFRS 9 Benchmark Portfolio

A synthetic loan portfolio consisting of loans to public European firms

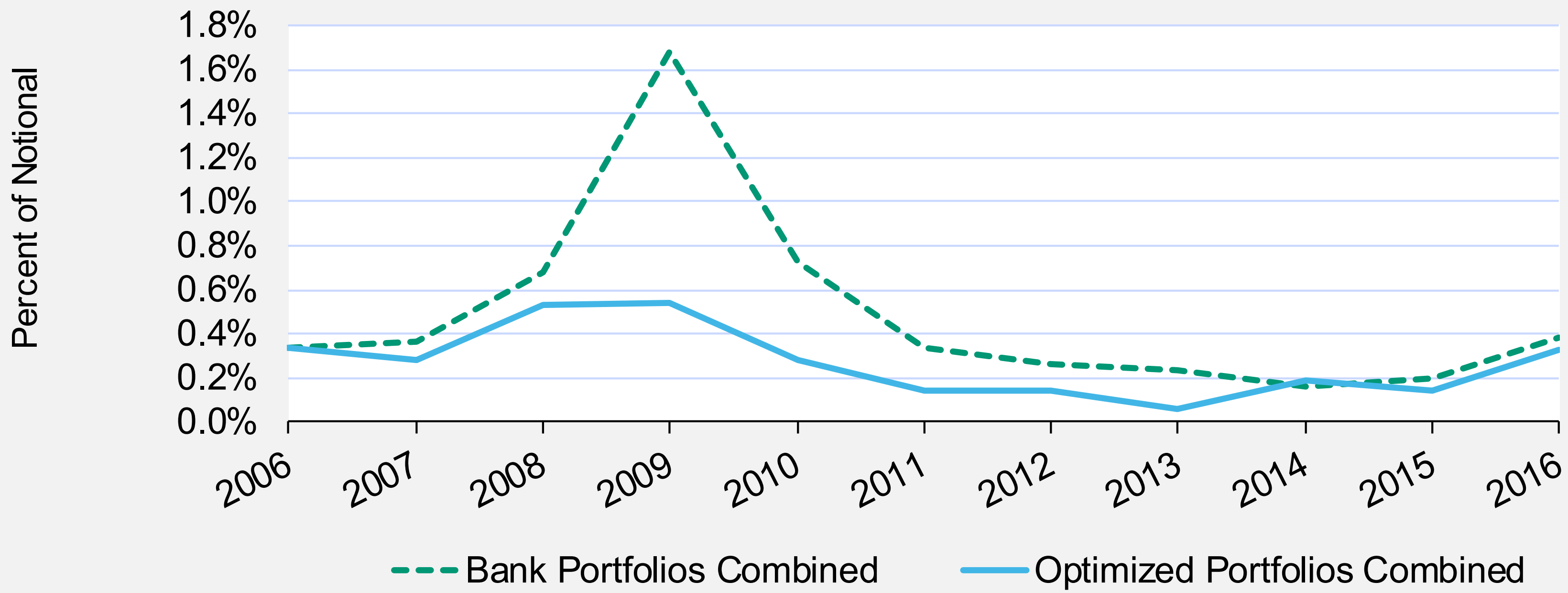
Instrument Characteristics

NEW ORIGINATION

LOAN MARKET	determined by outstanding liabilities of publicly traded firms – some adjustments for financial firms
MATURITY	determined by current and long-term liabilities validated against Pillar III data
CREDIT RISK	Moody's Analytics EDF
SPREAD	Implied Par Spread
REFERENCE RATE	three-month LIBOR rate

Realized Default Loss of Seven US Banks

The CRM strategy reduces default risk during the crisis period

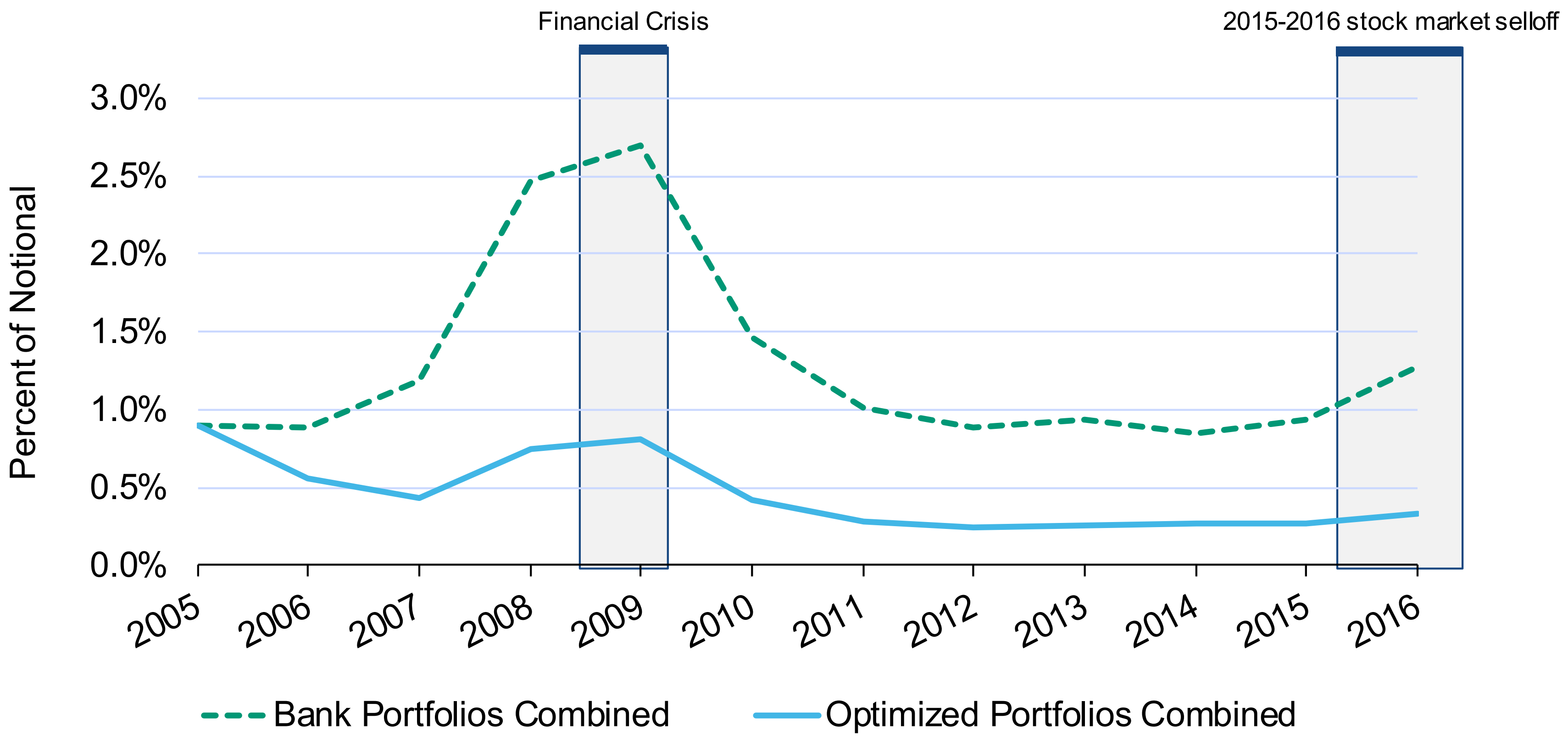


Variable	Average		Volatility	
	Benchmark	Optimized	Benchmark	Optimized
Default Loss	0.49%	0.27%	0.43%	0.16%

The CRM strategy reduces default loss volatility by 63%, which is associated with a 7.6% increase in each bank's equity value.

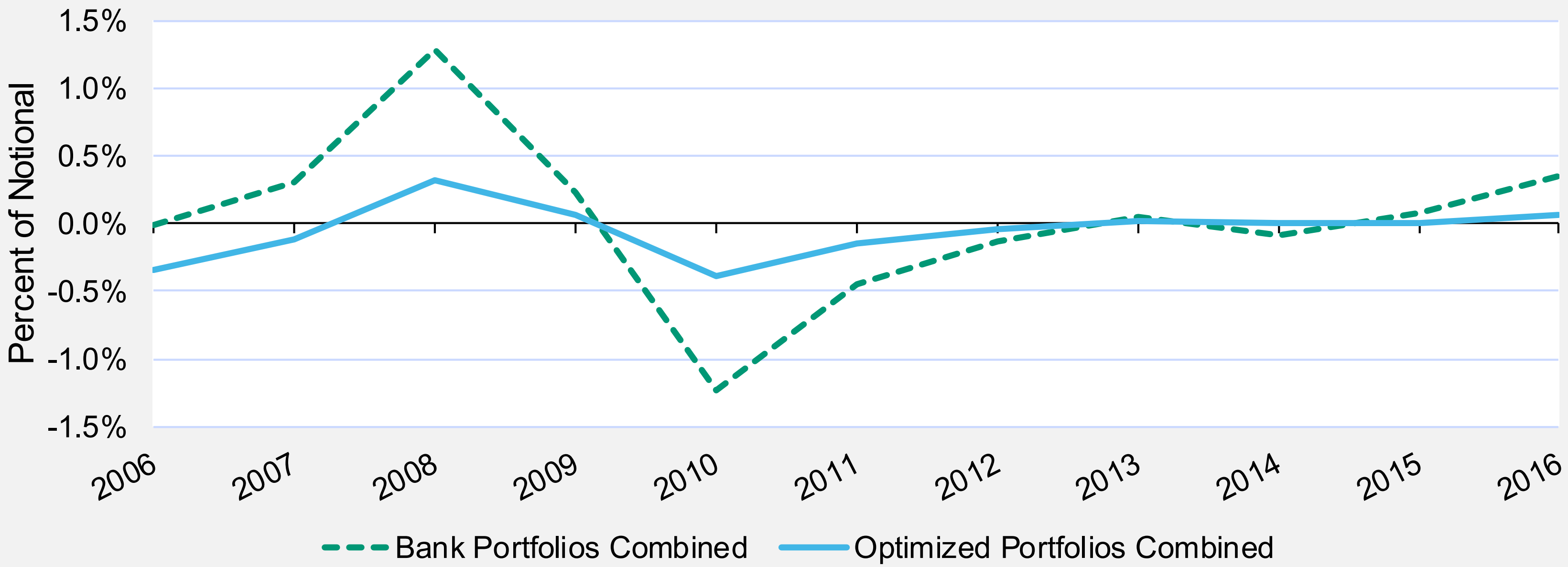
CECL Loss Allowance of Seven US Banks

The CRM strategy results in less CECL loss allowance



Change in CECL Loss Allowance of US Banks

The CRM strategy lowers CECL loss allowance volatility

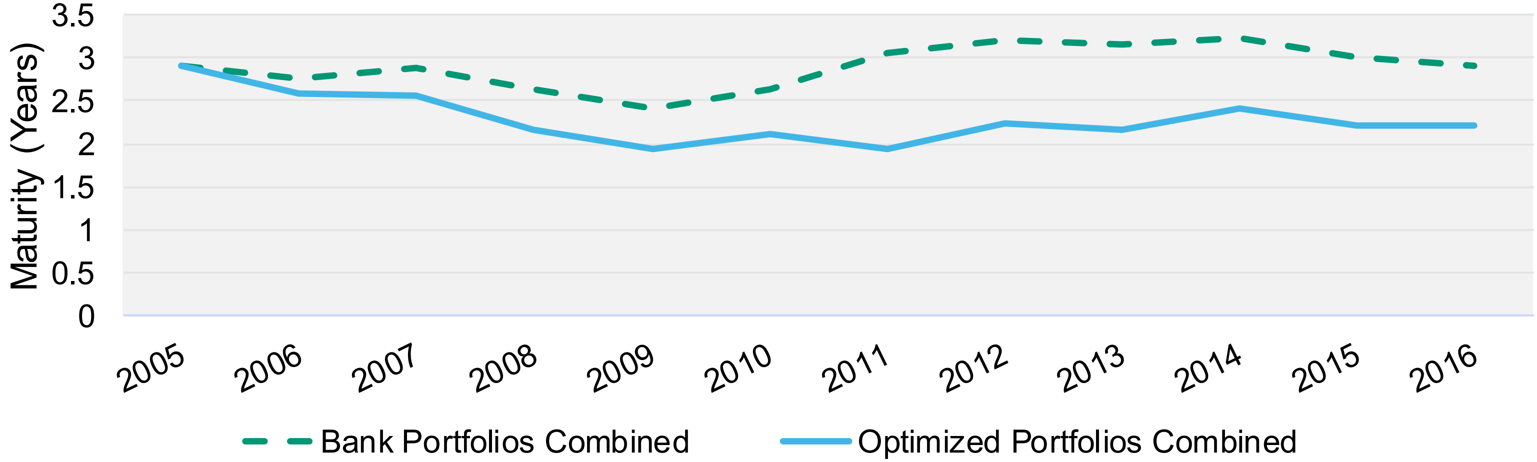


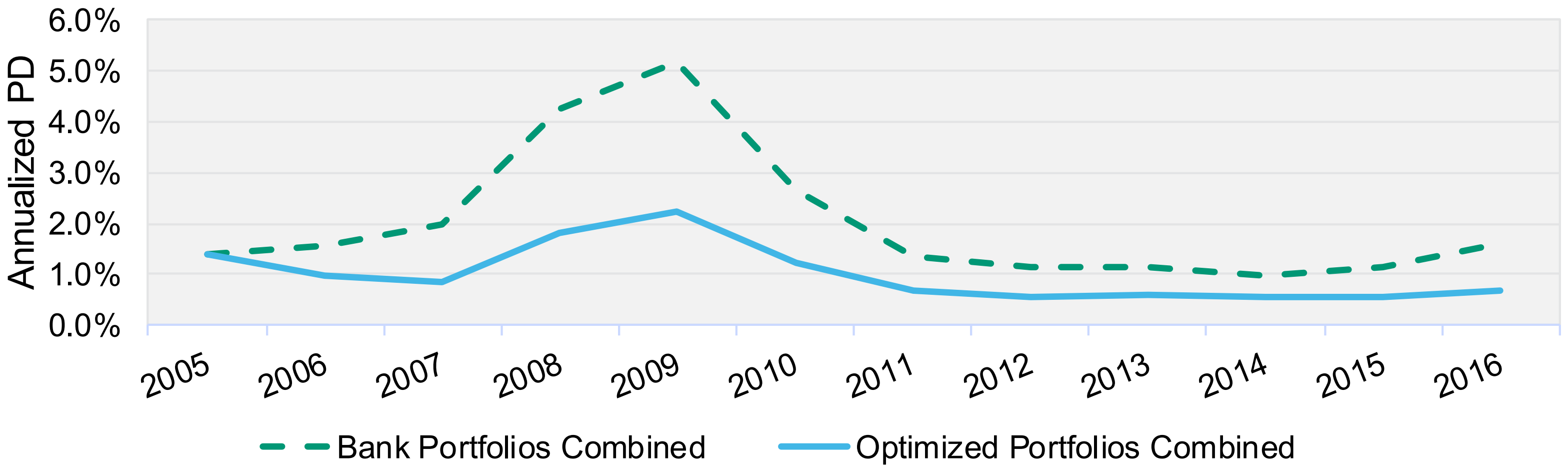
Variable	Average		Volatility	
	Benchmark	Optimized	Benchmark	Optimized
Change in Loss Allowance	0.04%	-0.05%	0.60%	0.20%

The CRM strategy reduces volatility of changes in loss allowance by 67%, which is associated with a 5.4% increase in equity value.

The Implication of CECL

Loans with shorter maturity and lower PD are preferred under CECL





Portfolio Default Loss Volatility by Bank

The CRM strategy lowers volatility in default loss

Bank	Default Loss Volatility		Implied Increase in Equity Value
	Benchmark	Optimized	
Bank 1	0.53%	0.20% (63%↓)	7.6%
Bank 2	0.36%	0.13% (64%↓)	7.7%
Bank 3	0.42%	0.41% (2.4%↓)	0.3%
Bank 4	0.77%	0.47% (39%↓)	4.7%
Bank 5	0.34%	0.20% (41%↓)	4.9%.
Bank 6	0.26%	0.15% (42%↓)	5.0%
Bank 7	0.38%	0.17% (55%↓)	6.6%

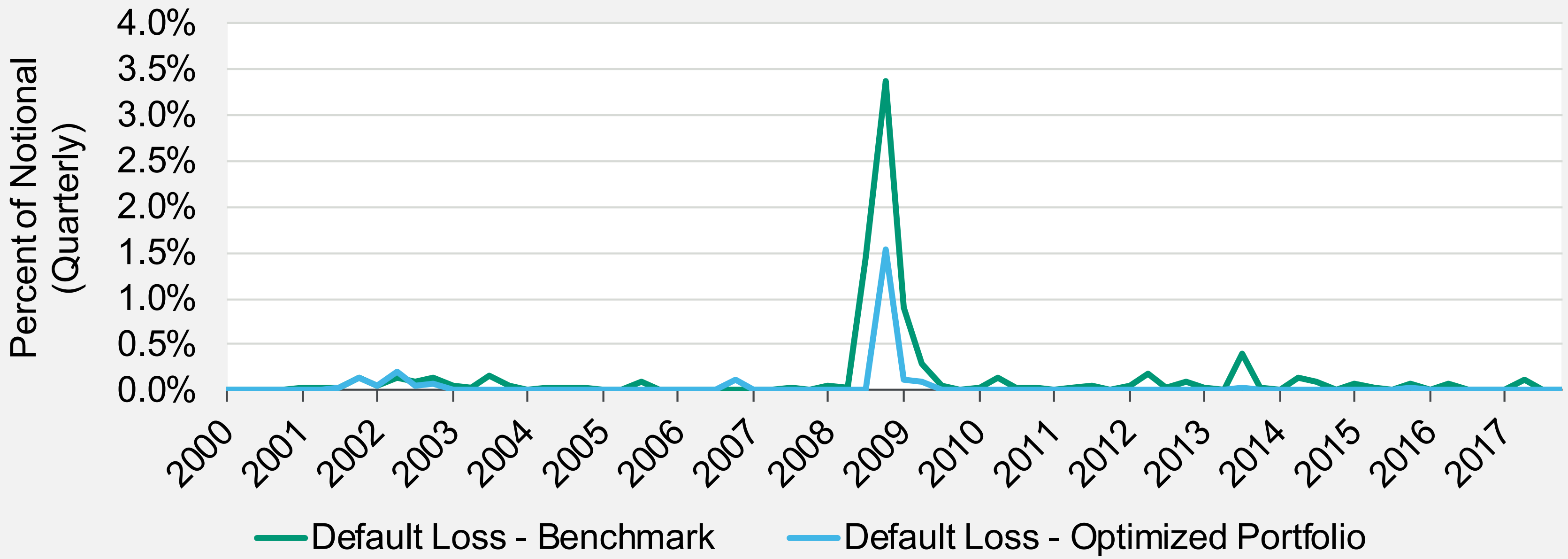
Portfolio Loss Allowance Volatility by Bank

The CRM strategy results in less loss allowance

Bank	Change in Loss Allowance Volatility		Implied Increase in Equity Value
	Benchmark	Optimized	
Bank 1	0.48%	0.14% (71% ↓)	5.7%
Bank 2	0.93%	0.27% (71% ↓)	5.7%
Bank 3	1.08%	0.37% (66% ↓)	5.3%
Bank 4	0.62%	0.25% (60% ↓)	4.8%
Bank 5	0.69%	0.32% (54% ↓)	4.3%
Bank 6	0.73%	0.25% (66% ↓)	5.3%
Bank 7	0.47%	0.17% (64% ↓)	5.1%

Realized Default Loss of European Portfolio

The CRM strategy reduces risk during the crisis period

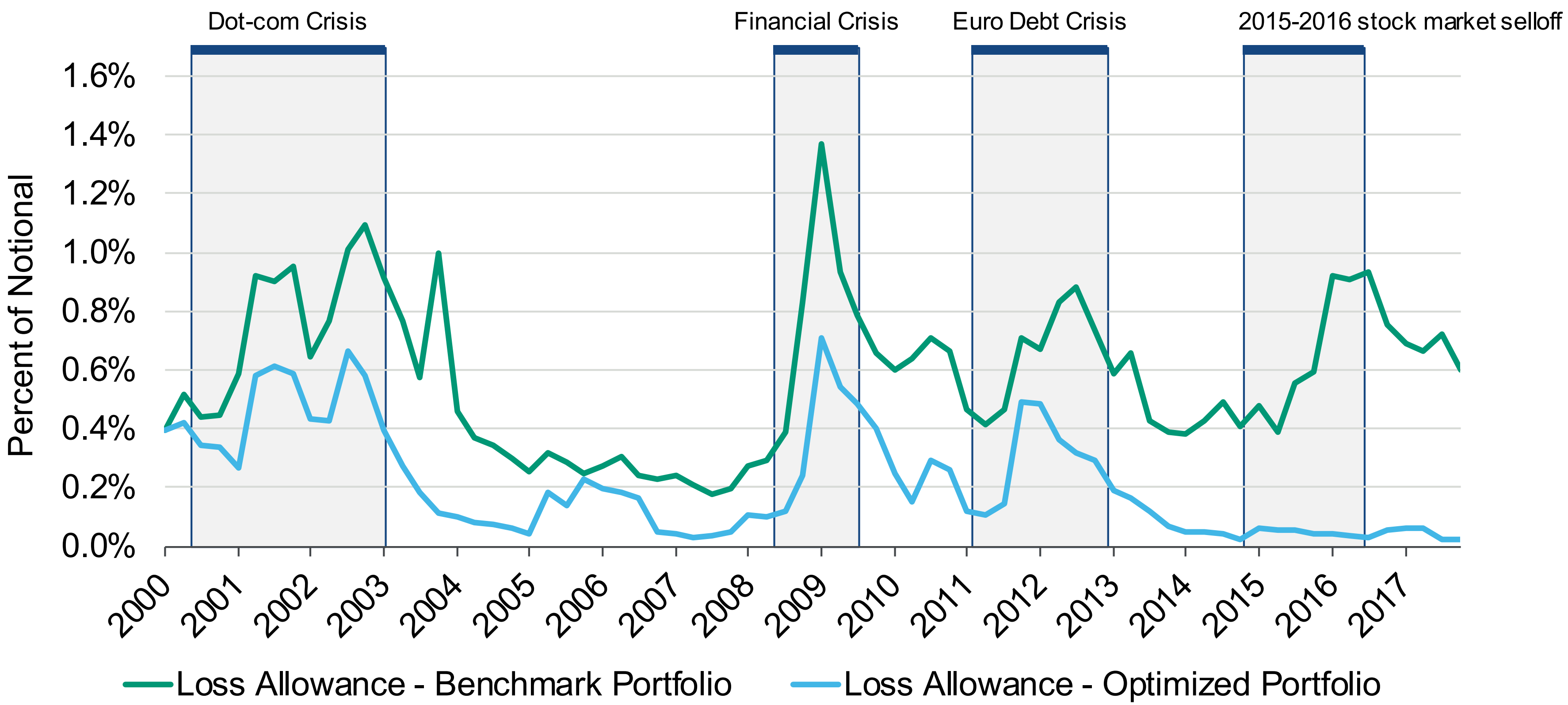


Variable	Average		Volatility	
	Benchmark	Optimized	Benchmark	Optimized
Default Loss	0.13%	0.03%	**0.44%**	**0.18%**

The CRM strategy reduces default loss volatility by 59%, which is associated with a 7.1% increase in equity value.

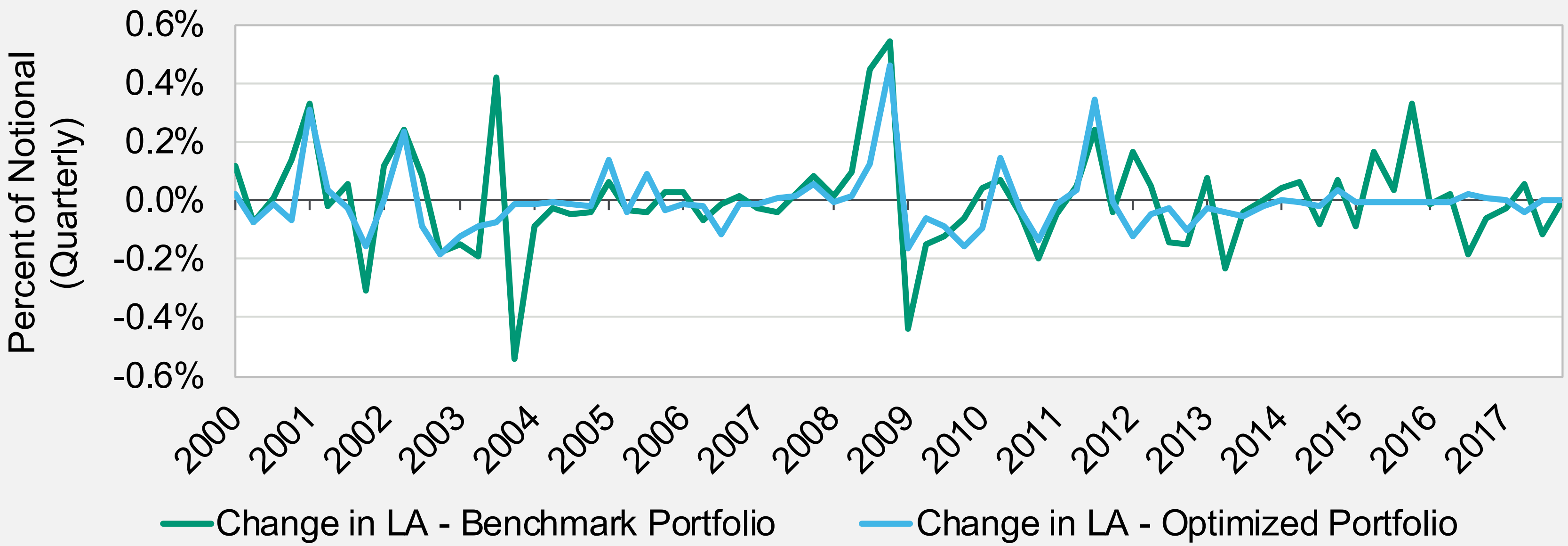
Realized Loss Allowance Under IFRS 9

The CRM strategy results in less IFRS 9 loss allowance



Change in IFRS 9 Loss Allowance

The CRM strategy lowers CECL loss allowance volatility

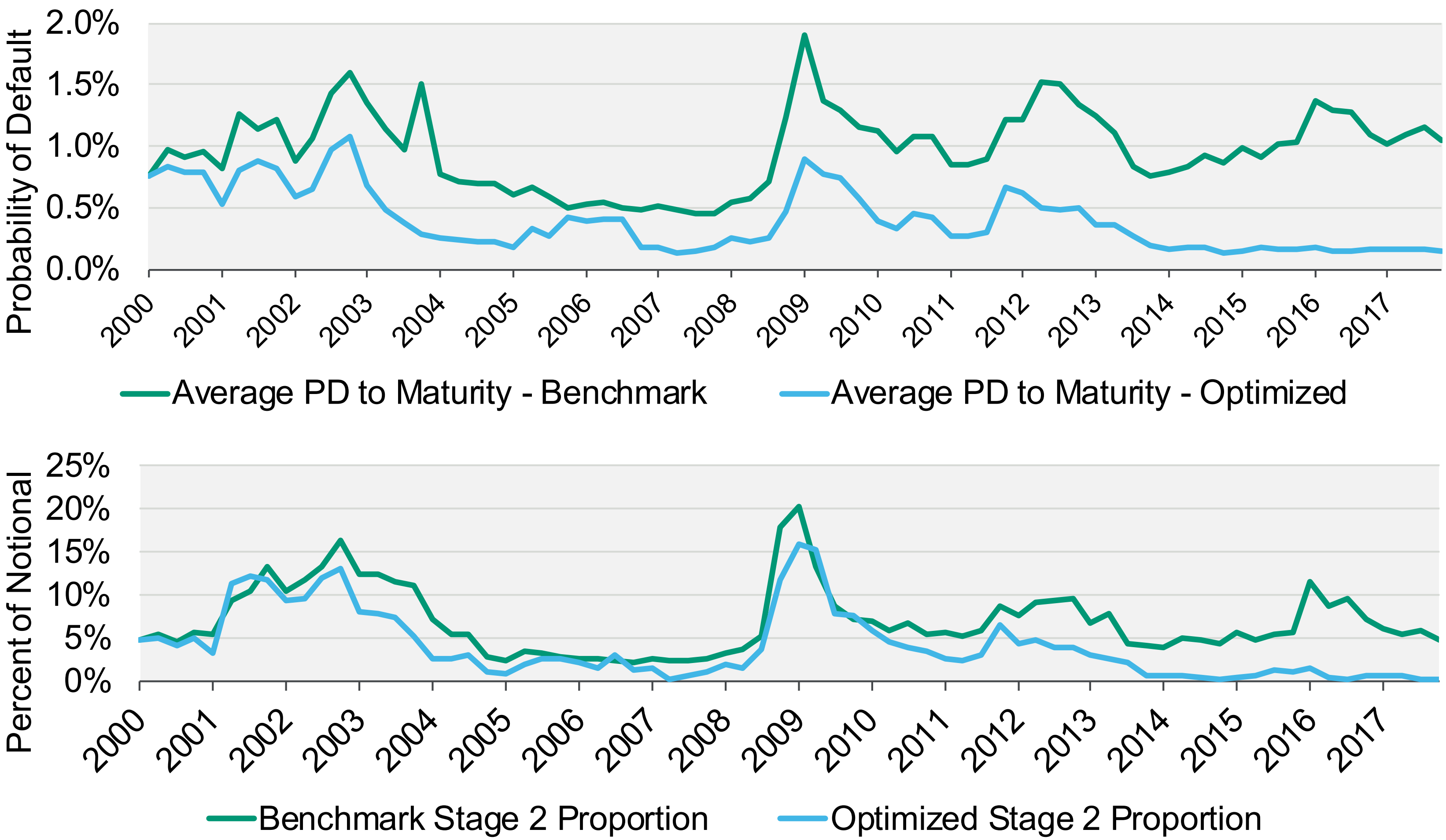


Variable	Average		Volatility	
	Benchmark	Optimized	Benchmark	Optimized
Change in Loss Allowance	0.00%	-0.01%	**0.17%**	**0.11%**

The CRM strategy reduces changes in loss allowance volatility by 35%, which is associated with a 2.8% increase in equity value.

Realized Portfolio Characteristics

PD to Maturity and Proportion of Stage 2



Credit Earnings Volatility, CECL, IFRS 9 and Share Price Performance

1. **Accounting rules can have a material impact on valuation.** Opacity and cost can have a detrimental impact on valuation.
2. **Earnings volatility is negatively associated with valuation.** For financial institutions both charge off and allowance play a role.
3. **Credit portfolio management.** Techniques can materially reduce portfolio volatility and positively impact valuation.

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