Implementation of CECL Methodology

Start

Transition

Project Mobilization

-Develop CECL Management Team
-Confirm scope and requirements
-Discuss data accessibility and
 talk with loan accounting/system
 vendor
-Methodology and Design Sessions
-Design Decisions
-Determine Timeline

Confirm Requirements

-Review data requirements
-Confirm loan segments/pools
-Confirm forecast (life of loss)
 assumptions and qualitative factors
-Establish forecast and qualitative
 factor parameters
-Agree on final methodology/
 methodologies
-Confirm Data
-Confirm Reports
-Confirm Users

Iterative Prototype Review

Revisions

-Develop CECL Prototypes
-Review all assumptions used
 for forecast and qualitative
 factors for reasonableness
-Prototype Reviews
-Prototype Revisions

Final Development

-Review interim results
-Final Revisions
-Final Development

System Testing/Validation

Management/BOD reviews:
-CECL Methodology
-All data and documentation supporting
 forecast assumptions
-Ongoing testing plan
-Scripts
-Bug Fixes
-Deployment Plan

Launch

Support

Orchestration Platform Alignment & Adoption

Project Management / Quality Assurance
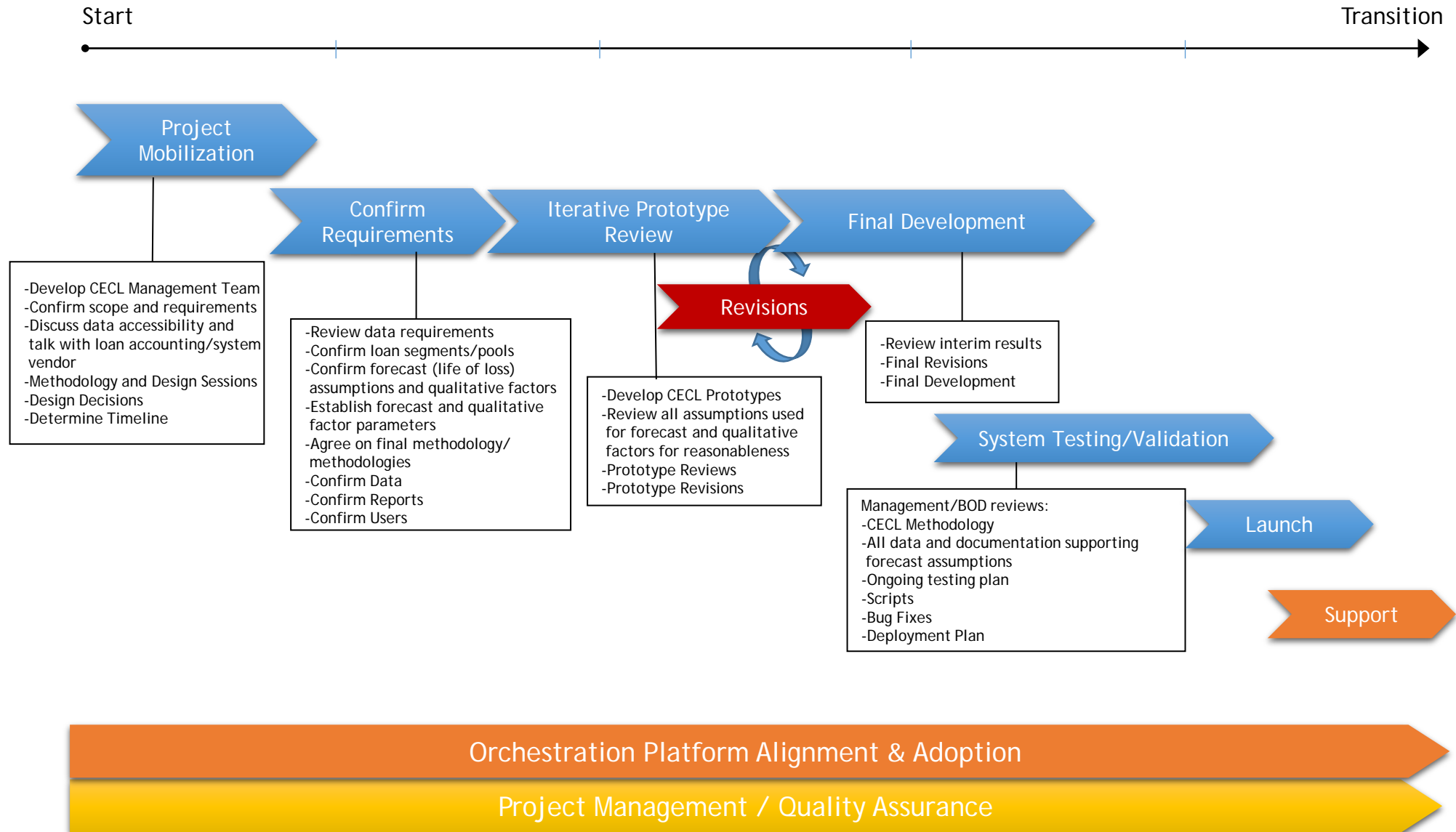
CECL Implementation and Modeling Summary

- Begin gathering data by loan /asset type or pool:
  - o Historical loss information
  - o Economic trend data and correlation of other qualitative factors
  - o Ensure Key fields are extractable from the loan system
  - o Obtain historical loan data from the loan system. Is data purged or archived?
  - o Determine contractual life and prepayment information from historical loan data
- Consider potential expected loss methodologies
- Keep BOD, Auditors and Examination team up to date

CECL Implementation and Modeling Summary

- Become familiar with Accounting Standards Update (ASU) 2016–13
- Develop an implementation team and plan a timeline with key stakeholders:
    - Board of directors
    - Industry peers
    - External auditors
    - Supervisory agencies
- Review existing allowance and credit risk management practices and policies
- Begin gathering data by loan /asset type or pool:
    o Historical loss information
    o Economic trend data and correlation of other qualitative factors
    o Ensure Key fields are extractable from the loan system
    o Obtain historical loan data from the loan system. Is data purged or archived?
    o Determine contractual life and prepayment information from historical loan data
- Consider potential expected loss methodologies
- Keep BOD, Auditors and Examination team up to date

Loan Data Requirements

Key	Required for initial model implementation		
Model	Additional fields necessary for DCF, Vintage and PD/LGD Models		
	Loan Data Fields		Loan Data Fields
Key	$ Limit/Unused Comittments	Model	Days Delinquent
Key	Account Number	Model	Risk Rating
Key	Current Balance	Model	Payment Frequency
Key	Origination Date	Model	TDR Flag
Key	Current Maturity Date	Model	Call Report Code
Key	Modification/Renewal Date	Model	Collateral Code
Key	Current Interest Rate and index factor	Model	NAICS Code
Key	Rate Floor and Ceiling	Model	Product Code
Key	Fixed/Adjustable rate	Model	Current Collateral Value/Original Collateral Value
Key	Chargeoff Amount	Model	Current /Original Collateral Value Date (appraisal date)
Key	Chargeoff Date	Model	Delinquency Status
Key	Current Deferred Loan Cost	Model	# of Times Past Due more than 120 Days
Key	Current Deferred Loan Fees	Model	# of Times Past Due more than 180 Days
Key	Current Discount	Model	# of Times Past Due more than 30 Days
Key	Current Premium	Model	# of Times Past Due more than 60 Days
Key	Current Payment Amount	Model	# of Times Past Due more than 90 Days
Key	Current Interest Payment	Model	Balloon Payment
Key	Current Principal Payment	Model	Current/Original FICO Score
Key	Original Balance	Model	Current/Original Risk Rating
Key	Original Discount	Model	Credit Bureau Combined LTV
Key	Original Premium		
Key	Loan Type Code		
Key	FDIC Type Code		
Key	Guarnatee Amount		

- ☷ Summary
- 💬 Qualitative
- ⚠ Impairments
- ☰ Loans
- ☁ Upload Loans
- 🔗 Upload Chargeoffs
- 🗓 Periods
- ⚙ Settings

Period	Total Balance	Total Vintage Reserve	Total Qualitative Reserve	Total ALLL Reserve	Total ALLL / Balance
Q2 2016	$750,272,905.79	$61,591,550.16	$0.00	$61,591,550.16	8.209%

Name	Balance	Vintage Reserve	Qualitative Reserve	ALLL Reserve	ALLL / Balance	Actions
Construction, land development, and other land loans	$57,161,557.49*	$17,180,100.36*	$0.00*	$17,180,100.36*	30.055%	Actions
1-4 family residential	$8,348,839.76	$300,980.49*	$0.00	$300,980.49	3.605%	Actions
Impaired Loans	$0.00	$0.00				Actions
Other construction loans	$48,812,717.73	$16,879,119.88*	$0.00	$16,879,119.88	34.579%	Actions
Impaired Loans	$13,276,385.22	$13,276,385.22				Actions
Secured by farmland	$0.00*	$0.00*	$0.00*	$0.00*	0.000%	Actions
Impaired Loans	$0.00	$0.00				Actions
Secured by 1-4 family residential properties	$5,371,204.09*	$389,305.50*	$0.00*	$389,305.50*	7.248%	Actions
Revolving, open-end loans secured by 1-4 family residential	$5,371,204.09	$389,305.50*	$0.00	$389,305.50	7.248%	Actions
Impaired Loans	$0.00	$0.00				Actions
Closed-end loans secured by 1-4 family residential properties	$243,984,106.71*	$12,137,603.82*	$0.00*	$12,137,603.82*	4.975%	Actions

Import Process and Vintage Methodology

Loan Import

- Loans are imported and allocated to each loan type/segment. i.e. Consumer, Residential, C&I, CRE, etc.

- Loan segments are sorted by origination year if the loan TB has not been purged.

- If the historical loan data has been purged, historical year end loan trial balances are individually imported i.e. 12/31/2007, 12/31/2008, 12/31/2009 etc. Loans are tagged by account number and all new loans are added after each import. (We are not going to get all the origination totals correct due to missing renewal dates).

Charge-off/Recoveries (C/R)

- C/R are imported by loan type/segment and allocated by origination year.

USA Bank

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| Loans | Impairments | Chargeoffs | Totals By Year | Vintage Analysis |

Total Opening Amount	Total Balance	Total Historical Loss	Total Vintage Reserve
$469,518,250.85	$241,944,325.01	$8,206,765.62	$8,538,950.38

Year	Total Opening Amount	Total Balance	Total Historical Loss	Loss Percentage	Total Vintage Reserve
< 2005	$64,209,857.43	$3,020,919.48	$0.00	0.000%	$0.00
2005	$18,282,757.00	$3,463,785.87	$194,130.00	0.235%	$8,151.33
2006	$24,135,518.24	$1,734,208.36	$1,130,510.83	4.684%	$81,230.55
2007	$22,175,543.52	$4,584,154.29	$3,545,264.56	15.987%	$732,881.24
2008	$33,648,291.70	$7,974,553.00	$2,792,903.96	8.300%	$661,910.59
2009	$26,735,370.00	$9,348,460.23	$466,146.05	1.744%	$162,995.61
2010	$31,406,086.03	$10,498,660.82	$77,810.22	0.248%	$26,010.98
2011	$17,866,306.00	$9,946,432.42	$0.00	0.000%	$0.00
2012	$25,198,345.89	$11,676,899.61	$0.00	2.145%	$250,463.36
2013	$41,895,317.11	$31,083,858.59	$0.00	2.507%	$779,148.71
2014	$51,507,736.93	$45,880,049.89	$0.00	3.646%	$1,672,839.66
2015	$76,080,541.00	$67,287,532.03	$0.00	3.849%	$2,589,923.33
2016	$36,376,580.00	$35,444,810.42	$0.00	3.940%	$1,396,683.92

Import Process and Vintage Methodology

Charge-offs/Recoveries (C/R)

- C/R are allocated by the year of charge-off within each origination period. i.e. Origination date: 2/31/2008, Charge-off date: 2/31/2012. Vintage year: 2008, Charge-off period: Year 3.

Vintage Loss %

The numerator is the charge off amount for each period and the denominator is the average amortized origination amount for that period, i.e. Year 2: $9,538,800

Annual Interest Rate	5.00%	Average calculated						
Ave Amortization Years	20	Parameter for the whole pool						
Payments Per Year	1							
Amount	$10,000,000							
Payment Number	Payment	Principal	Interest	Balance	Year 1	Year 2	Year 3	Year 4	Year 5
1	($802,425.87)	($302,425.87)	($500,000.00)	$9,697,574.13	9,848,787.06				
2	($802,425.87)	($317,547.17)	($484,878.71)	$9,380,026.96		$9,538,800.55			
3	($802,425.87)	($333,424.52)	($469,001.35)	$9,046,602.44			$9,213,314.70		
4	($802,425.87)	($350,095.75)	($452,330.12)	$8,696,506.69				$8,871,554.56	
5	($802,425.87)	($367,600.54)	($434,825.33)	$8,328,906.15					$8,512,706.42

USA Bank

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| Loans | Impairments | Chargeoffs | Totals By Year | Vintage Analysis |

Origination	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Total Percentage	Balance	Vintage Reserve
< 2006	0.000%	0.000%	0.000%	0.000%	0.000%	0.235%	0.235%	$3,463,785.87	$8,151.33
2006	0.000%	0.000%	0.000%	0.935%	0.332%	3.417%	4.684%	$1,734,208.36	$81,230.55
2007	0.000%	0.000%	0.775%	9.060%	2.318%	3.835%	15.987%	$4,584,154.29	$732,881.24
2008	0.000%	0.036%	0.552%	0.000%	0.244%	7.469%	8.300%	$7,974,553.00	$661,910.59
2009	0.000%	0.753%	0.671%	0.261%	0.000%	0.058%	1.744%	$9,348,460.23	$162,995.61
2010	0.000%	0.217%	0.031%	0.000%	0.000%	0.000%	0.248%	$10,498,660.82	$26,010.98
2011	0.000%	0.000%	0.000%	0.000%	0.000%	0.000%	0.000%	$9,946,432.42	$0.00
2012	0.000%	0.000%	0.000%	0.000%	0.000%	2.145%	2.145%	$11,676,899.61	$250,463.36
2013	0.000%	0.000%	0.000%	0.000%	0.362%	2.145%	2.507%	$31,083,858.59	$779,148.71
2014	0.000%	0.000%	0.000%	1.140%	0.362%	2.145%	3.646%	$45,880,049.89	$1,672,839.66
2015	0.000%	0.000%	0.203%	1.140%	0.362%	2.145%	3.849%	$67,287,532.03	$2,589,923.33
2016	0.000%	0.091%	0.203%	1.140%	0.362%	2.145%	3.940%	$35,444,810.42	$1,396,683.92
Total								$241,944,325.01	$8,538,950.38

Loss Rate Forecast Support

Year of Origination	Year of Chargeoff	Loss	Loss Analysis

PD x LGD Methodology

CRF Advisors uses an Expected Loss (EL) Model that calculates the loss in the event of loan defaults. EL can be expressed as a simple formula: **EL = PD * LGD * EAD.** The total exposure to credit risk is the amount that the borrower owes to the lending institution at the time of default; the **exposure at default (EAD).** Generally, EAD will not be larger than the borrowing facility. PD & LGD are risk metrics employed in the measurement and management of credit risk. The **probability of default (PD)** is the likelihood that a loan will not be repaid and will fall into default. It must be calculated for each borrower. The credit history of the borrower and the nature of the investment must be taken into consideration when calculating PD. **Loss given default (LGD)** is the fractional loss due to default. The loss given default (LGD) formula is: **LGD = 1 – Recovery Rate (RR).** The **Recovery Rate (RR)** is defined as the proportion of a bad debt that can be recovered.

Factors to determine PD and LGD

Factors to determine the Probability of Default (PD): 1) 5-year (or life of loan period) (2013-2017) non-accrual ratios for ABC Bank, 2) 5-year (2013-2017) non-accrual ratios for Peer Banks using UBPR reports, 3) Individual loan risk ratings, 4) Qualitative factors: Economic trends, Risk Ratings, and Delinquency trends. Adjustments to factors 3 and 4 were based on assumptions used by peer institutions and management estimations.

Factors to determine the Loss Given Default (LGD): 1) Actual LTV, 2) Actual LGD based on historical losses by loan type, 3) LTV estimates (by loan type) based on loan policy LTV guidelines discounted by origination date, 4) Peer data or FDIC-CFR article on LGD for Commercial Loans at Failed Banks.

Summary

Qualitative

Impairments

Loans

Upload Loans

Upload Chargeoffs

Periods

Settings

ALL POOLS / 1 TO 4 FAMILY SECURED BY FIRST LIENS (254) / 1 TO 4 FAMILY SECURED BY FIRST LIENS (254) / 1 TO 4 FAMILY SECURED BY FIRST LIENS (254)

| Loans | Impairments | Chargeoffs | Recoveries | PD × LGD Parameters | PD × LGD Analysis |

Total Opening Amount	Total Balance	Total PD × LGD Reserve
$85,677,000.00	$57,043,354.19	$3,022,108.03

Risk Rating	Total Balance	LGD Average	LGD Standard Deviation	PD Average	PD Standard Deviation	Reserve Rate	PD × LGD Reserve
Good	$10,950,316.56	27.347%	15.000%	2.500%	0.050%	0.691%	$75,686.41
Fair	$12,979,324.75	28.581%	15.000%	3.500%	0.050%	1.008%	$130,810.38
Pass	$8,085,805.95	27.112%	15.000%	6.500%	0.050%	1.770%	$143,101.68
Sat	$7,277,147.75	28.454%	15.000%	11.500%	0.050%	3.280%	$238,668.70
Sub	$13,878,724.68	29.057%	15.000%	31.500%	0.050%	9.160%	$1,271,340.27
Fail	$3,872,034.50	30.015%	15.000%	100.000%	0.050%	30.023%	$1,162,500.58

Probability Of Default (PD)

PD Base Rate (%)	1.5	
PD Standard Deviation (%)	0.05	
PD Analysis Type	Risk Rating	▼

| When the Risk Rating is . . .	then the PD discount is:	Base PD Factor (%)	Effective PD Factor (%)	
≡ Good	1.0	1.5	2.5	☐ ×
≡ Fair	2.0	1.5	3.5	☐ ×
≡ Pass	5.0	1.5	6.5	☐ ×
≡ Sat	10.0	1.5	11.5	☐ ×
≡ Sub	30.0	1.5	31.5	☐ ×
≡ Fail	100.0	1.5	100.0	☐ ×
≡		1.5		

PD-LGD Test

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Loss Given Default (LGD)

LGD Standard Deviation (%) 15.0

When the LTV is greater than or equal to (≥) . . .	and less than (<) . . .	then the LGD discount is:	
0.0	25.0	0.0	
25.0	40.0	7.5	
40.0	50.0	10.0	
50.0	75.0	20.0	
75.0	100.0	40.0	
100.0	1000.0	65.0	

LGD Narrative

- ≔ Summary
- ▪ Qualitative
- ▲ Impairments
- ≡ Loans
- ↟ Upload Loans
- ✇ Upload Chargeoffs
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ALL POOLS

Qualitative Factors   Qualitative Support

| 1 to 4 family SECURED BY...	CONSUMER Unsecured LOC (331)	HELOC-FIRST LIEN POSITION...	REVOLVING, OPEN-END LOANS...	NONRESIDENTIAL PROPERTY (260)	COMMERCIAL LOANS SECURED (300)
Changes in lending policies and procedures, including changes in underwriting standards and collection, charge-off, and recovery practices not considered elsewhere in estimating credit losses.					
10	10	5	5	5	--
Changes in international, national, regional, and local economic and business conditions and developments that affect the collectability of the portfolio, including the condition of various market segments.					
5	--	--	10	--	--
Credit loss and recovery experience may vary significantly depending upon the stage of the business cycle. For example, an over reliance on credit loss experience during a period of economic growth will not result in realistic estimates of credit losses					
--	--	--	--	--	--
Changes in the nature and volume of the portfolio and in the terms of loans.					
--	--	--	--	--	--
Changes in the experience, ability, and depth of lending management and other relevant staff.					
--	--	--	--	--	--
Changes in risk ratings and classified loans in the portfolio.					

GDP (Trillions of USD)/ Unemployment Rate (National)/ General Default Rate Historical Comparisons
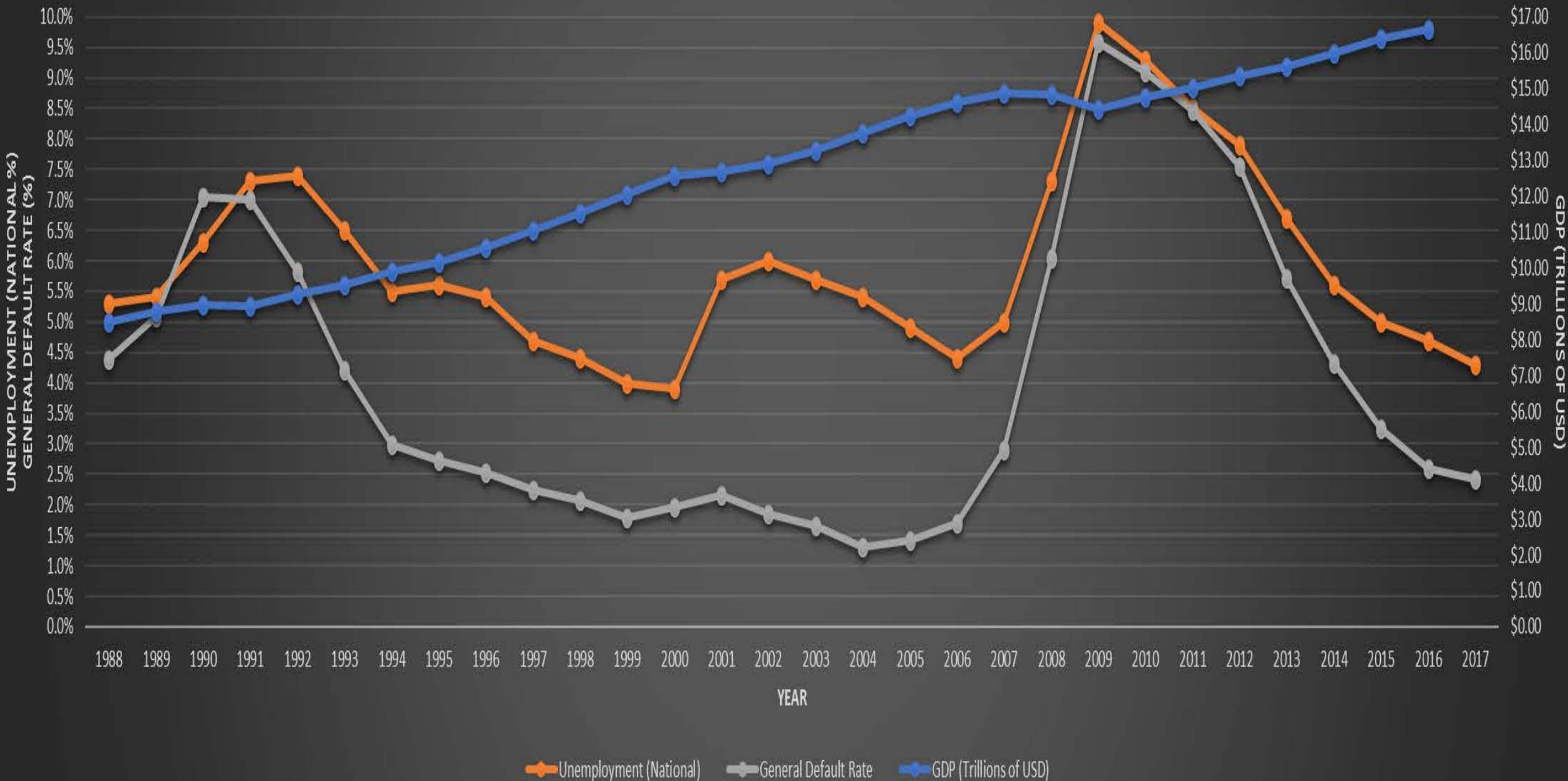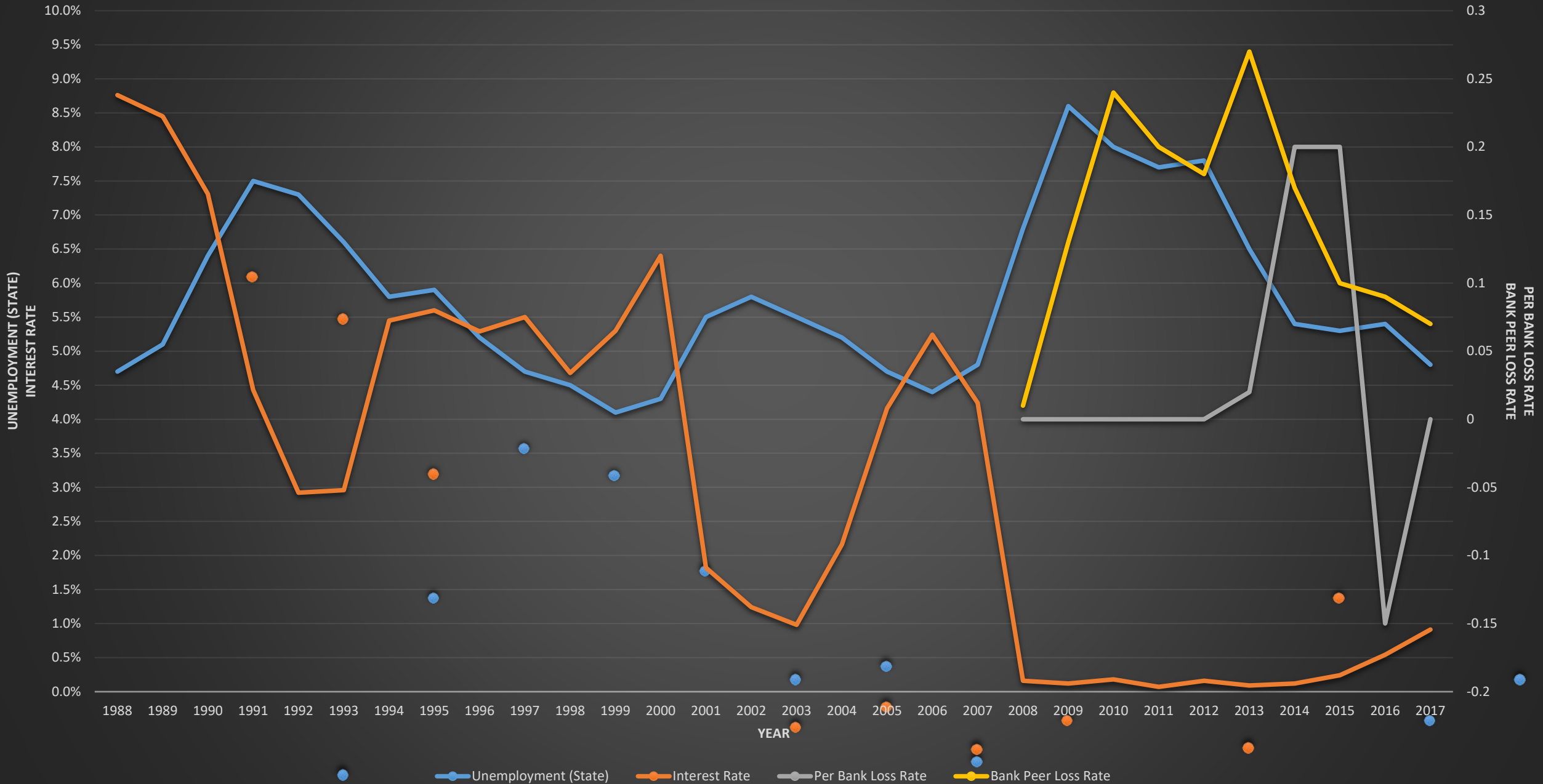
Unemployment (National)/ Interest Rate/ General Default Rate Historical Comparison
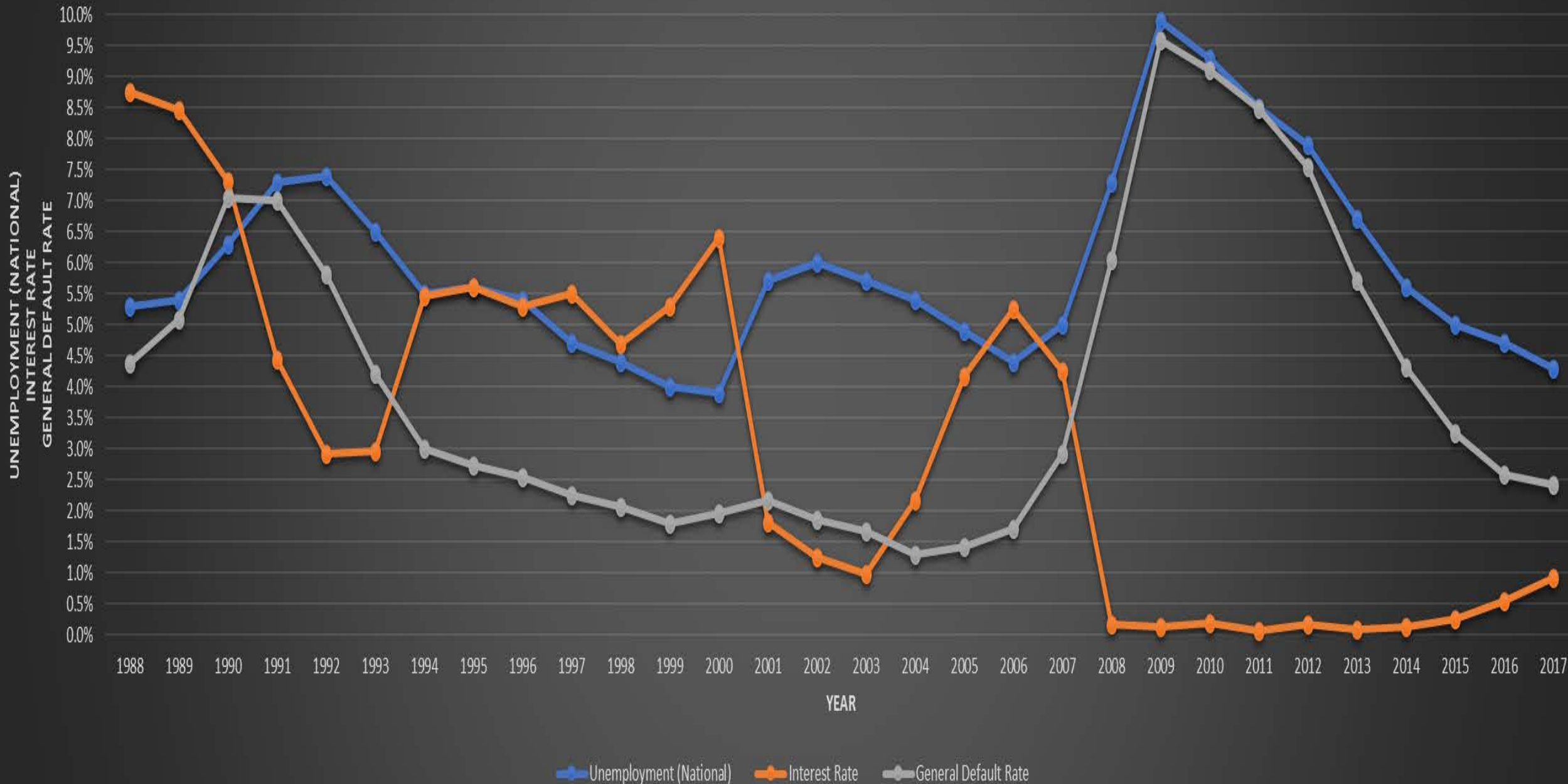
Unemployment (State)/ Interest Rate/ Per Bank Loss Rate Historical Comparison
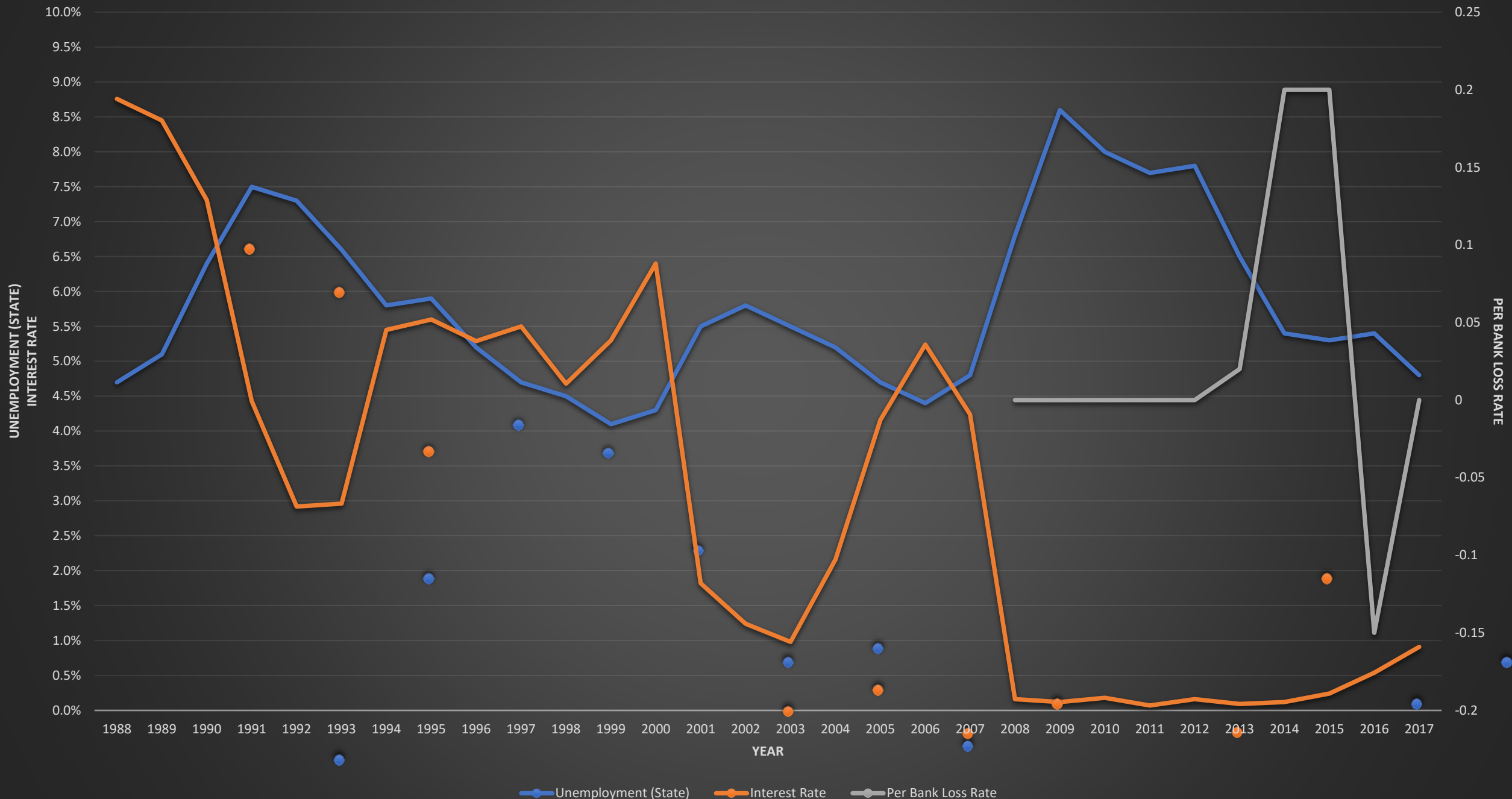
Unemployment (State)/ Interest Rate/ Per Bank Loss Rate/ Bank Peer Loss Rate Historical Comparison

CPPI- All national property/ Unemployment (National)/ General Default Rate Historical Comparison