The Effect of the Current Expected Credit Loss Approach on Banks' Lending during Stress Periods: Evidence from the COVID-19 Recession

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Agenda

Some accounting background

- Loans held for investment, allowance for credit losses, interest revenue
- The incurred loss model (ILM, FAS 5, ASC 450) as applied under bank regulatory guidance and supplemented by loan impairment GAAP (FAS 114, ASC 310)
- The current expected credit loss model (CECL, ASU 2016-13, ASC 326)

Why CECL yields more procyclical credit loss expense and thus loan growth than the ILM during stress periods/hypotheses

The research design, which exploits

- Banks' staggered effective dates/adoptions of CECL
  - Problem: Size and listing differences
  - Matched sample
- The (admittedly short and unusual) COVID-19 recession in 2020:Q2

The empirical results

Accounting for Loans Held for Investment

The accounting for loans held for investment is amortized cost less an allowance for credit losses

- Absent faulty underwriting decisions, to the extent than any allowance for credit losses is recorded at the inception of loans, this accounting is unconditionally conservative

For fixed-rate loans, the effective interest rate is the rate that equates the initial amortized cost (net of any deferred fees and gross of any deferred costs) to the present value of the promised payments. The effective interest rate

- Rises with expected credit losses and, for credit risky assets
- Exceeds the rate that equates the initial amortized cost to the present value of the expected payments (i.e., the economic interest rate)

The expected benefits of credit-risky lending are recognized in interest revenue (which exceeds economic interest revenue) over the life of loans

- Any credit loss expense that is recorded at loan inception or disproportionately early in the life of loans is unmatched to interest revenue

The ILM under Bank Regulatory Guidance and Supplemented by Loan Impairment GAAP

The ILM required and allowed banks to accrue for credit losses only if and to the extent that losses are

- Incurred
- Probable
- Capable of reasonable estimation

It was much easier to meet the ILM's probable and reasonably estimable conditions for homogeneous loans for which the accounting is primarily conducted at the pool level using statistics than for heterogeneous loans for which the accounting is primarily conducted at the individual loan level using judgment

Under bank regulatory guidance for consumer loans and residential mortgages, banks accrued for expected 12-months future net loan charge-offs for unclassified loans and for expected lifetime future net loan charge-offs for classified loans

- The former yielded unconditionally conservative allowances for loan losses at loan inception

Once heterogeneous loans became individually impaired or troubled debt restructurings occurred for any type of loan, the ILM was replaced with a lifetime expected credit loss impairment model under FAS 114, a manifestation of conditional conservatism

Collectively under the ILM, bank regulatory guidance, and loan impairment GAAP, the accounting was very similar to IFRS's current expected credit loss approach

Financial Crisis-Motivated Criticism of the ILM/Rationale for Replacing it with CECL

Critics alleged that the ILM required banks to accrue too little, too late during good times, and thus banks had to make up for this loss reserving deficiency during bad times

- Critics usually point to ILM's requirement that losses be probable, despite the fact that this requirement did not appreciably constrain credit loss accruals for homogeneous loans, the bulk of most banks' loans
- If the ILM posed a constraint for homogeneous loans, it was its requirement that losses be incurred, but this is a standard sort of accounting requirement for the recognition of anything

Some prior research findings are broadly consistent with this criticism of the ILM

- Increased loan loss provision timeliness is associated with increased capital issuance in good times and increased lending in downturns (Beatty and Liao 2011), consistent with capital crunch theory

But other explanations exist for these results. Timelier loan loss providing could result from

- Better bank management and credit risk modeling (Bushman and Williams 2012, 2015; Bhat et el. 2019)
- Stronger market and regulatory discipline (Wheeler, 2019; Gallemore 2022; Granja and Leuz 2022)

Moreover, timelier reserving for loan losses does not, by itself, create a cushion for future net loan charge-offs

A cushion is created only if timelier reserving leads banks to reduce risk, issue capital, or take other capital-preserving or increasing actions

CECL

Under CECL, accrue for expected lifetime net loan charge-offs on all loans at loan inception and in each period

Two general effects of CECL relative to the ILM

- Horizon effect: Accrue for lifetime losses for all loans under CECL versus 12-months losses for unimpaired homogeneous loans and likely a shorter horizon still for unimpaired heterogeneous loans under the ILM
  - CECL is more unconditionally conservative, moreover,
  - Losses over any horizon are much larger in bad times than in good times, and so
  - The differential effect of a longer rather than shorter horizon is larger in bad times than in good times
  - Also yielding greater conditional conservatism
- Preemption effect: For a closed portfolio of loans, accruing more early in the life of the loans reduces the amount that must be accrued later in the life of the loans
  - However, banks' loans held for investment generally are open portfolios, so this effect need not manifest over any finite period, and certainly not in the often quite short window from a prior favorable period (e.g., February 2020) to a stress period (e.g., April 2020)

Why CECL is Procyclical during Stress Periods

Three broad effects of CECL vs. ILM	Prior Good Times*	In or Entering Bad Times
Horizon effect on loans originated during stress periods	--	ILM << CECL
Horizon effect on preexisting loans* that remain unimpaired during stress periods	ILM < CECL	ILM << CECL
Preemption effect on preexisting loans* that become impaired in stress periods	ILM < CECL	ILM > CECL

* I assume preexisting loans were originated in prior good times. This assumption does not affect the conclusion.

Hypothesis: Even for preexisting loans, the horizon effect dominates the preemption effect during stress periods such as the COVID-19 pandemic, because most of these loans remain unimpaired in those periods. For newly originated loans, only the horizon effect is in play

Full Sample

344 Bank holding companies (BHCs), both public (219) and private (125), in 2018:Q1–2021Q1 (Table 1)

Eight quarters pre-January 1, 2020 (required adoption date for large public banks), five quarters post

CECL adoptions (Table 2)

- 155 in 2020:Q1, 149 public BHCs
  - These are the treatment banks in the full sample
- 39 later in sample period, 37 public BHCs
  - We drop these banks from the full sample
- 150 after sample period (by January 1, 2023), 117 private BHCs
  - These are the control banks in the full sample

Table 3, Panel A reports the descriptive statistics for full sample

Table 1 Sample Selection

	# bank-quarters	# unique banks
(1) Bank holding companies from FR Y-9C filings from 2018Q1 to 2021Q1	5,236	670
(2) Headquartered in the 50 US states with non-missing total assets, equity, and net income at the beginning of the quarter	5,123	661
(3) Require non-missing loan growth in the quarter	5,113	660
(4) Require non-missing data in 2019Q4 and 2020Q1 to identify banks' CECL adoption status	4,388	344
Subsample: public banks	2,783	219
Subsample: private banks	1,605	125
Full sample: Drop banks that adopt CECL between 2020Q3 and 2021Q1	3,881	305
Subsample: public banks	2,302	182
Subsample: private banks	1,579	123
Matched sample: Match each public bank that adopted CECL in 2020Q1 and has total assets below $10 billion to the public bank with the same headquarter state and the closest propensity score	874	72

Table 2 Number of Initial CECL Adoptions by Quarter

	2020Q1	2020Q2	2020Q3	2020Q4	2021Q1	not yet
Conventional public adopters	146	0	0	0	0	0
Non-conventional public adopters due to:						
Elect CARES Act delay	0	0	0	10	17	9
Different fiscal year end	0	0	4	6	0	0
SRC/EGC status	3	0	0	0	0	24
Private adopters	6	0	0	1	1	117

Table 3 Descriptive Statistics

Panel A: Summary statistics for the full sample

	N	Mean	Std	P25	Median	P75
LLP	3,881	0.003	0.004	0.000	0.001	0.003
Loan growth	3,881	0.016	0.041	-0.006	0.010	0.027
CECLAdopt	3,881	0.196	0.397	0.000	0.000	0.000
Recession	3,881	0.078	0.268	0.000	0.000	0.000
PPP	3,881	0.020	0.037	0.000	0.000	0.024
Assets	3,881	16.049	1.547	14.996	15.671	16.878
Equity	3,881	0.115	0.029	0.096	0.110	0.130
Cash flow	3,881	0.009	0.006	0.004	0.008	0.012
Deposit	3,881	0.751	0.146	0.733	0.790	0.835
Deposit growth	3,881	0.032	0.058	-0.001	0.017	0.046
Nonperforming loan	3,881	0.008	0.007	0.004	0.006	0.010
Commercial loan	3,881	0.122	0.080	0.065	0.107	0.166
Real estate loan	3,881	0.432	0.197	0.321	0.465	0.574
Consumer loan	3,881	0.040	0.065	0.004	0.012	0.047

Matched Sample

Public banks with assets below $10 billion

Match treatment and control banks without replacement based on their propensity to be a treatment bank estimated using values of 10 control variables in 2018Q1

Table 3, Panel B shows that only one of 10 variables,*Equity*, differs (weakly) significantly across the 36 matched pairs of treatment and control banks, and this difference works against our expectations

Table 3 Descriptive Statistics

Panel B: Summary statistics for the matched sample

	Treatment	Control	
	Mean	Mean	p-value for difference
Assets	15.477	15.418	0.673
Equity	0.124	0.116	0.075
Cash flow	0.010	0.009	0.151
Deposit	0.794	0.799	0.713
Deposit growth	0.018	0.026	0.433
Nonperforming loan	0.006	0.006	0.585
Commercial loan	0.124	0.101	0.184
Real estate loan	0.526	0.565	0.273
Consumer loan	0.036	0.038	0.918

Difference-in-Differences Research Design and Hypotheses

$$Loan\ growth_{i,q} = \theta_1 + \theta_2 CECLAdopt_{i,q} + \theta_3 CECLAdopt_{i,q} \times Recession_q + \sum \theta_j Control_{j,i,q\text{-}1} + b_i + d_q + v_{i,q}, \quad (1)$$

Quarterly percentage loan growth captures banks' activity

The COVID-10 recession in 2020:Q2 captures the (only available) stress period

- Figure 1 shows this quarter captures negative growth in GDP, the coincident index, and loans

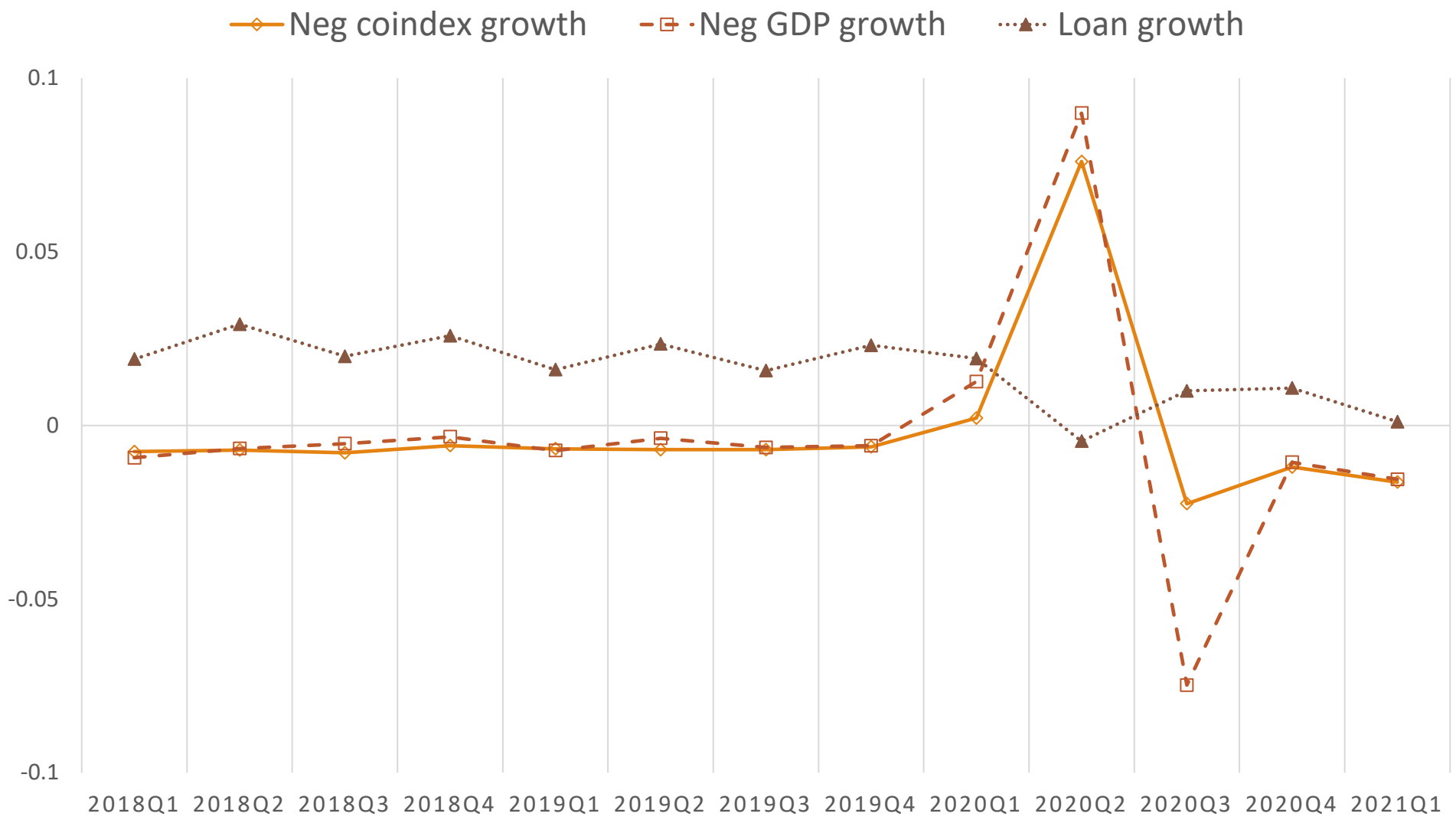
Expect $\theta_3 < 0$, because the horizon effect dominates the preemption effect

Main results reported in Table 5

Mechanism tests (Table 6):

- Expect θ_3 is more negative for less well-capitalized banks (for which a capital crunch is more likely)
- Expect θ_3 is more negative for banks that
  - Hold more heterogeneous loans (for which the horizon effect is stronger)
  - Have more loan impairments (strengthening the preemption effect)

Figure 1 Business Cycle and Loan Growth



But first a Validation Test: CECL Adoptions and Loan Loss Provisions During the COVID-19 Recession

Quarterly loan loss provision divided by beginning of quarter total loans

$$LLP_{i,q} = \theta_1 + \theta_2 CECLAdopt_{i,q} + \theta_3 CECLAdopt_{i,q} \times Recession_q + \sum \theta_j Control_{j,i,q\text{-}1} + b_i + d_q + v_{i,q}\,. \qquad (2)$$

Table 4 CECL Adoptions and Loan Loss Provisions During the COVID-19 Recession

		Dependent variable: LLP					
	Pred.	Full sample		Full sample		Matched sample	
	Sign	(1)		(2)		(3)	
Recession		0.002	***				
		(5.29)					
CECLAdopt		0.002	***	0.001	***	0.001	**
		(6.76)		(6.15)		(2.02)	
CECLAdopt × Recession	+	0.001	***	0.002	***	0.001	**
		(3.87)		(8.23)		(2.56)	
Bank FE		No		Yes		Yes	
Year-Quarter FE		No		Yes		Yes	
Clustered by Bank		Yes		Yes		Yes	
N		3,881		3,881		874	
R^2		0.357		0.775		0.753	

Table 5 CECL Adoptions and Lending Contraction During the COVID-19 Recession

		Dependent variable: Loan growth					
	Pred.	Full sample		Full sample		Matched sample	
	Sign	(1)		(2)		(3)	
Recession		-0.008	*				
		(-1.93)					
CECLAdopt		0.002		0.004		0.001	
		(0.87)		(1.23)		(0.25)	
CECLAdopt × Recession	-	-0.016	***	-0.020	***	-0.023	**
		(-2.87)		(-3.85)		(-2.49)	
Bank FE		No		Yes		Yes	
Year-Quarter FE		No		Yes		Yes	
Clustered by Bank		Yes		Yes		Yes	
N		3,881		3,881		874	
R^2		0.053		0.259		0.367	

Table 6 Cross-sectional Tests

Panel A: The effect of low Tier 1 risk-based capital ratios on the relation between CECL adoptions and lending contraction during the COVID-19 recession

		Dependent variable: Loan growth			
	Pred.	Full sample		Matched sample	
	Sign	(1)		(2)	
CECLAdopt		0.003		0.009	
		(0.78)		(0.55)	
CECLAdopt × Recession	-	-0.014	**	-0.014	
		(-2.26)		(-1.21)	
Low tier 1 capital		-0.004		-0.011	
		(-1.31)		(-0.66)	
CECLAdopt × Low tier 1 capital		0.004		0.038	
		(0.87)		(1.01)	
Recession × Low tier 1 capital		0.007		-0.073	
		(0.77)		(-1.42)	
CECLAdopt × Recession × Low tier 1 capital	-	-0.021	*	-0.119	*
		(-1.71)		(-1.67)	
Controls		Yes		Yes	
Bank FE		Yes		Yes	
State-Year-Quarter FE		Yes		Yes	
Clustered by Bank		Yes		Yes	
N		3,741		816	
R^2		0.258		0.211	

Panel B: The effect of high loan impairment on the relation between CECL adoptions and lending contraction during the COVID-19 recession

		Dependent variable: Loan growth			
	Pred.	Full sample		Matched sample	
	Sign	(1)		(2)	
CECLAdopt		0.005	*	0.001	
		(1.96)		(0.19)	
CECLAdopt × Recession	-	-0.019	***	-0.018	*
		(-4.41)		(-1.92)	
High loan impairment		0.004	**	0.001	
		(2.12)		(0.21)	
CECLAdopt × High loan impairment		-0.012	***	0.001	
		(-2.96)		(0.06)	
Recession × High loan impairment		-0.013	*	0.025	
		(-1.95)		(1.14)	
CECLAdopt × Recession × High loan impairment	+	0.020	**	-0.027	
		(2.02)		(-1.12)	
Controls		Yes		Yes	
Bank FE		Yes		Yes	
State-Year-Quarter FE		Yes		Yes	
Clustered by Bank		Yes		Yes	
N		3881		874	
R^2		0.297		0.369	

Panel C: CECL adoptions and lending contraction during the COVID-19 recession by loan type

		Full sample			Matched sample		
	Pred. Sign	Commercial loan growth (1)	Real estate loan growth (2)	Consumer loan growth (3)	Commercial loan growth (4)	Real estate loan growth (5)	Consumer loan growth (6)
CECLAdopt		0.007	-0.004	-0.006	0.013	-0.000	-0.037
		(1.37)	(-1.04)	(-0.63)	(1.55)	(-0.01)	(-1.52)
CECLAdopt × Recession	-	-0.025 **	-0.005	-0.010	-0.032 *	-0.015	-0.003
		(-2.41)	(-1.04)	(-0.79)	(-1.73)	(-1.35)	(-0.09)
Controls		Yes	Yes	Yes	Yes	Yes	Yes
Bank FE		Yes	Yes	Yes	Yes	Yes	Yes
Year-Quarter FE		Yes	Yes	Yes	Yes	Yes	Yes
Clustered by Bank		Yes	Yes	Yes	Yes	Yes	Yes
N		3,881	3,881	3,881	874	874	874
R^2		0.301	0.281	0.228	0.345	0.268	0.173

Robustness Analyses

Control for (precautionary) draws on commercial loans of credit in 2020Q1 (Table 7, Panel A)

Alternative matched samples based in part or whole on unused commercial loan commitments (Table 7, Panel B)

Placebo test during the financial crisis (Table 7, Panel C)

Control for state-year-quarter fixed effects (Table 7, Panel D)

Consequences of Banks' CECL Adoptions on Local Economies

CECL banks' deposit market share in counties

Monthly county-level unemployment rates

January-March 2020 the baseline, examine effects in subsequent months in 2020

$$\begin{aligned} Unemployment\ rate_{c,m} = {} & \theta_1 + \theta_2 CECL\ market\ share_c \times April_m + \ldots \\ & + \theta_{10} CECL\ market\ share_c \times December_m \\ & + \sum \theta_j Control_{c,m} + b_c + d_{s,m} + v_{c,m}, \end{aligned} \tag{3}$$

Table 8, Panel B: CECL adoptions and local unemployment rates

	Unemployment rate	
CECL market share × April	0.361	*
	(1.71)	
CECL market share × May	0.735	***
	(3.56)	
CECL market share × June	0.613	***
	(3.54)	
CECL market share × July	0.576	***
	(3.40)	
CECL market share × August	0.479	***
	(3.05)	
CECL market share × September	0.351	**
	(2.51)	
CECL market share × October	0.282	**
	(2.13)	
CECL market share × November	0.261	**
	(2.41)	
CECL market share × December	0.244	**
	(2.36)	
Controls	Yes	
County FE	Yes	
State-Year-Month FE	Yes	
Clustered by County	Yes	
N	37,056	
R^2	0.924	