KeyCorp

Second Quarter 2019 Earnings Review

July 23, 2019

Beth E. Mooney
Chairman and
Chief Executive Officer

Don Kimble
Vice Chairman and
Chief Financial Officer

FORWARD-LOOKING STATEMENTS AND ADDITIONAL INFORMATION

This communication contains forward-looking statements within the meaning of the Private Securities Litigation Reform Act of 1995 including, but not limited to, KeyCorp's expectations or predictions of future financial or business performance or conditions. Forward-looking statements are typically identified by words such as "believe," "seek," "expect," "anticipate," "intend," "target," "estimate," "continue," "positions," "plan," "predict," "project," "forecast," "guidance," "goal," "objective," "prospects," "possible," "potential," "strategy," "opportunities," or "trends," by future conditional verbs such as "assume," "will," "would," "should," "could" or "may", or by variations of such words or by similar expressions. These forward-looking statements are based on assumptions that involve risks and uncertainties, which are subject to change based on various important factors (some of which are beyond KeyCorp's control.) Actual results may differ materially from current projections.

Actual outcomes may differ materially from those expressed or implied as a result of the factors described under "Forward-looking Statements" and "Risk Factors" in KeyCorp's Annual Report on Form 10-K for the year ended December 31, 2018 ("Form 10-K") and in other filings of KeyCorp with the Securities and Exchange Commission (the "SEC"). Such forward-looking statements speak only as of the date they are made, and we undertake no obligation to update any forward-looking statement to reflect events or circumstances after that date or to reflect the occurrence of unanticipated events. For additional information regarding KeyCorp, please refer to our SEC filings available at www.key.com/ir.

Annualized, pro forma, projected and estimated numbers are used for illustrative purpose only, are not forecasts and may not reflect actual results. This presentation also includes certain non-GAAP financial measures related to "tangible common equity," "cash efficiency ratio," and certain financial measures excluding notable items. Notable items include certain revenue or expense items that may occur in a reporting period in which management does not consider indicative of ongoing financial performance. Management believes it is useful for the investment community to consider financial metrics with and without notable items in order to enable a better understanding of company results, facilitate comparability of period-to-period financial results, and to evaluate and forecast those results. Although Key has procedures in place to ensure that these measures are calculated using the appropriate GAAP or regulatory components, they have limitations as analytical tools and should not be considered in isolation, or as a substitute for analysis of results under GAAP. For more information on these calculations and to view the reconciliations to the most comparable GAAP measures, please refer to the appendix of this presentation, or page 80 of our Form 10-K dated December 31, 2018.

GAAP: Generally Accepted Accounting Principles

2Q19 Investor Highlights

Driving Returns

- **Revenue reflects solid balance sheet growth and momentum in fee-based businesses**
  - Average loans up 2% vs. PY reflecting broad-based C&I growth and strength in consumer, driven by Laurel Road and residential mortgage
    - Successful integration of Laurel Road acquisition: $400 MM originations in 2Q19
    - Momentum in residential mortgage: $1 B originations in 2Q19 (2x PQ & PY)
  - Average deposits up 5% vs. PY; reflecting growth in commercial and retail relationships
  - Strength in fees: investment banking and debt placement fees (record 2Q), cards and payments, and consumer mortgage
- **Well-managed expenses reflect achievement of $200 MM cost savings target**
  - Cash efficiency ratio of 58.7%[a] excl. notable items; on track to reach targeted cash efficiency range of 54-56% in 2H19

Strong Risk Management

- **Continued strong asset quality: maintaining credit discipline and underwriting standards**
  - Net charge-offs to average loans of .29%; portfolios continue to perform well
  - Nonperforming loans to period-end loans of .61%

Disciplined Capital Management

- **Strong capital position with CET1 ratio of 9.60%[b]**
- **Completed $180 MM[c] of common share repurchases and declared quarterly dividend of $.17 per common share in 2Q19**
- **Planned capital actions 3Q19-2Q20: 9% common share dividend increase in 3Q19 (approved on 7/17/19 by Board) and up to $1 billion share repurchase program**

(a) Non-GAAP measure and excludes notable items; see Appendix for detail and reconciliation
(b) 6/30/19 ratio is estimated
(c) Common share repurchase amount includes repurchases to offset issuances of common shares under our employee compensation plans

Financial Review

Financial Highlights

Continuing operations, unless otherwise noted

		2Q19	1Q19	2Q18	LQ Δ	Y/Y Δ
Profitability	EPS – assuming dilution	$ .40	$ .38	$ .44	5 %	(9) %
	EPS – excl. notable items[a], [b]	.44	.40	.44	10	-
	Cash efficiency ratio[a]	61.9 %	61.9 %	58.8 %	-	310 bps
	Cash efficiency –excl. notable items[a], [b]	58.7	60.2	58.4	(150) bps	30
	Return on average tangible common equity[a]	13.7	13.7	16.7	-	(304)
	ROTCE – excl. notable items[a], [b]	15.0	14.4	16.7	66	(161)
	Return on average total assets	1.19	1.18	1.41	1	(22)
	Net interest margin	3.06	3.13	3.19	(7)	(13)
Capital[c]	Common Equity Tier 1[d]	9.60 %	9.81 %	10.13 %	(21) bps	(53) bps
	Tier 1 risk-based capital[d]	11.05	10.94	10.95	11	10
	Tangible common equity to tangible assets[a]	8.59	8.43	8.32	16	27
Asset Quality	NCOs to average loans	.29 %	.29 %	.27 %	-	2 bps
	NPLs to EOP portfolio loans[e]	.61	.61	.62	-	(1)
	Allowance for loan and lease losses to EOP loans	.97	.98	1.01	(1) bps	(4)

EOP = End of Period

(a) Non-GAAP measure: see Appendix for reconciliation

(b) Excludes notable items; see Appendix for detail and reconciliations

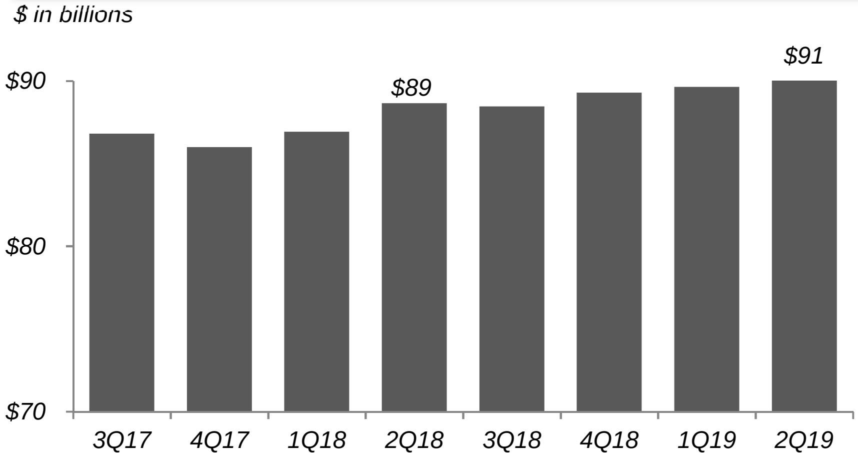
(c) From consolidated operations

(d) 6/30/19 ratios are estimated

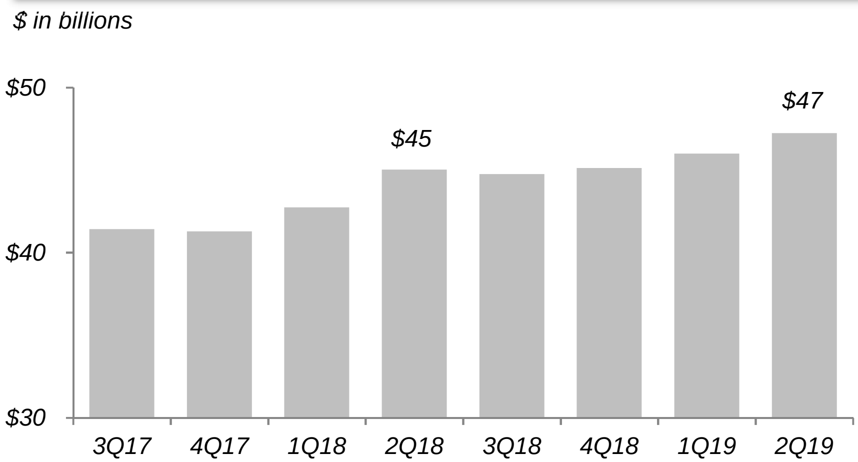
(e) Nonperforming loan balances exclude $518 million, $551 million, and $629 million of purchased credit impaired loans at June 30, 2019, March 31, 2019, and June 30, 2018, respectively

Loans

Total Average Loans



Average C&I Loans



Highlights

vs. Prior Year

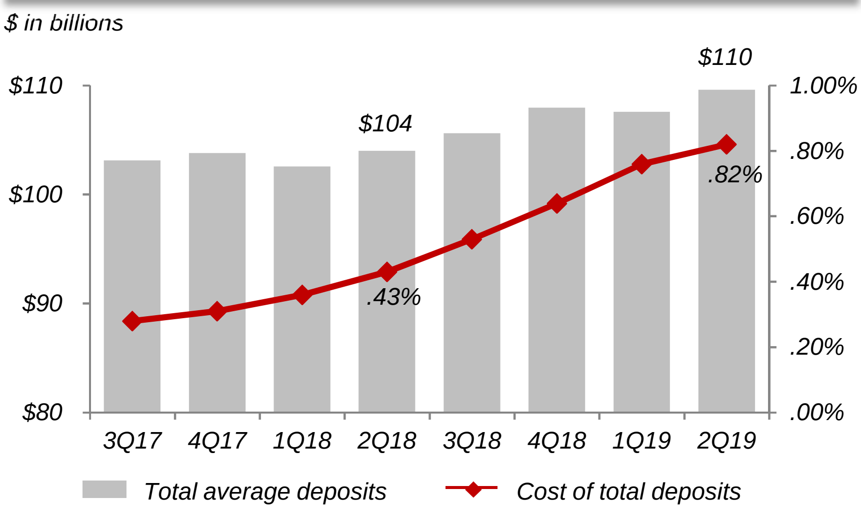
- **Average loans up 2% from 2Q18**
  - Commercial balances reflect strong C&I growth (+5%) driven by broad-based growth with middle-market clients, partially offset by a decline in commercial real estate
  - Consumer loans reflect growth from Laurel Road, residential mortgage, and indirect auto

vs. Prior Quarter

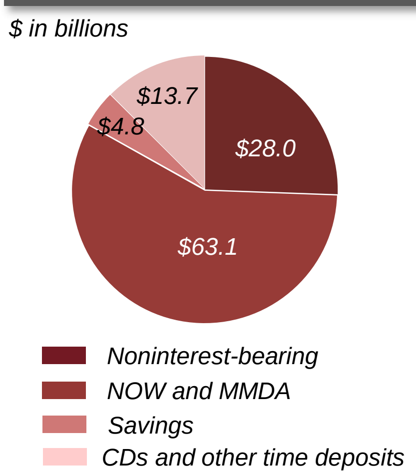
- **Average loans up 1% from 1Q19**
  - C&I balances up 3% driven by broad-based growth with middle-market clients
  - Consumer loans reflect growth from Laurel Road and residential mortgage

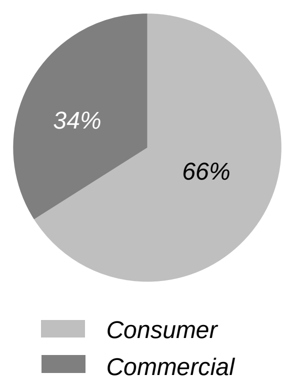
Deposits

Average Deposits



2Q19 Average Deposit Mix





Highlights

- **Deposit cost up 6 bps from 1Q19, reflecting:**
  - Continued migration of portfolio into higher-yielding products
- **Strong and stable deposit base**
  - 26% noninterest-bearing
  - ~65% stable retail and low-cost escrow

vs. Prior Year

- **Average deposits up 5% from 2Q18**
- **Strength in consumer banking franchise and growth from commercial relationships**
- **Continued mix shift to higher-yielding deposit products**

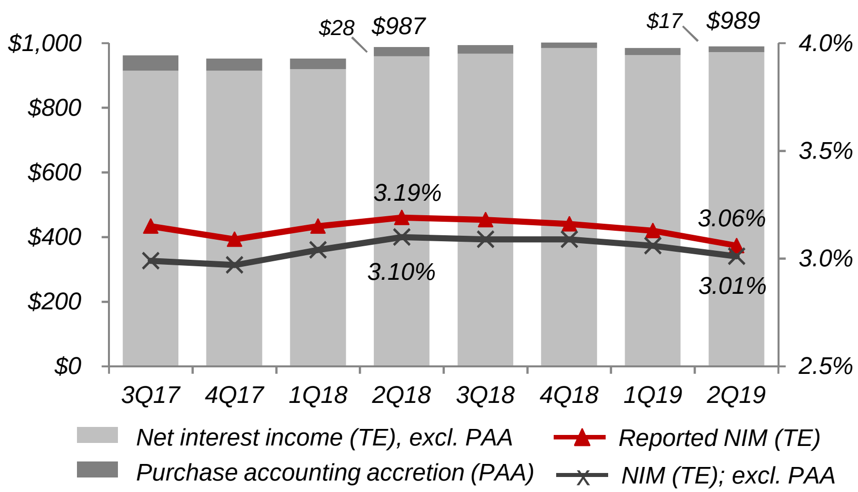
vs. Prior Quarter

- **Average deposit balances up 2% vs. 1Q19**
- **Strength in consumer banking franchise and growth from commercial relationships**
- **Reflects elevated level of short-term deposits**

Net Interest Income and Margin

Net Interest Income & Net Interest Margin Trend (TE)

$ in millions; continuing operations



	2Q18	3Q18	4Q18	1Q19	2Q19
NIM – reported	**3.19%**	**3.18%**	**3.16%**	**3.13%**	**3.06%**
PAA	.09	.09	.07	.07	.05
NIM – excl. PAA	**3.10%**	**3.09%**	**3.09%**	**3.06%**	**3.01%**
NII – reported ($MM)	**$ 987**	**$993**	**$1,008**	**$985**	**$989**
PAA	28	26	23	22	17[(a)]
NII – excl. PAA	**$959**	**$967**	**$985**	**$963**	**$972**

Highlights

- **Excluding PAA, 2Q19 net interest income was $972 MM and net interest margin was 3.01%**

vs. Prior Year

- **Net interest income up $13 MM, or 1% from 2Q18, excl. PAA**
  - Largely driven by higher interest rates and earning asset growth, partially offset by a lower NIM and lower loan fees

vs. Prior Quarter

- **Net interest income up $9 MM, or 1%, from 1Q19, excl. PAA**
  - Reflects higher earning asset balances and one additional day in the quarter, partially offset by higher interest bearing deposit costs

NIM Change vs. Prior Quarter	***1Q19:***	***3.13%***
Excess liquidity		(.03)
PAA (2Q vs. 1Q)		(.02)
Higher deposit costs and other		(.02)
Total change		**(.07)**
	2Q19:	***3.06%***

TE = Taxable equivalent PAA = Purchase accounting accretion

(a) 2Q19 purchase accounting accretion of $17 MM is made up of $14 MM related to contractual maturities and $3 MM related to prepayments

Noninterest Income

Noninterest Income

$ in millions *up / (down)*	2Q19	vs. 2Q18	vs. 1Q19
Trust and investment services income	$ 122	$ (6)	$ 7
Investment banking and debt placement fees	163	8	53
Service charges on deposit accounts	83	(8)	1
Operating lease income and other leasing gains	44	50	7
Corporate services income	53	(8)	(2)
Cards and payments income	73	2	7
Corporate-owned life insurance	33	1	1
Consumer mortgage income	10	3	2
Mortgage servicing fees	24	2	3
Other income	17	(82)	7
Total noninterest income	**$ 622**	**$ (38)**	**$ 86**
Notable items:			
Sale of insurance business	-	$ 78	-
Lease residual loss	-	(42)	-
Total noninterest income excl. notable items[(a)]	**$ 622**	**$ (2)**	**$ 86**

Highlights

vs. Prior Year

- **Noninterest income down $38 MM (-6%) from 2Q18**
  - Excluding notable items in prior period, down $2 MM[(a)]
- **Continued momentum in fee-based businesses**
  - Investment banking and debt placement fees (+$8 MM), consumer mortgage income (+$3 MM), cards and payments (+$2 MM)
- **Other income impacted by $78 MM gain from sale of Key Insurance and Benefits Services in 2Q18**
- **Operating lease income included $42 MM lease residual loss in 2Q18**
- **Trust and investment services income included $7 MM of KIBS revenue in 2Q18**

vs. Prior Quarter

- **Noninterest income up $86 MM (+16%) from 1Q19**
- **Investment banking and debt placement fees increased $53 MM to reach record second quarter**
- **Continued momentum in core fee-based businesses including cards and payments income and trust and investment services income, both up $7 MM**

(a) Non-GAAP measure

Noninterest Expense

Noninterest Expense

$ in millions *up / (down)*	2Q19	vs. 2Q18	vs. 1Q19
Personnel	$ 589	$ 3	$ 26
Net occupancy	73	(6)	1
Computer processing	56	5	2
Business services, professional fees	45	(6)	1
Equipment	24	(2)	-
Operating lease expense	32	2	6
Marketing	24	(2)	5
FDIC assessment	9	(12)	2
Intangible asset amortization	22	(3)	-
OREO expense, net	4	4	1
Other expense	141	43	12
Total noninterest expense	**$ 1,019**	**$ 26**	**$ 56**
Notable Items:			
Efficiency initiative expenses	$ 50	28	24
Laurel Road acquisition expenses	$ 2	2	2
Sale of insurance business	-	(5)	-
Total noninterest expense, excl. notable items[a]	**$ 967**	**$ 1**	**$ 30**

Highlights

vs. Prior Year

- **Noninterest expense up $26 MM, or 3%**
  - Excluding notable items up $1 MM[a]
- **Reflects impact of Key's acquisition of Laurel Road in April 2019, largely offset by the successful implementation of expense initiatives**
- **Lower FDIC assessment reflecting elimination of quarterly surcharge**

vs. Prior Quarter

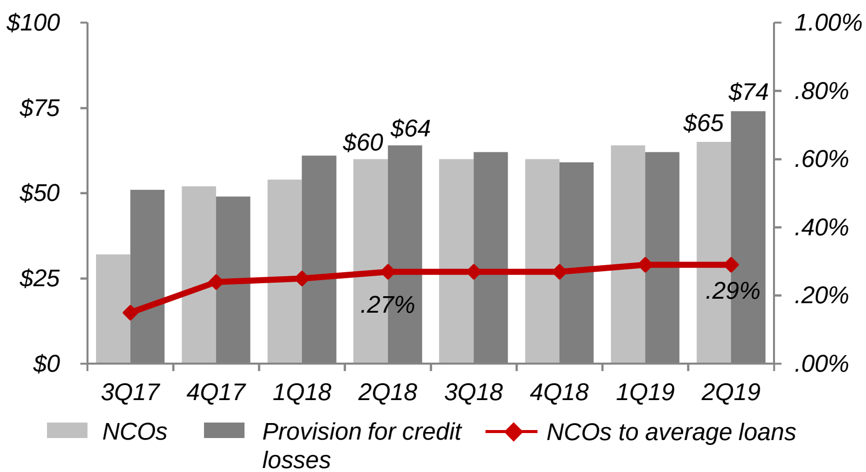
- **Noninterest expense up $56 MM, or 6%**
  - Excluding notable items up $30 MM, or 3%[a]
- **Reflects impact of Key's acquisition of Laurel Road in April 2019**
- **Higher personnel expense primarily related to incentive compensation from increased capital markets activity**
- **Seasonally higher marketing expense**

(a) Non-GAAP measure

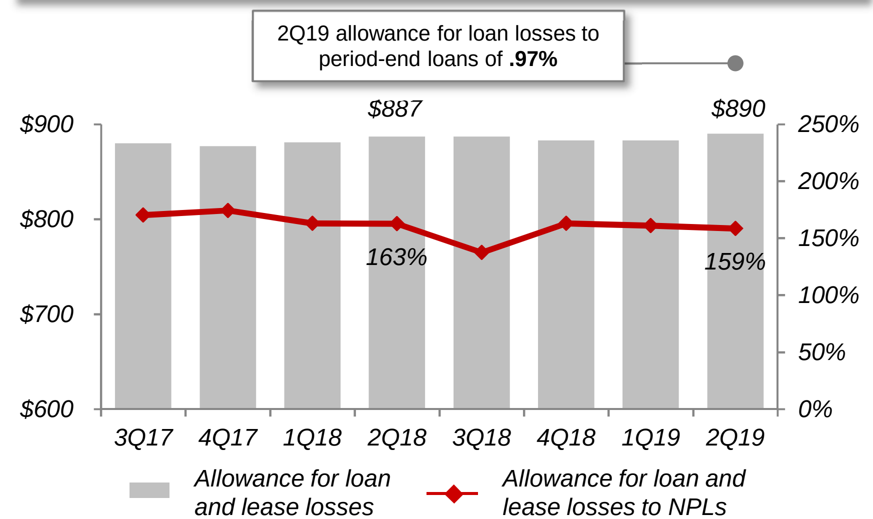
Credit Quality

Net Charge-offs & Provision for Credit Losses

$ in millions

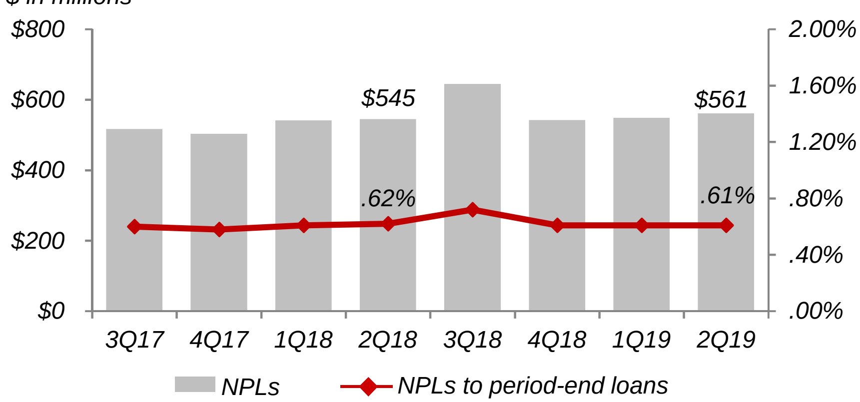


Allowance for Loan and Lease Losses



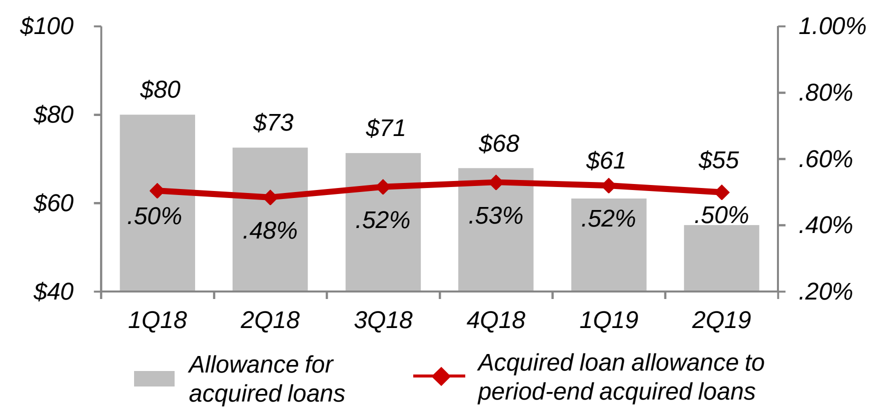
Nonperforming Loans[(a)]

$ in millions



Acquired Loans

$ in millions

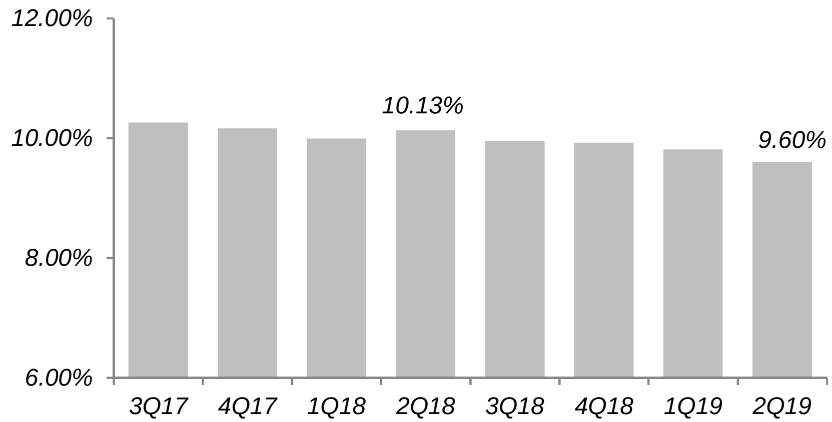


NCO = Net charge-off

(a) Nonperforming loan balances exclude $518 million and $629 million of purchased credit impaired loans at June 30, 2019, and June 30, 2018, respectively

Capital

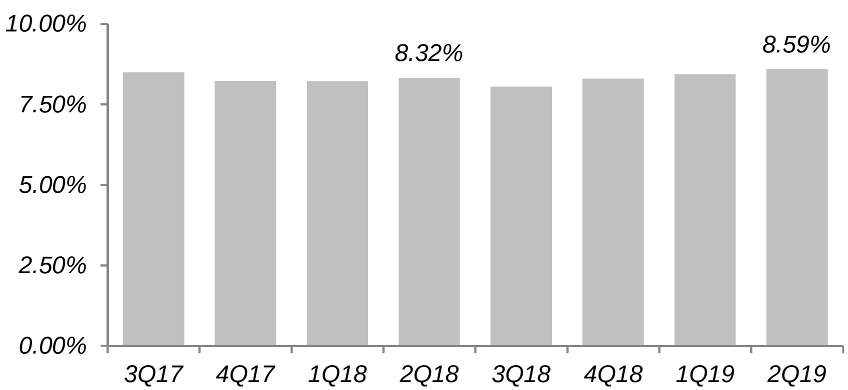
Common Equity Tier 1[a]



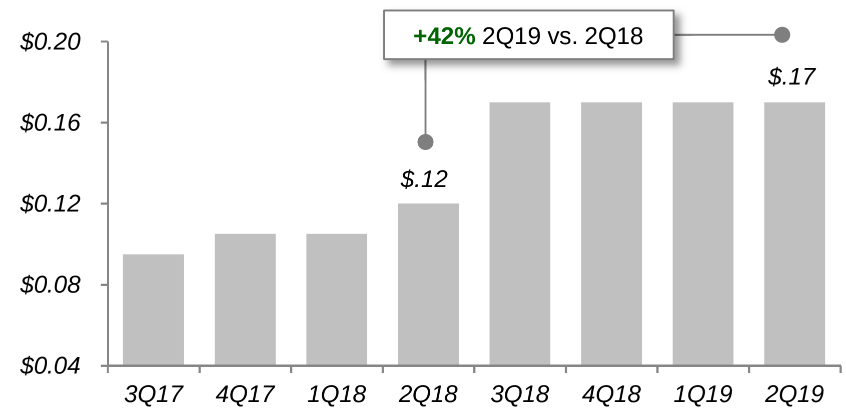
Highlights

- **Strong capital position: CET1 ratio of 9.60%[a] at 6/30/2019**
- **Declared dividend of $0.17 per common share and repurchased $180 MM[c] in common shares in 2Q19**
- **Planned capital actions for 3Q19-2Q20**
  - 9% common share dividend increase, from $.17 to $.185 in 3Q19 (approved 7/17/19)
  - A common share repurchase program of up to $1B

Tangible Common Equity to Tangible Assets[b]



Quarterly Common Share Dividend



(a) 6/30/19 ratios are estimated
(b) Non-GAAP measure: see Appendix for reconciliation
(c) Common share repurchase amount includes repurchases to offset issuances of common shares under our employee compensation plans

FY2019 Outlook & Long-term Targets

FY2019 outlook excludes the impact of 3Q19 activity disclosed in Key's Form 8-K filing on 7/16/2019

	FY 2019
Average Balance Sheet	• Loans: average balances in the range of \$90 B - \$91 B • Deposits: average balances in the range of \$108 B - \$109 B
Net Interest Income (TE)	• Net interest income expected to be in the range of \$4.0 B - \$4.1 B • Outlook assumes one 25 bps interest rate decrease
Noninterest Income	• Expected to be in the range of \$2.5 B - \$2.6 B
Noninterest Expense	• Expected to be in the range of \$3.85 B - \$3.95 B − Includes realization of \$200 MM run-rate cost savings in 2H19 − Achieve cash efficiency ratio target of 54 - 56% by 2H19 − Includes impact of Laurel Road acquisition
Credit Quality	• Net charge-offs to average loans below targeted range of 40 - 60 bps • Provision expected to slightly exceed net charge-offs
Taxes	• GAAP tax rate in the range of 18% - 19%

Long-term Targets

Positive operating leverage

Cash efficiency ratio:
54% - 56%

Moderate risk profile:
Net charge-offs to avg. loans targeted range of 40-60 bps

ROTCE:
16 - 19%

Appendix

Loan Portfolio Detail, at 6/30/19

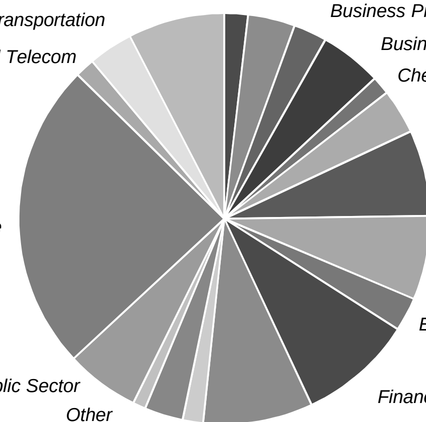
Total Loans

$ in billions	6/30/19	% of total loans
Commercial and industrial	$ 48.5	53
Commercial real estate	14.7	16
Commercial lease financing	4.6	5
Total Commercial	**$ 67.9**	**74**
Residential mortgage	6.1	7
Home equity	10.6	11
Consumer direct	2.4	3
Credit card	1.1	1
Consumer indirect	4.0	4
Total Consumer	**$ 24.1**	**26**

Commercial Loans

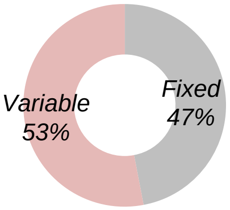
Diversified Portfolio by Industry

Total commercial loans:



Home Equity

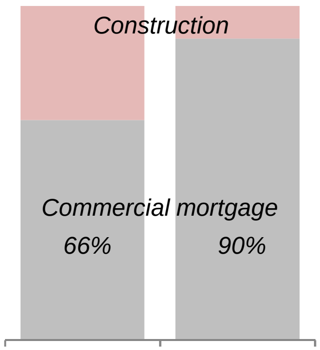
	Outstanding Balances		Average Loan Size	Average FICO	2008/ prior vintage
First lien	$ 6,252	59 %	$ 70,473	774	15 %
Second lien	4,323	41	46,285	774	26
Total home equity	**$ 10,575**				



- Combined weighted-average LTV at origination: 70%
- $586 million in lines outstanding (8.5% of the home equity lines) come to end of draw period by 2Q21

Commercial Real Estate

- Focused on relationships with CRE owners
- Aligned with targeted industry verticals
- Primarily commercial mortgage; selective approach to construction
- Criticized non-accruals: 0.6% of period-end balances[(a)]

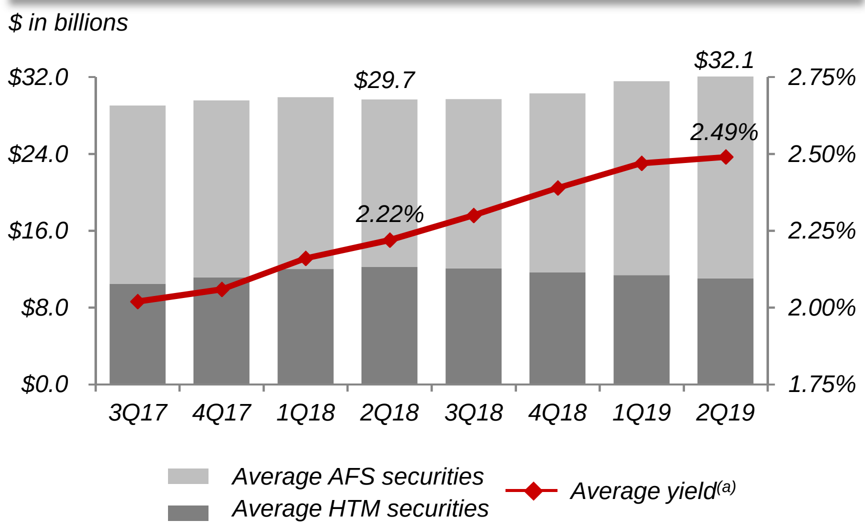


Tables may not foot due to rounding

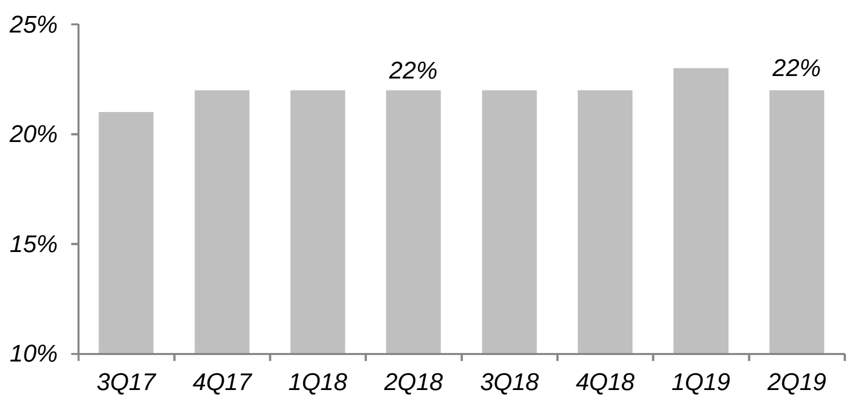
(a) Loan and lease outstandings; excludes purchase credit impaired loans from the First Niagara acquisition

Investment Portfolio

Average Total Investment Securities



Securities to Total Assets[b]



Highlights

- **Portfolio composed primarily of GNMA and GSE-backed MBS and CMOs**
  - Primarily fixed rate
  - GNMA 41% of 2Q19 average balances
- **Portfolio used for funding and liquidity management:**
  - Securities cash flows of $1.1 B in 2Q19
  - Reinvesting cash flows into High Quality Liquid Assets
- **Replaced cash flows at higher yields during 2Q19**
  - Yield on new investments ~50 bps higher than maturities
  - Portfolio yield has increased 27 bps from prior year
- **Portfolio average life of 4.3 years and duration of 3.7 years at 6/30/2019**

(a) Yield is calculated on the basis of amortized cost
(b) Includes end-of-period held-to-maturity securities at amortized cost and available-for-sale securities at fair value

Asset & Liability Management Positioning

Balanced positioning supports strong, stable net interest margin

Business and Balance Sheet Highlights

- **Strong, low-cost deposit base**
  - $82 B interest-bearing deposits at 110 bps
  - $28 B noninterest-bearing deposits
  - Cumulative interest-bearing deposit beta of 38%
  - ~65% stable retail and low-cost escrow
  - >85% from markets where Key maintains top-5 deposit or branch share
- **Relationship-oriented lending franchise**
  - Distinctive commercial capabilities drive C&I loan growth and ~70% floating-rate loan mix
  - Laurel Road addition enhances fixed rate loan volumes with an attractive profile
- **Disciplined balance sheet management with recurring re-investment opportunities**
  - $32 B securities portfolio is >99% government-guaranteed and generates ~$400 MM cash flows per month
  - Discretionary hedge activities help moderate interest rate risk exposure and lock in spreads on new business.

Positioning

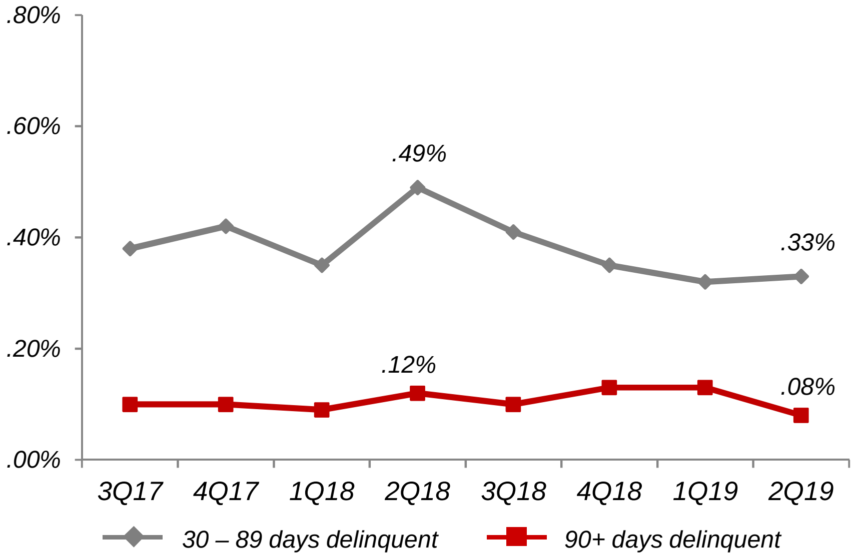
- **Actively hedging to reduce current and future exposure to declining rates**
  - Executed ~$3B in interest rate swaps and floors in 2Q19
  - ~$15B in hedge executions since 3Q18 significantly reduced declining rate exposure
- **Reducing asset sensitivity as the curve flattens and economic growth slows**
  - Lower level of exposure due to a more balanced rate outlook
  - Net interest income upside as reinvestment rates continue to exceed run off rates for fixed rate loans and securities
  - Higher deposit betas have reduced the benefit to rising short term interest rates

Balanced interest rate risk position:
NII impact of less than 1% for a 100 bps parallel increase or decrease from current rate levels over 12 months

Credit Quality Trends

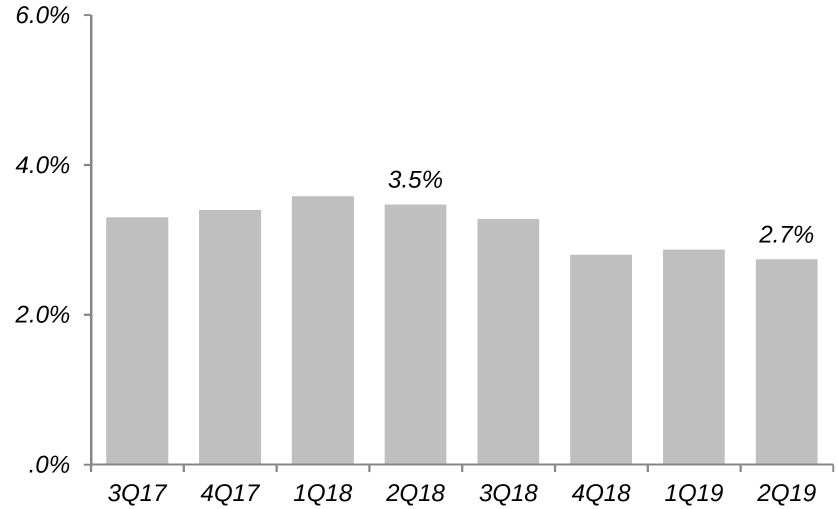
Delinquencies to Period-end Total Loans

Continuing operations



Criticized Outstandings[a] to Period-end Total Loans

Continuing operations



Metric[b]	2Q19	1Q19	4Q18	3Q18	2Q18
Delinquencies to EOP total loans: 30-89 days	.33 %	.32 %	.35 %	.41 %	.49 %
Delinquencies to EOP total loans: 90+ days	.08	.13	.13	.10	.12
NPLs to EOP portfolio loans[c]	.61	.61	.61	.72	.62
NPAs to EOP portfolio loans + OREO + Other NPAs[c]	.66	.66	.64	.75	.65
Allowance for loan losses to period-end loans	.97	.98	.99	.99	1.01
Allowance for loan losses to NPLs	158.6	161.1	162.9	137.5	162.8

(a) Loan and lease outstandings; excludes purchase credit impaired loans from the First Niagara acquisition

(b) From continuing operations

(c) Nonperforming loan balances exclude $518 million, $551 million, $575 million, $606 million, and $629 million of purchased credit impaired loans at June 30, 2019, March 31, 2019, December 31, 2018, September 30, 2018, and June 30, 2018, respectively

Credit Quality

Credit Quality by Portfolio

$ in millions	Period-end loans	Average loans	Net loan charge-offs	Net loan charge-offs[b] / average loans (%)	Nonperforming loans[c]	Ending allowance[d]	Allowance / period-end loans[d] (%)	Allowance / NPLs (%)
	6/30/19	2Q19	2Q19	2Q19	6/30/19	6/30/19	6/30/19	6/30/19
Commercial and industrial[a]	$ 48,544	$ 47,227	$ 24	0.20%	$ 189	$ 549	1.13%	290.48%
Commercial real estate:								
Commercial Mortgage	13,299	13,866	-	-	85	139	1.05	163.53
Construction	1,439	1,423	-	-	2	24	1.67	N/M
Commercial lease financing[e]	4,578	4,476	14	1.25	7	35	.76	500.00
Real estate – residential mortgage	6,053	5,790	1	.07	62	7	.12	11.29
Home equity	10,575	10,701	4	.15	191	36	.34	18.85
Consumer direct loans	2,350	2,352	8	1.36	3	32	1.36	N/M
Credit cards	1,096	1,091	10	3.68	2	44	4.01	N/M
Consumer indirect loans	4,003	3,859	4	.42	20	24	.60	120.00
Continuing total	**$ 91,937**	**$ 90,785**	**$ 65**	**.29%**	**$ 561**	**$ 890**	**.97%**	**158.65%**
Discontinued operations	964	983	3	1.22	7	12	1.24	171.43
Consolidated total	**$ 92,901**	**$ 91,768**	**$ 68**	**.30%**	**$ 568**	**$ 902**	**.97%**	**158.80%**

N/M = Not meaningful

(a) 6/30/19 ending loan balance includes $143 million of commercial credit card balances; average loan balance includes $141 million of assets from commercial credit cards
(b) Net loan charge-off amounts are annualized in calculation
(c) 6/30/19 NPL amount excludes $518 million of purchased credit impaired loans
(d) 6/30/19 allowance by portfolio is estimated
(e) Commercial lease financing includes receivables held as collateral for a secured borrowing of $11 million at June 30, 2019. Principal reductions are based on the cash payments received from these related receivables

GAAP to Non-GAAP Reconciliation

$ in millions	Three months ended 6/30/2019	3/31/2019	6/30/2018
Notable Items			
Efficiency initiative expenses	$ (50)	$ (26)	$ (22)
Laurel Road acquisition expenses	(2)	-	-
Sale of insurance business (net)	-	-	73
Lease residual loss	-	-	(42)
Total notable items	$ (52)	$ (26)	$ 9
Income taxes	(12)	(6)	7
Total notable items after tax	$ (40)	$ (20)	$ 2
Earnings per common share (EPS) excluding notable items			
EPS from continuing operations attributable to Key common shareholders – assuming dilution	$ 40	$ .38	$ .44
Add: EPS impact of notable items	.04	.02	-
EPS from continuing operations attributable to Key common shareholders excluding notable items (non-GAAP)	$ .44	$ .40	$ .44
Tangible common equity to tangible assets at period end			
Key shareholders' equity (GAAP)	$ 16,969	$ 15,924	$ 15,100
Less: Intangible assets [(a)]	2,952	2,804	2,858
Preferred Stock [(b)]	1,856	1,421	1,009
Tangible common equity (non-GAAP)	$ 12,161	$ 11,699	$ 11,233
Total assets (GAAP)	$ 144,545	$ 141,515	$ 137,792
Less: Intangible assets [(a)]	2,952	2,804	2,858
Tangible common equity to tangible assets ratio (non-GAAP)	$ 141,593	$ 138,711	$ 134,934
Tangible common equity to tangible assets ratio (non-GAAP)	8.59%	8.43%	8.32%

(a) For the three months ended June 30, 2019, March 31, 2019, and June 30, 2018, intangible assets exclude $10 million, $12 million, and $20 million, respectively, of period-end purchased credit card receivables

(b) Net of capital surplus

GAAP to Non-GAAP Reconciliation

$ in millions	Three months ended 6/30/2019	3/31/2019	6/30/2018
Average tangible common equity			
Average Key shareholders' equity (GAAP)	$ 16,531	$ 15,702	$ 15,032
Less: Intangible assets (average) [(a)]	2,959	2,813	2,883
Preferred Stock (average)	1,762	1,450	1,025
Average tangible common equity (non-GAAP)	$ 11,810	$ 11,439	$ 11,124
Return on average tangible common equity from continuing operations			
Net income (loss) from continuing operations attributable to Key common shareholders (GAAP)	$ 403	$ 386	$ 464
Plus: Notable items, after tax	40	20	(2)
Net income (loss) from continuing operations attributable to Key common shareholders excl. notable items	$ 443	$ 406	$ 462
Average tangible common equity (non-GAAP)	11,810	11,439	11,124
Return on average tangible common equity from continuing operations (non- GAAP)	13.69%	13.69%	16.73%
Return on average tangible common equity from continuing operations excl. notable items (non- GAAP)	15.05%	14.39%	16.66%
Cash efficiency ratio			
Noninterest expense (GAAP)	$ 1,019	$ 963	$ 993
Less: Intangible asset amortization	22	22	25
Adjusted noninterest expense (non-GAAP)	$ 997	$ 941	$ 968
Less: Notable items	52	26	27
Adjusted noninterest expense (non-GAAP)	$ 945	$ 915	$ 941
Net interest income (GAAP)	$ 981	$ 977	$ 979
Plus: Taxable-equivalent adjustment	8	8	8
Noninterest income	622	536	660
Total taxable-equivalent revenue (non-GAAP)	$ 1,611	$ 1,521	$ 1,647
Plus: Notable items	-	-	(36)
Adjusted total taxable-equivalent revenue (non-GAAP)	$ 1,611	$ 1,521	$ 1,611
Cash efficiency ratio (non-GAAP)	61.9%	61.9%	58.8%
Cash efficiency ratio excluding notable items (non-GAAP)	58.7%	60.2%	58.4%

(a) For the three months ended ended June 30, 2019, March 31, 2019, and June 30, 2018, average intangible assets exclude $11 million, $13 million, and $21 million, respectively, of average purchased credit card receivables