MGEE MGE Energy Inc. - Detailed Estimates - Zacks com

Workpaper JO-5 Page 46

Agreement - Estimate Revisions			
Curren Qtr (NA)	Next Qtr (NA)	Current Year (NA)	Next Year (NA)
NA	NA	NA	NA
NA	NA	NA	NA
NA	NA	NA	NA
NA	NA	N△	NA
NA	NA	NA	NA
NA	NA	NΔ	NA
	(NA) NA NA NA NA	(NA) (NA) NA NA NA NA NA NA NA NA NA NA NA NA	(NA) (NA) (NA) NA NA NA NA NA NA NA NA NA NA NA NA NA NA NA

Magnitude - Consensus Estimate Trend					
	This Quarter (Not defined)	%ext Quarter (Not Jefined)	Tris Year (Not Jefined)	Next Year (Not defined)	
Current	NA	NA	NA	NA	
7 Days Ago	NA	NA	NA	NA	
30 Days Ago	NA	NΑ	NA	NA	
60 Days Ago	NA	NA	NA	NA	
90 Days Ago	NA	N.A	NΑ	NA	

Upside - Most Accurate Estimate Versus Zacks Consensus				
	This Quarter (Not defined)	Next Quarter (Not defined)	(Not Jefned)	Next Year (Not defined)
Most Accurate Estimate	NA	NA	NA	NA
Zacks Consensus Estimate	AM	NA	NA.	NA
Earnings ESP	0 00%	0 00%	0 00%	0 00%

Surprise -	Reported Earning	js Histo	ry			
	Quarter Ending (Not defined)	Quarter (Not	Ending defined)	Quarter Ending (Not defined)	Guarter Ending (Not defined)	Average Surprise
Reported	NA		NA	NA	NA	NA
Estimate	NA	.*	NA	NA	AM	NA
Difference	NA		NA	NA	NA	NA
Surprise	NA		NA	NA	NA	NA

Qu'qk L'773**s**

\$97, \$93

Table Store

The Control of Store

The Control of Store

The Control of Store

Contr

Zacks Research is Reported On



4. m 4 .17.524 10. ar Pmh+

This make that in the provide in moreon is remark about as or more set by the language and also Cikib vithe introduce of any the provided and the control of the state of the set of the se

Constitute 2019 Carely, investment Prisoar in 10.0 Pivars de Praud Stelle (1639), unically 3 IL 80 (6)

After a many despite the parties of the comment of interest in a construction of the parties of

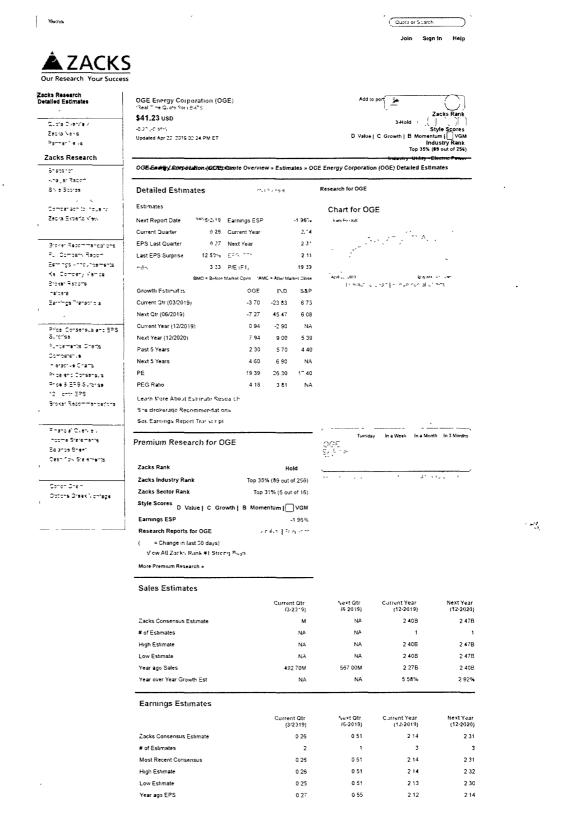
Visit to fluctuar defor information, about the performance numbers, hippayor above

Net www.dauxsdata.com N. get il undata and somer for your motitic applicative as te

Peak line inices by BATO Delay rulgoutes by Gongale

MYSC and AMEXIde is all least Loint interpretation MySDACid as a least 15 minutes league.





٠.	hpupui	٠	_	1
	Pag	е	48	

	Current Qtr (3-23-13)	%ext Qtr (6:2019)	Current Year (12:2019)	Next Year (1∠-2020)
Year over Year Growth Est	-3 70%	-7 27%	0 94%	8 10*6
Agreement - Estimate Revis	ions	•••••••••••••••••••••••••••••••••••••••		
	Current Otr (3:2315)	%ext Otr (6:20:9)	Current Year (12-2019)	Next Year (12-2020)
Up Last 7 Days	0	0	0	1
Up Last 30 Days	0	0	0	1
Up Last 60 Days	0	0	0	c
Down Last 7 Days	1	0	0	c
Down Last 30 Days	1	0	0	C
Down Last 60 Days	0	0	2	0

Magnitude - Consensus Estimate Trend

	Current Qtr (3-2019)	%ext Gtr (6:20 °9)	C_rrent Year (12/2019)	Next Year (12-2020)
Current	0 26	0 51	2 14	2 31
7 Days Ago	0 27	0 51	2 14	2 31
30 Days Ago	0 27	0 51	2 14	2 31
60 Days Ago	NA	NA	2 14	NΑ
90 Days Ago	NΑ	NA	2 14	NA

Upside - Most Accurate Estimate Versus Zacks Consensus

	Current Otr (3-2219)	%evt Qtr +6-2019)	Current Year (12-2019)	Next Year (12-2020)
Most Accurate Estimate	0 25	0.51	2 14	2 31
Zacks Consensus Estimate	0 26	0 51	2 14	2 31
Earnings ESP	- 93%	0 00%	0 00%	0 00%

Surprise - Reported Earnings History

	Quar er Ending (12/2018)	Quarter Ending (9/2018)	Quarter Ending (6/2013)	Quarter Ending (3°2013)	Average Surprise
Reported	0 2"	1 02	0 55	0 27	NA
Estimate	0 24	0 96	0 57	0 17	NA
Difference	0 03	0 06	-0 02	0 10	0.04
Surprise	-2 - 7 %	€5%	3.51%	53 8255	18 50%

Quiok Links Ber, ces

Vy Posoumn 019118 5551

Zar ks Research is Reported On



This pagin has not been with luck sports havible uniforms a provider or consider year and shares the following the standard of the residence of the standard or the standard of the standard of the standard or the standard o

Ocpyriqlia 2010 Zisuks ir vinstminin Resertanti. 10 S.R. rensi te Pfaza Sultri V i CO (Chi. Racy III. J. 80

For controlling in which is designed to the controlling of the control

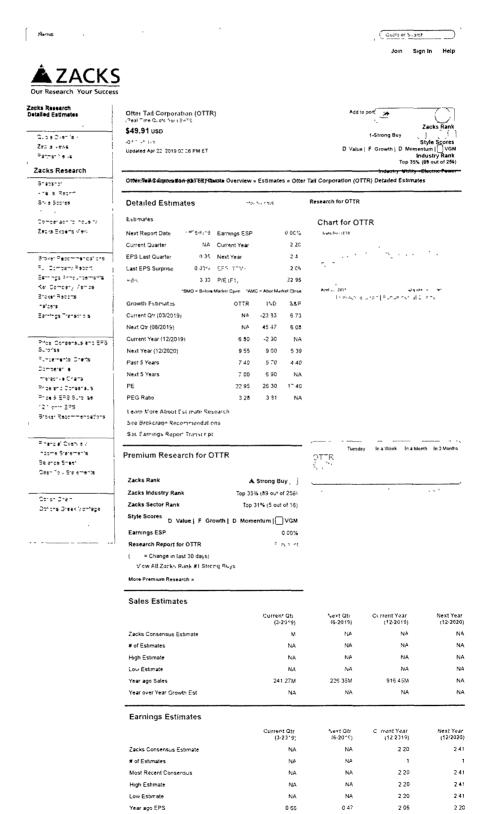
Asit at flammar for in a matiou, how normary nation is displayed above.

if a toward Zaudsupta control general days a loco central your hobite appliat acontr

Priel time under by SATS, Delayed quotes by burgary

THISE OF LAMEY data is the last 20 minutes deliance MASOMO data is the last to it has the indicate





4/22/2019 Public Utility Commission of Texas Docket No 49421

OTTR Otter Tail Corporation - Detailed Estimates - Zacks.com

Workpaper JO-5 Page 50

	Curren: Qti (3:2319)	%ex Gfr (6:20:4)	Current Year (12:2019)	Nekt Year (12/2020)
Year over Year Growth Est	NA	NA	6 80%	9 55*6
Agreement - Estimate Revisio	ons		***************************************	
	Current Otr (3-2919)	%ext Qtr (6/2019)	C_rrent Year (12-2019)	Next Year (12/2020
Up Last 7 Days	NA	NΑ	0	C
Up Last 30 Days	NA	NA.	0	(
Up Last 60 Days	NA.	NA	0	0
Down Last 7 Days	NA	NA	0	(
Down Last 30 Days	NA.	NA	0	(
Down Last 60 Days	NA	NA	0	(

Magnitude - Consensus Estimate Trend

	Current Qtr (3/2019)	%ext Qtr (6*20*9)	Current Year (12-2019)	Next Year (12-2020)
Current	NA	NA	2 20	2 41
7 Days Ago	NA	NA	2 20	2 41
30 Days Ago	NA	NA	2 20	2 41
60 Days Ago	NA	NA.	2 10	NA
90 Days Ago	NA	NΑ	2 10	NA

Upside - Most Accurate Estimate Versus Zacks Consensus

	Gurrent Gtr (3/2019)	%ext Qb (6/2019)	Corrent Year (12/2019)	Next Year (12:2020)
Most Accurate Estimate	N/A	NA	2 20	2 41
Zacks Consensus Estimate	N/A	NA	2 20	2 41
Earnings ESP	0 00%	0 00%	0 00%	0 00%

Surprise - Reported Earnings History

	Quarter Ending (12/2016)	Quarter Ending (9/2018)	Quar er Ending (6/2013)	Quarter Ending (3/2018)	Average Surprise
Reported	0 35	0.58	0 47	0 66	NA
Estimate	0 35	0 42	0.48	C 53	NA
Difference	0 00	0 16	-0 01	0 13	0 07
Surprise	2+0%	36 10 %	2 13 %	245 ""	-5 * 1 %

Quipit Limits

Seminas

Vy Approxim

Resolutores

O ent. Support

Folia vs

Georgie Play

Zacks Research is Reported On



888 Rating A as of a 22-20-4 Clink for Simble

This page has not been with clear sports about on the substances of discrete and consider a more than a solution of the control of the contro

Grayright 2010 Eacks in instrument Resilianch in 0.5 River, de Pfaza Guille Millium, Chilludo III. (ISB

In Inc. with individual control of author contribution of approximation of the control of the co

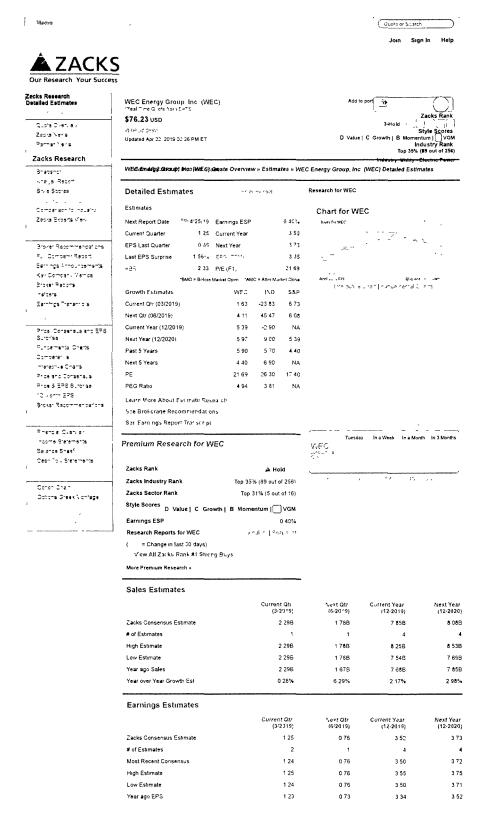
Visit be for many wheremore an about the principles of numbers displaying about

if sit ivwid zacksus a unince qui ou lestra la colombina jour in ble applicition t

Realtime prices by ENTS Delayes quotes by Surgara

NNSE and AMEY dutuin at teurs 20 meuns or fered NASDAQ data in at third. Fire clear drives





		Current Qts (3/23°9		Current Year (12/2019)	Next Year (12/2020)
Year over Year Gr	owth Est	1 635	6 4 11%	5 39%	6 11°4
Agreement -	Estimate Revis	ions			
		Current Qti (3/2319		Current Year (12/2019)	Next Year (12/2020)
Up Last 7 Days			0 0	0	o
Up Last 30 Days			0 0	0	o
Up Last 60 Days			1 0	0	a
Down Last 7 Days	i		0 0	0	0
Down Last 30 Day	/s		0 0	0	c
Down Last 60 Day	r's		0 0	0	C
Magnitude -	Consensus Est	ımate Trend		***************************************	······
		Current Qti		Current Year (12-2014)	Next Year (12/2020)
Current		12	5 0.76	3 52	3 73
7 Days Ago		12	5 0.76	3 52	3 73
30 Days Ago		12	4 0.76	3 52	3 74
60 Days Ago		12	4 0.75	3 51	3 73
90 Days Ago		12	3 0 75	3 51	3 73
Upside - Mo:	st Accurate Est	ımate Versus Zac	ks Consensus		
		Current Qt (3/23*5		Current Year (12-2019)	Next Year (12-2020
Most Accurate Est	timate	12	5 0.78	3 50	3 72
Zacks Consensus	Estimate	1 2	5 0.76	3 52	3 73
Earnings ESP		0.43.	. 0 00%	-0.50%	-0 043
Surprise - Re	eported Earning	gs History			
-	*Quarter Ending (*2/2018)	Quar er Ending (9/2018)	Quarter Ending (6/2013)	Quarter Ending (3/2018,	Average Surprise
Reported	0 65	0.74	0 73	1 23	N.A

Ber. 188	V, 4020,	Raso_ress	G 8-18_570-	E0.,04 *3	Zenka Von # 35
,					App Store
					Google Play
			***************************************	ı	ř.

0 64

0.01

-64

0.71

0.03

Zacks Research is Reported On

ACCREDITED BUSINESS

1 16

0 07

8913

0.66

0 07

05.1%

BSB Rating A as ut 2 72 2013 CI -L for E nick

NΑ

0 05

This page has not be outhought sport task or universal as a paper consultation has a more more than the company, these parties are restanced as a control of the consultation of the consu

Chipyrigh, 2019 Zituks - vesime a Reskinot - 10 to Rivers, te Pfaza Su + # + C0 10 1 - toull Livi60.

Estimate

Difference

Surprise

hathward of view hing we abilished in a manifest of descent in the provided in specific to the control of the provided in a manifest of the control of the provided in a manifest of the control of the provided in a specific to a specific to

Visit be for hance or in a mail in about hold informance himoursidisplaced about

Shift Www.ZacKsuBfa colonic ger, out dain all dicontrol fili your mobile as plos viens t

Real! the process of SATS Detayed quotes by Surgar.

NISE and AMEY data is at least 20 minutes or large 14/30/AQ data is at life set if it mails and it load



100002						(Queta or 5 are	· .
						Join Sig	ın in Help
A ZACKS	-						
ecks Research etailed Estimates	Avista Corporation (AVA) "Peal Time Q rate from BATS,				Add to p	ort 🚁	
Quora Overviava	\$41.70 USD					3-Hold	Zacks Rank
Zeoka News	-0 17 -0 219; Updated Apr 22 2019 02 50 PM ET				D Value	F Growth F Mome	Style Scores
ar at 'a va	Spanie Apr 11 10 10 01 00 Fin Ct					Ir	dustry Rank (89 out of 256)
acks Research						hrdasky White	Electric Paner
Shapanor Analis Recorr	Avide Caliporation (AVA) Grids	scOverview » Est	umates » .	Avista Co	rporation (AVA) Detaile	d Estimates	
Style Spores	Detailed Estimates	erte	ליש רביי		Research for AVA		
Comparation to toustry	Estimates				Chart for AVA		
ecos Ecos*s Ve v	Next Report Date \$11/19	Earnings ESP		0 50°.	shees for Ava		
	Current Quarter NA	Current Year		1 38		-	
ver Pacommencations		Next Year		2 14	mr + 7 _ , 1	m,1/ 1	,
בריפרי קיים ברים ברים ברים ברים	Last EPS Surprise 16 8*4	• E=> T*\'		2 08			
gs Announdements progry Verros	#2 * 3 33	P/E (F1,		21 11			
ompany varios Happins	Growth Estimate	AVA	15.0	5&P	Arni _ 201* Intarach a c	ישוף בט וואר יפי ווייר "פי	14 ~ .AF
**\$	Current Qtr (03/2019)	NA NA	-23 83	6 73			-
ngs Transpribis	Next Qtr (03/2019)	N4 N4	45 47	6 08			
	Next Qtr (06/2019) Current Year (12/2019)	-6 16	45 47 -2 90	NA NA			
-se-sus an: EPS							
53	Next Year (12/2020)	8 08	9 00	5 39			
ementa Chems	Past 5 Years	4 40	5 70	4 40			
cerenva corva Chama	Next 5 Years PE	3 20	6 90	NA 17.40			
nt Consensus	PEG Ratio	21 11 6 60	26 30 3 81	17 40 NA			
\$ 575 S.m.ss			3 81	NA			
onth E78	Learn More Apout Est mate Po						
kar Rapommenoarions	See Brokerage Recummendat						
	See Earn nge Report Transcri	f/*					
ends Clarves	Premium Research for	AVA			Tuesday	In a Week In a Mo	onth In 3 Months
snoe Sheet ome Sheethenbyts					AV-		
To vi Sire a mente	Zacks Rank		н.	old			1
İ	Zacks Industry Rank	Top 35	% (89 out			2 4	
n One n	Zacks Sector Rank		31% (5 ou		,	- 4	
ons Greek Yontage	Shile Sansa						
,	D Valde F C	Growth F Mom	entum	_			
	Earnings ESP			0 00%			
	Research Report for AVA		ŝi	ans "u"			
	(≈ Change in last 30 days)						
	View All Zacks Rank #1 5th	имід виў5					
	More Premium Research »						
	Sales Estimates		-				
			Curren		Next Qtr	Current Year	Next Year
			(3.	(2019)	(6/2019)	(12/2019)	(12/2020)
	Zacks Consensus Estimate			М	NA.	NA	NA NA
	# of Estimates			NA.	ŊA	NA 	NA
	High Estimate			NA	NA.	NA	NA
	Low Estimate			NΑ	NΔ	NΦ	NA
	Year ago Sales		40	9 36M	319 30M	1 40B	NA
	Year over Year Growth Est			NA	NA	NA	NA
	Earnings Estimates						
			Curre:	rt Qtr (2019)	Sext Otr (6/2019)	Current Year (12/2019)	Next Year (12-2020)
	Zacks Consensus Estimate		(3	.,25 9) NA	NA	1 95	2 14
	# of Estimates			NA NA	NA NA	1	1
	Most Recent Consensus			NA.	NA AN	1 98	2 14
	High Estimate			NA NA	44	1 98	2 14
	Low Estimate			NA NA	NA AN	1 98	2 14
	Year ago EPS			0.84	0 39	2 11	1 98
	Value Van Canata Cal			U 04	0.39	£ 1694	8.08%

	Current Qtr (3/2019)	\ext Qtr (6/2013)	Current Year (12/2019)	Next Yaar (12/2020
Up Last 7 Days	NA	NA	0	
Up Last 30 Days	NA NA	NA	0	
Up Last 60 Days	NA.	NA	0	
Down Last 7 Days	NA.	NA	0	
Down Last 30 Days	NΑ	NA	0	
Down Last 60 Days	NA NA	NA	0	
Magnitude - Consensus	Corrent Qtr	Next Qtr	Current Year	
Magnitude - Consensus		\ext Qtr (6/20 * 9)	Current Year (12/2019)	
	Corrent Qtr			Next Year (12/2020 2 1:
Current	Current Qtr (3/2019)	(6*20*9)	(12/2019)	(12/2020
Current 7 Days Ago	Current Qtr (3/2019) NA	(6*20*9) NA	(12/2019) 1 98	(12/2020 2 1
Current 7 Days Ago 30 Days Ago	Current Qtr (3/2019) NA NA	(8*20*9) NA NA	(12/2019) 1 98 1 98	(12/2020 2 1 2 1
Magnitude - Consensus Current 7 Days Ago 30 Days Ago 60 Days Ago 90 Days Ago	Current Qtr (3/2019) NA NA NA	(6/20*9) NA NA NA	(12/2019) 1 98 1 98 1 98	(12/202) 2 1 2 1 2 1 N
Current 7 Days Ago 30 Days Ago 60 Days Ago 90 Days Ago	Current Otr (3/2019) NA NA NA NA	(6*20*3) NA NA NA NA NA	(12/2019) 1 98 1 98 1 98 1 98	(12/2020 2 1 2 1 2 1 N.

Most Accurate Estimate	NA	NA		2 14
Zacks Consensus Estimate	NA NA	NA	1 98	2 14
Earnings ESP	0 00%	0 00%	0 00%	0 00%
Surprise - Reported Earn	ings History			
Quarter Ending (12/2013		Quarter Ending (6'2513)	Quarter Enging (3/2018)	Average Surprise

0 39

0 34

0 05

44, ***

0 15

0 20

-0 05

-2.00%

	T930_7598	Claris poor	Follow Us	Zacks "c'c's 4
		,		App Stor
				Google Pl
İ				
			1	

0.70

0.50

0 10

16 61 15

Reported

Eştimate

Difference

Surprise

Zacks Research is Reported On

ACCREDITED BAR

0.84

0 90

-0 06

-05/11

NA

NΑ

0.01

-0.07%

BAN Batting Aa r Z_ 2619 Cl v a nef v

Thinking the house read spot and ordinary spatial to the control of control of company agreement of the area of the control of company agreements of the area of the control of the control of control of the control of

Conviger Tradition of among post-posters. U.S.H. pro- to Plaza St. C. #5500 | 10 ago. # 80508

After critical or in programs of a strong combined on displaced or a start of the strong of the stro

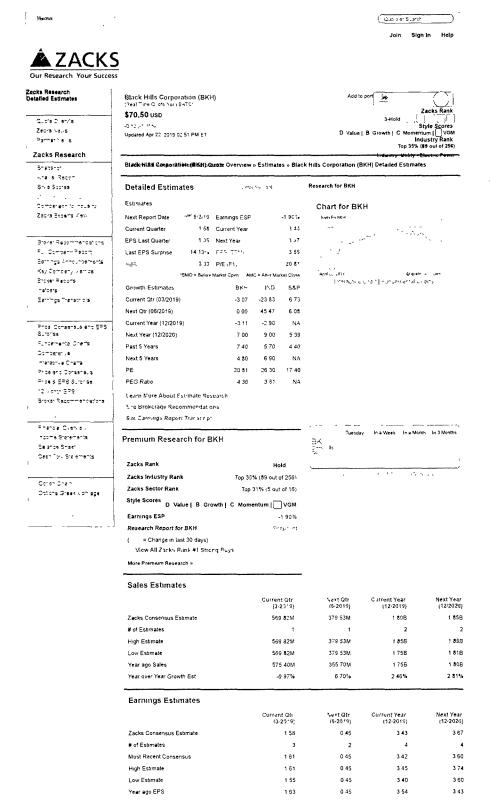
his fineffurmanue for the triston labour for performance humber displayed above

bindiversization to get our data and noting to such a second so such

Restinationed by 84.5. It sayed suct sibs Surspice

NYSH at I AMERidaa is at least 30 minutilis delection NASDAQ (latticisation in linear delection)





Workpaper JO-5
Page 56

	Curren: Qtr (3/2314)	%ex! Qtr (6:20:9)	Current Year (12-2019)	Nact Year (12/2020
Year over Year Growth Est	-3 07%	0 00%	-3 11%	7 07%
Agreement - Estimato Revis	SIONS			
	Current Otr (3-2019)	Next Gtr (6/2019)	Current Year (12/2019)	Next Year (12/2020
Up Last 7 Days	0	0	0	
Up Last 30 Days	0	0	0	
Up Last 60 Days	0	0	1	
Down Last 7 Days	†	0	0	
Down Last 30 Days	1	0	0	
Down Last 60 Days	1	0	1	
Current	(3-23*9)	(6/2019)	(12-2019) 3 43	(12/2020
	Current Otr	Next Otr	Carrent Year	Next Year
Current	1 58	0 45	3 43	3 6
7 Days Ago	1 60	0 45	3 43	3 6
	1 60	0.45	3 43	3 6
30 Days Ago				
	1 62	0 45	3 43	3 6
60 Days Ago		0 45 NA	3 43 3 42	
60 Days Ago 90 Days Ago	1 62 NA	NA		
60 Days Ago 90 Days Ago	1 62 NA	NA		3 6 3 6 Next Yea (12/2020
60 Days Ago 90 Days Ago Upside - Most Accurate Est	1 62 NA timate Versus Zacks Co	NA Onsensus Vert Gtr	3 42 Carrent Year	3 6 Next Yea
60 Days Ago 90 Days Ago Upside - Most Accurate Est Most Accurate Estimate	1 62 NA timate Versus Zacks Co Current Otr (3:23/9)	NA Onsensus Next Gtr (6:2019)	3 42 Current Year (12:2019)	3 6 Next Yea (12/2020
30 Days Ago 80 Days Ago 90 Days Ago Upside - Most Accurate Est Most Accurate Estmate Zacks Consensus Estmate Earnings ESP	1 62 NA timate Versus Zacks Co Current Off (4/2)*9) 1 55	NA NA NA Next Gtr (6-2019) 0 45	3 42 Current Year (12-2019) 3 43	3 6 Next Yea (12/2020 3 6
60 Days Ago 90 Days Ago Upside - Most Accurate Est Most Accurate Estimate Zacks Consensus Estimate	1 62 NA RIMATE Versus Zacks Co Current Oft (3/22/9) 1 55 1 58 - 90%	NA NSERSUS Next Gtr (5:20*9) 0 45	3 42 Current Year (12-2019) 3 43 3 43	3 6 Next Yea (12/2026 3 6 3 6

रेपंडरं ५ वस्त					
Şery c≇s	Vy Consum	स् _{षे} ड्ड , न्तः <u>श्रेष्ठ</u>		F2 2 C US	App Store Google Play

0.42

0.47

-0 05

- 5564

0 45

0.41

3.78%

1 63

1 55

5 15

NA

NA

0 05

452%

1 05

0.92

0 13

14 13%

Zacks Research is Reported On



This pagends not bremain to Lod sportates of the wholesprovinger commonly recompanies high remainstrate. Earl of 9 year page, most earlies for the risk materials as one of the common section of the common section of the common section of the common section of the common section of the common section of the common section of the common section of the common section of the common section of the common section of the common section of the common section of the common section of the common section sec

Occupage 2019 Zauks investment Research in 0.5 Riversite Plaza 3c or # 100 , Ohiliado (E. 1180).

Reported

Estimate

Difference

Surprise

Here wells of early indicated and service committed and partial and commonstrating asserting as a service of the service and t

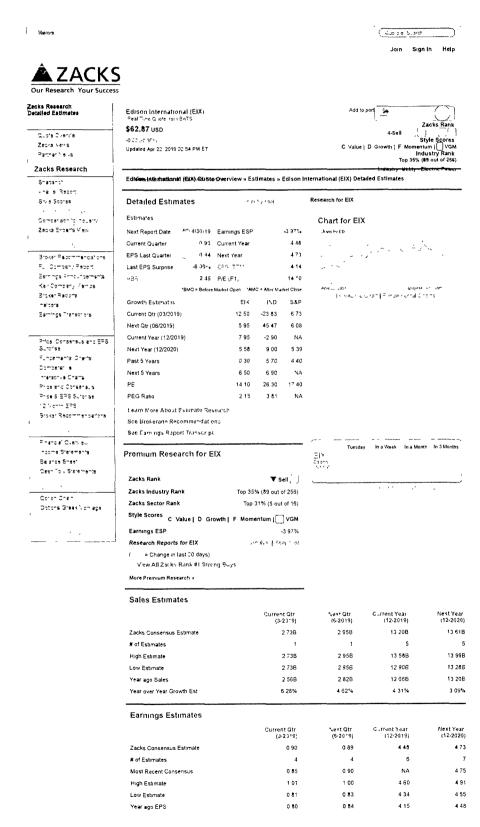
Virit of if it hands for no mail in which the distribution is smooth units a displayed choice

sind own 2 acksuata onthio group pate and contint. If your is ublied up in website

Fill the proced by BATS Delayed quotes by Surgar...

NVSE and AME ridato is it lossed on more or leved. NASIDAQ Italy is on head if it is to its differen





•			
	Page	58	

	Current Gtr (3/23.9)	%ext Qtr (6:2:119)	Current Ye st (12:2019)	N+xt Year (12/2020)
Year over Year Growth Est	12 50%	5 95%	7 95%	5 79%
Agreement - Estimate Revis	sions		·····	
	Current Gtr (3/2019)	\ext Gtr {6:2919}	Current Year (12:2019)	Next Year (12-2020)
Up Last 7 Days	1	1	0	0
Up Last 30 Days	1	1	0	0
Up Last 60 Days	1	1	0	0
Down Last 7 Days	1	1	1	2
Down Last 30 Days	1	1	2	3
Down Last 60 Days	0	1	4	4

Magnitude - Consensus Estimate Trend

_				
	Currar t Gtr (3/2019)	%ext Qtr (6-2019)	Current Year (12-2019)	Next Year (12-2020)
Current	0 90	0 89	4 48	4 73
7 Days Ago	0 90	0.89	4 50	4 77
30 Days Ago	0 93	0.89	4 53	478
60 Days Ago	0 88	0.87	4 55	4 82
90 Days Ago	0.88	0 87	4 55	4 82

Upside - Most Accurate Estimate Versus Zacks Consensus

	Current Qtr (3/2019)	%e¥t Qtr (6-2019)	Current Year (12/2019)	Next Year (12-2020)
Most Accurate Estimate	0 87	0.83	4 42	4 72
Zacks Consensus Estimate	0 90	0.89	4 48	473
Earnings ESP	d ²ⁿ v	÷ /4%	- 31%	'-0 333,

Surprise - Reported Earnings History

	Quar er Ending (12/2018)	Quar er Ending (9·2018)	Quar er Ending (6/2018)	Quarter Ending (3/2018)	Average Surprise
Reported	0 94	1 56	0.84	0 80	NA
Estmate	1 00	1 31	0 82	0 90	NA
Difference	-0 06	0 25	0 02	-0 10	0 03
Surprise	-5 17 G 34	3 (18 %	2 1414	-11.11.5	10%

Quarterly Estimates By Analyst

Zacks Premium Subscription Required Learn More

Annual Estimates By Analyst

Zacks Premium Subscription Required Leain Mote

Q. '01 Links

Samiloss Ny Addount Resources O'sh Suppor

© Paralless App Sto

App Sto

Google F

Zacks Research is Reported On

ACCREDITED

BBB Rating

as at 4 1 20.

BBB. Climiter Full

This page has not been all horsed, quargotic leady make above of or new sently the conjunct of the limple of page that in the limple of the make the conjunction of the limb the page that the limb of the limb the page that it will be the sent of the limb of t

Copyright 2019 Eacks Investment Research 10 5 Riverside Pleza Surfa # 120 | 0.1 ago ill 60805

Attraction for your plants a service demonstration of your plants and a work of the control of t

visit performance for informal anial out the performance numbers disputed and is

visit ower Zcoxs and distribution of state and content to you made example medical

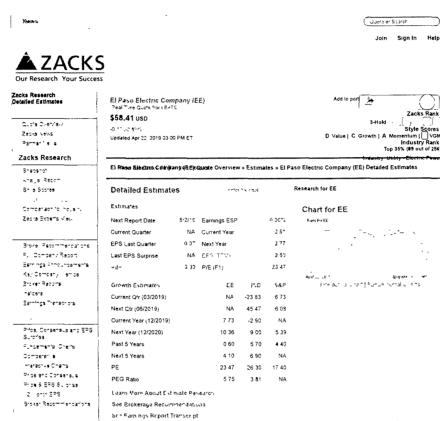
Seal incorpose, PATS Delay orguntes by a nguro

The section of the big state of the section of the



ZACKS





Premium Research for EE		Tues	sday In a We
Zacks Rank	▼ Hold	er * ₁	
Zacks Industry Rank	Top 35% (89 out of 256)		, ,
Zacks Sector Rank	Top 31% (5 out of 16)		
Style Scores D Value C Grow	th A Momentum VGM		
Earnings ESP	0 00%		
Research Report for EE	ลักษายะ		
(= Change in last 30 days)			
View All Facks Rank #1 Strong	Suys		

Sales Estimates					
	Curren (3/2		ext Qtr (6/2019)	Current Year (12/2019)	Next Year (12/2020)
Zacks Consensus Estimate		M	NA	NA	NA
# of Estimates		NA	NA	NA	NA
High Estimate		NA	NA	NA	NA
Low Estimate		NA	NA	NA	NA
Year ago Sales	175	71M	236 80M	903 60M	NA
Year over Year Growth Est		NA	NA	NA	NA

Earnings Estimates				
	Current Qtr (3/2019)	Sext Qtr (6/2019)	Current Year (12/2019)	Next Year {12/2020}
Zacks Consensus Estimate	NA	NA	2 51	2 77
# of Estimates	NA	NA	2	2
Most Recent Consensus	NA	NA.	2 62	2 95
High Estimate	NΑ	NA	2 62	2 95
Low Estimate	NA	NΑ	2 40	2 59
Year ago EPS	-0 12	0 76	2 33	2 51
Year over Year Growth Est	NA	NA	7 73%	10 36%

Financia Cyanyay

Conen Gran Options Greak \ ontage

ngome Statements Baishos Shas' Gean Toly Sterements

NA

NA

orkp/	aper	J	U	-:
	Page	е	60	0

	Current Qtr (3/2019)	\ext Qtr (6/2013)	Current Yzar (12 2019)	Next √ear (12/2020
Up Last 7 Days	NA.	NA	0	
Up Last 30 Days	NA.	NA	0	(
Up Last 60 Days	NA	NA	1	(
Down Last 7 Days	NA	NA	0	(
Down Last 30 Days	NA	NA	0	(
Down Last 60 Days	NA	NA	0	(
Magnitude - Consensus	Estimate Trend			······
	Current Qtr (3/2019)	\ext Qtr (6/20*9)	Current Year (12/2019)	Next Year (12/2020
Current	NA.	NA	2 51	2 77
		NA.	2 51	2.77
7 Days Ago	NA NA	NA.	2 31	21.

Unside - Mos	t Arcurate	Estimate	Vareus	7acks	Concensus	

	Current Qtr (3/2919)	Next Qtr (6/2019)	Current Year (12/2019)	Next Year (12:2020)
Most Accurate Estimate	NA	NA	2 51	2 59
Zacks Consensus Estimate	NA	NA	2 51	2 77
Earnings ESP	0 00%	0 00%	0 00%	-3 500

NA

NΑ

NΑ

NA

2 36

2 36

Surprise - Reported Earnings History

60 Days Ago

90 Days Ago

•	,	- ,			
	Quarter Ending (12/2013)	Quarter Ending (3'2013)	Quarter Ending (6/2013)	Quarter Ending (3/2018)	Average Surprise
Reported	0 07	1 79	0 76	~0 12	NA
Eshmate	0.00	NA	NA	NA	NA
Difference	0 07	NA	NA	NA	0 07
Surprise	NA	NA	NA	NA	NA

Quiok Links 882 588 Ty Assout. 39801.108E 0 '97' 8,555" Followius

Zauks Research is Reported On

Thicag have please invested approved or cholorous agriculture on the original state in earlieful company gos epitartic transition in exact for the state of the control of

Consider Contraction among those work distribution to Plaza Scir #1500; Parago Hill Mostos

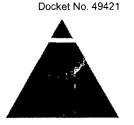
After continuous and international control of the c

Viet nerrormanus for information, book the performance however, flag agriculatives

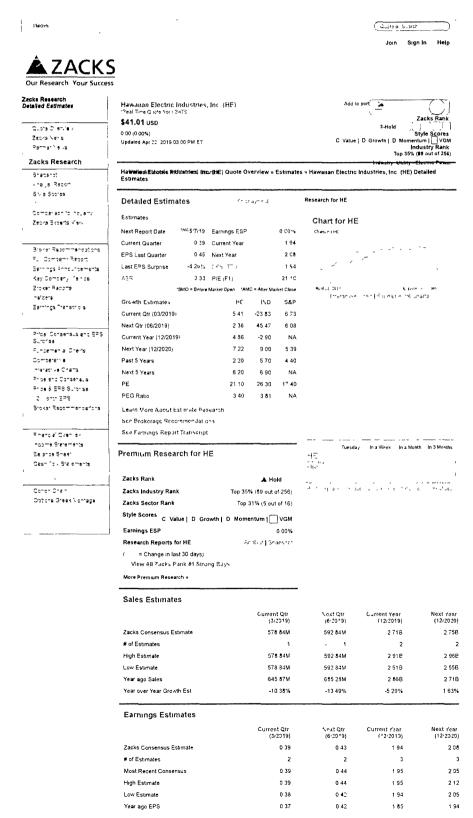
Victorionic accident nomino genocidents direction for our multipaspoliticos.

Realthne size by SAIS In layer quet alba Surgain

on a side time it to add a still provided a supplied in the side of the side o



ZACKS



orkp	aper	JO	-5
	Page	e 6:	2

	Current Qtt (3:23'9)	Vex Qfr (6/2019)	Current Year (12 2019)	Naxt Year (12/2020)
Year over Year Growth Est	5 41%	2 38%	4 86%	6 88%
Agreement - Estimate Revis	sions			·····
	Current Qtr (3/2019)	%ext Qtr (6-20+9)	Current Year (12:2019)	Next Year (12-2020)
Up Last 7 Days	0	0	0	0
Up Last 30 Days	0	0	0	0
Up Last 60 Days	0	0	O	0
Down Last 7 Days	0	0	1	1
Down Last 30 Days	0	0	1	0
Down Last 60 Days	0	0	2	1
Current 7 Days Ago	0 39 0 39	0 43 0 43	1 94 1 95	2 08 2 08
Current	0 39	0.43	1 94	2 08
30 Days Ago	0.39	0 43	1 95	2 09
60 Days Ago	0 39	0 44	1 98	2 11
90 Days Ago	NA	NA	2 00	2 16
Upside - Most Accurate Est	ımate Versus Zacks Co	onsensus		
Upside - Most Accurate Est	imate Versus Zacks Co Current Qtr (3/2)*9)	\ext Qtr (6:20:9)	Current Year (12/2019)	
	Current Qtr	Next Qtr		Next Year (12-2020 2 06
Upside - Most Accurate Est Most Accurate Estimate Zacks Consensus Estimate	Current Qtr (3-2319)	%ext Qtr (5/2019)	(12/2019)	(12-2020

	(12/2018)	(9/2018)	(6/2013)	(3/2018)	Average Surprise
ported	0 45	0 60	0 42	0 37	NA
ımat e	0 47	0 62	0 42	0 37	NA
ference	-0 02	-0 02	0 00	0 00	-0 01
rprise	-4.28%	-0.13%	5:0%	0.0115	874

Quick Links Services Vy Addourt C antSurpor ₹5″5% **∪3** Zeaks Vacio Sea Rasources

Zacks Research is Reported On



#58 Rating, A 4, J - 2, 20 + Cl conf his

This page has bother with Lad sporshed or deminate procedure last topic exemplate more settled page. Set offices lightly look on see, left her in the statistic feet of Media Microel Clinical Policy Control of the initial statistic feet of the more settled to the settled of the settled feet of the settled

Grippings, 2010 Eacks it sesting it Repriato - 10 ≤ Rivers de Plaza Guilli ¥ 100 Ciril aco (b.) 60

Note with of each more mode self-ordinary minitizant ording each television in other graph reads to each of the control of a taking administrated in the control of the con

 $b \sim \!\! t \, p_{\rm S} \, f \, \pi \, m_b m_b + t \, \sigma \, m_b \, m_b \, m_b + m_b \,$

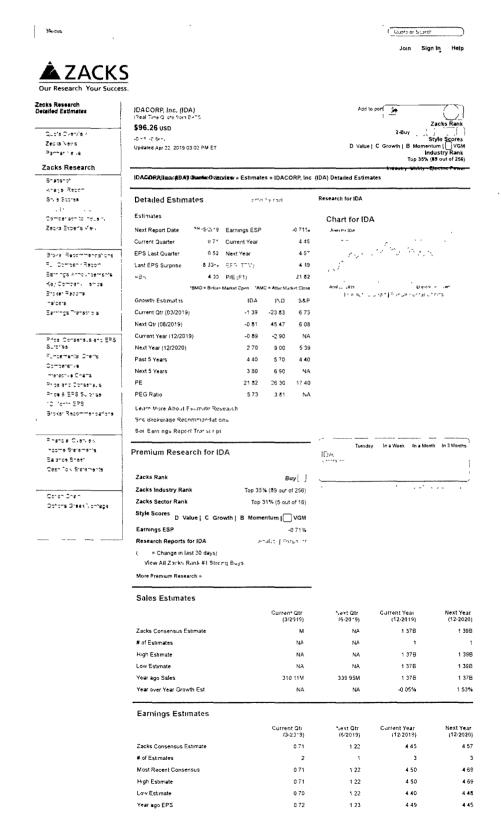
Visitoria Zacksuafa unin lugin, our cath and control tri your in biole applic vicor t

Restrain process (24TS Calayed quo as by Surgar

Wist at 1 AMEY tale - Allieur 35 moulins deleved "ABBING dals a strik valite ynd ys del ved



ZACKS



	Current Qtr (3/2319)	Next Off (6-20 -1)	Current Year (12-2019)	N≥xt Year (1∠/2020)	
Year over Year Growth Est	-1 39%	-0 81°6	-0 89%	2 77%	
Agreement - Estimate Revis	sions	······································		***************************************	
	Current Otr (3-2019)	*cext Qtr (6/2019)	Current Year (14:2019)	Next Year (12-2020)	
Up Last 7 Days	0	0	0	C	
Up Last 30 Days	0	0	1	c	
Up Last 60 Days	0	0	1	c	
Down Last 7 Days	0	0	0	C	
Down Last 30 Days	0	0	0		
Down Last 60 Days	0	0	0	(
Magnitude - Consensus Est	limate Trend				
Magnitude - Consensus Est		6/2-	G	Alaus Va	
Magnitude - Consensus Est	timate Trend Current Otr (3-2019)	Next Oir (b/2019)	Current Year (12:2019)	(12-2929	
Magnitude - Consensus Est	Current Otr			(12-2929	
Current	Current Otr (3/2019)	4b/2019} 1 22 1 22	(12-2019) 4 45 4 45	(12-2929 4 57 4 57	
•	Current Otr (3:2319) 0.71	(b/2019) 1 22	(12·2019) 4 45	(12-2929 4 57 4 57	
Current 7 Days Ago	Current Qtr 43-2919} 0 71 0 71	4b/2019} 1 22 1 22	(12-2019) 4 45 4 45	(12-2020 4 57 4 57 4 58	
Current 7 Days Ago 30 Days Ago	Current Otr (3:2719) 0.71 0.71	1 22 1 22 1 22	(12:2019) 4:45 4:45 4:44	(12-2020 4 57 4 57 4 58 NA	
Current 7 Days Ago 30 Days Ago 60 Days Ago	Current Otr (3/2719) 0 71 0 71 NA NA	1 22 1 22 1 22 1 22 1 22 NA	(12:2019) 4 45 4 45 4 44 4 44	(12-2020 4 57 4 57 4 58 NA	
Current 7 Days Ago 30 Days Ago 60 Days Ago 90 Days Ago	Current Otr (3/2719) 0 71 0 71 NA NA	1 22 1 22 1 22 1 22 1 22 NA	(12:2019) 4 45 4 45 4 44 4 44	(12-2020 4-57 4-57 4-53 NA NA	
Current 7 Days Ago 30 Days Ago 60 Days Ago 90 Days Ago	Current Ofr (J-2019) 0.71 0.71 0.71 NA NA NA	1 22 1 22 1 22 1 22 NA NA Onsensus	(12:2019) 4 45 4 45 4 44 4 42 4 42	Next Year (12:2020 4 57 4 57 4 58 NA NA Next Year 112:2020	

	Quarier Ending (12/2018)	Quarter Ending (9/2018)	Quarter Ending (6:2018)	Quarter Ending (3/2018)	Average Surprise
Reported	0 52	2 02	1 23	0 72	NA
Estimate	0.48	1 76	1 08	0.71	NA
Difference	0.04	0 26	0 15	0.01	0 12
Surprise	8 37%	477%	3,89%	1411	9 60%

0 00%

Cutor Chris

Sen, psa

Vy Appur Resources

C ent/Support

For an us

Texas You e App

Control

Georgie Play

Zacks Research is Reported On

ACCREDITED

BBB. BUSINESS

ACCREDITED

A. J. 1 T. 2013

Ch. Lege 5 min.

This page has not been with used sports it all or other what a previous ellipson does not be up near the previous through the property of the angle of the property of the state of the property of the state of the property of the state of t

Copyright 2019 Inche in History it Research 110 S.R. rens de Plaza 3: 114 100 Shi, ago 16, 160

Earnings ESP

with wath of their projects of admost minimal of ordines and associated by the description of their association and their associations are associated by the second of their associations and their associations are associated by the second of their associations are associated by the second of their associations are associated by the second of their associations are associated by the second of their associations are associated by the second of their associated by the second of their associations are associated by the second of their associated by the second of their associated by the second of their associated by the second of their associated by the second of their associated by the second of their associated by the second of their associated by the second of their associated by the second of their associated by the second of their associated by the second of their associated by the second of their associated by the second of the second of their associated by the second of their associated by the second of the second of the second of the second of their associated by the second of the

Virtue for nancino, in orma, un about the pilinormatic in the undersidist, as nearby, ϵ

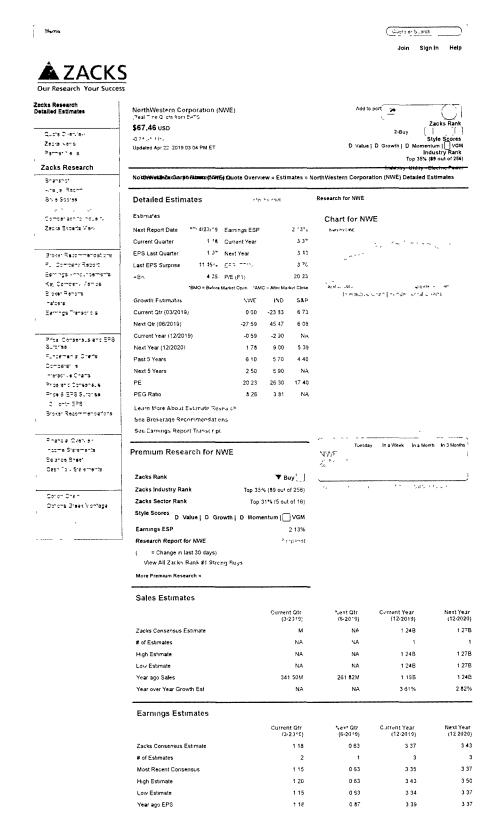
of single way zacksuata upon logic our cathalloud tenting your nublic applications t

Prattime promising EATS Delayed quoties by Surgar.

NuSE and AMED data in the sample of the resolution of the solution of the second of t







	Current Qtr (3/2314)	%ex* Qtr (6-2019)	Current Yest (12/2019)	N= (12/2020)
Year over Year Growth Est	0 00%	-27 59%	-0 59%	1 78%
Agreement - Estimate Revisio	ons			
	Current Oir (3-2019)	Next Qtr (6:2019)	Current Year (12-2019)	Next Year (17-2020)
Up Last 7 Days	0	0	0	0
Up Last 30 Days	0	0	0	0
Up Last 60 Days	0	0	0	0
Down Last 7 Days	1	0	0	0
Down Last 30 Days	1	0	0	0
Down Last 60 Days	0	0	0	0
	(3-2319) 1 18 1 18	(6/2019) 0.63 0.63	(12:2019) 3:37 3:37	3 43
7 Days Ago 30 Days Ago 60 Days Ago	1 18	0 63	3 37	(12/2020) 3 43 3 43 3 43 3 50 NA
7 Days Ago 30 Days Ago 60 Days Ago 90 Days Ago	1 18 1 18 1 18 1 15 NA	0.63 0.63 0.63 0.63 NA	3 37 3 37 3 37 3 41	3 43 3 43 3 43 3 50
7 Days Ago 30 Days Ago 60 Days Ago 90 Days Ago Upside - Most Accurate Estin	1 18 1 18 1 18 1 15 NA nate Versus Zacks C	0 63 0 63 0 63 NA Consensus	3 37 3 37 3 37 3 41 3 44	3 43 3 43 3 43 3 50 NA
Current 7 Days Ago 30 Days Ago 60 Days Ago 90 Days Ago Upside - Most Accurate Estin Most Accurate Estmate Zacks Consensus Estmate	1 18 1 18 1 18 1 15 NA nate Versus Zacks (Gurrent Ctr (J-2019)	0 63 0 63 0 63 0 63 NA Consensus	3 37 3 37 3 37 3 41 3 44 Current Year (12/2019)	3 43 3 43 3 43 3 50 NA Next Year (12-2020)
7 Days Ago 30 Days Ago 60 Days Ago 90 Days Ago Upside - Most Accurate Estin	1 18 1 18 1 18 1 15 NA nate Versus Zacks (Current Gr (3-2019) 1 20	0 63 0 63 0 63 0 63 NA Consensus	3 37 3 37 3 37 3 41 3 44 Current Year (12-2019) 3 37	3 43 3 43 3 43 3 50 NA Next Year (12-2020) 3 43
7 Days Ago 30 Days Ago 60 Days Ago 90 Days Ago Upside - Most Accurate Estin Most Accurate Estinate Zacks Consensus Estimate	1 18 1 18 1 18 1 15 NA nate Versus Zacks C Current Or (3-2019) 1 20 1 18	0 63 0 63 0 63 0 63 NA Consensus Next Ctr (6:20*9) 0 63	337 337 341 344 Current Year (12/2019) 337 337	3 43 3 43 3 43 3 50 NA Next Year (12-2020) 3 43
7 Days Ago 30 Days Ago 80 Days Ago 90 Days Ago Upside - Most Accurate Estin Most Accurate Estimate Zacks Consensus Estimate Earnings ESP Surprise - Reported Earnings	1 18 1 18 1 18 1 18 1 15 NA nate Versus Zacks (Gurrent Gir (3-2019) 1 20 1 18 2 1 : 5 History Quar er Ending Quar	0 63 0 63 0 63 0 63 NA Consensus Next Ofr (6:2019) 0 63 0 00%	3 37 3 37 3 41 3 44 Current Year (12-2019) 3 37 3 37 0 00%	3 43 3 43 3 43 3 50 NA Next Year (12-2020) 3 43
7 Days Ago 30 Days Ago 60 Days Ago 90 Days Ago Upside - Most Accurate Estin Most Accurate Estimate Zacks Consensus Estimate Earnings ESP Surprise - Reported Earnings	1 18 1 18 1 18 1 15 NA nate Versus Zacks (Current Gir (3-2019) 1 20 1 18 2 3 14	0 63 0 63 0 63 0 63 NA Consensus Next Otr (5:20 19) 0 63 0 63	337 337 341 344 Current Year (12-2019) 337 337 000%	3 43 3 43 3 50 NA Next Year (12-2020) 3 43 3 42

Se-, cas	Ny \$ \$200°	च् _{षे} ड्राटक्ड	೦ ತಗ್ಗೆ ಶಿಸ್ತರ್ಥನ	£3 2~ ^3	Zenia Vobile kap
					App Store
					Google Play
		,			
,				I	ı

-0 13

- 6 51%

0 11

11 46%

Zacks Research is Reported On



-0 02

- 5"15

0 38

0 09

·* 28%

This page has reflerence "Gried sporshed order whola previous ellower by less road to your sets before Eal of the compative work so real terms and law make or an experience of the compative of

Cupying is 2019 Dacks - 715kms N Resk trof - 10 S R versite Plaza 30 to # 0.00 j Ch. No.7 to 1060 -

Difference

Surprise

Coupring Action Action and respect to the residence of the coupring of the coupring and respect to the coupring of the respect to the coupring of the respect to the coupring and respect to the coupring of the respect to the coupring of the respect to the coupring of the respect to the respe

Visit be for name is a small an absolution purposition of smooth displaced and ϵ

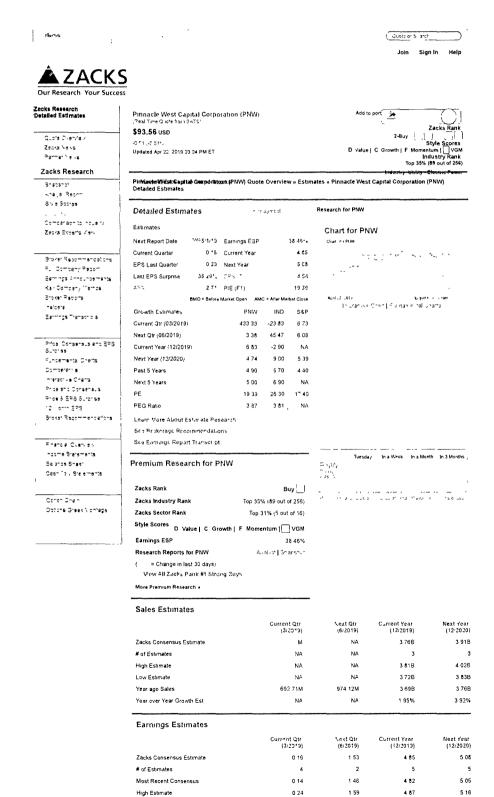
strict yww.zackcusta.com io genoù osta si diodrunt ha your a ub le upp ur vieor b

Print the property SMTS Delayed quotes by Sur Jan.

My SE and AMEZY data is in to use 20 minutes differed MASOAQ data is with ust 15 minutes directed



ZACKS



0 03

0 03

5 00

4 85

4 80

4 54

		Curren Off (5/2) 9		(arrent Year (12/2019)	Noxt Year (12/2020)
Year over Year G	rowth Est	433 33%	3 36%	6 83%	4 70%
Agreement	- Estimate Revis	ions	······································		
		Current Qtr (3:2019		Current Year (12-2019)	Next Year (12/2020)
Up Last 7 Days		2	2 1	0	2
Up Last 30 Days		2	1	0	2
Up Last 60 Days		2	1	2	3
Down Last 7 Day	s	(0	0	(
Down Last 30 De	iys	(0	0	
Down Last 60 Da	ys	C	1	0	(
Magnitude -	Consensus Est	ımate Trend			
		Currar t Otr (3:2919		C_rrent Year (12-2019)	Next Year (12-2920
Current		0.16	1 53	4 85	5 08
7 Days Ago		0 12	1 49	4 85	5 07
30 Days Ago		0 12	1 49	4 85	5 07
60 Days Ago		0.10	1 49	4 82	4 99
90 Days Ago		0 10	1 49	4 81	4 94
Upside - Mo	st Accurate Est	mate Versus Zaci	ks Consensus		
		Current Otr (3/2319		Current Year (12/2019)	Next Year (12/2020
Most Accurate E	stimate	0 2:	3 1 59	4 85	5.06
Zacks Consensu	s Estimat e	0 18	1 53	4 85	5 01
Earnings ESP		3* 49`	4 29%	0 00%	4)4,
Surprise - R	eported Earning	js History	······································	***************************************	
	Quar e- Ending {*2/2018}	Quarter Ending (9/2018)	Quarter Ending (6/2013)	Quarter Ending (3/2018)	Average Surprise
Reported	0 23	2 50	1 48	0 03	N/
Estmate	0 17	2 75	1 44	0.10	N/
Countaie			2.24	-0 07	0.0
Difference	0 06	0 25	0 04	-0 0	0 0.

2, 01, 748 V, Appound \$97, 295 3250_7025 C ET'8.3337 70 c .s Zaors "od e \$00

Annual Estimates By Analyst Zacks Premium Subscription Required Learning &

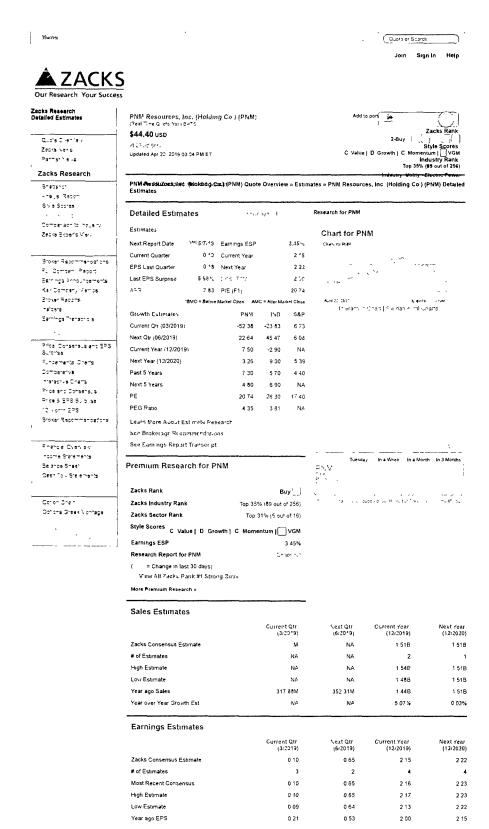
Zacks Research is Reported On

This stay them of the fact in the factor of the sure and the control of a control of the factor of the factor of the control o

At the content of the product of a story continued to independ in every card care principle and the product of a story continued to independ in each of the product of a story continued to independ in each of the product of a story content of the product of a story content of the product of a story content of the product of a story content of the product of a story content of the product of a story content of the product of a story content of the product of a story content of the product of a story content of the product of a story content
I SILL ALL SULL STATE ULL SE SESTE COLLEGE SE Realth te in estay Bame C land quart sion Scripe e

NYSE and AMEA dollars at least 20 minutilla cetavico. Neis DAC dollars a cetast 15 millions de la just





Vorkpaper JO-5 Page 70

	Curren, Qtr (3/2314)	%ex Qtr (6:2014)	Current Year (12/2019)	N=xt Year (12/2020)
Year over Year Growth Est	-52 38%	22 64%	7 50%	3 26%
Agreement - Estimate Revisio	ns			
	Current Otr (3/2019)	%ext Qtr (6:2019)	Current Year (12:2019)	Next Year (12/2020)
Up Last 7 Days	1	′ 0	0	0
Up Last 30 Days	1	0	0	1
Up Last 60 Days	1	0	2	1
Down Last 7 Days	0	0	0	0
Down Last 30 Days	1	0	0	0
Down Last 60 Days	0	1	0	0

Magnitude - Consensus Estimate Trer	١d	
-------------------------------------	----	--

	Correct Qtr (3/2019)	Vext Otr (6:20:9)	Current Year (12/2019)	Next Year (12 2020)
Current	0 10	0 65	2 15	2 22
7 Days Ago	0.09	0 65	2 15	2 22
30 Days Ago	0 17	0 55	2 15	2 22
60 Days Ago	0 06	0 65	2 13	2 20
90 Days Ago	0 06	0 65	2 13	2 20

Upside - Most Accurate Estimate Versus Zacks Consensus

	Current Ofr (3-20 9)	Next Qtr (6:2019)	Current Year (12-2019)	Next Year (12/2020)
Most Accurate Estimate	0 10	0 65	2 15	2 22
Zacks Consensus Estimate	0 10	0 65	2 15	2 22
Earnings ESP	. 43%	0 00%	0 00%	-2 11%

Surprise - Reported Earnings History

	Quarter Ending (*2/2018)	Quarter Ending (9:2018)	Quarter Ending (6/2018)	Quarter Ending (3/2018)	Average Surprise
Reported	0.18	1 08	0 53	0 21	NA.
Estimate	0 17	1 04	0 43	0 21	NA
Difference	0 01	0 04	0 10	0 00	0 04
Surprise	5 58 4	2 45 4	27.74%	3713	825%

Quarterly Estimates By Analyst

Zacks Premium Subscription Required Char Three

Annual Estimates By Analyst

Zacks Premium Subscription Required Loain More

8971798	My Appount	Resources	೦ ೯೯(೮,೮೦೦೯	#s' car us	Zeoks Voor's Pot
					App Store
					Google Play
				1	·

Zacks Research is Reported On



naguige beann't bena a their ad apointed of intertement application into intertion in the remarker of the intertement bear to be an intertement of the day and the second kind of the se

Country to 2015 Tacks investment Revealer 10 5 Rivers de Maza Buildia noto | Ohio 150 | 5 56608

Consider of the control of the contr

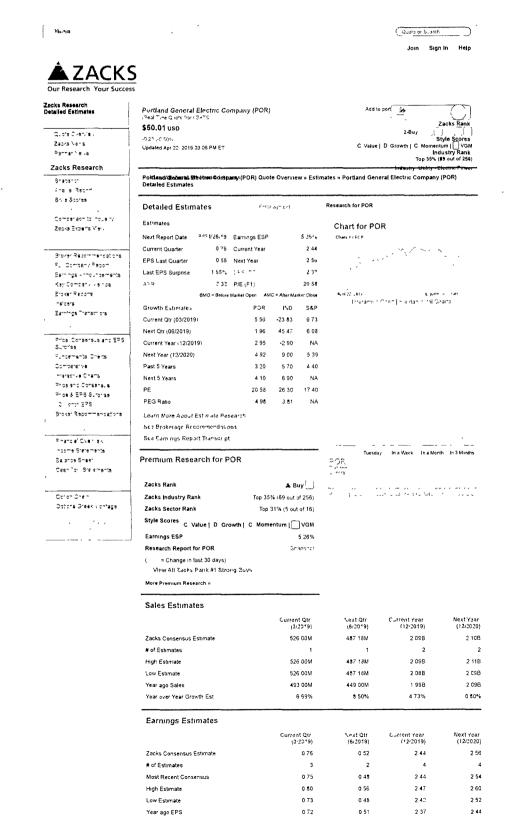
"Hit parton har de for informational reportormance timos sidisplaced abolic

viall ower zebespell communget i under and content to you mobile say or over other

Positive prices by PATS. Delay it quotes by singuis

what and AMEY do a sailtness to notice colored MAS JAC do a sic meet to a color boson."





Page 72

		Current Qtt (3/23-9)	Next Off (6/2019)	Current Year (12/2019)	Nrxt Year (12/2020)
Year over Year Gro	wth Est	5 56%	1 96%	2 95%	4.71%
Agreement -	Estimate Revis	ions		A	
		Current Ofr		Current Year (14/2019)	Next Year (12/2020)
Up Last 7 Days		10 23 3,		0	(,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,
Up Last 30 Days		1	. 0	0	0
Up Last 60 Days		G	0	2	1
Down Last 7 Days		0	0	a	9
Down Last 30 Day	s	G	0	0	0
Down Last 60 Day	s	C C) 0	0	0
Magnitude - (Consensus Est	ımate Trend			
		Gurrant Ott (3/2019)	%ext Qtr (6-2919)	Current Year (12-2019)	Next Year (12-2020)
Current		0.76	0 52	2 44	2 56
7 Days Ago		0.73	0 52	2 44	2 56
30 Days Ago		0.73	0 52	2 44	2 56
60 Days Ago		0.75	0 48	2 44	2 52
90 Days Ago		NA	NA NA	2 44	2 51
Upside - Mos	t Accurate Est	imate Versus Zaci	ks Consensus		
		Current Ofr (3-2019		Current Year (12/2019)	Next Year (12/2029)
Most Accurate Est	ımate	0.80	0 52	2 44	2 56
Zacks Consensus	Estimate	0.76	0 52	2 44	2 56
Earnings ESP		. 25%	0 00%	0 00%	0 00%
Earnings ESP	eported Earning		0 00%	0.00%	0 00%
Earnings ESP	eported Earning Quarter Ending (*2-2016)		Quar.er Ending (6/2013)	0 00% Quarter Enderg (3/2018)	0 00%
Earnings ESP	Quarter Ending	gs History Quarter Ending	Quar.er Ending	Quarter Enderg	Average Surprise
Earnings ESP Surprise - Re	Quarter Ending (*2/2016)	gs History Quarter Ending (9:2018)	Quar.er Ending (6/2013)	Quarter Ending (3/2018)	
Earnings ESP Surprise - Re	Quarter Ending (*2:2018) 0.55	gs History Quarter Ending (9/2018) 0 59	Quar.er Ending (6/2013) 0 51	Quarter Ending (3/2018) 0.72	Average Surprise

\$67.1098	Ny 2000 m	Rasc. 1033	C 9"18.220"	₹2 °2 × ↓8	Zecka Vichila 3
					App Sto
					Google P
•				1	l
		•			
,		1			

Zacks Research is Reported On



ISB Rating Aで あいまた。2019 Cincref mik

This page has not been killed apolitists or other shoeld prive or encounding length of the property state. Earl Uthicology y look sample the finding labelled to the order should be defined to provide the property of the pr

Cubyrigii 2019 Zacks runstmir t Nessiaror 100 Kivers de Plaza 31 (18/100, Oh. 166 H. 160

Activities to deep the province of the private and approved to a composition of the province of the private and as a composition of the private and as a composition of the private and as a composition of the private and as a composition of the private and as a composition of the private and as a composition of the private and the pr

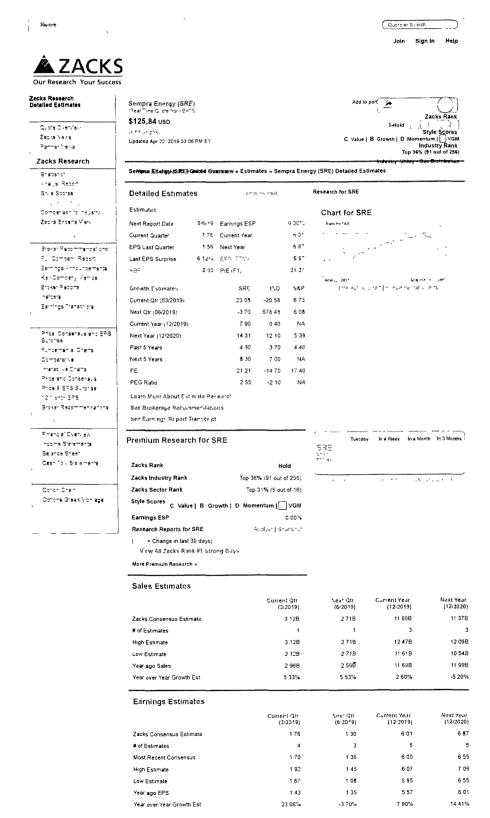
. Visitible for many from majoral analysis the orinomagnetic semi-size displayed and δ

it is they are are a round of the one of the control of the management of the manage

Real time prices by SeTS Delayed quotes by Surgard

MISE and AMC tidate is able as 20 mouths defended tansome fole is at kest to not be defined





	Current Qtr (3:20*9)	\ext Qtr (6:2019)	Current Year (12/2019)	Next Year (12/2020)
Up Last 7 Days	1	0	0	0
Up Last 30 Days	3	1	1	1
Up Last 60 Davs	0	0	3	0
Down Last 7 Days	2	2	1	1
Down Last 30 Days	1	2	1	3
Down Last 60 Days	1	1	2	2

Magnitude - Consensus Estimate Trend					
	Current 4tr (3/2019)	\ext \Qtr (6/2019)	Current rear (12:2019)	Next re (12/20)	
Current	1 75	1 30	6 01	6	
7 Days Ago	1 76	1 34	6 01	6	
30 Doug Age	1.01	1 25	6.00		

Upside - Most Accurate Estimate Versus Zacks Consensus							
90 Days Ago	1 85	1 59	6 04	7 10			
60 Days Ago	1 85	1 59	6 03	7 09			
30 Days Ago	1 68	1 35	6 00	6 96			
7 Days Ago	1 76	1 34	6 01	6 88			
Current	1 /5	1 30	6 01	6.87			

Opside - Most Accurate Estimate	versus Zacks G	onsensus		
	Current Qtr (3-2019)	%ext Qtr (6:20*3)	C .trent Y ar (12/2019)	Next Year (12 2020)
Most Accurate Estimate	1 76	1 30	6 0 1	6 84
Zacks Consensus Estimate	1 76	1 30	6 0 1	6 87
Earnings ESP	0 00%	0 00%	0.03	-0.461

Surprise - Reported Earnings History					•
	Quarter Ending {*2/2913}	Quarter Ending (9'2019)	Quarter Ending (6'2017)	Quarter Enging (3/2018)	Average Surprise
Reported	1 56	1 23	1 35	1 43	NA
Estimate	1 47	1 13	1 17	1 67	NA
Difference	0 09	0 10	0 18	-0 24	0 03
Surprise	6 12 %	581%	11 34%	-112"0	4 00%

Quarterly Estimates By Analyst

Zacks Premium Subscription Required _ ain ~or,

Annual Estimates By Analyst

Zacks Premium Subscription Required unar il mern

Services	Vy Acce, **	स्वद्रत "इडड	© 'an, 8 cccr	F0 '04 U8	Zeoka Yobi e Po
	`				App Store
,					Google Pla

This page har netizion suncreda spor incui o lattervise apprevalon orizonti o incompanies representativen in acti o un conspanito orizonte orizonti o incompanito orizonti o incompanito orizonti orizonti orizonte orizonale orizonte orizonte orizonte orizonte orizonte orizonte orizon

6 the cand or even hinguise opisitishing thirminent or inspect one occurry supporting the profession oils. This post after in our imprinent is a rading additing the profession of the control sale after opisitishing the profession of the control sale after opisitishing the profession of the profession of the control of the profession of the control of the control of the profession of the control of the contro

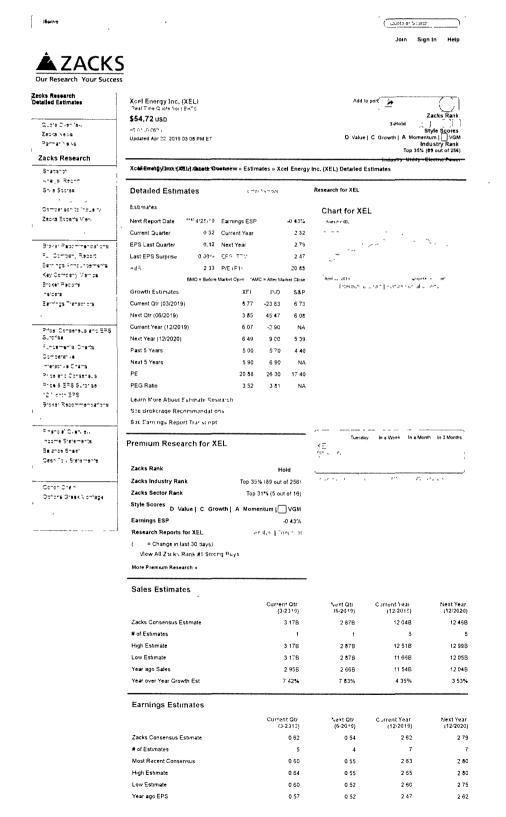
Newtoperformance occurs risk or about the performance runge and played above

Realthnic prices by GATS IDLIayed quoties by Surgard

NYSE ar I AMOXI tata I at leuw 20 innue sociavad i NAGDAQ data u at le sat të mnu as diskuad



ZACKS



Dago	76
Page	70

	Current Qtr (2/2313)	%ext Qfr (6/20 i9)	Current Year (12/2019)	Next Year (12/2020)
Year over Year Growth Est	8 77%	3 85%	6 07%	6 43%
Agreement - Estimate Revis	ions			
	Currer t Qtr (3-2319)	%ext Qtr (6:2019)	Carrent Year (12/2019)	Next Year (12/2020)
Up Last 7 Days	1	1	1	0
Up Last 30 Days	1	1	1	0
Up Last 60 Days	1	2	2	1
Down Last 7 Days	1	0	0	0
Down Last 30 Days	1	0	0	0
Down Last 60 Days	2	0	1	0

Magnitude - Consensus Estimate Trend

	Current Qtr (3/2019)	%ext Qtr (6/2019)	(12:2019) (13:2019)	Next Year (12/2020)
Current	0 62	0 54	2 62	2 79
7 Days Ago	0 61	0 53	2 62	2 79
30 Days Ago	0.61	0 53	2 62	2 79
60 Days Ago	0.61	0 53	2 62	2 78
90 Days Ago	0 63	0 53	2 61	2 79

Upside - Most Accurate Estimate Versus Zacks Consensus

	Current Qtr (3/2019)	%ext Qtr (6:2019)	Current Year (12-2019)	Next Year (12-2020)
Most Accurate Estimate	0.61	0 53	2 64	2 80
Zacks Consensus Estimate	0 62	0 54	2 62	2 79
Earnings ESP	-n 43°0	- 40 -	18	145%

Surprise - Reported Earnings History

	Quarter Ending (*2/2018)	Quar er Ending (9/2018)	Quarter Ending (6/2013)	Quarter En 3mg (3/2018)	Average Surprise
Reported	0 42	0 96	0 52	0 57	NA
Estimate	0.42	0.98	0 47	0 51	NA
Difference	0 00	-0 02	0 05	0 06	0 02
Surprise	2:0%	202%	2504	11.75%	5 79%

Quarterly Estimates By Analyst

Zacks Premium Subscription Required Lagri Your

Annual Estimates By Analyst

Zacks Premium Subscription Required _uain mure

Quipk Links

App Store
Google Play
,

Zacks Research is Reported On

This programs to open all homeolidic composition agrees agree of some considery in contraction to control of the control programmer independent of some Model Control of the Model of the Control of the Model of the Control of the Model of the Control of the Model of the Control of the Model of the Control of the Model of the Control of the Model of the Control of the Model of the Control of the Model of the Control of the Model of the Control of the Con

Copyright 17019 Eacks, repetitive at Research 110 S.R. verside Pieza Sulfa # 600 Chicaeo, Itu Su809

Copying Construction deviation for exercising a superior of the service of the construction are given as a service of the construction are given as a service of the construction are given as a service of the construction are given as a service of the construction are given as a service of the construction are given as a service of the construction are given as a service of the construction and the construction are given as a service of the construction and the construction are given as a service of the construction and the construction are given as a service of the construction and the construction are given as a service of the construction and the construction are given as a service of the construction and the construction are given as a service of the construction and the construction are given as a service of the construction and the construction are given as a service of the construction and the construction are given as a service of the construction and the construction are given as a service of the construction and the construction are given as a service of the construction and the construction are given as a service of the construction and the construction are given as a service of the construction and the construction are given as a service of the construction and the construction are given as a service of the construction are given as a service of the construction are given as a service of the construction are given as a service of the construction are given as a service of the construction are given as a service of the construction are given as a service of the construction are given as a service of the construction are given as a service of the construction are given as a service of the construction are given as a service of the construction are given as a service of the construction are given as a service of the construction and the construction are given as a service of the construction and the construction are given as a service of the construction and the construction are given as a service of th

is stup after that de for mormal on about the proformance numbers discoved about

s, all assess ZBOXS DFTR COIN to get countries and content for your mobile sopicitives at

Peal time places by PATS Colay a quotes by hingers

Wild. and AMAY data shall list to minutes or later. "ASUAC data shall hast constructed decision

Docket No 49421

4/25/2019 Public Utility Commission of Texas

Finance Home

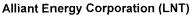
Watchlists My Portfolio

Markets Industries Videos

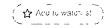
News

🕹 Download Data

Workpaper JO-6 Page 1



NasdagGS - NasdagGS Real Time Piloc Currency in USD



C 53.33KJ.

46.81 +0.13 (+0.28%)

Summary	Chart	Conversations	Stat stics	Historical Data	Picfle	Francials	Al a /sis	Options	Holders	Sustainab lity
---------	-------	---------------	------------	-----------------	--------	-----------	-----------	---------	---------	----------------

Time Period Feb 03 2019 - Apr 25 2019 -

Show Historical Prices >

Frequency Weekly ~

Currency in USD

•						
Date	Open	H gr	Low	Close'	Ad, Close**	Volume
Apr 22, 2019	45 95	46 80	45 72	46 68	46 68	3,366,400
Apr 15, 2019	46 84	46 99	45.75	45 98	45 98	4,241,100
Apr 08, 2019	46 65	46 90	46 14	46.81	46.81	4,565,600
Apr 01, 2019	47.13	47 14	45 99	46 74	46 74	6,865,800
Mar 25, 2019	47 63	47,91	46 67	47.13	47.13	5,518,000
Mar 18, 2019	47.32	47.89	46 27	47 55	47 55	6,663,300
Mar 11, 2019	46 40	47.48	46 30	47 40	47.40	13,057,000
Mar 04, 2019	45.85	46 48	45 68	46 25	46 25	7,594,100
Feb 25, 2019	45 75	46 18	45.09	45 87	45 87	7,835,000
Feb 18, 2019	44 88	45 80	44.72	45 68	45 68	6,111,800
Feb 11, 2019	44.97	45 25	44 59	44.98	44 98	8,185,100
Feb 04, 2019	44 00	45 06	43 12	45 00	45 00	6,457,400
Jan 28, 2019	-	-	-	-	•	•

^{*}Close price adjusted for splits **Adjusted close price adjusted for both dividends and splits



People	Also	Watch	
People	Also	Watch	

Symbol	Last Price	Change	% Change
WEC WEC Energy C	77.72 Group, Inc	+0 67	+0 87%
PNW Pinnacle West	95 02 Capital Corporati	+0 22	+0 23%
OGE Energy C	42 27 Corp	+0 25	+0 59%
CMS CMS Energy C	54 90 Corpciation	+0 50	+0 92%
SCG SCG			



Yahoo Small Business

Data Disclaimer Help Suggestions Privacy (Updated) About Our Ads Terms (Updated)



Watchlists Finance Home

My Portfolio

Screeners

Markets

Industries

Videos

News

Page 2

Ameren Corporation (AEE)

NYSE - Nasdag Real Time Price Currency in USD



Quota Lookup

72.29 +0.30 (+0.42%)

As of 12 36PM EDT Market open

Summary Chart Conversations Statistics Historical Data Prc*le Analysis Options Holde's



Time Period Feb 03 2019 - Apr 25 2019

Show Historical Prices -

Frequency Weekly ~

Currency in USD						业 Download Data
Date	Open	High	Low	Close'	Aaj Close**	Volume
Apr 22, 2019	70.36	72 25	70 27	71 99	71 99	4,836,600
Apr 15, 2019	72 19	73 09	70 43	70.48	70 48	4,093,700
Apr 08, 2019	72 36	72 57	71.06	71.98	71 98	5,582,600
Apr 01, 2019	73.58	73.77	71 21	72.39	72 39	8,524,500
Mar 25, 2019	73 93	74 91	73 01	73 55	73 55	6,263,000
Mar 18, 2019	73 07	74 45	71,57	73 75	73 75	7,025,000
Mar 12, 2019			0,47	'5 Dividend		
Mar 11, 2019	71.84	73 32	71.81	73 04	72 56	8,080,000
Mar 04, 2019	71 33	71 90	70 42	71.70	71 23	6,453,900
Feb 25, 2019	72 36	72 36	69 80	70 93	70 47	7,242,000
Feb 18, 2019	69 72	72 18	69.53	72 18	71 71	5,864,400
Feb 11, 2019	70 49	71.08	68 26	69.68	69 22	9,287,500
Feb 04, 2019	68 51	70.48	67 90	70 47	70 01	5,986,900
Jan 28, 2019	-	-	-	-	•	-

*Close price adjusted for splits -- **Adjusted close price adjusted for both dividends and splits



-			
Symbol	Last Price	Change	% Change
DTE DTE Energy Co	124.09 ompany	+0 05	+0 04%
AJG Arthur J Gallaç	82 28 gher & Co	+0 22	+0 27%
ABC AmerisourceBe	73 18 ergen Corporation	-0 91	-1 23%
CMS CMS Energy C	54 71 orperation	+0 31	+0 56%
AEP American Elect	84 56 ric Power Company	+0 54	+0 64%



Yahoo Small Business

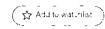
Data Disclaimer Help Suggestions Privacy (Updated) About Our Ads Terms (Updated)



Finance Home Watchlists My Portfolio Screeners Markets Industries Videos News

American Electric Power Company, Inc. (AEP)

NYSE - Nasdaq Real Time Price Currency in USD



Quota Lookup

84.79 +0.77 (+0.92%)

As of 1 22PM EDT Market open

Summary Chart Conversations Statistics Historical Data Profile Financials Atlaysis Options Holders Susial nability

Can your bank

Time Period Feb 03 2019 - Apr 25 2019 •

Show Historical Prices >

Frequency Weekly ~

Currency in USD

-						
Date	Open	Чgr	Low	Close*	Ad, Closer	Volume
Apr 22, 2019	82 93	84 35	82 51	84 02	84 02	7,335,000
Apr 15, 2019	84 15	84,61	82 73	83 01	83 01	8,974,800
Apr 08, 2019	83 38	84 49	82 67	84 15	84,15	12,030,400
Apr 01, 2019	83 90	83 96	82 15	83 57	83 57	15,443,200
Mar 25, 2019	85 26	86 10	83 28	83 75	83 75	17,463,300
Mar 18, 2019	83 80	85 71	82 08	85 14	85 14	17,389,200
Mar 11, 2019	82 11	84 27	81.95	83 81	83 81	20,801,100
Mar 04, 2019	81 75	82 20	80 66	81 95	81,95	11,042,300
Feb 25, 2019	81.59	81.72	79 91	81.40	81 40	12,336,000
Feb 18, 2019	79.48	81.76	79 13	81.72	81 72	8,212,400
Feb 11, 2019	79 80	80.85	79 02	79.27	79 27	14,026,800
Feb 07, 2019			0.	67 Dividend		
Feb 04, 2019	78 63	80 09	78.15	80 02	79 34	10,845,500
Jan 28, 2019	-	-	-	~	-	-

*Close price adjusted for splits -- **Adjusted close price adjusted for both dividends and splits

Value you'll only find at Fidelity.

- \$4 95 online U.S. caulty trades
- ZERO min mums to open a retail brokerage account



People Als	o Watch
Symbol	Last Drice

Symbol	Last Price	Change	^o Change
SO Soutnern Com	52 50 pany (Tne)	+0 27	+0 52%
D Dominion Ener	76.62 rgy Inc	+0 33	+0 43%
DUK Duke Energy (90-29 Corporation (Holdin	+0 61	+0 68%
FE FestEnergy Co	41 12 orp	+0 2€	+0 64%
ED Consolidated I	84.63 Edison, Inc	+0 31	+0 3/%

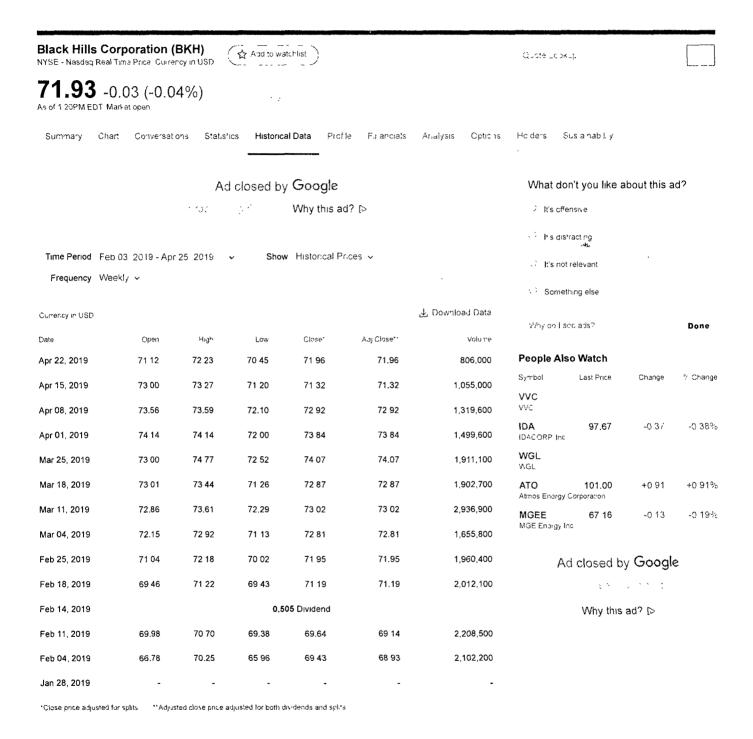


Yahoo Small Business

Data Disclaimer Help Suggestions
Privacy (Updated) About Our Ads Terms (Updated)







Data Disclaimer Help Suggestions Privacy (Updated) About Our Ads Terms (Updated)

Yahoo Small Business

¥ f t

Finance Home

'Close price adjusted for splits

Watchlists

My Portfolio

Screeners

Markets

Industries

Videos

News

Page 5

Consolidated Edison, Inc. (ED) Add to watchlist Quista Lockup NYSE - Nasdaq Real Time Price Currency in USD **84.67** +0.35 (+0.42%) Historical Data Picfle Summary Chart Conversations Statis'ics Financia's Ar a ysis Options holde s Sustainab hty What don't you like about this ad? Make your money water C It's offensive LEARN MORE It's distracting Time Period Feb 03 2019 - Apr 25 2019 -Show Historical Prices -. It's not relevant Frequency Weekly ~ Something else ⊥ Download Dato Currency in USD Why go I sec ads? Done Ad Close" Date Open Higr Low Close' Volume People Also Watch Apr 22, 2019 83 61 84.75 83 48 84.32 4.469.800 84 32 Last Price Symbol Change % Change 5.779.900 Apr 15, 2019 84 66 85.03 83 32 83 61 83 61 so 52 52 +0 29 +0 56% Southern Company (Tne) 84 45 6,477,100 Apr 08, 2019 84 98 83 61 84 55 84 55 AEP 84 87 +0.85 +1 01% Apr 01, 2019 6,463,500 84 67 84 84 83 55 84 81 84 81 American Electric Power Company DUK 90.31 +0.63 +0.70% Mar 25, 2019 85 12 85.87 83.80 84 81 84 81 7,495,000 Duke Energy Corporation (Holdin Mar 18, 2019 84 94 85 59 83 34 84 91 84 91 9,582,400 76 64 +0 35 +0 46% Dominion Energy Inc Mar 11, 2019 83.76 85.57 83.66 84.84 84 84 12.079.100 EXC +0.66% 50 40 +0.33 Existen Corporation Mar 04, 2019 83 10 84 35 82 44 83 82 83 82 9,116,600 Feb 25, 2019 82 00 82 84 80 98 82 66 82 66 8,950,400 Ad closed by Google Feb 18, 2019 78 41 82.19 78 18 82 10 82 10 9,179,000 * & 0,1 t Feb 12, 2019 0.74 Dividend Why this ad? ⊳ Feb 11, 2019 78.87 79.37 77 21 78 51 77 77 9,906,000 Feb 04, 2019 76 35 78.95 76.03 78 93 78 19 9,476,300 Jan 28, 2019

> Data Disclaimer Help Suggestions Privacy (Updated) About Our Ads Terms (Updated)

Yahoo Small Business

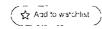
ƴ f t

© 2019 Verizon Media. All rights reserved

**Adjusted close price adjusted for both dividends and spl *s

Workpaper JO-6 Page 6





Quote Lookup

124.41 +0.37 (+0.30%)

As of 1 27PM EDT Market open

Summary Chart Conversations Statistics Historical Data Profile Financials Analysis Options Holders Sustainability

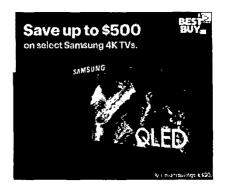
Ad closed by Google

Why this ad? [>

Show Historical Prices V Time Period Feb 03 2019 - Apr 25 2019 🕑

Weekly ~
weekly .

Currency in USD					<u>4</u>	Download Data
Date	Open	High	Low	C103e*	Adj Close**	Volu re
Apr 22, 2019	123.25	124 32	122 05	124.04	124.04	3,948,800
Apr 15, 2019	124 63	124 97	122 25	123 21	123 21	4,229,400
Apr 08, 2019	123.65	124 55	122 46	124 42	124 42	3,922,600
Apr 01, 2019	124 52	124 64	122 06	123.98	123 98	3,666,600
Mar 25, 2019	125.13	126 07	123.24	124 74	124 74	3,497,600
Mar 18, 2019	124.00	125 70	121 71	124 89	124 89	7,459,800
Mar 15, 2019			0.945	Dividend		
Mar 11, 2019	123 21	124 82	122 83	123.98	123.04	7,819,100
Mar 04, 2019	123 13	123 52	122 02	123 20	122.26	5,090,100
Feb 25, 2019	123.76	123.84	121.51	122 90	121 97	5,326,800
Feb 18, 2019	119.79	123 80	119 19	123 72	122 78	5,130,000
Feb 11, 2019	118.56	120 06	118 17	119 81	118.90	4,864,900
Feb 04, 2019	116 36	118.85	112 86	118 56	117.66	5,798,800
Jan 28, 2019	-	-	-	-	•	-



People Also Watch								
Symbol	Last Price	Change	? Charge					
CMS CMS Energy C	54 94 Torpolation	+0 54	+0 99%					
ETR Entergy Corpo	95 31 ration	+0 67	+0 71%					
AEE Ameren Corpo	72 31	+0 32	+0 44%					
FE FirstEnergy Co	41.15 orp	+0 29	+9 72%					
PNW Pinnadle West	95 11 Capital Corporati	+0 31	+0 33%					

Ad closed by Google

\$2 1 3 2 2 1 1 2 1 4

Why this ad? ⊳

*Close price adjusted for splits **Adjusted close price adjusted for both dividends and splits

Yahoo Small Business

Data Disclaimer Help Suggestions Privacy (Updated) About Our Ads Terms (Updated)

y f t

Duke Energy Corporation (DUK) NYSE - Nasdaq Real Time Price Currency in USD



Quota Lookub

90.30 +0.62 (+0.69%)

As of 1 30PM EDT Market open

Summary Chart Conversations Statistics Historical Data Profile Financials Acaysis Options Holde's Sustainability

Thank you for helping us improve your Yahoo experience

Learn more about your feedback

Time Period Feb:03 2019 - Apr 25 2019 -Show Historical Prices >

Frequency Weekly ~

Currency in USD					₹ D	ownload Data
Date	Open	H gh	Low	Close*	Ad, Closer	Volume
Apr 22, 2019	89 01	89 98	88 29	89 68	89 68	6,895,000
Apr 15, 2019	90 50	90 74	88 71	89 14	89 14	13,315,900
Apr 08, 2019	90.50	91 08	89 21	90 45	90 45	14,948,500
Apr 01, 2019	89.75	90 62	87.93	90 53	90 53	21,221,500
Mar 25, 2019	90 90	91 67	88.81	90 00	90 00	20,285,800
Mar 18, 2019	90 86	91 67	88 66	90 70	90 70	21,107,900
Mar 11, 2019	90 26	91 08	89 88	90 65	90 65	24,028,900
Mar 04, 2019	89.82	90 65	88 98	90 20	90 20	15,581,900
Feb 25, 2019	89 91	89.99	88 19	89.53	89 53	17,649,000
Feb 18, 2019	87 64	90 29	87 24	89 91	89 91	13,536,100
Feb 14, 2019			0.928	Dividend		
Feb 11, 2019	90 08	90 74	87.02	87.51	86 60	18,846,700
Feb 04, 2019	87 16	90 58	86 48	90 30	89 36	15,794,700
Jan 28, 2019	_		-		-	-

Business Solutions on a Mission for a Stronger America LEARN MOSE SourceAmerica

People Also Watch								
Symbol	Last Price	Change	°. Charge					
SO Southern Compa	52,53 ny ([⊤] ne)	+0 30	+0 57%					
D Dominion Energy	76 64 Inc	+0 35	+0 46%					
AEP Amor can Electric	84 84 Power Company	+0 82	+0 98%					
ED Consolidated Ed.	84 66 son, Inc	+0.34	+0 40%					
SE Sea Limited	24 16	-0 34	-1 39%					

Ad closed by Google

Why this ad? ⊳

*Close price adjusted for splits **Adjusted close price adjusted for both dividends and splits

Yahoo Small Business

Data Disclaimer Help Suggestions Privacy (Updated) About Our Ads Terms (Updated)

y f t

"Juse price adjustes for splits

Administrations or heladicated for both divides on and sufficient





Data Disclarier Let Suppostors Terecy (Jadate J. About Our Acs. Terms (Judate J.

"shor shall musi me.

y f t

© 2011 ventors Media. All rights reserved

Docket No 49421

Finance Home

Jan 28, 2019

'Close price adjusted for splits

Watchlists My Portfolio

o Screeners

Markets

Industries

BE A 2 SALES AND REPORT OF THE PROPERTY OF THE

Videos News

Workpaper JO-6 Page 9

Eversource Energy (ES) Add to watchlist Quitte Lookup NYSE - Nasdaq Real Time Price Currency in USD **70.90** +0.04 (+0.06%) As of 1 33PM EDT Market open Summary Chart Conversations Statistics Historical Data Picfle Filancials Atlatysis Options He dets Sus a.nab I'y What don't you like about this ad? Microsoft Access your world, virtually anywhere Now you can use O'rice 365 Home subscription across It's offensive SUBSCRIBE → even more devices 🔾 It's distracting Time Period Feb 03 2019 - Apr 25 2019 Show Historical Prices -. It's not relevant Frequency Weekly ~ Something else → Download Data Currency in USD v/h/ coil sec ads? Done Close' Ad Close 1 Volu ne Date Open High Low People Also Watch Apr 22, 2019 69 88 71 08 69 78 70 86 70 86 5,296,200 Last Price Symbol % Change Change Apr 15, 2019 70 67 71 10 69 89 69 96 69.96 5 766 900 WEC 77.80 +0.75 +0.97% WEC Energy Group, Inc. Apr 08, 2019 71 14 71.40 69 87 70 68 70 68 6.798.600 CMS 54 92 +0 95% Apr 01, 2019 70 94 71.12 69 09 71 08 71 08 7.855.100 CMS Energy Corporation LNT 46 84 +0 34% +0 16 Mar 25, 2019 71 72 72 26 69 94 70.95 70.95 8 325 500 Alliant Energy Corporation Mar 18, 2019 71.60 72 15 69 90 71 69 71.69 8.813.600 EIX 63 74 -0.45 -071% Edison International Mar 11, 2019 69.76 71.96 69 54 71 73 71.73 14,161,200 DTE 124.34 +0 30 +0 24% DTE Energy Company Mar 04, 2019 0.535 Dividend Mar 04, 2019 69 89 69 89 68.38 69 68 69 15 10,217,400 Ad closed by Google Feb 25, 2019 69 48 70 11 68 92 69 74 69 20 11,608,600 1112 Feb 18, 2019 70 17 70 57 69.48 70 30 69 76 9.118.000 Why this ad? ▷ Feb 11, 2019 69 71 70.62 69 65 70 20 69 66 7.490.800 70.05 7.874.600 Feb 04, 2019 68 64 70.08 68.04 69 51

Yahoo Small Business

Data Disclaimer Help Suggestions
Privacy (Updated) About Our Ads Teims (Updated)



© 2019 Verizon Media All rights reserved

**Adjusted close price adjusted for both dividends and sel*s

Finance Home

Watchlists

My Portfolio

Screeners

Markets Industries

THE STATE STATE OF THE STATE OF

Videos

News

Exelon Corporation (EXC)

NYSE - Nasdaq Real Time Price Currency in USD

And to watchist

Quote Lookup

So

easy...

50.40 +0.33 (+0.67%)

As of 1 34PM EDT Market open

Summary Chart Conversations Statistics Historical Data Profile Financiais Atlaysis Options Holde's Sustainability

(x / MARIE PRO **BETTER WAY TO** Trading forex carries a high level of risk

Time Period Feb 03 2019 - Apr 25 2019 -Show Historical Prices >

Frequency Weekly ~

Currency in USD						🕹 Download Data	
Date	Open	H gF	Low	Close*	Ad, Closer	Volure	
Apr 22, 2019	49 49	50.34	49 31	50 07	50 07	19,681,900	
Apr 15, 2019	49 81	50 29	48 79	49.40	49.40	22,594,900	
Apr 08, 2019	49 87	50.26	49 20	49 70	49 70	26,244,900	
Apr 01, 2019	50 34	50.35	49 44	49.90	49 90	23,927,000	
Mar 25, 2019	50 31	50 85	49 59	50.13	50 13	26,313,600	
Mar 18, 2019	50 01	50 47	48 84	50 28	50 28	32,734,100	
Mar 11, 2019	48 79	50 20	48 69	50.00	50.00	30,109,200	
Mar 04, 2019	48.66	48 95	48 10	48 78	48 78	19,197,700	
Feb 25, 2019	48 96	48.97	48.09	48.54	48 54	25,359,000	
Feb 19, 2019			0.3	363 Dividend			
Feb 18, 2019	48.04	48.91	47 71	48 74	48.37	24,418,700	
Feb 11, 2019	47.66	48 26	47 49	48 26	47.90	24,650,000	
Feb 04, 2019	47.21	48.17	46 03	47 72	47 36	32,536,300	
Jan 28, 2019			_	-	_	_	

'Close price adjusted for splits **Adjusted close price adjusted for both dividends and sol *s Marcus: Se aman Sien, Bur

People Also Watch

Symbol Last Price Change %. Change FE 41.20 +0 34 +0 83% FirstEnergy Corp ETR 95 29 +0 69% +0 65 Entergy Corporation AEP 84 89 +0.87 +1 04% American Electric Power Company 76.65 +0.47% +0 3€ Dominion Energy Inc SO +0.54% 52 51 +0.28 Southern Company (Tine)

Ad closed by Google

Why this ad? ⊳

Yahoo Small Business

Data Disclaimer Help Suggestions Privacy (Updated) About Our Ads Terms (Updated)

y f t

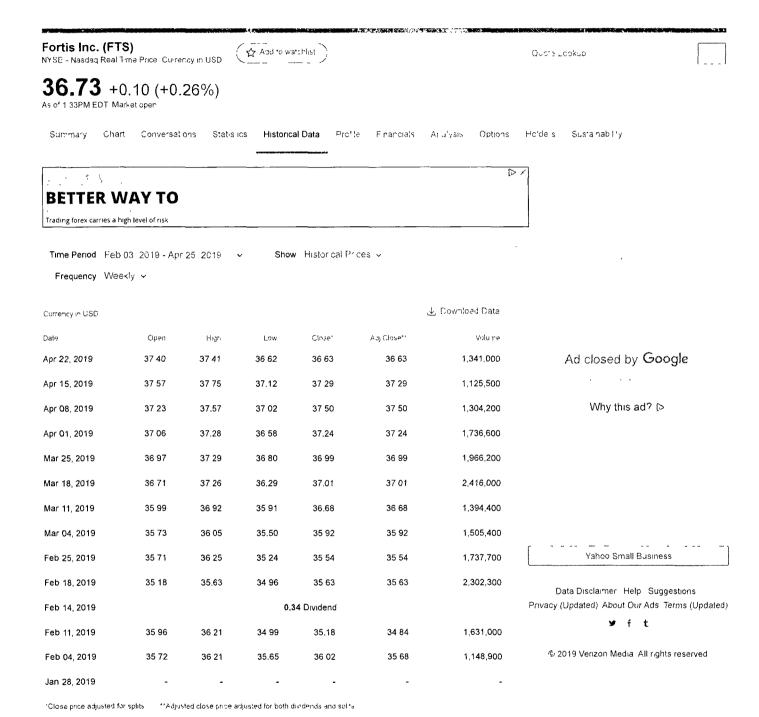
My Portfolio

Screeners

Industries Markets

Videos

Workpaper JO-6



Watchlists Finance Home

My Portfolio

Screeners

Markets Industries Videos

News

IDACORP, Inc. NYSE - Nasdaq Real 7		y in USD (公	And to watchli	st)			Quota L	ookub		
97.70 -0 As of 1 33PM EDT Ma		%)								
Summary Char	t Conversation	s Statistics	Historical Da	ata Profile	Francias	Ar a'ysis Options	Holde's	Sus ainab I 'y		
Thank you for	helping us impi	rove your Yah	noo experier	nce				k you for helping Yahoo experien		ve
							Learn	rore about your feed	cac×	
Time Period Feb	·	5 2019 🗸	Show H	listorical Price	?\$ ✔					
Currency in USD										
Date	Open	H.gr	Low	Close'	Ad, Close**	Volu re				
Apr 22, 2019	96.97	98 44	95 93	98 04	98 04	622,500	People	Also Watch		
Apr 15, 2019	99 10	99 65	96 79	97 09	97.09	873,400	Symbol	Last Price	Change	9 Charge
Apr 08, 2019	99.18	99 28	97 41	98 81	98 81	1,012,700	AVA Avista Corp	41,86 poration	-0 08	-0 19%
Apr 01, 2019	99.52	100.00	97 52	99 24	99 24	1,150,000	BKH Black Hills	72 06 Corperation	+0 10	+0 14%
Mar 25, 2019	100 31	101.16	98 50	99.54	99 54	1,161,700	EE El Paso Ele	59.99 Setric Company	+0 19	+0 33%
Mar 18, 2019	99 68	101.11	97.72	100 02	100 02	1,225,200	PNM	45 54	+0 40	+0 89%
Mar 11, 2019	100 55	102.01	98.99	99 54	99 54	1,778,900	PNM Reso	urces, Inc. (Holding Co 51.49	+0 30	+0 59%
Mar 04, 2019	99 36	100 37	98.13	100 34	100.34	1,093,100		eneral Electric Cc	70 00	10 00 73
Feb 25, 2019	99.17	99 25	97.33	98 92	98 92	1,236,000		Ad closed by	/ Gooal	e
Feb 18, 2019	98 04	100 19	97.59	99 42	99 42	818,900		, , ,	: 03:	
Feb 11, 2019	98 27	99 30	96 57	97.89	97 89	1,018,800		Why this	ad? ⊳	
Feb 04, 2019			0.63 D	ıvıdend						
Feb 04, 2019	95.76	99.11	95 03	98 55	97 91	813,700				
Jan 28, 2019	-	-	-	-	-	•				
'Close price adjusted fo	or splits **Adjusted	d close price adjust	ed for both divide	nds and sol*s						

Yahoo Small Business

Data Disclaimer Help Suggestions Privacy (Updated) About Our Ads Terms (Updated)



Docket No. 49421 Finance Home

Watchlists

My Portfolio

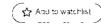
Screeners Markets Industries

Videos

Page 13

NextEra Energy, Inc. (NEE)

NYSE - Nasdag Real Time Price Currency in USD



Quoto Lookup

191.29 +1.23 (+0.65%)

As of 1 38PM EDT Market open

Summary Chart Conversations Statistics Historical Data Picfle Francia's Analysis Options Holders Sustainab! /

Business Solutions for a Stronger America

LEARN MORE

SourceAmerica

OF EAR TO CH

WE CO

Pay what is ** ". Save 🕾 🖫 \$500 a y LEARN MORE

ıme Period	Feb 03	2019 - Apr 25	2019	~	Show	Historical Prices	٠

Frequency Weekly ~

Jan 28, 2019

Currency in USD						
Date	Open	High	Low	Olose"	Aaj Olose**	Volume
Apr 22, 2019	189 17	191 47	188 08	190 06	190 06	5,577,200
Apr 15, 2019	191 11	192 31	189 04	189 36	189 36	6,778,100
Apr 08, 2019	189 44	191 42	187 83	190 85	190.85	7,047,100
Apr 01, 2019	193 42	193 75	187 43	190 08	190 08	10,340,800
Mar 25, 2019	194 45	195 33	191 30	193 32	193 32	10,152,900
Mar 18, 2019	191 47	195 55	187 79	193.93	193 93	10,301,100
Mar 11, 2019	188 61	192 17	188 46	191.24	191 24	9,852,700
Mar 04, 2019	188 23	189 43	186 57	188 70	188 70	9,953,900
Feb 27, 2019			1.25	Dividend		
Feb 25, 2019	188 45	189 39	186 06	187.56	186 31	10,451,900
Feb 18, 2019	184 13	188 14	183 40	188.13	186 88	8,746,800
Feb 11, 2019	182 42	185.11	181 68	184.04	182 82	8,839,200
Feb 04, 2019	177.11	183.37	176 13	183 01	181.79	10,436,300

People Also Watch

=			
Symbol	Last Price	Change	% Change
D Domin on Energy	76 69 Inc	+0 40	+0 52%
SO Southern Compa	52 54 ny (Tne)	+0 31	+0 60%
AEP Amorican Electric	84.98 Power Company	+0 9€	+1 14%
PPL Corporation	30.94	-0 01	-0 02%
WEC WEC Energy Gro	77 89 oup, Inc	+0 84	+1 09%

Ad closed by Google

30 100

Why this ad? ⊳

*Close price adjusted for splits **Adjusted close price adjusted for both dividends and spl*s

Yahoo Small Business

Data Disclaimer Help Suggestions Privacy (Updated) About Our Ads Terms (Updated)



NorthWestern Corporation (NWE)

NYSE - Nasdag Real Time Price Currency in USD

Add to watchlist

Queta Leokup

68.86 +0.09 (+0.13%)

As of 1 40PM EDT Market open

Summary Chart Conversations Statistics Historical Data Profile Financia's Analysis Options Holde's Sustainability

Prepay & save up to 40% off the base rate:

Offer ends April 29.

Time Period Feb 03 2019 - Apr 25 2019 🐱 Show Historical Prices -

Frequency Weekly ~

Currency in USD					ک	L Download Data	
Date	Open	High	Low	Close'	Auj Close''	Volu re	
Apr 22, 2019	68 03	69 13	67 38	68 77	68 77	1,773,400	
Apr 15, 2019	69.82	69.99	68 18	68.24	68 24	1,212,000	
Apr 08, 2019	70 55	70 92	69.20	69 66	69 66	2,295,200	
Apr 01, 2019	70 41	70 89	69.70	70 70	70 70	2,124,700	
Mar 25, 2019	70 83	71 77	69 83	70 41	70 41	1,597,400	
Mar 18, 2019	70 84	71 64	69 36	70 65	70 65	2,210,200	
Mar 14, 2019			0.57	75 Dividend			
Mar 11, 2019	70 28	71.02	69 78	70.74	70 16	2,279,100	
Mar 04, 2019	69 12	70.30	68.54	70.17	69 60	1,536,200	
Feb 25, 2019	67.34	69 32	66.85	69.05	68 49	1,890,600	
Feb 18, 2019	65 51	67.45	65.38	67.41	66 86	1,086,600	
Feb 11, 2019	65.02	67 80	64 66	65 54	65 01	1,599,500	
Feb 04, 2019	62 77	65 23	62 32	65 01	64 48	901,600	
Jan 28, 2019	-	-		•	-	-	

People Also Watch								
Symbol	Last Price	Change	%. Change					
POR Portland General i	51.51 Electric Cc	+0 32	+0 63%					
PNM PNM Resources	45 57 Inc (Holding Co	+0 43	+0.95%					
NJR 'vewJersey Resou	49.65 irces Corporation	+0 45	+0 91%					
BKH Black Hills Corpor	72 05 ation	+0 09	+0 13%					
UTL UNITI_Corporation	55.19	+1 03	+1 91%					

Ad closed by Google

0.311

Why this ad? [>

*Close price adjusted for splits **Adjusted close price adjusted for both dividends and splits

Yahoo Small Business

Data Disclaimer Help Suggestions Privacy (Updated) About Our Ads Terms (Updated)

₩ f t

Docket No 49421 Finance Home

Watchlists

My Portfolio

Screeners

Markets

Industries

Videos

J. Do vnload Data

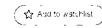
News

Page 15

•,58...

OGE Energy Corp. (OGE)

NYSE - Nasdag Real Time Price Currency in USD



Quota Lookup

42.36 +0.34 (+0.81%)

As of 1 43PM EDT Market open

\$	Summary	Chart	Conversations	Statis ics	Historical Data	Prof le	Francias	A, a ysis	Options	Holders	Sustainab Ly

Drive A Benz Today

\$5 JI

Sr

Time Period Feb 03 2019 - Apr 25 2019 -Show Historical Prices >

Frequency Weekly ~

Currency in USD

•							
Date	Öpən	Hıgr	Low	Close'	Aaj Close**	Volume	
Apr 22, 2019	41 37	42 28	40 90	42 02	42 02	5,300,200	
Apr 15, 2019	42 33	42 42	41 37	41 43	41 43	4,689,200	
Apr 09, 2019			0.36	65 Dividend			
Apr 08, 2019	42 28	42 81	41 70	42 16	41 80	7,364,400	
Apr 01, 2019	43 20	43 25	42 14	43 07	42 70	6,338,500	
Mar 25, 2019	43 14	43 76	42 70	43 12	42 75	5,642,500	
Mar 18, 2019	43 06	43 34	41.82	43 11	42 74	8,500,400	
Mar 11, 2019	42 45	43 16	42 29	43 11	42 74	8,205,700	
Mar 04, 2019	42 54	42 62	41.87	42 37	42 01	8,374,500	
Feb 25, 2019	42 68	42 75	41.73	42 43	42 07	8,820,700	
Feb 18, 2019	41 82	42 87	41 45	42 79	42 42	6,791,900	
Feb 11, 2019	41.42	42 07	41.25	41 88	41 52	7,629,700	
Feb 04, 2019	40 56	41 48	40 17	41.26	40 91	6,211,900	
Jan 28, 2019	-	-	-	-	-	-	

Bitdefender **™**

People Also Watcl	1
-------------------	---

Symbol	Last Price	Change	[∞] Change
LNT Alliant Energy Co	46 88 rpolation	+0 20	+0 43%
PNW Pinnacio West Ca	95 16 abital Corporat	+0 3€	+0 38%
GXP GXP			
PNM PNM Pesourcas	45.57 Inc (Holding Co	+0 43	+0 95%
IDA IDACORP Inc	97 76	-0 28	-0 29%

Ad closed by Google

512 11 Why this ad? ⊳

*Close price adjusted for splits **Adjusted close price adjusted for both dividends and sol *a

Yahoo Small Business

Data Disclaimer Help Suggestions Privacy (Updated) About Our Ads Terms (Updated)

¥ f t

Markets

Industries

Videos

News

Screeners

Watchlists

Finance Home

Feb 11, 2019

Feb 04, 2019

Jan 28, 2019

My Portfolio

Workpaper JO-6 Page 16

BEANDMAN TO A COMPONENT AND SOMETHING TO SOME STREET, WAS AND THE SOMETHING TO SOME STREET, WHEN THE SAME STRE Otter Tail Corporation (OTTR) (Acu to wateri'st) Quote Lookup NasdaqGS - NasdaqGS Real Time Price Currency in USD **50.75** +0.05 (+0.10%) As of 1 35PM EDT Market open Summary Chart Conversations Historical Data Picfle Financials At a yets Cotions Holde, s Sustamab Hy Ad closed by Google Why this ad? D Time Period Feb 03 2019 - Apr 25 2019 Show Historical Prices ~ Frequency Weekly ~ . N. V & J . Currency in USD Adj Close** Date Oren High Low Clase* Volume People Also Watch Apr 22, 2019 50 23 49 77 50.70 302,000 50.92 50.70 Symbol Last Price Change %. Change Apr 15, 2019 50.67 51 19 50 32 50 50 50 50 261,200 BKH 72.05 +0 09 +0 13% Black Hills Corperation Apr 08, 2019 50 04 327,600 50 61 49 26 50 57 50 57 ALE +0.13% 80.15 +0.10 Apr 01, 2019 49 94 50 22 48.48 50.18 50 18 342,600 Allete, Inc. PNM 45.55 +0 41 +0 91% Mar 25, 2019 48.59 50.55 48 20 49 82 49 82 393,800 PNM Resources Inc (Holding Co Mar 18, 2019 50 27 50 73 48 56 48 58 48 58 370,100 MGEE 67 30 +0 01 +0.01% MGE Energy Inc Mar 11, 2019 50 61 51 70 50 00 50 13 50 13 517,100 IDA 97 76 -0.28 -0.29% IDACORP Inc Mar 04, 2019 50 68 50.98 50 01 50 43 50 43 335,300 Feb 25, 2019 50.00 50.63 49 51 50 63 50 63 323,800 Ad closed by Google Feb 18, 2019 50 23 50 61 48 37 49 94 49 94 346,600 1. 35 18 37 Feb 14, 2019 0.35 Dividend Why this ad? ⊳

*Close price adjusted for splits **Adjusted close price adjusted for both dividends and splits

50.60

49.93

47.63

47 75

49.90

48 15

Yahoo Small Business

Data Disclaimer Help Suggestions
Privacy (Updated) About Our Ads Terms (Updated)



© 2019 Verizon Media All rights reserved

50 23

49 89

49 88

49 54

407,200

467,500

Finance Home

Watchlists

My Portfolio

Screeners

Historical Data

Markets Industries

Videos News Page 17

Pinnacle West Capital Corporation (PNW)

NYSE - Nasdaq Real Time Price Currency in USD

(Add to watchlist)

Quota Lookub

95.12 +0.32 (+0.34%)

As of 1 46PM EDT Market open

Summary

RIG	FREE
₩.	PIZOOKIE DAY

WEDNESDAY, APRIL 24

Chart Conversations Statistics



Profile Firancia's

Araysis

Cotions

Time Period Feb 03 2019 - Apr 25 2019 -

Show Historical Prices >

Frequency Weekly ~

Currency in USD					<u>4</u>	, Download Data
Date	Open	Higri	low	Close'	Aaj Close**	Volu ne
Apr 22, 2019	94 10	95 80	93 19	94 80	94 80	2,765,400
Apr 15, 2019	95 89	96 33	93 73	94 07	94.07	3,233,100
Apr 08, 2019	94.58	95.57	93 62	95 31	95 31	3,768,300
Apr 01, 2019	95.41	95 41	93.14	94 64	94 64	4,309,400
Mar 25, 2019	96,92	97 25	94 40	95 58	95 58	5,307,800
Mar 18, 2019	96 00	97 27	94.01	96 72	96 72	3,863,200
Mar 11, 2019	93 30	96.43	92 92	96.15	96 15	6,285,200
Mar 04, 2019	93 21	93 68	91.90	93 16	93 16	4,882,200
Feb 25, 2019	93 23	94 02	92 25	92 78	92 78	6,172,500
Feb 18, 2019	90 17	93 49	89.57	93 22	93 22	4,464,900
Feb 11, 2019	89 21	90.37	88.96	89.96	89.96	3,728,500
Feb 04, 2019	87 32	89.50	86 55	89 38	89 38	4,505,100
Jan 28, 2019	-	-	-	-	-	-

Symbol Last Price Change % Char	nge
NI 27 75 +0 24 +0 89 ty Source Inc	9%
SCG SCG	
DTE 124 39 +0 35 +0 26	3%
PEG 58 99 +0 29 +0 49 Public Service Enterprise Group	9%
XEL 55 90 +0 49 +0 88 Xeel Energy Inc	8%

Ad closed by Google · · · · Why this ad? ⊳

Yahoo Small Business

Data Disclaimer Help Suggestions Privacy (Updated) About Our Ads Terms (Updated)



^{*}Close price adjusted for splits

^{**}Adjusted close price adjusted for both dividends and splits

Add to waterilis. NYSE - Nasdaq Real Time Price Currency in USD

Quota Lookup

51.51 +0.33 (+0.63%)

As of 1 47PM EDT Market open

Summary	Chart	Conversations	Statistics	Historical Data	Pic"le	Financials	Ar a'ysis	Cotions	Holde s	Sustainability

IF IT'S NOT FROM IROBOT®, IT'S NOT A ROOMBA*.



Time Period Feb 03 2019 - Apr 25 2019 -Show Historical Prices >

Frequency Weekly ~

Currency in USD

Date	Open	High	Low	Close*	Aaj Close**	Volure	
Apr 22, 2019	50.15	51.39	49 79	51 19	51 19	1,538,600	
Apr 15, 2019	51,79	51 98	50 21	50 26	50 26	1,654,000	
Apr 08, 2019	51 63	51 89	51 07	51 76	51 76	2,338,700	
Apr 01, 2019	51.89	51.89	50 91	51.83	51.83	3,086,500	
Mar 25, 2019	51 70	52 59	51 31	51.84	51.84	3,272,800	
Mar 22, 2019				0.363 Dividend			
Mar 18, 2019	52 24	52 31	50 70	51 74	51 38	3,139,300	
Mar 11, 2019	51 60	52 60	51 56	52 34	51.97	4,105,500	
Mar 04, 2019	50 46	51.58	50.03	51.49	51 13	3,223,000	
Feb 25, 2019	50.34	50.42	49,08	50 32	49 97	3,204,500	
Feb 18, 2019	48 86	50 45	48 39	50 45	50 10	2,310,700	
Feb 11, 2019	49 14	49 50	48 34	48 93	48 59	3,198,300	
Feb 04, 2019	47.63	49.27	47 17	49.27	48 92	2,414,300	
Jan 28, 2019	-	-	-		-	-	

*Close price adjusted for splits **Adjusted close price adjusted for both dividends and sol *s SAVE # \$150

on Reamoa i Series Robots

TREAT MOM TO A CLEAN HOUSE ALL YEAR ROUND.



.↓. Download Data

People Also Watch

Symbol	Last Price	Change	% Charge
NWE NorthWestern Co	68 82 prporation	+0 05	+0 07%
PNM PNM Resources	45 56 Inc (Holding Co	+0 42	+0,93%
IDA IDACORP Inc	97.78	-0.26	-0 2/%
PNW Pinnacle West C	95 14 apital Corporati	+0 34	+0 36%
BKH Black Hills Corpo	72 01	+0 05	+0 07%

Ad closed by Google

1 1 1 1 1 1 1

Why this ad? ⊳

Yahoo Small Business

Data Disclaimer Help Suggestions Privacy (Updated) About Our Ads Terms (Updated)



Docket No 49421 Finance Home

Watchlists

My Portfolio

Screeners

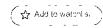
Markets

Industries

Videos News Page 19

Public Service Enterprise Group Incorporated (PEG)

NYSE - Nasdaq Real Time Price Currency in USD



59.01 +0.31 (+0.52%)

As of 1 49PM EDT Market open

Summary Chart Conversations Statistics Historical Data Atralysis



Show Historical Prices > Time Period Feb 03 2019 - Apr 25 2019 -

Frequency Weekly ~

Jan 28, 2019

S E	UNIVED A	THE UNITI EXPL CARD	OF
60K BONUS MILES	\$O INT	RO NUAL E	1

Currency in USD						♣ Download Data
Date	Open	H gr.	Low	Close*	Ad, Closer	Volume
Apr 22, 2019	58 70	58 98	57 70	58.70	58 70	8,786,900
Apr 15, 2019	59 99	60.32	57 87	58 87	58 87	13,957,400
Apr 08, 2019	59 55	60 36	58.93	59 89	59 89	11,415,000
Apr 01, 2019	59 32	59 70	58 12	59 70	59 70	13,812,500
Mar 25, 2019	59.72	60.00	58 57	59 41	59 41	11,088,100
Mar 18, 2019	59 83	60 09	58 72	59 63	59 63	11,572,100
Mar 11, 2019	58 84	59 95	58 54	59 73	59 73	20,535,400
Mar 07, 2019			0	.47 Dividend		
Mar 04, 2019	59 42	59 68	58 42	58 88	58 41	19,067,300
Feb 25, 2019	57.38	59 35	56 88	59 25	58 78	20,963,100
Feb 18, 2019	55 35	57.63	55 35	57 30	56 84	15,136,300
Feb 11, 2019	55.90	56 45	55 56	56 32	55 87	14,454,900
Feb 04, 2019	54 31	55 89	53 91	55 88	55 44	15,092,000

LEARN MORE

NI

N Source Inc

People Al	so Watch		
Symbol	Last Price	Change	? Charge
PPL PPL Corporat	30 92	-0 03	-0 05%
FE FirstEnergy C	41 21 orp	+0 35	+9 86%
PNW Pinnaule Wes	95 16 • Capital Corporat	+0 36	+0 38%
ETR Entergy Cons	95 39 oration	+0 75	+0 79%

Ad closed by Google

+0 24

+0.87%

27.75

Why this ad? ⊳

*Close price adjusted for splits ***Adjusted close price adjusted for both dividends and splits

Yahoo Small Business

Data Disclaimer Help Suggestions Privacy (Updated) About Our Ads Terms (Updated)

y f t

Workpaper JO-6

Finance Home

Watchlists

My Portfolio

Screeners

Markets

Industries

Videos

News

Page 20

WEC Energy Group, Inc. (WEC) NYSE - Nasdaq Real Time Price Currency in USD

Add to watchlist

Guota Lookup

77.87 +0.82 (+1.06%)

As of 1 50PM EDT Market open

Summary Chart Conversations Statistics Historical Data Picfle Financials Analysis Options. Holde's Sustainabil'y

> **Drive A Benz Today**

31 \$5

Ü

Time Period Feb 03 2019 - Apr 25 2019 -Show Historical Prices v Frequency Weekly ~

Currency in USD						
Date	Open	High	Low	Close*	Ad, Close	Volu ne
Apr 22, 2019	76.23	77 34	75 88	77.05	77 05	5,330,200
Apr 15, 2019	77 90	78 09	76.18	76 29	76 29	6,068,500
Apr 08, 2019	77 55	78 11	76 53	77.82	77.82	7,490,200
Apr 01, 2019	78 95	79 03	76 57	78 22	78 22	8,552,200
Mar 25, 2019	79 47	80 05	78 04	79 08	79 08	7,128,400
Mar 18, 2019	78 50	79 95	77.37	79 33	79 33	8,195,300
Mar 11, 2019	77 08	78 88	76 80	78 88	78 88	15,582,200
Mar 04, 2019	76 16	77 41	75 53	77 00	77 00	8,094,900
Feb 25, 2019	76 66	76 66	74.89	76 03	76 03	9,510,700

; ,	35	,	· * : . '	,,	í	• •
				,		

People Ais	o waten		
Symbol	Last Price	Change	% Change
XEL Xool Energy Inc	55 91	+0 50	+0 90%
LNT Alliant Energy (46 86 Corporation	+0 18	+0 39%
SCG SCG			
PNW Pinnacle West (95 16 Capital Corporat	+0 3€	+0 38%
CMS CMS Energy Ci	54 94 orperation	+0.53	+0 98%
۸.	d closed by	Coord	•

'Close price adjusted for splits

74 43

74 64

72 47

76,67

75.61

74 72

Feb 18, 2019

Feb 13, 2019

Feb 11, 2019

Feb 04, 2019

Jan 28, 2019

*'Adjusted close price adjusted for both dividends and splits

74 14

73 74

71.72

76 64

74 47

74 72

0.59 Dividend

76.64

73.88

74.13

8,120,700

10,075,600

8,025,500

Yahoo Small Business

Why this ad? ▷

Data Disclaimer Help Suggestions Privacy (Updated) About Our Ads Terms (Updated)

y f t

Docket No. 49421

Finance Home

Watchlists My Portfolio Screeners

Markets

Industries

Videos

News

Workpaper JO-6 Page 21

ARCESTANTON CONTOCONO CASCONIRA ENCARCAMENTACIONES ANTONOS CONTOCONOS CONTOCONOS Xcel Energy Inc. (XEL) QU313 200803 NasdaqGS - NasdaqGS Real Time Price Currency in USD

55.91 +0.50 (+0.90%)

As of 1.51PM EDT Market open

C manage	Chart	Coourantons	Cont a inc	Historical Data	Deatt	E	Araba	Catano	Ho as i	Crown ab !!
Summary	Unari	Conversa; ons	Statistics	Historical Data	PIC. le	F Famola s	At a yala	CDGDJP	mo de s	cius a nao i y

	Import in the Nation that
	Invest in the Nation that
	The state of the s
Communication of the last	The state of the s

Time Period Feb 03 2019 - Apr 25 2019 -Show Historical Prices V

Frequency Weekly ~

Currency in USD						<u>↓</u> Download Data
Date	Open	rl gl	Low	Close*	Ad, Closer	Volu re
Apr 22, 2019	54 50	55 67	54 46	55 41	55 41	9,075,800
Apr 15, 2019	55 92	56 21	54 60	54 68	54 68	12,269,600
Apr 08, 2019	55 71	56 32	55 11	55 87	55 87	14,657,800
Apr 01, 2019	56 25	56 25	54.74	55 71	55 71	16,016,700
Mar 25, 2019	57.10	57 48	55.81	56 21	56 21	15,558,900
Mar 18, 2019	56 45	57 51	55 43	57 07	57 07	13,418,100
Mar 14, 2019			0.4	105 Dividend		
Mar 11, 2019	55.66	56 89	55 62	56 50	56 10	21,544,800
Mar 04, 2019	54 89	55 90	54 41	55 67	55 27	18,121,600
Feb 25, 2019	55 21	55 36	54 13	54 92	54 53	18,599,200
Feb 18, 2019	53 57	55 27	53 35	55.27	54 87	14,750,500
Feb 11, 2019	53 49	53 91	53 03	53 46	53 08	17,358,800
Feb 04, 2019	51 96	53.50	51.57	53 48	53 10	12,038,300
Jan 28, 2019	-	-	-	-	-	-

People Also Watch

i copic Ais	O Water		
Symbol	Last Price	Change	% Charge
WEC Inergy G	77.88 roup, Inc	+0 83	+1.08%
PNW Pinnacia West	95.16 Capital Corporal	+0 3€	+9 38%
CNP CenterPoint In	30 52 ergy, Inc (Holur	+0 23	+9 7 6 %
PEG Public Service	59 02 Enterprise Group	+0 32	+3 54%

TE TECO Energy Inc

Ad closed by Google

Why this ad? ▷

*Close price adjusted for splits **Adjusted close price adjusted for both dividends and sol*s

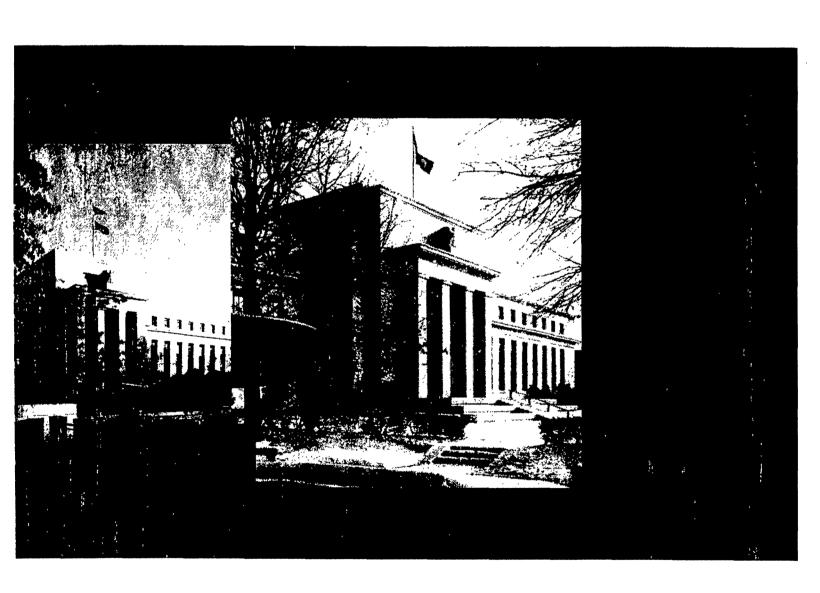
Yahoo Small Business

Data Disclaimer Help Suggestions Privacy (Updated) About Our Ads Terms (Updated)



MONETARY POLICY REPORT

February 22, 2019



Board of Governors of the Federal Reserve System

LETTER OF TRANSMITTAL



BOARD OF GOVERNORS OF THE FEDERAL RESERVE SYSTEM

Washington, D.C., February 22, 2019

THE PRESIDENT OF THE SENATE
THE SPEAKER OF THE HOUSE OF REPRESENTATIVES

erm H. Pawell

The Board of Governors is pleased to submit its *Monetary Policy Report* pursuant to section 2B of the Federal Reserve Act.

Sincerely,

Jerome H. Powell, Chairman

STATEMENT ON LONGER-RUN GOALS AND MONETARY POLICY STRATEGY

Adopted effective January 24, 2017, as amended effective January 29, 2019.

The Federal Open Market Committee (FOMC) is firmly committed to fulfilling its statutory mandate from the Congress of promoting maximum employment, stable prices, and moderate long-term interest rates. The Committee seeks to explain its monetary policy decisions to the public as clearly as possible. Such clarity facilitates well-informed decisionmaking by households and businesses, reduces economic and financial uncertainty, increases the effectiveness of monetary policy, and enhances transparency and accountability, which are essential in a democratic society.

Inflation, employment, and long-term interest rates fluctuate over time in response to economic and financial disturbances. Moreover, monetary policy actions tend to influence economic activity and prices with a lag. Therefore, the Committee's policy decisions reflect its longer-run goals, its medium-term outlook, and its assessments of the balance of risks, including risks to the financial system that could impede the attainment of the Committee's goals.

The inflation rate over the longer run is primarily determined by monetary policy, and hence the Committee has the ability to specify a longer-run goal for inflation. The Committee reaffirms its judgment that inflation at the rate of 2 percent, as measured by the annual change in the price index for personal consumption expenditures, is most consistent over the longer run with the Federal Reserve's statutory mandate. The Committee would be concerned if inflation were running persistently above or below this objective. Communicating this symmetric inflation goal clearly to the public helps keep longer-term inflation expectations firmly anchored, thereby fostering price stability and moderate long-term interest rates and enhancing the Committee's ability to promote maximum employment in the face of significant economic disturbances. The maximum level of employment is largely determined by nonmonetary factors that affect the structure and dynamics of the labor market. These factors may change over time and may not be directly measurable. Consequently, it would not be appropriate to specify a fixed goal for employment; rather, the Committee's policy decisions must be informed by assessments of the maximum level of employment, recognizing that such assessments are necessarily uncertain and subject to revision. The Committee considers a wide range of indicators in making these assessments. Information about Committee participants' estimates of the longer-run normal rates of output growth and unemployment is published four times per year in the FOMC's Summary of Economic Projections. For example, in the most recent projections, the median of FOMC participants' estimates of the longer-run normal rate of unemployment was 4.4 percent.

In setting monetary policy, the Committee seeks to mitigate deviations of inflation from its longer-run goal and deviations of employment from the Committee's assessments of its maximum level. These objectives are generally complementary. However, under circumstances in which the Committee judges that the objectives are not complementary, it follows a balanced approach in promoting them, taking into account the magnitude of the deviations and the potentially different time horizons over which employment and inflation are projected to return to levels judged consistent with its mandate.

The Committee intends to reaffirm these principles and to make adjustments as appropriate at its annual organizational meeting each January.

CONTENTS

Summary	1
Economic and Financial Developments	1
Monetary Policy	
Special Topics	
Part 1: Recent Economic and Financial Developments	5
Domestic Developments	
Financial Developments	
International Developments	
Part 2: Monetary Policy	33
Part 2. Summary of Economic Projections	47
Part 3: Summary of Economic Projections	
The Outlook for Economic Activity	
The Outlook for Inflation	
Appropriate Monetary Policy	
Uncertainty and Risks	51
Abbreviations	65
List of Boxes	
Employment Disparities between Rural and Urban Areas	10
Developments Related to Financial Stability	" 26
Monetary Policy Rules and Systematic Monetary Policy	36
The Role of Liabilities in Determining the Size of the Federal Reserve's Balance She	
Federal Reserve Transparency: Rationale and New Initiatives	45
Forecast Uncertainty	

Note: This report reflects information that was publicly available as of noon EST on February 21, 2019. Unless otherwise stated, the time series in the figures extend through, for daily data. February 20, 2019, for monthly data, January 2019; and, for quarterly data, 2018:Q4. In bar charts, except as noted, the change for a given period is measured to its final quarter from the final quarter of the preceding period.

For figures 16 and 34, note that the S&P 500 Index and the Dow Jones Bink Index are products or S&P Dow Jones Indices LLC and/or its affiliates and have been licensed for use by the Board. Copyright © 2019 S&P Dow Jones Indices LLC, a division of S&P Global, and or its affiliates. All rights reserved Redistribution, reproduction, and/or photocopyrig in whole or in part are prohibited without written permission of S&P Dow Jones Indices LLC for more information on any of S&P Dow Jones Indices LLC's indices please visit www.spdji.com S&P's is a registered trademark of Standard & Poor's Financial Services LLC, and Dow Jones® is a registered trademark of Dow Jones Indices LLC, Dow Jone

,**'#**

1

SUMMARY

Economic activity in the United States appears to have increased at a solid pace, on balance, over the second half of 2018, and the labor market strengthened further. Inflation has been near the Federal Open Market Committee's (FOMC) longer-run objective of 2 percent, aside from the transitory effects of recent energy price movements. In this environment, the FOMC judged that, on balance, current and prospective economic conditions called for a further gradual removal of policy accommodation. In particular, the FOMC raised the target range for the federal funds rate twice in the second half of 2018, putting its level at 2½ to 2½ percent following the December meeting. In light of softer global economic and financial conditions late in the year and muted inflation pressures, the FOMC indicated at its January meeting that it will be patient as it determines what future adjustments to the federal funds rate may be appropriate to support the Committee's congressionally mandated objectives of maximum employment and price stability.

Economic and Financial Developments

The labor market. The labor market has continued to strengthen since the middle of last year. Payroll employment growth has remained strong, averaging 224,000 per month since June 2018. The unemployment rate has been about unchanged over this period, averaging a little under 4 percent—a low level by historical standards—while the labor force participation rate has moved up despite the ongoing downward influence from an aging population. Wage growth has also picked up recently.

Inflation. Consumer price inflation, as measured by the 12-month change in the price index for personal consumption expenditures, moved down from a little above the FOMC's objective of 2 percent in the middle of last

year to an estimated 1.7 percent in December, restrained by recent declines in consumer energy prices. The 12-month measure of inflation that excludes food and energy items (so-called core inflation), which historically has been a better indicator of where overall inflation will be in the future than the headline measure that includes those items, is estimated to have been 1.9 percent in December—up ½ percentage point from a year ago. Survey-based measures of longer-run inflation expectations have generally been stable, though market-based measures of inflation compensation have moved down some since the first half of 2018.

Economic growth. Available indicators suggest that real gross domestic product (GDP) increased at a solid rate, on balance, in the second half of last year and rose a little under 3 percent for the year as a whole—a noticeable pickup from the pace in recent years. Consumer spending expanded at a strong rate for most of the second half, supported by robust job gains, past increases in household wealth, and higher disposable income due in part to the Tax Cuts and Jobs Act, though spending appears to have weakened toward year-end. Business investment grew as well, though growth seems to have slowed somewhat from a sizable gain in the first half. However, housing market activity declined last year amid rising mortgage interest rates and higher material and labor costs. Indicators of both consumer and business sentiment remain at favorable levels, but some measures have softened since the fall, likely a reflection of financial market volatility and increased concerns about the global outlook.

Financial conditions. Domestic financial conditions for businesses and households have become less supportive of economic growth since July. Financial market participants' appetite for risk deteriorated markedly in the latter part of last year amid investor concerns

2 SUMMARY

about downside risks to the growth outlook and rising trade tensions between the United States and China. As a result, Treasury yields and risky asset prices declined substantially between early October and late December in the midst of heightened volatility, although those moves partially retraced early this year. On balance since July, the expected path of the federal funds rate over the next several years shifted down, long-term Treasury yields and mortgage rates moved lower, broad measures of U.S. equity prices increased somewhat. and spreads of yields on corporate bonds over those on comparable-maturity Treasury securities widened modestly. Credit to large nonfinancial firms remained solid in the second half of 2018; corporate bond issuance slowed considerably toward the end of the year but has rebounded since then. Despite increases in interest rates for consumer loans, consumer credit expanded at a solid pace, and financing conditions for consumers largely remain supportive of growth in household spending. The foreign exchange value of the U.S. dollar strengthened slightly against the currencies of the U.S. economy's trading partners.

Financial stability. The U.S. financial system remains substantially more resilient than in the decade preceding the financial crisis. Pressures associated with asset valuations eased compared with July 2018, particularly in the equity, corporate bond, and leveraged loan markets. Regulatory capital and liquidity ratios of key financial institutions, including large banks, are at historically high levels. Funding risks in the financial system are low relative to the period leading up to the crisis. Borrowing by households has risen roughly in line with household incomes and is concentrated among prime borrowers. While debt owed by businesses is high and credit standards - especially within segments of the loan market focused on lower-rated or unrated firms—deteriorated in the second half of 2018, issuance of these loans has slowed more recently.

International Developments. Foreign economic growth stepped down significantly last year from the brisk pace in 2017. Aggregate growth in the advanced foreign economies slowed markedly, especially in the euro area, and several Latin American economies continued to underperform. The pace of economic activity in China slowed noticeably in the second half of 2018. Inflation pressures in major advanced foreign economies remain subdued, prompting central banks to maintain accommodative monetary policies.

Financial conditions abroad tightened in the second half of 2018, in part reflecting political uncertainty in Europe and Latin America, trade policy developments in the United States and its trading partners, as well as concerns about moderating global growth. Although financial conditions abroad improved in recent weeks, alongside those in the United States, on balance since July 2018, global equity prices were lower, sovereign yields in many economies declined, and sovereign credit spreads in the European periphery and the most vulnerable emerging market economies increased somewhat. Market-implied paths of policy rates in advanced foreign economies generally edged down.

Monetary Policy

Interest rate policy. As the labor market continued to strengthen and economic activity expanded at a strong rate, the FOMC increased the target range for the federal funds rate gradually over the second half of 2018. Specifically, the FOMC decided to raise the federal funds rate in September and in December, bringing it to the current range of $2\frac{1}{4}$ to $2\frac{1}{2}$ percent.

In December, against the backdrop of increased concerns about global growth, trade tensions, and volatility in financial markets, the Committee indicated it would monitor global economic and financial developments and assess their implications for

the economic outlook. In January, the FOMC stated that it continued to view sustained expansion of economic activity, strong labor market conditions, and inflation near the Committee's 2 percent objective as the most likely outcomes. Nonetheless, in light of global economic and financial developments and muted inflation pressures, the Committee noted that it will be patient as it determines what future adjustments to the target range for the federal funds rate may be appropriate to support these outcomes. FOMC communications continued to emphasize that the Committee's approach to setting the stance of policy should be importantly guided by the implications of incoming data for the economic outlook. In particular, the timing and size of future adjustments to the target

range for the federal funds rate will depend

on the Committee's assessment of realized

and expected economic conditions relative to

its maximum-employment objective and its

symmetric 2 percent inflation objective.

Balance sheet policy. The FOMC continued to implement the balance sheet normalization program that has been under way since October 2017. Specifically, the FOMC reduced its holdings of Treasury and agency securities in a gradual and predictable manner by reinvesting only principal payments it received from these securities that exceeded gradually rising caps. Consequently, the Federal Reserve's total assets declined by about \$260 billion since the middle of last year, ending the period close to \$4 trillion.

Together with the January postmeeting statement, the Committee released an updated Statement Regarding Monetary Policy Implementation and Balance Sheet Normalization to provide additional information about its plans to implement monetary policy over the longer run. In particular, the FOMC stated that it intends to continue to implement monetary policy in a regime with an ample supply of reserves so that active management of reserves is not

required. In addition, the Committee noted that it is prepared to adjust any of the details for completing balance sheet normalization in light of economic and financial developments.

Special Topics

Labor markets in urban versus rural areas.

The recovery in the U.S. labor market since the end of the recession has been uneven across the country, with rural areas showing markedly less improvement than cities and their surrounding metropolitan areas. In particular, the employment-to-population ratio and labor force participation rate in rural areas remain well below their pre-recession levels, while the recovery in urban areas has been more complete. Differences in the mix of industries in rural and urban areas—a larger share of manufacturing in rural areas and a greater concentration of fast-growing services industries in urban areas—have contributed to the stronger rebound in urban areas. (See the box "Employment Disparities between Rural and Urban Areas" in Part 1.)

Monetary policy rules. In evaluating the stance of monetary policy, policymakers consider a wide range of information on the current economic conditions and the outlook. Policymakers also consult prescriptions for the policy interest rate derived from a variety of policy rules for guidance, without mechanically following the prescriptions of any specific rule. The FOMC's approach for conducting systematic monetary policy provides sufficient flexibility to address the intrinsic complexities and uncertainties in the economy while keeping monetary policy predictable and transparent. (See the box "Monetary Policy Rules and Systematic Monetary Policy" in Part 2.)

Balance sheet normalization and monetary policy implementation. Since the financial crisis, the size of the Federal Reserve's balance sheet has been determined in large part by its decisions about asset purchases for

4 SUMMARY

economic stimulus, with growth in total assets primarily matched by higher reserve balances of depository institutions. However, liabilities other than reserves have grown significantly over the past decade. In the longer run, the size of the balance sheet will be importantly determined by the various factors affecting the demand for Federal Reserve liabilities. (See the box "The Role of Liabilities in Determining the Size of the Federal Reserve's Balance Sheet" in Part 2.)

Federal Reserve transparency and accountability. For central banks, transparency provides an essential basis for accountability.

Transparency also enhances the effectiveness of monetary policy and a central bank's efforts to promote financial stability. For these reasons, the Federal Reserve uses a wide variety of communications to explain its policymaking approach and decisions as clearly as possible. Through several new initiatives, including a review of its monetary policy framework that will include outreach to a broad range of stakeholders, the Federal Reserve seeks to enhance transparency and accountability regarding how it pursues its statutory responsibilities. (See the box "Federal Reserve Transparency: Rationale and New Initiatives" in Part 2.)

PART 1 RECENT ECONOMIC AND FINANCIAL DEVELOPMENTS

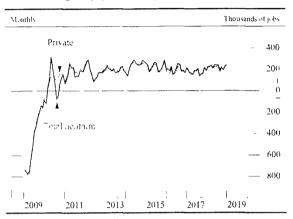
Domestic Developments

The labor market strengthened further during the second half of 2018 and early this year...

Payroll employment gains have remained strong, averaging 224,000 per month since June 2018 (figure 1). This pace is similar to the pace in the first half of last year, and it is faster than the average pace of job gains in 2016 and 2017.

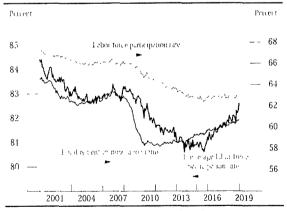
The strong pace of job gains over this period has primarily been manifest in a rising labor force participation rate (LFPR)—the share of the population that is either working or actively looking for work—rather than a declining unemployment rate. Since June 2018, the LFPR has moved up about 1/4 percentage point and was 63.2 percent in January—a bit higher than the narrow range it has maintained in recent years (figure 2). The improvement is especially notable because the aging of the population—and, in particular, the movement of members of the babyboom cohort into their retirement years—has otherwise imparted a downward influence on the LFPR. Indeed, the LFPR for individuals between 25 and 54 years old - which is much less sensitive to population aging-- has

1. Net change in payroll employment



Note: The da a are 3-month moving averages SOURLE. Bureau of Labor Statistics via Haver Analytics

2. Labor force participation rates and employment-to-population ratio



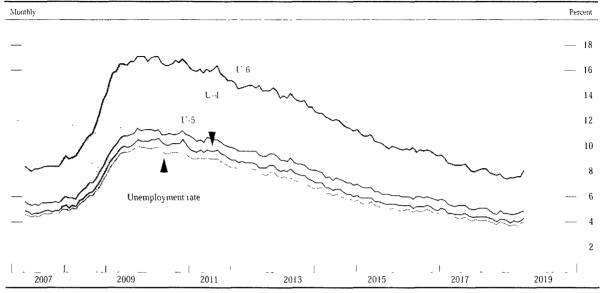
No.F. The data are monthly. The prime-age labor force participation rate is a percentage of the population aged 25 to 54. The labor force participation rate and the employment-to-population ratio are percentages of the population aged 16 and over

Source Bureau of Labor Statistics via Haver Analytics

^{1.} The observed pace of payroll job gains would have been sufficient to push the unemployment rate lower had the LFPR not risen. Indeed, monthly payroll gains in the range of 115,000 to 145,000 appear consistent with an unchanged unemployment rate around 4.0 percent and an unchanged LFPR around 62 9 percent (which are the June 2018 values of these rates). If instead the LFPR were declining 0.2 percentage point per year—roughly the influence of population aging—the range of job gains needed to maintain an unchanged unemployment rate would be about 40,000 per month lower. There is considerable uncertainty around these estimates, as the difference between monthly payroll gains and employment changes from the Current Population Survey (the source of the unemployment rate and LFPR) can be quite volatile over short periods.

6 PART 1: RECENT ECONOMIC AND FINANCIAL DEVELOPMENTS

3. Measures of labor underutilization



Note Unemployment rate measures total unemployed as a percentage of the labor force. U-4 measures total unemployed plus discouraged workers as a percentage of the labor force plus discouraged workers. Discouraged workers are a subset of marginally attached workers who are not currently looking for work because they believe no jobs are available for them. U-5 measures total unemployed plus all marginally attached to the labor force, as a percentage of the labor force plus persons marginally attached to the labor force. Marginally attached workers are not in the labor force, want and are available for work, and have looked for a job in the past 12 months. U-6 measures total unemployed plus all marginally attached workers plus total employed part time for economic reasons, as a percentage of the labor force plus all marginally attached workers. The shaded bar indicates a period of business recession as defined by the National Bureau of Economic Research.

Source Bureau of Labor Statistics via Haver Analytics

improved considerably more than the overall LFPR, including a ½ percentage point rise since June 2018.²

At the same time, the unemployment rate has remained little changed and has generally been running a little under 4 percent.³ Nevertheless, the unemployment rate remains at a historically low level and is ½ percentage point below the median of the Federal Open Market Committee (FOMC) participants' estimates of its longer-run normal level (figure 3).⁴ Combining the movements in both unemployment and labor force participation.

^{2.} Since 2015, the increase in the prime-age LFPR for women was nearly 2 percentage points, while the increase for men was only about 1 percentage point. In January, the LFPR for prime-age women was slightly above where it stood in 2007, whereas for men it was still about 2 percentage points below.

^{3.} The unemployment rate in January was 4.0 percent, boosted somewhat by the partial government shutdown, as some furloughed federal workers and temporarily laid-off federal contractors are treated as unemployed in the household employment survey.

^{4.} See the Summary of Economic Projections in Part 3 of this report.

the employment-to-population ratio for individuals 16 and over—the share of that segment of the population who are working—was 60.7 percent in January and has been gradually increasing since 2011.

Other indicators are also consistent with a strong labor market. As reported in the Job Openings and Labor Turnover Survey (JOLTS), the job openings rate has moved higher since the first half of 2018, and in December, it was at its highest level since the data began in 2000. The quits rate in the JOLTS is also near the top of its historical range, an indication that workers have become more confident that they can successfully switch jobs when they wish to. In addition, the JOLTS layoff rate has remained low, and the number of people filing initial claims for unemployment insurance benefits has also remained low. Survey evidence indicates that households perceive jobs as plentiful and that businesses see vacancies as hard to fill.

... and unemployment rates have fallen for all major demographic groups over the past several years

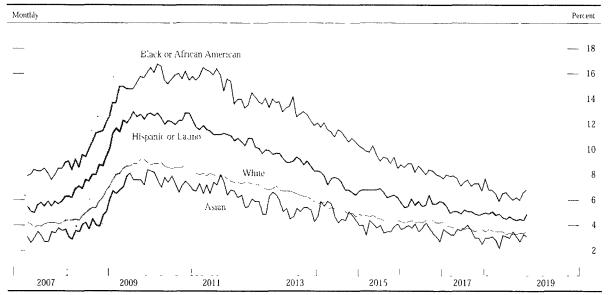
The flattening in unemployment since mid-2018 has been evident across racial and ethnic groups (figure 4). Even so, over the past several years, the decline in the unemployment rates for blacks or African Americans and for Hispanics has been particularly notable. and the unemployment rates for these groups are near their lowest readings since these series began in the early 1970s. Differences in unemployment rates across ethnic and racial groups have narrowed in recent years, as they typically do during economic expansions, after having widened during the recession; on net. unemployment rates for African Americans and Hispanics remain substantially above those for whites and Asians, with differentials generally a bit below pre-recession levels.

The rise in LFPRs for prime-age individuals over the past few years has also been apparent in each of these racial and ethnic groups.

Nonetheless, the LFPR for whites remains

8 PART I RECENT ECONOMIC AND FINANCIAL DEVELOPMENTS

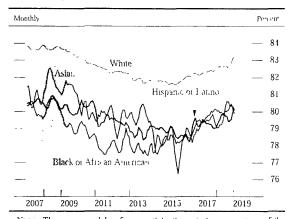
4. Unemployment rate by race and ethnicity



Note: Unemployment rate measures total unemployed as a percentage of the labor force. Persons whose ethnicity is identified as Hispanic or Latino may be of any race. The shaded but indicates a period of business recession as defined by the National Bureau of Economic Research.

Source: Bureau of Labor Statistics via Haver Analytics.

5 Prime-age labor force participation rate by race and ethnicity



Note The prime-age labor force participation rate is a percentage of the population aged 25 to 54. Persons whose ethnicity is identified as Hispanic or Lamo may be of any race. The data are seasonally adjusted by Board staff and are 3-month moving averages. The shaded bar indicates a period of business recession as defined by the National Bureau of Economic Research, Source. Bureau of Labor Statistics.

higher than that for other groups (figure 5). Important differences in economic outcomes persist across other characteristics as well (see, for example, the box "Employment Disparities between Rural and Urban Areas," which highlights that there has been less improvement since 2010 in the LFPR and employment-to-population ratio for prime-age individuals in rural areas compared with urban areas).

Increases in labor compensation have picked up recently but remain moderate by historical standards . . .

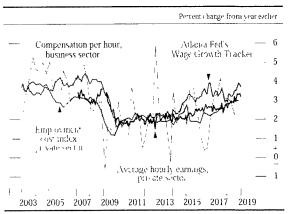
Most available indicators suggest that growth of hourly compensation has stepped up further since June 2018 after having firmed somewhat over the past few years; however, growth rates remain moderate compared with those that prevailed in the decade before the recession. Compensation per hour in the business sector—a broad-based measure of wages and benefits, but one that is quite volatile—rose 2½ percent over the four quarters ending in 2018:Q3, about the same as the average annual increase over the past seven years or so (figure 6). The employment cost index, a less volatile measure of both wages and the cost

to employers of providing benefits, increased 3 percent over the same period, while average hourly earnings—which do not take account of benefits—increased 3.2 percent over the 12 months ending in January of this year; the annual increases in both of these measures were the strongest in nearly 10 years. The measure of wage growth computed by the Federal Reserve Bank of Atlanta that tracks median 12-month wage growth of individuals reporting to the Current Population Survey showed an increase of 3.7 percent in January, near the upper end of its readings in the past three years and well above the average increase in the preceding few years.⁵

... and have likely been restrained by slow growth of labor productivity over much of the expansion

These moderate rates of compensation gains likely reflect the offsetting influences of a strong labor market and productivity growth that has been weak through much of the expansion. From 2008 to 2017, labor productivity increased a little more than 1 percent per year, on average, well below the average pace from 1996 to 2007 of nearly 3 percent and also below the average gain in the 1974 -95 period (figure 7). Although considerable debate remains about the reasons for the slowdown over this period, the weakness in productivity growth may be partly attributable to the sharp pullback in capital investment during the most recent recession and the relatively slow recovery that followed. More recently, however, labor productivity is estimated to have increased almost 2 percent at an annual rate in the first three quarters of 2018—still moderate relative to earlier periods, but its fastest three-quarter gain since 2010. While it is uncertain whether this faster rate of growth will persist, a sustained pickup in productivity growth, as well as additional labor market strengthening, would likely support stronger gains in labor compensation.

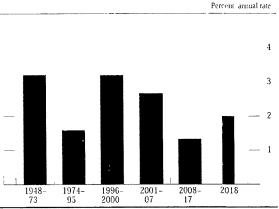
6 Measures of change in hourly compensation



Note Business-sector compensation is on a 1-quarter percentage change basis and extends through 2018 Q3. For the private sector employment cost index change is over the 12 months ending in the last month of each quarter, for private-sector average hourly earnings, the data are 12-month percent changes and begin in March 2007, for the Atlanta Fed's Wage Growth Iracker, the data are shown as a 3-month moving average of the 12-month percent change.

Source Bureau of Labor Statistics via Haver Analytics, Federal Reserve Bank of Atlanta, Wage Growth Tracker

7. Change in business-sector output per hour



NOTE Changes are measured from Q4 of the year immediately preceding the period through Q4 of the final year of the period. The bar for 2018 reports growth from 2017 Q4 through 2018 Q3 at an annual rate.

Solk Ref. Bureau of Labor Statistics via Haver Analytics.

^{5.} The Atlanta Fed's measure differs from others in that it measures the wage growth only of workers who were employed both in the current survey month and 12 months earlier.

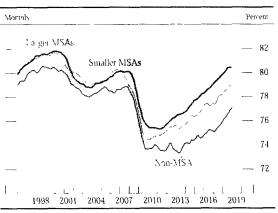
Employment Disparities between Rural and Urban Areas

The U.S. labor market has recovered substantially since 2010. For people in their prime working years (ages 25 to 54), the unemployment rate has moved down steadily to levels below the previous business cycle peak in 2007, the labor force participation rate (LFPR) has retraced much of its decline, and the share of the population who are employed-known as the employment-to-population ratio, or EPOP ratio has returned to about its level before the recession. However, the labor market recovery has been uneven across the country, with "rural" (or nonmetro) areas showing markedly less improvement than cities and their surroundings (metro areas).1

The extent of the initial decline and subsequent improvement in the EPOP ratio varied by metropolitan status. The gap between the EPOP ratios in rural and larger urban areas is now noticeably wider than it was before the recession, and the cyclical recovery started later in rural areas. Specifically, as shown in figure A, the prime-age EPOP is now slightly above its prerecession level in larger urban areas, whereas it is just below its pre-recession average in smaller urban areas and much below its pre-recession level in rural areas.2

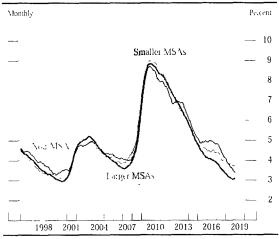
The EPOP ratio can usefully be viewed as summarizing both the LFPR—that is, the share of the population that either has a job or is actively looking for work—and the unemployment rate, which measures the share of the labor force without a job and actively searching.3 The divergence in rural and urban EPOP ratios during the economic expansion almost entirely reflects divergences in LFPRs rather than in unemployment rates (figures B and C). In particular, the rural and urban unemployment rates have tracked each

A Employment-to-population ratios



NOTE Data are for persons aged 25 to 54. Larger metropolitan statistical areas (MSAs) consist of 500,000 people or more, and smaller MSAs consist of 100,000 to 500,000 people. The shaded bars indicate periods of business recession as defined by the National Bureau of Economic Research. SOURCE References listed in box note 2

Unemployment rates



Note Data are for persons aged 25 to 51. Larger metropolitan statistical areas (MSAs) consist of 500,000 people or more, and smaller MSAs consist of 100,000 to 500,000 people. The shaded bars indicate periods of business recession as defined by the National Bureau of Economic Research.

Source References listed in box note 2

population" and the unemployment rate is defined as "persons unemployed/labor force" These numbers are multiplied by 100 for presentation purposes in the figures

^{1.} For convenience, we refer to metropolitan counties with strong commuting ties to an urbanized center as "urban" and nonmetropolitan counties that lack such ties as "rural"

^{2.} For all figures in this discussion, the raw data are from the U.S. Census Bureau, Current Population Survey. note that the Bureau of Labor Statistics is involved in the survey process for the Current Population Survey Calculations of the series shown are as described in Alison Weingarden (2017), "Labor Market Outcomes in Metropolitan and Non-metropolitan Areas: Signs of Growing Disparities," FEDS Notes (Washington: Board of Governors of the Federal Reserve System, September 25), www.tecleraliese ve gov/ccon/es/notes/feds-notes labor market outcomes in ristropolitaniana con chel opolicantares signs of growing disparities-2017/0925 http://The figures show 12-month moving averages of the monthly time-series

^{3.} Specifically, the EPOP ratio equals (LEPR) $\times (1$ unemployment rate), where LEPR is defined as "labor force/

other fairly closely in this expansion, though they have diverged a little in the past few years. In contrast, the difference between rural and urban LFPRs has widened significantly over the past decade

On average, people in rural areas tend to have fewer years of schooling than people in urban areas, and because the EPOP ratio tends to be lower for individuals with less education, this demographic difference has contributed to the persistent rural-urban divide. However, these educational differences do not appear responsible for the fact that the gap between rural and urban EPOP ratios have widened Figure D shows that, in recent years, rural and urban EPOP ratios diverged substantially even within educational categories, similar to the divergence in EPOPs more generally. The left panel of figure D shows that the EPOP ratio of non-college-educated adults ages 25 to 54 has been much lower in rural areas than in urban ones beginning in 2012. The right panel of figure D shows that the EPOP ratio of college-educated adults used to be higher in rural areas than in urban ones, but that is no longer so. Thus, the recent widening of the rural-urban disparity in EPOP ratios has not been primarily driven by differences in years of education.

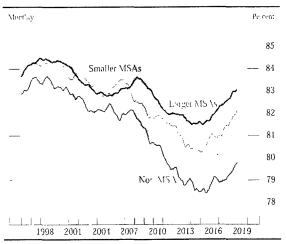
Nevertheless, because the recovery in the EPOP ratio for non-college-educated adults in rural areas

D. Employment-to-population ratios

(continued on next page)

9 (4)

C Labor force participation rates



Note Data are for persons aged 25 to 54. Larger metropolitan statistical areas (MSAs) consist of 500,000 people or more and smaller MSAs consist of 100,000 to 500,000 people. The shaded bars indicate periods of business recession as defined by the National Bureau of Economic Research. Soc.5c.* References listed in box note 2.

, ,

College adults Noncollege adults Monthly Percent Percent 87 76 86 Non-MSA 74 85 72 84 83 70 MSAs MSAs 82 68 81 Non-MS 66 80 2004 2007 2010 2013 2016 2019 1998 2001 2004 2007 2010

Note: Data are for persons aged 25 to 54 MSA is metropolitan statistical area. The shaded bars indicate periods of business recession as defined by the National Bureau of Economic Research.

Section 4.5 Experience Section 2018

Source References listed in box note 2

Employment Disparities (continued)

has been particularly weak, it is likely that broader macroeconomic trends-including the ongoing shift in labor demand that has favored individuals with more education—have had more adverse consequences for the populations in rural areas than in urban areas For example, manufacturing, where employment has stagnated, accounts for a larger share of employment in rural areas than in urban areas, while fast-growing services industries, such as health-care and professional services that tend to employ workers with more education, are more concentrated in urban areas. Indeed, employment in manufacturing has not yet fully recovered from the recession. And, despite the strength in the past two years, the share of total employment in manufacturing has remained near its post-recession low.

The fact that most of the EPOP divergence is seen in labor force participation rather than unemployment rates suggests that many rural workers who experienced a permanent job loss, perhaps due to a factory closing, decided to eventually exit the labor force rather than continue their job search. Some individuals who had been working, despite ongoing health problems, may have responded to job loss and poor reemployment opportunities by applying for Social Security Disability

Insurance (SSDI) benefits, and, in fact, take-up increased a little more in rural areas than it did in urban ones over the past decade.⁴

When regions are faced with adverse changes in labor demand, some residents may respond by migrating to more prosperous areas. The more outmigration that occurs from areas with relatively fewer labor market opportunities, the smaller should be the observed decline in local-area EPOPs.5 However, some research suggests that the average migration response to adverse demand shocks has decreased in recent decades, which could amplify the labor market effects of local shocks and lead to persistent disparities in EPOP ratios across areas.5

⁴ This increase could reflect growing public health problems (which expands the pool of individuals who qualify for SSDI) and sluggish labor demand in rural areas (which increases the propensity of individuals to apply for SSDI benefits).

^{5.} Although a higher rate of rural out-migration would help close the EPOP gap, depopulation might exacerbate economic difficulties for those who remain in rural areas

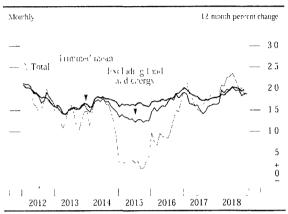
⁶ See, for example, Mai Dao, Davide Furceri, and Prakash Loungani (2017), "Regional Labor Market Adjustment in the United States Trend and Cycle." Review of Economics and Statistics, vol. 99 (May), pp. 243–57.

Price inflation is close to 2 percent

Consumer price inflation has fluctuated around the FOMC's objective of 2 percent. largely reflecting movements in energy prices. As measured by the 12-month change in the price index for personal consumption expenditures (PCE), inflation is estimated to have been 1.7 percent in December after being above 2 percent for much of 2018 (figure 8).6 Core PCE inflation—that is, inflation excluding consumer food and energy prices—is estimated to have been 1.9 percent in December. Because food and energy prices are often quite volatile, core inflation typically provides a better indication than the total measure of where overall inflation will be in the future. Total inflation was below core inflation for the year as a whole not only because of softness in energy prices, but also because food price inflation has remained relatively low.

Core inflation has moved up since 2017, when inflation was held down by some unusually large price declines in a few relatively small categories of spending, such as mobile phone services. The trimmed mean PCE price index, produced by the Federal Reserve Bank of Dallas, provides an alternative way to purge inflation of transitory influences, and it may be less sensitive than the core index to idiosyncratic price movements such as those noted earlier. The 12-month change in this measure did not decline as much as core PCE inflation in 2017, and it was 2.0 percent in November. Inflation likely has been increasingly supported by the strong labor market in an environment of stable inflation expectations; inflation last year was

8 Change in the price index for personal consumption expenditures



Note: The data for total and excluding food and energy extend through December 2018, final values are staff esturates. The trimmed data extend through November 2018.

SOURCE. For trunned mean Tederal Reserve Bank of Dallas for all else. Bureau of Economic Analysis all via Haver Analytics

^{6.} The partial government shutdown has delayed publication of the Bureau of Economic Analysis's estimate for PCE price inflation in December, and the numbers reported here are estimates based on the December consumer and producer price indexes.

^{7.} The trimmed mean index excludes whichever prices showed the largest increases or decreases in a given month. Note that over the past 20 years, changes in the trimmed mean index have averaged about ½ percentage point above core PCE inflation and 0.1 percentage point above total PCE inflation.

14 PART I RECENT ECONOMIC AND FINANCIAL DEVELOPMENTS

9 Spot and futures prices for crude oil



Note. The data are weekly averages of daily data and extend through February 20, 2019

SOURCE ICF Brent Futures via Bloombern

10. Nonfuel import prices and industrial metals indexes



NOTE The data for nonfuel import prices are monthly. The data for industrial metals are a monthly average of daily data and extend through February 20, 2019

SOURCE For nonfuel import prices, Bureau of Labor Statistics, for industrial metals S&P GSCI Industrial Metals Spot Index via Haver Analytics

also boosted slightly by the tariffs that were imposed throughout 2018.

Oil prices have dropped markedly in recent months...

As noted, the slower pace of total inflation in late 2018 relative to core inflation largely reflected softening in consumer energy prices toward the end of the year. After peaking at about \$86 per barrel in early October, the price of crude oil subsequently fell sharply and has averaged around \$60 per barrel this year (figure 9). The recent decline in oil prices has led to moderate reductions in the cost of gasoline and heating oil. Supply factors, including surging oil production in Saudi Arabia, Russia, and the United States, appear to be most responsible for the recent price declines, but concerns about weaker global growth likely also played a role.

... while prices of imports other than energy have also declined

After climbing steadily since their early 2016 lows, nonfuel import prices peaked in May 2018 and declined for much of the rest of 2018 in response to dollar appreciation. lower foreign inflation, and declines in commodity prices. In particular, metal prices fell markedly in the second half of 2018, partly reflecting concerns about prospects for the global economy (figure 10). Nonfuel import prices, before accounting for the effects of tariffs on the price of imported goods, had roughly a neutral influence on U.S. price inflation in 2018.

Survey-based measures of inflation expectations have been stable . . .

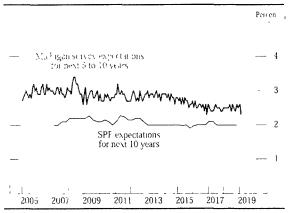
Expectations of inflation likely influence actual inflation by affecting wage- and price-setting decisions. Survey-based measures of inflation expectations at medium- and longer-term horizons have remained generally stable over the second half of 2018. In the Survey of Professional Forecasters, conducted by the Federal Reserve Bank of Philadelphia, the median expectation for the annual rate of increase in the PCE price index over the

next 10 years has been very close to 2 percent for the past several years (figure 11). In the University of Michigan Surveys of Consumers, the median value for inflation expectations over the next 5 to 10 years has been around 2½ percent since the end of 2016, though this level is about ¼ percentage point lower than had prevailed through 2014. In contrast, in the Survey of Consumer Expectations, conducted by the Federal Reserve Bank of New York, the median of respondents' expected inflation rate three years hence while relatively stable around 3 percent since early 2018 -is nonetheless at the top of the range it has occupied over the past couple of years.

... while market-based measures of inflation compensation have come down since the first half of 2018

Inflation expectations can also be gauged by market-based measures of inflation compensation. However, the inference is not straightforward, because marketbased measures can be importantly affected by changes in premiums that provide compensation for bearing inflation and liquidity risks. Measures of longer-term inflation compensation -- derived either from differences between yields on nominal Treasury securities and those on comparable-maturity Treasury Inflation-Protected Securities (TIPS) or from inflation swaps—moved down in the fall and are below levels that prevailed earlier in 2018 (figure 12).8 The TIPS-based measure of 5-to-10-year-forward inflation compensation and the analogous measure from inflation swaps are now about 1³/₄ percent

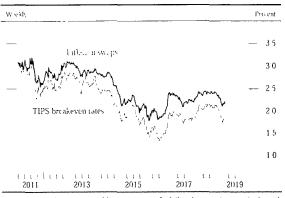
Median inflation expectations



NOTE: The Michigan survey data are monthly and extend through February 2019 the February data are preliminary. The SPF data for inflation expectations for personal consumption expenditures are quarterly and begin

University of Michigan Surveys of Consumers Federal Reserve Bank of Philadelphia, Survey of Professional Forecasters (SPF)

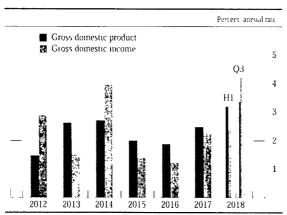
5 to 10 year forward inflation compensation



NOTE The data are weekly averages of daily data and extend through February 15, 2019 TIPS is Treasury Inflation-Protected Securities Source Federal Reserve Bank of New York Barclays, Federal Reserve Board staff estimates

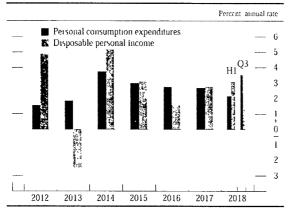
^{8.} Inflation compensation implied by the TIPS breakeven inflation rate is based on the difference, at comparable maturities, between yields on nominal Treasury securities and yields on TIPS, which are indexed to the total consumer price index (CPI). Inflation swaps are contracts in which one party makes payments of certain fixed nominal amounts in exchange for cash flows that are indexed to cumulative CPI inflation over some horizon. Inflation compensation derived from inflation swaps typically exceeds TIPS-based compensation, but week-to-week movements in the two measures are highly correlated.

Change in real gross domestic product and gross domestic income



Source Bureau of Economic Analysis via Haver Analytics

Change in real personal consumption expenditures and disposable personal income



Source Bureau of Economic Analysis via Haver Analytics

and 2½ percent, respectively, with both measures below their respective ranges that persisted for most of the 10 years before the start of the notable declines in mid-2014.

Real gross domestic product growth was solid, on balance, in the second half of 2018

Real gross domestic product (GDP) rose at an annual rate of 3½ percent in the third quarter, and available indicators point to a moderate gain in the fourth quarter. 10 For the year, GDP growth appears to have been a little less than 3 percent, up from the $2\frac{1}{2}$ percent pace in 2017 and the 2 percent pace in the preceding two years (figure 13). Last year's growth reflects, in part, solid growth in household and business spending, on balance, as well as an increase in government purchases of goods and services; by contrast, housing-sector activity turned down last year. Private domestic final purchases—that is, final purchases by households and businesses, which tend to provide a better indication of future GDP growth than most other components of overall spending—likely posted a strong gain for the year.

Some measures of consumer and business sentiment have recently softened—likely reflecting concerns about financial market volatility, the global economic outlook, trade policy tensions, and the government shutdown—and consumer spending appears to have weakened at the end of the year. Nevertheless, the economic expansion continues to be supported by steady job gains, past increases in household wealth, expansionary fiscal policy, and still-favorable domestic financial conditions, including

⁹ As these measures are based on CPI inflation, one should probably subtract about ½ percentage point --the average differential with PCE inflation over the past two decades - to infer inflation compensation on a PCE basis.

^{10.} The initial estimate of GDP by the Bureau of Economic Analysis for the fourth quarter was delayed because of the partial government shutdown and will now be released on February 28.

moderate borrowing costs and easy access to credit for many households and businesses.

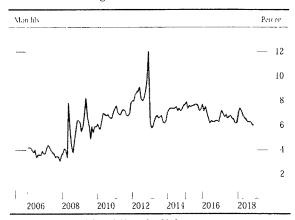
Ongoing improvements in the labor market continue to support household income and consumer spending . . .

Real consumer spending picked up after some transitory weakness in the first half of 2018, rising at a strong annual rate of 3½ percent in the third quarter and increasing robustly through November (figure 14). However, despite anecdotal reports of favorable holiday sales, retail sales were reported to have declined sharply in December. Real disposable personal income -that is, income after taxes and adjusted for price changes- looks to have increased around 3 percent over the year, boosted by ongoing improvements in the labor market and the reduction in income taxes due to the implementation of the Tax Cuts and Jobs Act (TCJA). With consumer spending rising at about the same rate as gains in disposable income in 2018 through the third quarter (the latest data available), the personal saving rate was roughly unchanged, on net, over this period (figure 15).

... although wealth gains have moderated and consumer confidence has recently softened

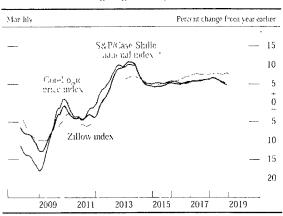
While increases in household wealth have likely continued to support consumer spending, gains in net worth slowed last year. House prices continued to move up in 2018, boosting the wealth of homeowners, but the pace of growth moderated (figure 16). U.S. equity prices are, on net, similar to their levels at the end of 2017. Still, the level of equity and housing wealth relative to income remains very high by historical standards (figure 17).¹¹

15. Personal saving rate



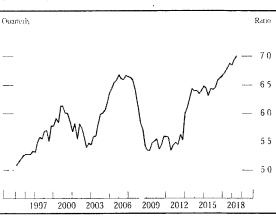
NOTE: Data extend through November 2018 Science: Bureau of Economic Analysis via Haver Analytics

16. Prices of existing single-family houses



NOTE The data for the S&P/Case-Shiller index extend through November 2018. The data for the CoreLogic index extend through December 2018. SOURCE CoreLogic Home Price Index, Zillow, S&P/Case-Shiller U.S. National Home Price Index The S&P/Case-Shiller Index is a product of S&P. Dow. Jones. Indices. LLC and/or its affiliates. (For Dow. Jones Indices Incensing information, see the note on the Contents page.)

17 Wealth-to-income ratio



 $No{\rm I}^{\dagger}$. Data extend through 2018 Q3. The series is the ratio of household networth to disposable personal income

SOURCE For net worth, Federal Reserve Board, Statistical Release Z.1 Financial Accounts of the United States", for income, Bureau of Fconomic Analysis via Haver Analytics

^{11.} Indeed, in the third quarter of 2018—the most recent period for which data are available—household net worth was seven times the value of disposable income, the highest-ever reading for that ratio, which dates back to 1947. However, following the decline in stock prices since the summer, this ratio has likely fallen somewhat

18 PART I RECENT ECONOMIC AND FINANCIAL DEVELOPMENTS

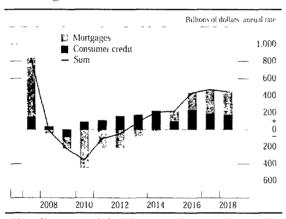
18. Indexes of consumer sentiment



NOTE. The data are monthly. Michigan data extend through February 2019, the February data are preliminary. The Conference Board data are indexed to 100 in 1985. The Michigan survey data are indexed to 100 in 1966.

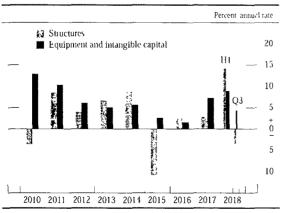
Source University of Michigan Surveys of Consumers Conference Board

19. Changes in household debt



Note: Changes are calculated from year-end to year-end except 2018 changes, which are calculated from 2017 Q3 to 2018 Q3 Solpce Federal Reserve Board, Statistical Release Z 1 "Financial Accounts of the United States"

20. Change in real private nonresidential fixed investment



Source Bureau of Economic Analysis via Haver Analytics

Consumer sentiment as measured by the Michigan survey flattened out at a high level through much of 2018, and the sentiment measure from the Conference Board survey climbed through most of the year, with both measures posting their highest annual averages since 2000 (figure 18). However, consumer sentiment has turned down since around year-end, on net, with the declines primarily reflecting consumers' expectations for future conditions rather than their assessment of current conditions. Consumer attitudes about car buying have also weakened. Nevertheless. these indicators of consumers' outlook remain at generally favorable levels, likely reflecting rising income, job gains, and low inflation.

Borrowing conditions for consumers remain generally favorable despite interest rates being near the high end of their post-recession range

Despite increases in interest rates for consumer loans and some reported further tightening in credit card lending standards, financing conditions for consumers largely remain supportive of growth in household spending, and consumer credit growth in 2018 expanded further at a solid pace (figure 19). Mortgage credit has continued to be readily available for households with solid credit profiles. For borrowers with low credit scores, mortgage underwriting standards have eased somewhat since the first half of 2018 but remain noticeably tighter than before the recession. Financing conditions in the student loan market remain stable, with over 90 percent of such credit being extended by the federal government. Delinquencies on such loans, though staying elevated, continued to improve gradually on net.

Business investment growth has moderated after strong gains early in 2018 . . .

Investment spending by businesses rose rapidly in the first half of last year, and the available data are consistent with growth having slowed in the second half (figure 20).

The apparent slowdown reflects, in part, more moderate growth in investment in equipment and intangibles as well as a likely decline in investment in nonresidential structures after strong gains earlier in the year. Forward-looking indicators of business spending—such as business sentiment, capital spending plans, and profit expectations from industry analysts—have softened recently but remain positive overall. And while new orders of capital goods flattened out toward the end of last year, the backlog of unfilled orders for this equipment has continued to rise.

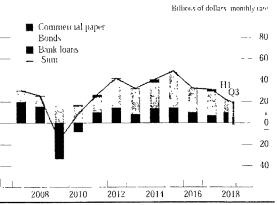
... as corporate financing conditions tightened somewhat but remained accommodative overall

Spreads of yields on nonfinancial corporate bonds over those on comparable-maturity Treasury securities widened modestly, on balance, since the middle of 2018 as investors' risk appetite appeared to recede some. Nonetheless, a net decrease in Treasury vields over the past several months has left interest rates on corporate bonds still low by historical standards, and financing conditions appear to have remained accommodative overall. Aggregate net flows of credit to large nonfinancial firms remained solid in the third quarter (figure 21). The gross issuance of corporate bonds and new issuance of leveraged loans both fell considerably toward the end of the year but have since rebounded, mirroring movements in financial market volatility.

Respondents to the January Senior Loan Officer Opinion Survey on Bank Lending Practices, or SLOOS, reported that lending standards for commercial and industrial (C&1) loans remained basically unchanged in the fourth quarter after having reported easing standards over the past several quarters. However, banks reported tightening lending standards on all categories of commercial real estate (CRE) loans in the fourth quarter on net.

Meanwhile, financing conditions for small businesses have remained generally

21 Selected components of net debt financing for nonfinancial businesses



SOURCE Federal Reserve Board Statistical Release Z.1, "Financial Accounts of the United States."

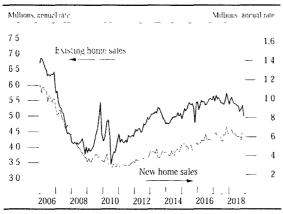
20 PART 1. RECENT ECONOMIC AND FINANCIAL DEVELOPMENTS

22. Private housing starts and permits



NOTE The data extend through November 2018 SOURCE U.S. Census Bureau via Haver Analytics

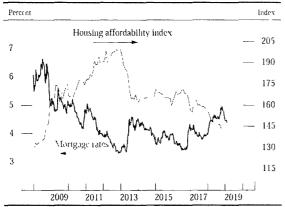
23. New and existing home sales



NOTE Data are monthly New home sales extends through November 2018 and includes only single-family sales. Existing home sales extends through December 2018 and includes single-family, condo, townhome, and co-op-sales.

SOURCE For new home sales U.S. Census Bureau for existing home sales, National Association of Realtors, all via Haver Analytics

24 Mortgage rates and housing affordability



Note The housing affordability index data are monthly through December 2018, and the mortgage rate data are weekly through February 14, 2019. At an index value of 100, a median income family has exactly enough income to qualify for a median-priced home mortgage. Housing affordability is seasonally adjusted by Board staff.

SOURCI For housing affordability index, National Association of Realtois, for mortgage rates Freddie Mac Primary Mortgage Market Survey

accommodative. Lending volumes to small businesses rebounded a bit in recent months, and indicators of recent loan performance stayed strong.

Activity in the housing sector has been declining

Residential investment declined in 2018, as housing starts held about flat and sales of existing homes moved lower (figures 22 and 23). The drop in residential investment reflects rising mortgage rates —which remain higher than in 2017 despite coming down some recently—as well as higher material and labor building costs, which have likely restrained new home construction. Consumers' perceptions of homebuying conditions deteriorated sharply over 2018, consistent with the decline in the affordability of housing associated with both higher mortgage rates and still-rising house prices (figure 24).

Net exports likely subtracted from GDP growth in 2018

After a strong performance in the first half of last year supported by robust exports of agricultural products, real exports declined in the third quarter, and available indicators suggest only a partial rebound in the fourth quarter (figure 25). At the same time, growth in real imports seems to have picked up in the second half of 2018. As a result, real net exports—which lifted U.S. real GDP growth during the first half of 2018—appear to have subtracted from growth in the second half. For the year as a whole, net exports likely subtracted a little from real GDP growth, similar to 2016 and 2017. The nominal trade deficit and the current account deficit in 2018 were little changed as a percent of GDP from 2017 (figure 26).

Federal fiscal policy actions boosted economic growth in 2018...

Fiscal policy at the federal level boosted GDP growth in 2018, both because of lower income and business taxes from the TCJA and

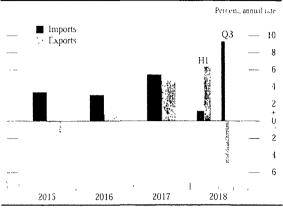
because federal purchases appear to have risen significantly faster than in 2017 as a result of the Bipartisan Budget Act of 2018 (figure 27).¹² The partial government shutdown, which was in effect from December 22 through January 25, likely held down GDP growth in the first quarter of this year somewhat, largely because of the lost work of furloughed federal government workers and temporarily affected federal contractors.

The federal unified deficit widened in fiscal year 2018 to 3¾ percent of nominal GDP because receipts moved lower, to roughly 16½ percent of GDP (figure 28). Expenditures edged down, to 20¼ percent of GDP, but remain above the levels that prevailed in the decade before the start of the 2007–09 recession. The ratio of federal debt held by the public to nominal GDP equaled 78 percent at the end of fiscal 2018 and remains quite elevated relative to historical norms (figure 29). The Congressional Budget Office projects that this ratio will rise over the next several years.

... and the fiscal position of most state and local governments is stable

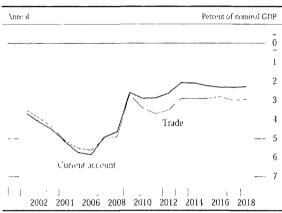
The fiscal position of most state and local governments is stable, although there is a range of experiences across these governments. After several years of slow growth, revenue gains of state governments strengthened notably as sales and income tax collections have picked up over the past few quarters. At the local level, property tax collections continue to rise at a solid clip, pushed higher by past house price gains. After declining a bit in 2017, real state and local government purchases grew moderately last year, driven largely by a boost in construction but also reflecting modest growth in employment at these governments.

25. Change in real imports and exports of goods and services



Socret Bureau of Leonomic Analysis via Haver Analytics

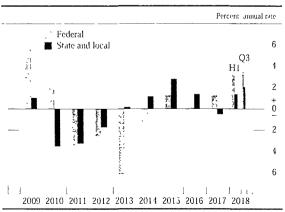
26. U.S. trade and current account balances



Note. Data for 2018 are the average of the first three quarters of the year at an annualized rate. GDP is gross domestic product.

SOUPCE Bureau of Feonomic Analysis via Haver Analytics.

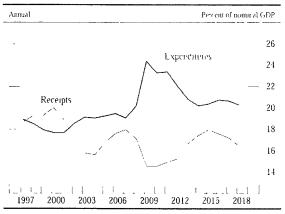
Change in real government expenditures on consumption and investment



SOURCE Bureau of Economic Analysis

^{12.} The Joint Committee on Taxation estimated that the TCJA would reduce average annual tax revenue by a little more than 1 percent of GDP starting in 2018 and for several years thereafter. This revenue estimate does not account for the potential macroeconomic effects of the legislation

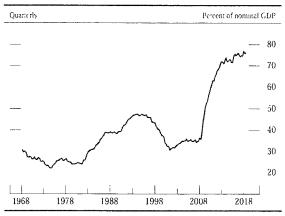
28. Federal receipts and expenditures



Note The receipts and expenditures data are on a unified-budget basis and are for fiscal years (October through September), gross domestic product (GDP) data are for the four quarters ending in Q3

Source Office of Management and Budget via Haver Analytics

29. Federal government debt held by the public



Note The data extend through 2018 Q3. The data for gross domestic product (GDP) are at an annual rate. Federal debt held by the public equals federal debt less Treasury securities held in federal employee defined benefit retirement accounts, evaluated at the end of the quarter.

SOURCE FOR GDP, Bureau of Economic Analysis via Haver Analytics, for federal debt, Federal Reserve Board Statistical Release Z.1, Financial Accounts of the United States

Financial Developments

The expected path of the federal funds rate over the next several years has moved down

Despite the further strengthening in the labor market and continued expansion in the U.S. economy, market-based measures of the expected path for the federal funds rate over the next several years have declined, on net, since the middle of last year (figure 30). Various factors contributed to this shift, including increased investor concerns about downside risks to the global economic outlook and rising trade tensions, as well as FOMC communications that were viewed as signaling patience and greater flexibility in the conduct of monetary policy in response to adverse macroeconomic or financial market developments.

Survey-based measures of the expected path of the policy rate through 2020 also shifted down, on net, relative to the levels observed in the first half of 2018. According to the results of the most recent Survey of Primary Dealers and Survey of Market Participants. both conducted by the Federal Reserve Bank of New York just before the January FOMC meeting, the median of respondents' modal projections for the path of the federal funds rate implies two additional 25 basis point rate increases in 2019. Relative to the December survey, these increases are expected to occur later in 2019. Looking further ahead, respondents to the January survey forecast no rate increases in 2020 and in 2021.13 Meanwhile, market-based measures of uncertainty about the policy rate approximately one to two years ahead were little changed, on balance, from their levels at the end of last June.

^{13.} The results of the Survey of Primary Dealers and the Survey of Market Participants are available on the Federal Reserve Bank of New York's website at https://www.newyorkfed.org/markets/survey_questions.html and https://www.newyorkfed.org/markets/survey_market_participants, respectively

The nominal Treasury yield curve continued to flatten

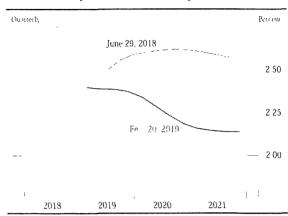
The nominal Treasury yield curve flattened somewhat further since the first half of 2018, with the 2-year nominal Treasury yield little changed and the 5- and 10-year nominal Treasury yields declining about 25 basis points on net (figure 31). At the same time, yields on inflation-protected Treasury securities edged up, leaving market-based measures of inflation compensation moderately lower. In explaining movements in Treasury yields since mid-2018, market participants have pointed to developments related to the global economic outlook and trade tensions, FOMC communications, and fluctuations in oil prices. Option-implied volatility on swap rates—an indicator of uncertainty about Treasury vields -- declined slightly on net.

Consistent with changes in yields on nominal Treasury securities, yields on 30-year agency mortgage-backed securities (MBS)—an important determinant of mortgage interest rates—decreased about 20 basis points, on balance, since the middle of last year and remain low by historical standards (figure 32). Meanwhile, yields on both investment-grade and high-yield corporate debt declined a bit (figure 33). As a result, the spreads on corporate bond yields over comparablematurity Treasury yields are modestly wider than at the end of June. The cumulative increases over the past year have left spreads for high-yield and investment-grade corporate bonds close to their historical medians, with both spreads notably above the very low levels that prevailed a year ago.

Broad equity price indexes increased somewhat

Broad U.S. stock market indexes increased somewhat since the middle of last year, on net, amid substantial volatility (figure 34). Concerns over the sustainability of corporate earnings growth, the global growth outlook, international trade tensions, and some Federal

30 Market-implied federal funds rate path



Note. The federal funds rate path is implied by quotes on overnight index swaps—a derivative contract tied to the effective federal funds rate. The implied path as of February 20, 2019, is compared with that as of June 29, 2018. The path is estimated with a spline approach assuming a term premium of 0 basis points. The current path extends through November 2021 and the previous one through September 2021.

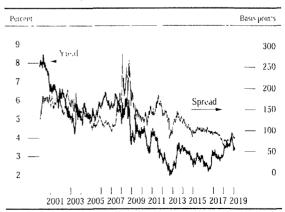
Source Bloomberg Federal Reserve Board staff estimates

31. Yields on nominal Treasury securities



SOURCE Department of the Treasury via Haver Analytics

32. Yield and spread on agency mortgage-backed securities

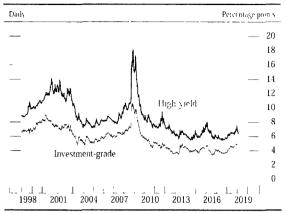


NOTE The data are daily. Yield shown is for the Fannie Mae 30-year current coupon, the coupon rate at which new mortgage-backed securities would be priced at par, or face, value. Spread shown is to the average of the 5- and 10-year nominal Treasury yields.

SOLAGE Department of the Treasury, Barclays Live

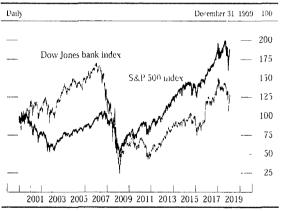
24 PART 1 RECENT ECONOMIC AND FINANCIAL DEVELOPMENTS

33. Corporate bond yields, by securities rating



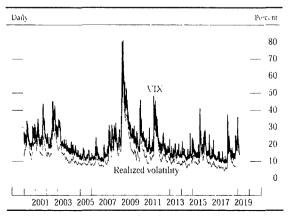
Note. Investment-grade is the 10-year triple-B, which reflects the effective yield of the ICE BofAMI 7 to-10-year triple-B U.S. Corporate Index (C4A4). High-yield is the 10-year high-yield and reflects the effective yield of the ICE BofAML 7-to-10-year U.S. Cash Pay High Yield Index (J4A0). SOURCE ICE Bank of America Merrill Lynch Indices, used with permission.

34. Equity prices



SOURCE Standard & Poor's Dow Jones Indices via Bloomberg (For Dow Jones Indices Incensing information, see the note on the Contents page)

35. S&P 500 volatility



NOTE The VIX is a measure of implied volatility that represents the expected annualized change in the S&P 500 index over the following 30 days. For realized volatility, five-minute returns are used in an exponentially weighted moving average with 75 percent of weight distributed over the past 20 days.

SOURCE Choe Volatility Index 5 (VIX3) accessed via Bloomberg

Reserve communications that were perceived as less accommodative than expected weighed on investor sentiment for a time. There were considerable differences in stock returns across sectors, reflecting their varying degrees of sensitivities to energy price declines, trade tensions, and rising interest rates. In particular, stock prices of companies in the utilities sector—which tend to benefit from falling interest rates—and in the health-care sector outperformed broader indexes. Conversely. stock prices in the energy sector substantially underperformed the broad indexes, as oil prices dropped sharply. Basic materials - a sector that was particularly sensitive to concerns about the global growth outlook and trade tensions—also underperformed. Bank stock prices declined slightly, on net, as the yield curve flattened and funding costs rose. Measures of implied and realized stock price volatility for the S&P 500 index—the VIX and the 20-day realized volatility increased sharply in the fourth quarter of last year to near the high levels observed in early February 2018 amid sharp equity price declines. These volatility measures partially retraced following the turn of the year, with the VIX returning to near the 30th percentile of its historical distribution and with realized volatility ending the period close to the 70th percentile of its historical range (figure 35). (For a discussion of financial stability issues, see the box "Developments Related to Financial Stability.")

Markets for Treasury securities, mortgagebacked securities, and municipal bonds have functioned well

Available indicators of Treasury market functioning have generally remained stable since the first half of 2018, with a variety of liquidity metrics—including bid-ask spreads, bid sizes, and estimates of transaction costs—displaying few signs of liquidity pressures. Liquidity conditions in the agency MBS market were also generally stable. Overall, the functioning of Treasury and agency MBS markets has not been materially affected by

the implementation of the Federal Reserve's balance sheet normalization program over the past year and a half. Credit conditions in municipal bond markets have remained stable since the middle of last year, though yield spreads on 20-year general obligation municipal bonds over comparable-maturity Treasury securities were modestly higher on net.

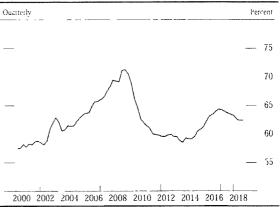
Money market rates have moved up in line with increases in the FOMC's target range

Conditions in domestic short-term funding markets have also remained generally stable since the beginning of the summer. Increases in the FOMC's target range were transmitted effectively through money markets, with yields on a broad set of money market instruments moving higher in response to the FOMC's policy actions in September and December. The effective federal funds rate moved to parity with the interest rate paid on reserves and was closely tracked by the overnight Eurodollar rate. Other short-term interest rates, including those on commercial paper and negotiable certificates of deposits, also moved up in light of increases in the policy rate.

Bank credit continued to expand, and bank profitability improved

Aggregate credit provided by commercial banks expanded through the second half of 2018 at a stronger pace than the one observed in the first half of last year, as the strength in C&I loan growth more than offset the moderation in the growth in CRE loans and loans to households. In the fourth quarter of last year, the pace of bank credit expansion was about in line with that of nominal GDP, leaving the ratio of total commercial bank credit to current-dollar GDP little changed relative to last June (figure 36). Overall, measures of bank profitability improved further in the third quarter despite a flattening vield curve, but they remain below their precrisis levels (figure 37).

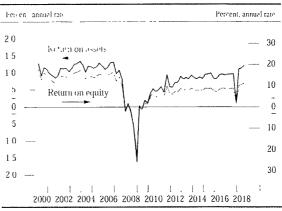
Ratio of total commercial bank credit to nominal gross domestic product



NOTE Data for 2018 Q4 are estimated

SULFACE Federal Reserve Board, Statistical Release II 8. Assets and Liabilities of Commercial Banks in the United States", Bureau of Economic Analysis via Haver Analytics.

37 Profitability of bank holding companies



 $N_{\rm GIL}$. The data are quarterly and are seasonally adjusted. The data extend through 2018 Q3

Source Federal Reserve Board, Form FR Y 9C, Consolidated Financial Statements for Bank Holding Companies

Developments Related to Financial Stability

The Federal Reserve Board's financial stability monitoring framework

The framework used by the Federal Reserve Board to monitor financial stability distinguishes between shocks to and vulnerabilities of the financial system. Shocks, such as sudden changes to financial or economic conditions, are typically surprises and are inherently difficult to predict, whereas vulnerabilities tend to build up over time and are the aspects of the financial system that are most expected to cause widespread problems in times of stress. Some vulnerabilities are cyclical in nature, rising and falling over time, while others are structural, stemming from longer-term torces shaping the nature of credit intermediation. As a result, the framework focuses primarily on monitoring vulnerabilities and emphasizes four broad categories based on academic research.¹

- 1. Elevated valuation pressures are signaled by asset prices that are high relative to economic fundamentals or historical norms and are often driven by an increased willingness of investors to take on risk. As such, elevated valuation pressures imply a greater possibility of outsized drops in asset prices.
- 2. Excessive borrowing by businesses and households leaves them vulnerable to distress if their incomes decline or the assets they own fall in value.
- 3. Excessive leverage within the financial sector increases the risk that financial institutions will not have the ability to absorb losses when hit by adverse shocks.
- **4. Funding risks** expose the financial system to the possibility that investors will "run" by withdrawing their funds from a particular institution or sector. Facing a run, financial institutions may need to sell assets quickly at "fire sale" prices, thereby incurring substantial losses and potentially even becoming insolvent. Historians and economists often refer to widespread investor runs as "financial panics."

While this framework provides a systematic way to assess financial stability, some potential risks do not fit neatly into it because they are novel or difficult to quantify, such as cybersecurity or developments in crypto-assets. In addition, some vulnerabilities are difficult to measure with currently available data, and the set of vulnerabilities may evolve over time. Given these limitations, we continually rely on ongoing

Since the publication of the Federal Reserve Board's tirst *Financial Stability Report* on November 28, 2018, some areas where valuation pressures were a concern have cooled, particularly those related to below-investment-grade corporate debt.² Regulatory capital and liquidity ratios of key financial institutions, especially large banks, are at historically high levels. Funding risks in the financial system are low relative to the period leading up to the crisis. Borrowing by households has risen roughly in line with household incomes and has been concentrated among prime borrowers. Nonetheless, debt owed by businesses is high, and credit standards, especially within segments of the loan market focused on lower-rated or unrated firms, deteriorated in the second half of 2018

Asset valuations increased to the high end of their historical ranges in many markets over 2017 and the first hall of 2018, supported by the solid economic expansion and an apparent increase in investors' appetite for risk. However, compared with July 2018, around the time of the previous Monetary Policy Report, valuation pressures have eased somewhat in the equity, corporate bond, and leveraged loan markets. Over the same period, amid substantial market volatility, the forward equity price-to-earnings ratio of S&P 500 firms, a metric of valuations in equity markets, declined a touch, on net, and it currently stands just below the top quartile of its historical distribution (figure A). Spreads on both investment- and speculativegrade corporate bonds over comparable-maturity Treasury securities widened modestly to levels close to the medians of their historical ranges since 1997 (figure B) Spreads on newly issued leveraged loans widened markedly in the fourth quarter of 2018. In real estate markets, commercial real estate prices have been growing taster than rents for several years, leaving valuations stretched.

Since the 2007-09 recession, household debt and business debt have diverged (figure C). Over the past several years, borrowing by households has stayed in line with income growth and has been concentrated among borrowers with strong credit histories.

(continued)

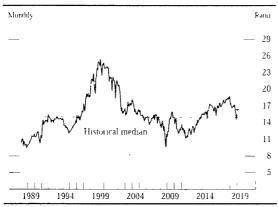
· 1.000 和 200年6月前 在200年 12月4年12日1日 12月

research by the Federal Reserve staff, academics, and other experts.

¹ For a review of the research literature in this area and further discussion, see Tobias Adrian, Daniel Covitz, and Nellie Liang (2015), "Financial Stability Monitoring." Annual Review of Financial Feonomics, vol. 7 (December), pp. 357–95

² See Board of Governors of the Federal Reserve System (2018), Financial Stability Report (Washington: Board of Governors, November), https://www.nederalreserve.gov/publicanors/2018/november (in included little) by report necross (2018).

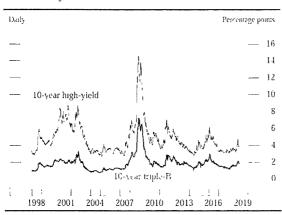
A. Forward price to earnings ratio of S&P 500 firms



No.1. Aggregate forward price to earnings ratio of S&P 500 firms. Data are based on expected earnings for 12 months ahead. The plus sign shows daily data corresponding to February 20, 2019.

Source Federal Reserve Board steff calculations using Refunitiv (formerly Thomson Reuters), IBES Estimates

B. Corporate bond spreads to similar-maturity Treasury securities

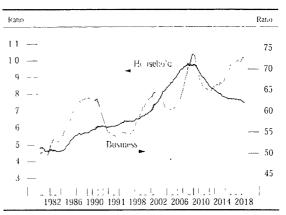


Note. The 10-year triple-B reflects the effective yield of the ICE Bof-ML 7-to-10-year triple-B U.S. Corporate Index (C4A4), and the 10-year high yield reflects the effective yield of the ICE BofAML 7 to-10-year U.S. Cash Pay High Yield Index (J4A0). Treasury yields from smoothed yield curve estimated from off-the-run securities.

SOURCE ICE Data Indices LLC used with permission, Department of the Treasury

By contrast, borrowing by businesses, including riskier firms, has expanded significantly. For speculative-grade and unrated firms, the ratio of debt to assets has increased steadily since 2010 and remains near its historical peak. Further, growth in debt to businesses with lower credit ratings and with already elevated levels of borrowing, such as high-yield bonds and leveraged loans, has been substantial over the past

C. Business- and household-sector credit-to-GDP ratio



Note: Data are quarterly and extend through 2018 Q3. The shaded bars indicate periods of business recession as defined by the National Bureau of Economic Research. GDP is gross domestic product.

SOURLE Federal Reserve Board Statistical Release Z.1 "Financial Accounts of the United States", Bureau of Economic Analysis via Haver Analytics, national income and product accounts, Table 1.1.5 Gross Domestic Product, Board staff calculations

two years (figure D). Issuance of these instruments slowed significantly in November and December 2018 because of the sharply higher spreads demanded by investors to hold them, but issuance has rebounded somewhat in early 2019.

Credit standards for new leveraged loans deteriorated over the second half of 2018. The share of newly issued large loans to corporations with high leverage—defined as those with ratios of debt to EBITDA (earnings before interest, taxes, depreciation, and amortization) above 6-increased through 2018 to levels exceeding previous peaks observed in 2007 and 2014, when underwriting quality was notably poor. In addition, issuance of covenant-lite loans- loans with few or no traditional maintenance covenants—remained high during the second half of 2018, although this elevated level may reflect, in part, a greater prevalence of investors who do not traditionally monitor and exercise loan covenants.3 Nonetheless, the strong economy has helped sustain solid credit performance of leveraged loans in 2018, with the default rate on such loans near the low end of its historical range

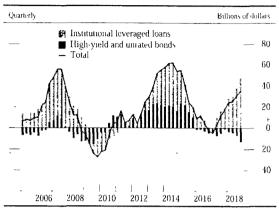
(continued on next page)

TO CONTROL OF THE PROPERTY OF

³ Collateralized loan obligations, which are predominantly backed by leveraged loans, have grown rapidly over the past year and, as of year-end 2018, purchase about 60 percent of leveraged loans at origination. Similarly, mutual funds hold about 20 percent of leveraged loans.

Financial Stability (continued)

D. Net issuance of risky business debt



NOTE Total net issuance of risky debt is the sum of the net issuance of speculative-grade and unrated bonds and leveraged loans. The data are four-quarter moving averages.

SOURCE Mergent, Fixed Investment Securities Database (FISD), S&P.

Source Mergent, Fixed Investment Securities Database (FISD), S&P Global, Leveraged Commentary & Data

The credit quality of nonfinancial high-yield corporate bonds was roughly stable over the past several years, with the share of high-yield bonds outstanding that are rated B3/B- or below staying tlat and below the financial crisis peak. In contrast, the distribution of ratings among investment-grade corporate bonds deteriorated. The share of bonds rated at the lowest investment-grade level (for example, an S&P rating of triple-B) reached near-record levels. As of December 2018, around 42 percent of corporate bonds outstanding were at the lowest end of the investment-grade segment, amounting to about \$3 trillion.

Vulnerabilities from financial-sector leverage continue to be low relative to historical standards, in part because of regulatory reforms enacted since the financial crisis. Core financial intermediaries, including large banks, insurance companies, and broker-dealers, appear well positioned to weather economic stress. As of the third quarter of 2018, regulatory capital ratios for the U.S. global systemically important banks remained well above regulatory requirements and were close to historical highs. Those banks will be subject to the 2019 Dodd-Frank Act stress tests and Comprehensive Capital Assessment and Review. Consistent with the Federal Reserve Board's public framework, this year's scenarios feature a larger increase in unemployment.

and a deeper recession than in 2018 as well as typically large declines in tinancial asset prices. Capital levels at insurance companies and broker-dealers also remained relatively robust by historical standards. A range of indicators suggest that hedge fund leverage was roughly unchanged over 2018; however, comprehensive data, available with a significant time lag, from early 2018 showed that leverage remained at the upper end of its range over the past eight years.

Vulnerabilities associated with funding risk—that is, the financing of illiquid assets or long-maturity assets with short-maturity debt—continue to be low, in part because of the post-crisis implementation of liquidity regulations for banks and the 2016 money market reforms. Banks are holding higher levels of liquid assets, while their use of short-term wholesale funding as a share of liabilities is near historical lows. Assets under management at prime funds, institutions that proved vulnerable to runs in the past, have risen somewhat in recent months but remained far below pre-reform levels

Potential downside risks to international financial stability include a downturn in global growth, political and policy uncertainty, an intensification of trade tensions, and broadening stress in emerging market economies (EMEs). In many advanced foreign economies, financial conditions tightened somewhat in the second half of 2018, partly reflecting a deterioration in the fiscal outlook of Italy and Brexit uncertainty. The United Kingdom and the European Union (EU) have not yet ratified the terms for the United Kingdom's March 2019 withdrawal from the EU (Brexit). Without such a withdrawal agreement, there will be no transition period for important trade and financial interactions between U.K. and EU residents, and, despite preparations for a "no-deal Brexit," a wide range or economic and financial activities could be disrupted EMEs also experienced heightened financial stress in the second half of 2018. Although that stress has receded somewhat more recently, many EMEs continue to harbor important vulnerabilities, reflecting one or more of substantial corporate leverage, fiscal concerns, or excessive reliance on foreign funding.

⁴ See U.S. Securities and Exchange Commission (2014), "SEC Adopts Money Market Fund Reform Rules," press release, July 23, https://www.sec.gov/news/press-release (2014-14).

International Developments

Economic activity in most foreign economies weakened in the second half of 2018

After expanding briskly in 2017, foreign GDP growth moderated in 2018. While part of this slowdown is likely due to temporary factors, it also appears to reflect weaker underlying momentum against the backdrop of somewhat tighter financial conditions, increased policy uncertainty, and ongoing debt deleveraging.

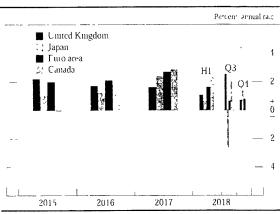
The growth slowdown was particularly pronounced in advanced foreign economies

Real GDP growth in several advanced foreign economies (AFEs) slowed markedly in the second half of the year (figure 38). This slowdown was concentrated in the manufacturing sector against the backdrop of softening global trade flows. In Japan, real GDP contracted in the second half of 2018. as economic activity, which was disrupted by a series of natural disasters in the third quarter, rebounded only partly in the fourth quarter. Growth in the euro area slowed in the second half of the year: Transportation bottlenecks and complications in meeting tighter emissions standards for new motor vehicles weighed on German economic activity, while output contracted in Italy. Although some of these headwinds appear to be fading, recent indicators especially for the manufacturing sector -point to only a limited recovery of activity in the euro area at the start of 2019.

Inflation pressures remain contained in advanced foreign economies . . .

In recent months, headline inflation has fallen below central bank targets in many major AFEs, reflecting large declines in energy prices (figure 39). In the euro area and Japan, low headline inflation rates also reflect subdued core inflation. In Canada and the United Kingdom, instead, core inflation rates have been close to 2 percent.

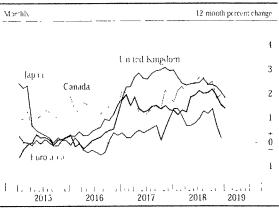
38 Real gross domestic product growth in selected advanced foreign economies



Note The data for the euro area, Japan, and the U.K. incorporate preliminary estimates for 2018 Q1. The data for Canada extend through 2018 Q3.

SOURGE FOUR THE United Kingdom Office for National Statistics, for Japan Cabinet Office. Government of Japan for the euro area, Eurostat. for Canada, Statistics Canada, all via Havei Analytics.

39 Consumer price inflation in selected advanced foreign economies

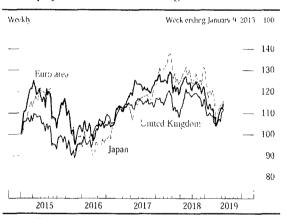


NOTE. The data for the euro area incorporate the flash estimate for January 2019. The data for the United Kingdom extend through January 2019. The data for Canada and Japan extend through December 2018.

Source: For the United Kingdom, Office for National Statistics, for Japan Ministry of International Affairs and Communications, for the euro area, Statistical Office of the European Communities, for Canada, Statistics Canada all via Haver Analytics

30° Part 1 recent economic and financial developments

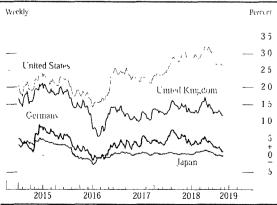
40. Equity indexes for selected foreign economies



Note. The data are weekly averages of daily data and extend through February 20, 2019

SCURCE For euro area, DJ Euro Stoxx Index, for Japan, TOPLY Stock Index, for United Kingdom: FTSE 100 Stock Index, all via Bloomberg

41. Nominal 10-year government bond yields in selected advanced economies



NOTE. The data are weekly averages of daily benchmark yields and extend through February 20, 2019.

Source Bloomberg

... prompting central banks to withdraw accommodation only gradually

With underlying inflation still subdued, the Bank of Japan and the European Central Bank (ECB) kept their short-term policy rates at negative levels. Although the ECB concluded its asset purchase program in December, it signaled an only very gradual removal of policy accommodation going forward. The Bank of England (BOE) and the Bank of Canada, which both began raising interest rates in 2017, increased their policy rates further in the second half of 2018 but to levels that are still low by historical standards. The BOE noted that elevated uncertainty around the United Kingdom's exit from the European Union (EU) weighed on the country's economic outlook.

Political uncertainty and slower economic growth weighed on AFE asset prices

Moderation in global growth, protracted budget negotiations between the Italian government and the EU, and developments related to the United Kingdom's withdrawal from the EU weighed on AFE asset prices in the second half of 2018 (figure 40). Broad stock price indexes in the AFEs fell, interest rates on sovereign bonds in several countries in the European periphery remained elevated, and European bank shares underperformed, although these moves have partially retraced in recent weeks. Market-implied paths of policy in major AFEs and long-term sovereign bond yields declined somewhat, as economic data disappointed (figure 41).

Growth slowed in many emerging market economies

Chinese GDP growth slowed in the second half of 2018 as an earlier tightening of credit policy, aimed at restraining the buildup of debt, caused infrastructure investment to fall sharply and squeezed household spending (figure 42). However, increased concerns about a sharper-than-expected slowdown in

growth, as well as prospective effects of trade policies, prompted Chinese authorities to ease monetary and fiscal policy somewhat. Elsewhere in emerging Asia, growth remained well below its 2017 pace amid headwinds from moderating global growth. Tighter financial conditions also weighed on growth in other EMEs—notably, Argentina and Turkey.

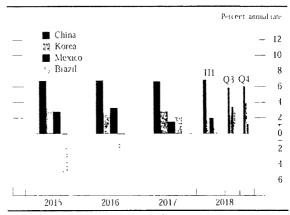
Economic activity strengthened somewhat in Mexico and Brazil, but uncertainty about policy developments remains elevated

In Mexico, economic activity increased at a more rapid rate in the third quarter after modest advances earlier in the year. However, growth weakened again in the fourth quarter, as perceptions that the newly elected government would pursue less market-friendly policies led to a sharp tightening in financial conditions. Amid a sharp peso depreciation and above-target inflation, the Bank of Mexico raised its policy rate to 8.25 percent in December. Brazilian real GDP growth rebounded in the third quarter after being held down by a nationwide trucker's strike in May, and financial markets have rallied on expectations that Brazil's new government will pursue economic policies that support growth. However, investors continued to focus on whether the new administration would pass significant fiscal reforms.

Financial conditions in many emerging market economies were volatile but are, on net, little changed since July

Financial conditions in the EMEs generally tightened in the second half of 2018, as investor concerns about vulnerabilities in several EMEs intensified against the backdrop of higher policy uncertainty, slowing global growth, and rising U.S. interest rates. Trade policy tensions between the United States and China weighed on asset prices, especially in China and other Asian economies. Broad measures of EME sovereign bond spreads over U.S. Treasury yields rose, and benchmark EME equity indexes declined. However,

42 Real gross domestic product growth in selected emerging market economies

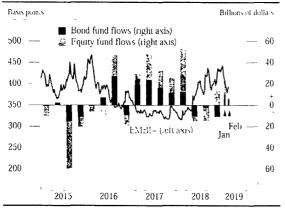


NOTE The data for China are seasonally adjusted by Board staff. The data for Korea. Mexico, and Brazil are seasonally adjusted by their respective government agencies. The data for Korea and Mexico, incorporate preliminary estimates for 2018 Q4. The data for Brazil extend through 2018 O3.

Societti Foi China, China National Bureau of Statistics, foi Korea, Bank of Korea, foi Mexico, Instituto Nacional de Estadística y Geografia, for Brazil Instituto Brasileiro de Geografia e Estatistica, all via Haver Analytics

32 PART 1: RECENT ECONOMIC AND FINANCIAL DEVELOPMENTS

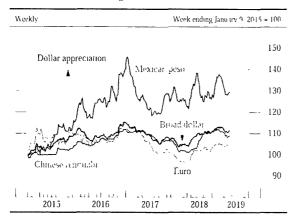
43. Emerging market mutual fund flows and spreads



Note The bond and equity fund flows data are quarterly sums of weekly data from January 1 2015, to December 31, 2018, and monthly sums of weekly data from January 1 2019, to February 20, 2019 The fund flows data exclude funds located in China The J.P. Morgan Emerging Markets Bond Index Plus (EMBI+) data are weekly averages of daily data and extend through February 19, 2019

SOURCE For bond and equity fund flows FPFR Global, for EMBI+ J.P. Morgan Emerging Markets Bond Index Plus via Bloomberg

44. U.S dollar exchange rate indexes



NOTE. The data, which are in foreign currency units per dollar are weekly averages of daily data and extend through February 20, 2019. As indicated by the arrow increases in the data represent U.S. dollar appreciation, and decreases represent U.S. dollar depreciation.

SUCRUS Federal Reserve Board, Statistical Release H 10, "Foreign Exchange Rates"

financial conditions improved significantly in recent months, supported in part by more positive policy developments—including the U.S.-Mexico-Canada Agreement and progress on U.S.-China trade negotiations—and FOMC communications indicating a more gradual normalization of U.S. interest rates. EME mutual fund inflows resumed in recent months after experiencing outflows in the middle of 2018 (figure 43). While movements in asset prices and capital flows have been sizable for a number of economies, broad indicators of financial stress in EMEs are below those seen during other periods of stress in recent years.

The dollar appreciated slightly

The foreign exchange value of the U.S. dollar is bit a higher than in July (figure 44). Concerns about the global outlook, uncertainty about trade policy, and monetary policy normalization in the United States contributed to the appreciation of the dollar. The Chinese renminbi depreciated against the dollar slightly, on net, amid ongoing trade negotiations and increased concerns about growth prospects in China. The Mexican peso has been volatile amid ongoing political developments and trade negotiations but has, on net, declined only modestly against the dollar. Sharp declines in oil prices also weighed on the currencies of some energy-exporting economies.

Part 2 Monetary Policy

The Federal Open Market Committee continued to gradually increase the federal funds rate in the second half of last year

From late 2015 through the first half of last year, the Federal Open Market Committee (FOMC) gradually increased its target range for the federal funds rate as the economy continued to make progress toward the Committee's congressionally mandated objectives of maximum employment and price stability. In the second half of 2018, the FOMC continued this gradual process of monetary policy normalization, raising the federal funds rate at its September and December meetings, bringing the target range to 2½ to 2½ percent (figure 45). The FOMC's decisions to increase the federal funds rate

14. See Board of Governors of the Federal Reserve System (2018), "Federal Reserve Issues FOMC Statement." press release, September 26, pages // www.federalreserve.gov/newsevents/pressreleases/monetary/2015/0926a htm; and Board of Governors of the Federal Reserve System (2018), "Federal Reserve Issues FOMC Statement," press release, December 19, https://www.federalreserve.gov/newsevents/pressreleases/monetary/2015/1219a htm.

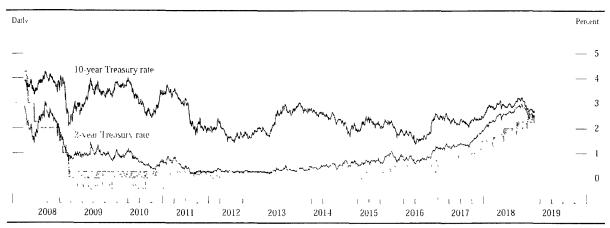
reflected the solid performance of the U.S. economy, the continued strengthening of the labor market, and the fact that inflation had moved near the Committee's 2 percent longerrun objective.

Looking ahead, the FOMC will be patient as it determines what future adjustments to the target range for the federal funds rate may be appropriate

With the gradual reductions in the amount of policy accommodation to date, the federal funds rate is now at the lower end of the range of estimates of its longer-run neutral level—that is, the level of the federal funds rate that is neither expansionary nor contractionary.

Developments at the time of the December FOMC meeting, including volatility in financial markets and increased concerns about global growth, made the appropriate extent and timing of future rate increases more uncertain than earlier. Against that backdrop, the Committee indicated it would monitor global economic and financial developments and assess their implications for the economic outlook. In the Summary

45. Selected interest rates



NOTE: The 2-year and 10-year Treasury rates are the constant-maturity yields based on the most actively traded securities SOURCE. Department of the Treasury, Federal Reserve Board.

34 PART 2 MONETARY POLICY

of Economic Projections (SEP) from the December meeting—the most recent SEP available—participants generally revised down their individual assessments of the appropriate path for monetary policy relative to their assessments at the time of the September meeting.¹⁵

In January, the Committee stated that it continued to view sustained expansion of economic activity, strong labor market conditions, and inflation near the Committee's symmetric 2 percent objective as the most likely outcomes. Nonetheless, in light of global economic and financial developments and muted inflation pressures, the Committee will be patient as it determines what future adjustments to the federal funds rate may be appropriate to support these outcomes.

Future changes in the federal funds rate will depend on the economic outlook as informed by incoming data

The FOMC has continued to emphasize that the actual path of monetary policy will depend on the evolution of the economic outlook as informed by incoming data. Specifically, in deciding on the timing and size of future adjustments to the federal funds rate, the Committee will assess realized and expected economic conditions relative to its objectives of maximum employment and 2 percent inflation. This assessment will take into account a wide range of information, including measures of labor market conditions, indicators of inflation pressures and inflation expectations, and readings on financial and international developments.

In addition to evaluating a wide range of economic and financial data and information gathered from business contacts and other informed parties around the country, policymakers routinely consult prescriptions for the policy interest rate from a variety of rules, which can serve as useful guidance to the FOMC. However, many practical considerations make it undesirable for the FOMC to mechanically follow the prescriptions of any specific rule. Consequently, the FOMC's framework for conducting systematic monetary policy respects key principles of good monetary policy and, at the same time, provides flexibility to address many of the limitations of these policy rules (see the box "Monetary Policy Rules and Systematic Monetary Policy").

The FOMC has continued to implement its program to gradually reduce the Federal Reserve's balance sheet

The Committee has continued to implement the balance sheet normalization program that has been under way since October 2017. To Under this program, the FOMC has been reducing its holdings of Treasury and agency securities in a gradual and predictable manner by decreasing its reinvestment of the principal payments it received from these securities. Specifically, such payments have been reinvested only to the extent that they exceeded gradually rising caps (figure 46).

In the third quarter of 2018, the Federal Reserve reinvested principal payments from its holdings of Treasury securities maturing during each calendar month in excess of \$24 billion. It also reinvested in agency mortgage-backed securities (MBS) the amount of principal payments from its holdings of agency debt and agency MBS received during each calendar month in excess of \$16 billion. In the fourth quarter, the FOMC increased the caps for Treasury securities and for agency securities to their respective maximums of \$30 billion and \$20 billion. Of note,

^{15.} See the December Summary of Economic Projections, which appeared as an addendum to the minutes of the December 18–19, 2018, meeting of the FOMC and is presented in Part 3 of this report

¹⁶ For more information, see the Addendum to the Policy Normalization Principles and Plans, which is available on the Board's website at https://www.federalieserve.gov/monetarypolicy/files/LOMC_PolicyNormalization.201/0613.pdf.

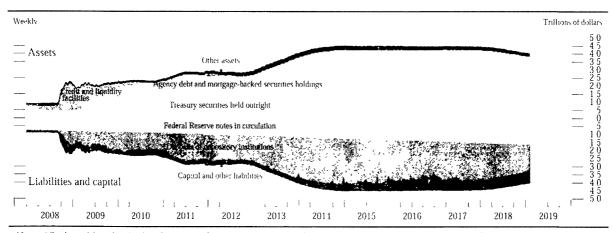
46. Principal payments on SOMA securities

Treasury securities Agency debt and mortgage-backed securities Monthly Billions of dollars Merthly Redemptions ■ Redemptions 80 80 Reinvestments 12 Remyestments Monthly cap Monthly cap 70 70 60 60 5050 40 40 30 30 20 20 10 2017 2017

Note Reinvestment and redemption amounts of Treasury securities are projections starting in February 2019. Reinvestment and redemption amounts of agency debt and mortgage-backed securities are projections starting in February 2019. Cap amounts are projections beyond March 2019. The data extend through December 2019.

Sot RO Federal Reserve Bank of New York, Federal Reserve Board staff calculations

47. Federal Reserve assets and liabilities



Note: "Credit and liquidity facilities" consists of primary secondary, and seasonal credit, term auction credit, central bank liquidity swaps; support for Maiden Lane, Bear Stearns and AlG, and other credit facilities, including the Primary Dealer Credit Facility, the Asset Backed Commercial Paper Money Market Mutual Fund Liquidity Facility, the Commercial Paper Funding Facility, and the Term Asset Backed Securities Loan Facility. Other assets" includes unamortized premiums and discounts on securities held outright. "Capital and other habilities includes reverse repurchase agreements, the U.S. Treasury General Account, and the U.S. Treasury Supplementary Financing Account. The data extend through February 13, 2019.

Source: Federal Reserve Board, Statistical Release H.4.1, "Factors Affecting Reserve Balances."

reinvestments of agency debt and agency MBS ceased in October as principal payments fell below the maximum redemption caps.

The Federal Reserve's total assets have continued to decline from about \$4.3 trillion last July to about \$4.0 trillion at present, with holdings of Treasury securities at approximately \$2.2 trillion and holdings of

agency debt and agency MBS at approximately \$1.6 trillion (figure 47).

As the Federal Reserve has continued to gradually reduce its securities holdings, the level of reserve balances in the banking system has declined. In particular, the level of reserve balances has decreased by about \$350 billion since the middle of last year, and

Monetary Policy Rules and Systematic Monetary Policy

Monetary policy rules are mathematical formulas that relate a policy interest rate, such as the federal funds rate, to a small number of other economic variables—typically including the deviation of inflation from its target value and a measure of resource slack in the economy. The prescriptions for the policy interest rate from these rules can provide helpful guidance for the Federal Open Market Committee (FOMC). This discussion provides information on how policy rules inform the FOMC's systematic conduct of monetary policy, as well as practical considerations that make it undesirable for the FOMC to mechanically follow the prescriptions of any specific rule. The FOMC's approach for conducting monetary policy provides sufficient flexibility to address the intrinsic complexities and uncertainties in the economy while keeping monetary policy predictable and transparent

Policy Rules and Historical Prescriptions

The effectiveness of monetary policy is enhanced when it is well understood by the public. In simple models of the economy, good economic performance can be achieved by following a specific monetary policy rule that fosters public understanding and that incorporates key principles of good monetary policy.² One such principle is that monetary policy should respond in a predictable way to changes in economic conditions and the economic outlook. A second principle is that monetary policy should be accommodative when inflation is below policymakers' longer-run inflation objective and employment is below its maximum sustainable level; conversely, monetary policy should be restrictive when the opposite holds. A third principle is that, to stabilize inflation, the policy rate should be adjusted by more than one-for-one in response to persistent increases or decreases in inflation.

Fconomists have analyzed many monetary policy rules, including the well-known Taylor (1993) rule. Other rules include the "balanced approach" rule, the "adjusted Taylor (1993)" rule, the "price level" rule, and the "first difference" rule (figure A).³ These policy rules embody the three key principles of good monetary policy and take into account estimates of how far the economy is from the Federal Reserve's dual-mandate goals of maximum employment and price stability. Four of the five rules include the difference between the rate of unemployment that is sustainable in the longer run and the current unemployment rate (the unemployment rate gap); the first-difference rule includes the change in the unemployment gap rather than its level.⁴ In addition, four of the five rules include the difference

(continued)

^{1.} For a discussion of how the public's understanding of monetary policy matters for the effectiveness of monetary policy, see Janet L. Yellen (2012), "Revolution and Evolution in Central Bank Communications," speech delivered at the Haas School of Business, University of California at Berkeley, Berkeley, Calif., November 13, https://www.tc.do.alreserve.comewsevents.speech?cclop2012+112; http://www.tc.do.alreserve.comewsevents.speech?cclop2012+112; http://www.tc.do.alreserve.comewsevents.speech?cclop2012+112; http://www.tc.do.alreserve.comewsevents.speech?cclop2012+112; http://www.tc.do.alreserve.comewsevents.speech?cclop2012+112; http://www.tc.do.alreserve.comewsevents.speech?cclop2012+112; http://www.tc.do.alreserve.comewsevents.speech?cclop2012+112; http://www.tc.do.alreserve.comewsevents.speech.cclop2012+112; http://www.tc.do.alreserve.comewsevents.speech.cclop2012+112; http://www.tc.do.alreserve.comewsevents.speech.cclop2012+112; http://www.tc.do.alreserve.comewsevents.speech.cclop2012+112; http://www.tc.do.alreserve.comewsevents.speech.cclop2012+112; http://www.tc.do.alreserve.comewsevents.speech.cclop2012+112; http://www.tc.do.alreserve.comewsevents.speech.cclop2012+112; https://www.tc.do.alreserve.comewsevents.speech.cclop2012+112; https://www.tc.do.alreserve.cc

^{2.} For a discussion regarding principles for the conduct of monetary policy, see Board of Governors of the Federal Reserve System (2018). "Monetary Policy Principles and Practice," Board of Governors, https://www.techareserve.gov.monetarypolicy/conetary.pol.cy/principles and practice 1.55.

³ The Taylor (1993) rule was suggested in John B. Taylor (1993), "Discretion versus Policy Rules in Practice," Carnegie-Rochester Conterence Series on Public Policy, vol. 39 (December), pp. 195-214. The balanced-approach rule was analyzed in John B. Taylor (1999), "A Historical Analysis of Monetary Policy Rules," in John B. Taylor, ed., Monetary Policy Rules (Chicago University of Chicago Press), pp. 319-41 The adjusted Taylor (1993) rule was studied in David Reifschneider and John C. Williams (2000), "Three Lessons for Monetary Policy in a Low-Inflation Fra," *Journal or Money, Credit and* Banking, vol. 32 (November), pp. 936–66. A price-level rule was discussed in Robert E. Hall (1984), "Monetary Strategy with an Elastic Price Standard," in Price Stability and Public Policy, proceedings of a symposium sponsored by the Federal Reserve Bank of Kansas City, held in Jackson Hole, Wyo, August 2-3 (Kansas City: Federal Reserve Bank of Kansas City), pp. 137-59, https://www.kansascityred.org/birblica sympositio8+ks4-prf= Finally, the first-difference rule is based on a rule suggested by Athanasios Orphanides (2003), "Historical Monetary Policy Analysis and the Taylor Rule," Journal of Monetary Economics, vol. 50 (July), pp. 983-1022 A comprehensive review of policy rules is in John B. Taylor and John C. Williams (2011), "Simple and Robust Rules for Monetary Policy," in Benjamin M. Friedman and Michael Woodford, eds., Handbook of Monetary Economics, vol. 3B (Amsterdam North-Holland), pp. 829-59. The same volume of the Handbook of Monetary Economics also discusses approaches other than policy rules for deriving policy rate

⁴ The Taylor (1993) rule represented slack in resource utilization using an output gap (the difference between the current level of real gross domestic product (GDP) and the level that GDP would be if the economy were operating at maximum employment). The rules in figure A represent slack in resource utilization using the unemployment gap instead, because that gap better captures the FOMC's statutory goal to promote maximum employment. However, movements in these alternative measures of resource utilization are highly correlated. For more information, see the note below figure A.

A. Monetary policy rules

Taylor (1993) rule	$R_t^{T^{03}} = r_t^{LR} + \pi_t + 0.5(\pi_t - \pi^{LR}) + (u_t^{LR} - u_t)$
Balanced-approach rule	$R_t^{BA} = r_t^{LR} + \pi_t + 0.5(\pi_t - \pi^{LR}) + 2(u_t^{LR} - u_t)$
Taylor (1993) rule, adjusted	$R_t^{T93odj} = maximum \left\{ R_t^{T93} - Z_t, 0 \right\}$
Price-level rule	$R_{t}^{PL} = maximum \{ r_{t}^{LR} + \pi_{t} + (u_{t}^{LR} - u_{t}) + 0.5(PLgap_{t}), 0 \}$
First-difference rule	$R_t^{FD} = R_{t-1} + 0.5(\pi_t - \pi^{LR}) + (u_t^{LR} - u_t) - (u_{t-4}^{LR} - u_{t-4})$

Note. $R^{(v)}$, $R^{(h)}$, $R^{(p)}$ and $R^{(f)}$ represent the values of the nominal federal funds rate prescribed by the Taylor (1993), balanced-approach, adjusted Taylor (1993), price-level, and first-difference rules, respectively

 R_t denotes the actual nominal federal funds rate for quarter t, τ_t is four-quarter price inflation for quarter t, u_t is the unemployment rate in quarter t, and r_i^{TR} is the level of the neutral real federal funds rate in the longer run that, on average, is expected to be consistent with sustaining maximum employment and inflation at the FOMC's 2 percent longer-run objective, π^{tF} . In addition, u^{tF} is the rate of unemployment in the longer run, Z is the cumulative sum of past deviations of the federal funds rate from the prescriptions of the Taylor (1993) rule when that rule prescribes setting the federal funds rate below zero. PLgap, is the percent deviation of the actual level of prices from a price level that rises 2 percent per year from its level in a specified starting period

The Taylor (1993) rule and other policy rules are generally written in terms of the deviation of real output from its full capacity level. In these equations, the output gap has been replaced with the gap between the rate of unemployment in the longer run and its actual level (using a relationship known as Okun's law) in order to represent the rules in terms of the FOMC's statutory goals. Historically, movements in the output and unemployment gaps have been highly correlated. Box note 3 provides references for the policy rules.

between recent inflation and the FOMC's longerrun objective (2 percent as measured by the annual change in the price index for personal consumption expenditures, or PCE), while the price-level rule includes the gap between the level of prices today and the level of prices that would be observed if inflation had been constant at 2 percent from a specified starting year (PLgap,).5 The price-level rule thereby takes account of the deviation of inflation from the long-run objective in earlier periods as well as the current period.

The adjusted Taylor (1993) rule recognizes that the federal funds rate cannot be reduced materially below zero, and that following the prescriptions of the standard Taylor (1993) rule after a recession during which the federal funds rate has fallen to its

lower bound may therefore not provide enough policy accommodation. To make up for the cumulative shortfall in accommodation (Z), the adjusted rule prescribes only a gradual return of the policy rate to the (positive) levels prescribed by the standard Taylor (1993) rule after the economy begins to recover. The version of the pricelevel rule specified in figure A also recognizes that the federal funds rate cannot be reduced materially below zero. It inflation runs below the 2 percent objective during periods when the price-level rule prescribes setting the federal funds rate well below zero, the rule will, over time, call for more accommodation to make up for the past inflation shortfall.

As shown in figure B, the different monetary policy rules often differ in their prescriptions for the federal funds rate." Although almost all of the simple policy

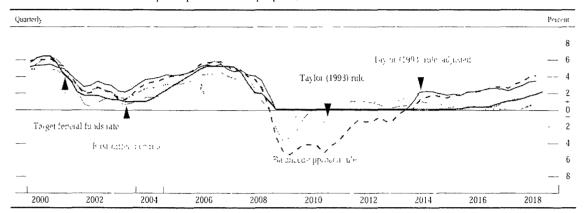
^{5.} Calculating the prescriptions of the price-level rule requires selecting a starting year for the price level from which to cumulate the 2 percent annual rate of inflation Figure B uses 1998 as the starting year. Around that time, the underlying trend of inflation and longer-term inflation expectations stabilized at a level consistent with PCE price inflation being close to 2 percent

⁽continued on next page)

⁶ These prescriptions are calculated using (1) published data for inflation and the unemployment rate and (2) surveybased esumates of the longer-run value of the neutral real interest rate and the longer-run value of the unemployment rate

Monetary Policy Rules (continued)

B Historical federal funds rate prescriptions from simple policy rules



Note The rules use historical values of inflation, the federal funds rate, and the unemployment rate. Inflation is measured as the 4 quarter percent change in the price index for personal consumption expenditures (PCF) excluding food and energy. Quarterly projections of long run values for the federal funds rate and the unemployment rate are derived through interpolations of biannual projections from Blue Chip Economic Indicators. The long-run value for inflation is taken as 2 percent. The target value of the price level is the average level of the price index for PCE excluding food and energy in 1998 extrapolated at 2 percent per year. The data extend through 2018 Q3 with the exception of the target federal funds rate data, which go through 2018 Q4.

Source: Federal Reserve Bank of Philadelphia. Wolters Kluwer. Blue Chip Economic Indicators. Federal Reserve Board staff estimates.

rules would have called for values for the federal funds rate that were increasing over time in recent years, the prescribed values vary widely across rules. In general, there is no unique criterion for favoring one rule over another.

Systematic Monetary Policy in Practice

Although monetary policy rules seem appealing for obtaining and communicating current and future policy rate prescriptions, the usefulness of these rules for policymakers is limited by a range of practical considerations. According to simple monetary policy rules, the policy interest rate must respond mechanically to a small number of variables. However, these variables may not reflect important information available to policymakers at the time they make decisions. For example, none of the inputs into the Taylor (1993) rule include financial and credit market conditions or indicators of consumer and business sentiment, these factors are often very informative for the future course of the economy. Similarly, monetary policy rules tend to include only the current values of the selected variables in the rule. But the relationship between the current values of these variables and the outlook for the economy changes over time for a number of reasons. For example, the structure of the economy is evolving over time and is not known with certainty at any given point in time. To complicate

matters further, monetary policy affects the Federal Reserve's goal variables of inflation and employment with long and variable lags. For these reasons, good monetary policy must take into account the information contained in the real-time forecast of the economy. Finally, simple policy rules do not take into account that the risks to the economic outlook may be asymmetric, such as during the period when the federal funds rate was still close to zero. At that time, the FOMC took into consideration that it would have limited scope to respond to an unexpected weakening in the economy by cutting the federal funds rate, but that it would have ample scope to increase the policy rate in response to an unexpected strengthening in the economy. This asymmetric risk provided a rationale for increasing the federal funds rate more gradually than prescribed by some policy rules shown in figure B.8

(continued)

structure of the economy cause the longer-run value of the neutral real interest rate to vary over time and thus complicate its estimation. See Board of Governors of the Federal Reserve System (2018), Monetary Policy Report (Washington, Board of Governors, July), pp. 37–41, https://www.tedna.ruse.cve.gov/moneorypolicy.ubss/tc.80213_polit/liepolipd.

8. For further discussion regarding the challenges of using monetary policy rules in practice, see Board of Governors of the Federal Reserve System (2018), "Challenges Associated with Using Rules to Make Monetary Policy," Board of Governors of the System and the System Policy associated with using roles to make moretary policy and force associated with using roles to make more enough policy bit of

- タイト・大型などは2000 メール・アンストリアを1000で展開機能が発出して基準が発送する最初のおよりを数します。 ディーオー

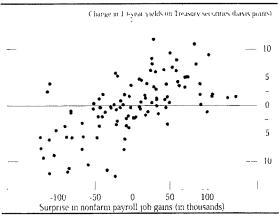
^{7.} The box "Complexities of Monetary Policy Rules" in the July 2018 Monetary Policy Report discusses how shifts in the

The FOMC conducts systematic monetary policy in a framework that respects the key principles of good monetary policy while providing sufficient flexibility to address many of the practical concerns described earlier. At the core of this framework lies the FOMC's tirm commitment to the Federal Reserve's statutory mandate of promoting maximum employment and price stability, a commitment that the Committee reaffirms on a regular basis.4 To explain its monetary policy decisions to the public as clearly as possible. the FOMC communicates about the economic data that are relevant to its policy decisions. As part of this communication strategy, the Federal Reserve regularly describes the economic and financial data used to inform its policy decisions in the Monetary Policy Report and the FOMC meeting minutes. These data include, but are not limited to, measures of labor market conditions, inflation, household spending and business investment, asset prices, and the global economic environment. The FOMC postmeeting statements and the meeting minutes detail how the data inform the Committee's overall economic outlook, the risks to this outlook, and, in turn, the Committee's assessment about the appropriate stance of monetary policy. This appropriate stance depends on the FOMC's longer-run goals, the economic outlook and the risks to the outlook, and the channels through which monetary policy actions influence economic activity and prices. The FOMC combines all of these elements in determining the timing and size of adjustments of the policy interest rates. The quarterly Summary of Economic Projections provides additional information about each FOMC participant's forecasts for the economy and the longer-run assessments of the economy, under her or his individual views concerning appropriate policy.

These policy communications help the public understand the FOMC's approach to monetary policymaking and the principles that underlie it Consequently, in response to incoming information, market participants tend to adjust their expectations regarding monetary policy in the direction consistent with achieving the maximum-employment and pricestability goals of the FOMC.10 Evidence that market

The state of the s

Change in 10-year yield in response to Employment Situation report



Note. The data are monthly, and the sample period starts in February 2010. The change in 10 year yields on Treasury securities is measured within a 1-hour window after the data release. The surprise in nonfarm payroll job gains is measured as the difference in the actual ponfarm payroll job gains in thousands and the median expected nonfarm payroll job gams in the Bloomberg Survey of Economists before the data release

Source Bureau of Labor Statistics Bloomberg

participants adjust their expectations for policy in this manner is shown in figure C. The figure plots the change in the 10-year yield on Treasury securities in a one-hour window around the release of employment reports on the vertical axis against the difference in the actual value of nonfarm payroll job gains and the expectations of private-sector analysts immediately before the release of the data on the horizontal axisthat is, a proxy for "surprises" in nonfarm payroll job gains. When actual nonfarm payroll job gains turn out to be higher than market participants expect, the yield on 10-year Treasury securities tends to increase. The rise in the 10-year yield reflects market participants' expectation that, as a result of stronger-than-expected labor market data, the path of short-term interest rates will be higher in the future. Conversely, the 10-year yield tends to decline after negative surprises in nonfarm payroll data, reflecting the path of short-term interest rates will be somewhat lower in the future. These adjustments in the 10-year yield help stabilize the economy even before the FOMC changes the level of the tederal funds rate in the direction consistent with achieving its goals, as higher long-term interest rates tend to slow the labor market while lower rates tend to strengthen it.

⁹ See the Statement on Longer-Run Goals and Monetary Policy Strategy, which is available on the Board's website at hiros /www.federniesers.gov/monetarypolicy/fues/cONC Longe fumboals pdf.

^{10.} New economic information can be composed of data surprises or of factors that may pose risks to future economic outcomes but are not yet reflected in the data.

40 PART 2 MONETARY POLICY

by about \$1.2 trillion since its peak in 2014.¹⁷ At the January meeting, the Committee released an updated Statement Regarding Monetary Policy Implementation and Balance Sheet Normalization to provide additional information regarding its plans to implement monetary policy over the longer run. 18 In this statement, the Committee indicated that it intends to continue to implement monetary policy in a regime in which an ample supply of reserves ensures that control over the level of the federal funds rate and other short-term interest rates is exercised primarily through the setting of the Federal Reserve's administered rates, and in which active management of the supply of reserves is not required. This operating procedure is often called a "floor system." The FOMC judges that this approach provides good control of short-term money market rates in a variety of market conditions and effective transmission of those rates to broader financial conditions. In addition, the FOMC stated that it is prepared to adjust any of the details for completing balance sheet normalization in light of economic and financial developments.

Although reserve balances play a central role in the ongoing balance sheet normalization process, in the longer run, the size of the balance sheet will also be importantly determined by trend growth in nonreserve liabilities. The box "The Role of Liabilities in Determining the Size of the Federal Reserve's Balance Sheet" discusses various factors that influence the size of reserve and nonreserve liabilities.

Meanwhile, interest income on the Federal Reserve's securities holdings has continued to support substantial remittances to the U.S. Treasury Preliminary financial statement results indicate that the Federal Reserve remitted about \$65 billion in 2018.

The Federal Reserve's implementation of monetary policy has continued smoothly

As with the previous federal funds rate increases since late 2015, the Federal Reserve successfully raised the effective federal funds rate in September and December by increasing the interest rate paid on reserve balances and the interest rate offered on overnight reverse repurchase agreements (ON RRPs). Specifically, the Federal Reserve raised the interest rate paid on required and excess reserve balances to 2.20 percent in September and to 2.40 percent in December. In addition, the Federal Reserve increased the ON RRP offering rate to 2.00 percent in September and to 2.25 percent in December. The Federal Reserve also approved a ¼ percentage point increase in the discount rate (the primary credit rate) in both September and December. Yields on a broad set of money market instruments moved higher, roughly in line with the federal funds rate, in response to the FOMC's policy decisions in September and December. Usage of the ON RRP facility has remained low, excluding quarter-ends.

The effective federal funds rate moved to parity with the interest rate paid on reserve balances in the months before the December meeting. At its December meeting, the Committee made a second small technical adjustment by setting the interest on excess reserves rate 10 basis points below the top of the target range for the federal funds rate; this adjustment was intended to foster trading in the federal funds market at rates well within the FOMC's target range.

The Federal Reserve will conduct a review of its strategic framework for monetary policy in 2019

With labor market conditions close to maximum employment and inflation near the Committee's 2 percent objective, the FOMC

^{17.} Since the start of the normalization program, reserve balances have dropped by approximately \$600 billion

^{18.} See the Statement Regarding Monetary Policy Implementation and Balance Sheet Normalization, which is available on the Board's website at https://www.fedetalreserve.gov/newsevents/pressicleases/monetary?0190130c htm.

41

The Role of Liabilities in Determining the Size of the Federal Reserve's Balance Sheet

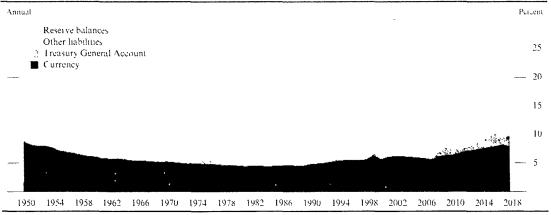
The size of the Federal Reserve's balance sheet increased from \$900 billion at the end of 2006 to about \$4.5 trillion at the end of 2014—or from 6 percent of gross domestic product (GDP) to about 25 percent of GDP-mainly as a result of the large-scale asset purchase (LSAP) programs conducted in response to persistent economic weakness following the financial crisis. The expansion of total assets that stemmed from the LSAPs was primarily matched by higher reserve balances of depository institutions, which peaked in the fall of 2014 at \$2.8 trillion, or almost 16 percent of GDP, rising from about \$10 billion at the end of 2006. Liabilities other than reserves have also grown significantly and played a role in the expansion of the balance sheet. The magnitude of these nonreserve liabilities as well as the flows aftecting their variability are not closely related to monetary policy decisions. Since October 2017, the Federal Reserve has been gradually reducing its securities holdings resulting from crisis-era purchases. Once these holdings have unwound to the point at which reserve balances have declined to their longer-run level, the size of the balance sheet will be determined by factors affecting the demand for Federal Reserve liabilities This discussion describes the Federal Reserve's most significant liabilities and reviews the factors that

influenced their size since the financial crisis. Many of the Federal Reserve's liabilities arise from statutory responsibilities, such as supplying currency and serving as the Treasury Department's fiscal agent. Each liability provides social benefits to the economy and plays an important role as a safe and liquid asset for the public, the banking system, the U.S. government, or other institutions.

Figure A plots the evolution of the Federal Reserve's main liabilities relative to nominal GDP over the post-World War II period. Federal Reserve notes outstanding have traditionally been the largest Federal Reserve liability and, over the past three decades, have been slowly growing as a share of U.S. nominal GDP. U.S. currency is an important medium of exchange and store of value, both domestically and abroad. Despite the increasing use of electronic means of payment, currency remains widely used in retail transactions in the United States. Demand for currency tends to increase with the size of the economy because households and businesses need more currency to use in exchange for a growing volume of economic transactions. In addition, with heavy usage of U.S. currency overseas, changes in global growth as well as in financial and geopolitical stability can also

(continued on next page)

A. Liabilities as a share of nominal gross domestic product



NOTE Data for 2018 pertain to Q3 and are from the Tederal Reserve Banks Combined Quarterly Financial Report (Unaudited), data for 1950 through 2017 are from the 104th Annual Report, 2017

Source. Board of Governors of the Federal Reserve System (2018), 104th Annual Report, 2017. Table 6. Reserves of Depository Institutions, Federal Reserve Bank Credit, and Related Items (Table 6A. Year-End 1984-2017 and Month-End 2017. Table 6B. Year-End 1918-1983) (Washington Board of Governors), pp. 302-09. https://www.lederalneserve.gov/publications/files/2017-annual-report pdf. Board of Governors of the Federal Reserve System (2018), Federal Reserve Banks Combined Quarterly Entered Report (Unaudited), Table. Combined Statements of Condition (Washington Board of Governors, September 30) p. 3, https://www.federalneserve.gov/aboutthefed/files/quarterly-report-20180930.pdf.