

2703.96

<http://us.spindices.com/indices/equity/sp-500>

Average Reported/Operating Earn.

85.26%

2018.02.22

Projected Operating Earnings by S&P Dow Jones Indices

Past CAGR All 5.44%

LongTerm Payout

1

2

3

4

5 TV

Past CAGR 20 Y 4.92%

85.87%

2018.03.31

2018.06.30

2018.09.30

2018.12.31

2019.03.31

2019.06.30

2019.09.30

2019.12.31

2020. 12. 31.

2021. 12. 31.

2022. 12. 31.

2023. 12. 31.

Date

1Q

2Q

3Q

4Q

1Q

2Q

3Q

4Q

Y

Y

Y

Y

Growth% 25.19% 10.37% 8.50% 6.62% 4.75% 2.87%

SOLVER

Proj. Op. Earn. 124.79 156.22 172.42 187.07 199.45 208.92 214.92

8.08%

TV ERP

Monthly /Shr 35.78 38.54 40.13 41.77 39.67 42.44 44.21 46.10

ROE

15.04%

Proj. Payout 30.72 33.09 34.46 35.87 34.06 36.44 37.96 39.59 160.63 171.27 179.39 184.54

K

14.13%

Cost of Capital 8.41% 8.41% 8.41% 8.41% 8.41% 8.41% 8.41% 8.41% 8.41% 8.42% 8.43% 8.44% 8.45%

g

2.13%

10.14% 35.07% 60.27% 85.48% 110.14% 135.07% 160.27% 185.48% 285.75% 385.75% 485.75% 585.75%

rf

2.87%

DF 0.99 0.97 0.95 0.93 0.92 0.90 0.88 0.87 0.81 0.75 0.71 0.67

CoC

8.41%

5.54%

PV 30.46 32.15 32.80 33.46 31.18 32.72 33.45 34.24 129.47 129.23 127.21

TV CoC

8.45%

5.58%

TV 3,304.94

P 12/31/2020

10.37%

SUM PV FCFE 646.37

R 12/31/2019

46.1

PV TV 2,210.30

O 09/30/2019

44.21

Intrinsic Value 2856.67

J 06/30/2019

42.44

E 03/31/2019

39.67

C 12/31/2018

41.77

T 09/30/2018

40.13

E 06/30/2018

38.54

D 03/31/2018

35.78

2018.02.22	http://us.spindices.com/indices/equity/sp-500													This calculation is based on REPORTED EARNINGS !!!!		Past CAGR All	5.06%			
LongTerm Payout	Projected Reported Earnings by S&P Dow Jones Indices													Past CAGR 20 Y	4.56%					
2703.96	1													2	3	4	5	TV		
98.43%	2018.03.31	2018.06.30	2018.09.30	2018.12.31	2019.03.31	2019.06.30	2019.09.30	2019.12.31	2020.12.31	2021.12.31	2022.12.31	2023.12.31								
Date	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	Y	Y	Y	Y	SOLVER							
Growth%				58.00%				7.28%	6.18%	5.08%	3.97%	2.87%	10.59%	TV ERP						
Proj. Rep. Earn.	94.55			149.39				160.26	170.16	178.80	185.90	191.24	ROE	15.04%						
Monthly	34.60	35.67	38.93	40.19	37.66	38.60	41.02	42.99					K	1.57%						
Proj. Payout	34.06	35.11	38.32	39.55	37.07	37.99	40.37	42.32	167.49	175.99	182.98	188.24	g	0.24%						
Cost of Capital	8.41%	8.41%	8.41%	8.41%	8.41%	8.41%	8.41%	8.41%	8.42%	8.43%	8.44%	8.45%	rf	2.87%						
	10.14%	35.07%	60.27%	85.48%	110.14%	135.07%	160.27%	185.48%	285.75%	385.75%	485.75%	585.75%	CoC	8.41%	5.54%					
DF	0.99	0.97	1.00	0.93	0.92	0.90	0.88	0.87	0.81	0.75	0.71	0.67	TV CoC	8.45%	5.58%					
PV	33.77	34.10	38.32	36.90	33.92	34.11	35.58	36.60	135.00	132.79	129.76		P	10.37%						
TV												3,371.06	R	12/31/2019	42.99					
SUM PV FCFE	680.86												O	09/30/2019	41.02					
PV TV	2,254.52												J	06/30/2019	38.60					
Intrinsic Value	2935.38												E	03/31/2019	37.66					
													C	12/31/2018	40.19					
													T	09/30/2018	38.93					
													E	06/30/2018	35.67					
													D	03/31/2018	34.60					

2018.02.23	http://www.trpropresearch.com/												SOLVER								
LongTerm Payout	Projected Operating Earnings by Thomson Reuters												7.11%	TV ERP							
85.87%	1												2	3	4	5	TV	ROE	15.04%		
	2018.03.31	2018.06.30	2018.09.30	2018.12.31	2019.03.31	2019.06.30	2019.09.30	2019.12.31	2020.12.31	2021.12.31	2022.12.31	2023.12.31	K	14.13%							
Date	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	Y	Y	Y	Y	g	2.13%							
Growth%	18.84%												9.89%	8.14%	6.38%	4.63%	2.87%	rf	2.87%		
Proj. Op. Earn.	133.01	158.07												173.71	187.85	199.84	209.08	215.09	CoC	8.41%	5.54%
Monthly	36.24	38.99	40.60	42.24	42.56	43.25	43.60	44.30						TV CoC	8.45%	5.58%					
Proj. Payout	31.12	33.48	34.86	36.27	36.54	37.14	37.44	38.04	161.30	171.60	179.54	184.69	P 12/31/2020	191.0788	10.00%						
Cost of Capital	8.41%	8.41%	8.41%	8.41%	8.41%	8.41%	8.41%	8.41%	8.42%	8.43%	8.44%	8.45%	R 12/31/2019	44.30							
	9.86%	34.79%	60.00%	85.21%	109.86%	134.79%	160.00%	185.21%	285.48%	385.48%	485.48%	585.48%	O 09/30/2019	43.60							
DF	0.99	0.97	0.95	0.93	0.92	0.90	0.88	0.87	0.81	0.75	0.71	0.67	J 06/30/2019	43.25							
PV	30.86	32.53	33.19	33.84	33.45	33.36	33.00	32.91	130.03	129.50	127.33		E 03/31/2019	42.56							
TV													3,307.56	C 12/31/2018	42.24						
SUM PV FCFE	650.01														T 09/30/2018	40.60					
PV TV	2,212.39														E 06/30/2018	38.99					
Intrinsic Value	2862.40														D 03/31/2018	36.24					

2018.02.23		https://insight.factset.com/resources/topic/research-desk											SOLVER		
LongTerm Payout		Projected Operating Earnings by FactSet											7.16%	TV ERP	
85.87%		1				2				3	4	5	TV	ROE	15.04%
Date	2018.03.31	2018.06.30	2018.09.30	2018.12.31	2019.03.31	2019.06.30	2019.09.30	2019.12.31	2020.12.31	2021.12.31	2022.12.31	2023.12.31	K	14.13%	
	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	Y	Y	Y	Y	g	2.13%	
Growth%	18.60%				10.13%				8.31%	6.50%	4.68%	2.87%	rf	2.87%	
Proj. Op. Earn.	133.31			158.11				174.12	188.59	200.85	210.26	216.29	CoC	8.41%	5.54%
Monthly	36.31	39.05	40.59	42.16	40.02	43.36	44.70	46.04					TV CoC	8.45%	5.58%
Proj. Payout	31.18	33.53	34.85	36.20	34.36	37.23	38.38	39.53	161.94	172.46	180.54	185.73	P 12/31/2020	192.17651	10.37%
Cost of Capital	8.41%	8.41%	8.41%	8.41%	8.41%	8.41%	8.41%	8.41%	8.42%	8.43%	8.44%	8.45%	R 12/31/2019	46.04	
	9.86%	34.79%	60.00%	85.21%	109.86%	134.79%	160.00%	185.21%	285.48%	385.48%	485.48%	585.48%	O 09/30/2019	44.70	
DF	0.99	0.97	0.95	0.93	0.92	0.90	0.88	0.87	0.81	0.75	0.71	0.67	J 06/30/2019	43.36	
PV	30.92	32.58	33.18	33.78	31.46	33.44	33.83	34.21	130.55	130.15	128.05		E 03/31/2019	40.02	
TV												3,326.14	C 12/31/2018	42.16	
SUM PV FCFE	652.14												T 09/30/2018	40.59	
PV TV	2,224.82												E 06/30/2018	39.05	
Intrinsic Value	2876.96												D 03/31/2018	36.31	

2018.02.15	https://www.yardeni.com/													SOLVER	
LongTerm Payout	Projected Operating Earnings by Yardeni													7.10%	TV ERP
85.87%	1				2				3	4	5	TV	ROE	15.04%	
	2018.03.31	2018.06.30	2018.09.30	2018.12.31	2019.03.31	2019.06.30	2019.09.30	2019.12.31	2020.12.31	2021.12.31	2022.12.31	2023.12.31	K	14.13%	
Date	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	Y	Y	Y	Y	g	2.13%	
Growth%	19.00%				9.82%				8.09%	6.35%	4.61%	2.87%	rf	2.87%	
Proj. Op. Earn.	132.59			157.78				173.28	187.29	199.18	208.36	214.34	CoC	8.41%	5.54%
Monthly	36.18	38.94	40.52	42.14	42.45	43.15	43.49	44.19					TV CoC	8.45%	5.58%
Proj. Payout	31.07	33.44	34.79	36.18	36.45	37.05	37.35	37.94	160.82	171.03	178.91	184.05	P 12/31/2020	190.67733	10.04%
Cost of Capital	8.41%	8.41%	8.41%	8.41%	8.41%	8.41%	8.41%	8.41%	8.42%	8.43%	8.44%	8.45%	R 12/31/2019	44.19	
	12.05%	36.99%	62.19%	87.40%	112.05%	136.99%	162.19%	187.40%	287.67%	387.67%	487.67%	587.67%	O 09/30/2019	43.49	
DF	0.99	0.97	0.95	0.93	0.91	0.90	0.88	0.86	0.80	0.75	0.71	0.67	J 06/30/2019	43.15	
PV	30.76	32.43	33.06	33.71	33.31	33.22	32.86	32.78	129.46	128.89	126.73		E 03/31/2019	42.45	
TV												3,296.11	C 12/31/2018	42.14	
SUM PV FCFE	647.20												T 09/30/2018	40.52	
PV TV	2,202.00												E 06/30/2018	38.94	
Intrinsic Value	2849.20												D 03/31/2018	36.18	



2703.96

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Average Reported/Operating Earn.

85.26%

2018.02.22

Projected Operating Earnings by S&P Dow Jones Indices

Past CAGR All 5.44%

LongTerm Payout

1

2

3

4

5 TV

Past CAGR 20 Y 4.92%

85.87%

2018.03.31

2018.06.30

2018.09.30

2018.12.31

2019.03.31

2019.06.30

2019.09.30

2019.12.31

2020. 12. 31.

2021. 12. 31.

2022. 12. 31.

2023. 12. 31.

Date

1Q

2Q

3Q

4Q

1Q

2Q

3Q

4Q

Y

Y

Y

Y

Growth% 25.47% 10.37% 8.31% 6.25% 4.19% 2.13%

SOLVER

Proj. Op. Earn. 124.51 156.22 172.42 186.75 198.41 206.72 211.12

8.08%

TV ERP

Monthly /Shr 35.78 38.54 40.13 41.77 39.67 42.44 44.21 46.10

ROE

15.04%

Proj. Payout 30.72 33.09 34.46 35.87 34.06 36.44 37.96 39.59 160.36 170.37 177.51 181.28

K

14.13%

Cost of Capital 8.41% 8.41% 8.41% 8.41% 8.41% 8.41% 8.41% 8.41% 8.41% 8.42% 8.43% 8.44% 8.45%

g

2.13% AVG g

0.024984353

10.14% 35.07% 60.27% 85.48% 110.14% 135.07% 160.27% 185.48% 285.75% 385.75% 485.75% 585.75%

rf

2.87%

DF 0.99 0.97 0.95 0.93 0.92 0.90 0.88 0.87 0.81 0.75 0.71 0.67

CoC

8.41% 5.54%

PV 30.46 32.15 32.80 33.46 31.18 32.72 33.45 34.24 129.25 128.55 125.88

TV CoC

8.45% 5.58%

TV 2,864.29

P 12/31/2020

10.37%

SUM PV FCFE 644.14

R 12/31/2019

46.1

PV TV 1,915.60

O 09/30/2019

44.21

Intrinsic Value 2559.73

J 06/30/2019

42.44

E 03/31/2019

39.67

C 12/31/2018

41.77

T 09/30/2018

40.13

E 06/30/2018

38.54

D 03/31/2018

35.78

2018.02.22	http://us.spindices.com/indices/equity/sp-500													This calculation is based on REPORTED EARNINGS !!!!		Past CAGR All	5.06%			
LongTerm Payout	Projected Reported Earnings by S&P Dow Jones Indices													Past CAGR 20 Y	4.56%					
2703.96	1													2	3	4	5	TV		
98.62%	2018.03.31	2018.06.30	2018.09.30	2018.12.31	2019.03.31	2019.06.30	2019.09.30	2019.12.31	2020.12.31	2021.12.31	2022.12.31	2023.12.31								
Date	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	Y	Y	Y	Y	SOLVER							
Growth%				58.00%				7.28%	5.99%	4.70%	3.41%	2.13%	10.30%	TV ERP						
Proj. Rep. Earn.	94.55			149.39				160.26	169.86	177.85	183.92	187.83	ROE	15.04%						
Monthly		34.60	35.67	38.93	40.19	37.66	38.60	41.02	42.99				K	1.38%						
Proj. Payout		34.12	35.18	38.39	39.63	37.14	38.06	40.45	42.39	167.51	175.39	181.38	185.23	g	0.21%					
Cost of Capital	8.41%	8.41%	8.41%	8.41%	8.41%	8.41%	8.41%	8.41%	8.41%	8.42%	8.43%	8.44%	8.45%	rf	2.87%					
		10.14%	35.07%	60.27%	85.48%	110.14%	135.07%	160.27%	185.48%	285.75%	385.75%	485.75%	585.75%	CoC	8.41%	5.54%				
DF		0.99	0.97	1.00	0.93	0.92	0.90	0.88	0.87	0.81	0.75	0.71	0.67	TV CoC	8.45%	5.58%				
PV		33.83	34.17	38.39	36.97	33.99	34.18	35.64	36.67	135.01	132.34	128.62		P		10.37%				
TV													2,926.71	R	12/31/2019	42.99				
SUM PV FCFE	679.81													O	09/30/2019	41.02				
PV TV	1,957.34													J	06/30/2019	38.60				
Intrinsic Value	2637.16													E	03/31/2019	37.66				
														C	12/31/2018	40.19				
														T	09/30/2018	38.93				
														E	06/30/2018	35.67				
														D	03/31/2018	34.60				

2018.02.23		http://www.trpropresearch.com/											SOLVER									
LongTerm Payout		Projected Operating Earnings by Thomson Reuters											6.84%		TV ERP							
85.87%		1											2		3		4		5		TV	
		2018.03.31	2018.06.30	2018.09.30	2018.12.31	2019.03.31	2019.06.30	2019.09.30	2019.12.31	2020.12.31	2021.12.31	2022.12.31	2023.12.31	K	ROE	15.04%						
Date		1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	Y	Y	Y	Y	g	2.13%							
Growth%					18.89%				9.89%	7.95%	6.01%	4.07%	2.13%	rf	2.87%							
Proj. Op. Earn.		132.95			158.07				173.71	187.52	198.79	206.88	211.28	CoC	8.41%	5.54%						
Monthly		36.24	38.99	40.60	42.24	42.56	43.25	43.60	44.30					TV CoC	8.45%	5.58%						
Proj. Payout		31.12	33.48	34.86	36.27	36.54	37.14	37.44	38.04	161.02	170.70	177.64	181.42	P 12/31/2020	191.0788	9.64%						
Cost of Capital		8.41%	8.41%	8.41%	8.41%	8.41%	8.41%	8.41%	8.41%	8.42%	8.43%	8.44%	8.45%	R 12/31/2019	44.30							
		9.86%	34.79%	60.00%	85.21%	109.86%	134.79%	160.00%	185.21%	285.48%	385.48%	485.48%	585.48%	O 09/30/2019	43.60							
DF		0.99	0.97	0.95	0.93	0.92	0.90	0.88	0.87	0.81	0.75	0.71	0.67	J 06/30/2019	43.25							
PV		30.86	32.53	33.19	33.84	33.45	33.36	33.00	32.91	129.81	128.82	125.99		E 03/31/2019	42.56							
TV													2,866.50	C 12/31/2018	42.24							
SUM PV FCFE		647.77												T 09/30/2018	40.60							
PV TV		1,917.37												E 06/30/2018	38.99							
Intrinsic Value		2565.14												D 03/31/2018	36.24							

2018.02.23		https://insight.factset.com/resources/topic/research-desk												SOLVER				
LongTerm Payout		Projected Operating Earnings by FactSet												7.04%		TV ERP		
85.87%		1				2				3		4		5		TV		
Date		2018.03.31	2018.06.30	2018.09.30	2018.12.31	2019.03.31	2019.06.30	2019.09.30	2019.12.31	2020.12.31	2021.12.31	2022.12.31	2023.12.31	K	ROE	15.04%		
		1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	Y	Y	Y	Y	g	2.13%			
Growth%		21.94%				9.37%				7.56%	5.75%	3.94%	2.13%	rf	2.87%			
Proj. Op. Earn.	132.34	161.37				176.49				189.83	200.74	208.64	213.08	CoC	8.41%	5.54%		
Monthly		38.67	39.01	41.04	42.65	41.21	43.32	45.98	45.98	TV CoC							8.45%	5.58%
Proj. Payout		33.21	33.50	35.24	36.62	35.39	37.20	39.48	39.48	163.00	172.37	179.16	182.97	P 12/31/2020	193.86768	9.85%		
Cost of Capital	8.41%	8.41%	8.41%	8.41%	8.41%	8.41%	8.41%	8.41%	8.41%	8.42%	8.43%	8.44%	8.45%	R 12/31/2019	45.98			
		9.86%	34.79%	60.00%	85.21%	109.86%	134.79%	160.00%	185.21%	285.48%	385.48%	485.48%	585.48%	O 09/30/2019	45.98			
DF		0.99	0.97	0.95	0.93	0.92	0.90	0.88	0.87	0.81	0.75	0.71	0.67	J 06/30/2019	43.32			
PV		32.93	32.54	33.55	34.17	32.39	33.41	34.80	34.16	131.41	130.08	127.07		E 03/31/2019	41.21			
TV														2,890.93	C 12/31/2018	42.65		
SUM PV FCFE	656.51														T 09/30/2018	41.04		
PV TV	1,933.72														E 06/30/2018	39.01		
Intrinsic Value	2590.23														D 03/31/2018	38.67		

2018.02.15		https://www.yardeni.com/											SOLVER							
LongTerm Payout		Projected Operating Earnings by Yardeni											7.17%		TV ERP					
85.87%		1				2				3		4		5		TV				
		2018.03.31	2018.06.30	2018.09.30	2018.12.31	2019.03.31	2019.06.30	2019.09.30	2019.12.31	2020.12.31	2021.12.31	2022.12.31	2023.12.31	K	ROE	15.04%				
Date		1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	Y	Y	Y	Y	g	2.13%					
Growth%		21.84%				9.78%				7.86%	5.95%		4.04%		2.13%					
Proj. Op. Earn.	131.98	160.81				176.53				190.41	201.74		209.89		214.35		CoC	8.41%	5.54%	
Monthly		38.21	39.04	40.92	42.64	43.25	43.96	44.31	45.02									TV CoC	8.45%	5.58%
Proj. Payout		32.81	33.52	35.14	36.61	37.14	37.74	38.05	38.65	163.50	173.23	180.23	184.06	P	12/31/2020	193.44988	9.58%			
Cost of Capital	8.41%	8.41%	8.41%	8.41%	8.41%	8.41%	8.41%	8.41%	8.41%	8.42%	8.43%	8.44%	8.45%	R	12/31/2019	45.02				
		12.05%	36.99%	62.19%	87.40%	112.05%	136.99%	162.19%	187.40%	287.67%	387.67%	487.67%	587.67%	O	09/30/2019	44.31				
DF		0.99	0.97	0.95	0.93	0.91	0.90	0.88	0.86	0.80	0.75	0.71	0.67	J	06/30/2019	43.96				
PV		32.48	32.51	33.39	34.11	33.94	33.84	33.48	33.39	131.61	130.55	127.66		E	03/31/2019	43.25				
TV													2,908.17	C	12/31/2018	42.64				
SUM PV FCFE	656.96													T	09/30/2018	40.92				
PV TV	1,942.84													E	06/30/2018	39.04				
Intrinsic Value	2599.80													D	03/31/2018	38.21				

Summary	S&P Dow Jones Ind	Thomson Reuter	FactSet	Yardeni
Date	2018.02.22	2018.02.23	2018.02.23	2018.02.15
Intrinsic Value	2856.67	2862.40	2876.96	2849.20
Projected Reported Earnings by S&P Dow Jones Indices				
	2935.38			
	2896.02			
Average	2861.31			
Median	2859.53			
Min	2849.20			
Max	2876.96			
Value Band		2849	2877	
2018.02.22				
2703.96				

1. Valuation with $g = r_f$ at the terminal period

Summary	S&P Dow Jones Ind	Thomson Reuter	FactSet	Yardeni
Date	2018.02.22	2018.02.23	2018.02.23	2018.02.15
Intrinsic Value	2559.73	2565.14	2590.23	2599.80
Projected Operating Earnings by Thomson Reuters				
	2637.16			
	2598.44			
Average	2578.72			
Median	2577.68			
Min	2559.73			
Max	2599.80			
Value Band		2560	2600	
2018.02.22				
2703.96				

2. Valuation with $g = \text{longterm ROE} * \text{longterm K}$ at the terminal period

Median	Band
2724.50	
2559.73	
2876.96	
	2560
	2877
from median	-6.05% 5.60%
from market	-7.67% 3.77%