



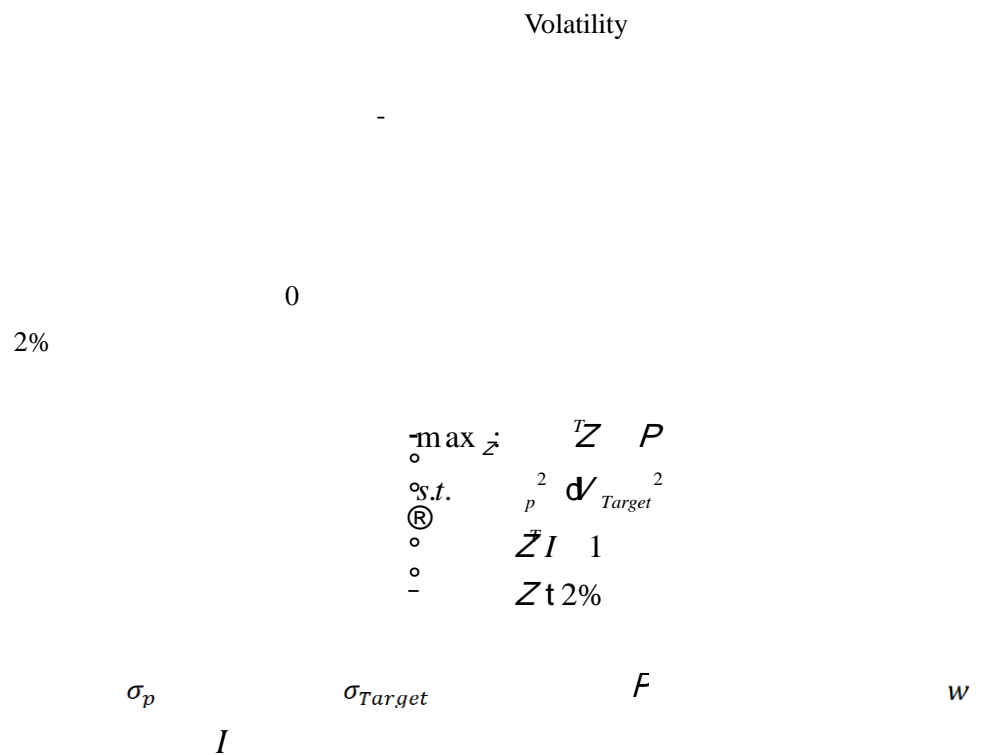
1	.....	- 4 -
1.1	.....	- 4 -
1.2	.....	- 5 -
2	.....	- 7 -
2.1	.....	- 7 -
2.2	.....	- 8 -
3	.....	- 9 -
3.1	.....	- 9 -
3.2	.....	- 9 -
3.2.1、	.....	- 9 -
3.2.2、	.....	- 12 -
3.2.3、	.....	- 15 -
3.2.4、	.....	- 17 -
4	.....	- 20 -

1	2014-12-31	2019-11-30	.....	- 10 -
2	2014-12-31	2019-11-30	.....	- 10 -
3	2014-12-31	2019-11-30	.....	- 10 -
4	2014-12-31	2019-11-30	.....	- 11 -
5	2014-12-31	2019-11-30	.....	- 11 -
6	2014-12-31	2019-11-30	.....	- 12 -
7	-	-	2014-12-31	
2019-11-30	.....	.....	.....	- 12 -
8	-	-	2014-12-31	
2019-11-30	.....	.....	.....	- 12 -
9	2014-12-31	2019-11-30	.....	- 13 -
10	2014-12-31	2019-11-30	.....	- 13 -
11	2014-12-31	2019-11-30	.....	- 14 -
12	-	-	2014-12-31	
2019-11-30	.....	.....	.....	- 14 -
13	2014-12-31	2019-11-30	.....	- 14 -
14 -				
14	-	-		
2014-12-31	2019-11-30	.....	.....	- 15 -
15	-	-		
2014-12-31	2019-11-30	.....	.....	- 15 -
16	2014-12-31	2019-11-30	.....	- 15 -
17	2014-12-31	2019-11-30	.....	- 16 -
18	2014-12-31	2019-11-30	.....	- 16 -
19	2014-12-31	2019-11-30	.....	- 17 -
20	-	-	2014-12-31	
2019-11-30	.....	.....	.....	- 17 -
21	-	-		

2014-12-31	2019-11-30	.....	- 17 -
22		2014-12-31 2019-11-30 ...	- 18 -
23		2014-12-31 2019-11-30	..... - 18 -
24		2014-12-31 2019-11-30	..... - 19 -
25		- - 2014-12-31	..... - 19 -
2019-11-30		.....	- 19 -
26		2014-12-31 2019-11-30 ..	19 -
27		- -	..... - 20 -
2014-12-31	2019-11-30	.....	- 20 -
28		- -	..... - 20 -
2014-12-31	2019-11-30	.....	- 20 -

1

1.1



1.2

60/40 /

2008 60/40
40%

-

1996

Risk Parity

Risk Budgeting

N

$$R(w) = \sqrt{w^T \Sigma w}, w^T I = 1$$

$R(w), \sigma_p$

6

w

I 表示

i

Marginal Risk Contribution

MRC_i

i

$$MRC_i = \frac{\partial R(w)}{\partial w_i} = \frac{w_i \sum_{j=1}^N w_j \Sigma_{ij}}{\sum_{j=1}^N w_j \Sigma_{jj}}$$

i

Total Risk Contribution

TRC_i

i

$$TRC_i = w_i \frac{\partial R(w)}{\partial w_i} = \frac{w_i \sum_{j=1}^N w_j \Sigma_{ij}}{\sum_{j=1}^N w_j \Sigma_{jj}}$$

$$\sum_{i=1}^N TRC_i \frac{\sum_{j=1}^N w_i w_j V_j}{V_p} = V_p$$

$$i \quad i \quad s_i$$

:

$$s_i \frac{TRC_i}{V_p}$$

$$1$$

$$\sum_{i=1}^N s_i = 1$$

w

$$\min_w \sum_{i=1}^N \left(\frac{TRC_i}{V_p} s_i \right)^2 = \min_w \sum_{i=1}^N \left(\frac{\sum_{j=1}^N w_i w_j V_j}{V_p^2} s_i \right)^2$$

$$w^T I = 1$$

$$w \geq 0$$

$$s_i = 1/N,$$

Risk Parity

TRC_i i w σ_{ij} i j
 σ_p I

2



up_{stock}

50%

W_{target}^{stock}

$$W_{target}^{stock} = W_{bench}^{stock} \quad down_{stock} \quad Space_{down}^{stock}$$

$down_{stock}$

50%

W_{bench}

W_{target}^{stock}

W_{target}

W_{target}

1

W_{target}

W_{target}

W_{opt}

W_{target}

W_{opt}

$$\min_{w_{opt}} : (w_{opt} \quad w_{target})^T (w_{opt} \quad w_{target})$$

o

o

o

o

o

o

-

$$\text{s.t.} \quad (w_{opt} \quad w_{bench})^T \mathbf{6} (w_{opt} \quad w_{bench}) \leq V_{TrackingError}^2$$

$$w_{opt}^T \mathbf{I} = 1$$

$$w_{opt} \geq \mathbf{t}0$$

6

W_{bench}

W_{target}

W_{opt}

\mathbf{I}

$V_{TrackingError}$

2.2

$$S_{bench} = [60\%, 20\%, 20\%]$$

60%

20% 20%

96%

$$S_{target} = [96\%, 2\%, 2\%]$$

90%

10%

$$S_{target} = [10\%, 45\%, 45\%]$$

$$S_{target} = S_{bench} = [60\%, 20\%, 20\%]$$

$$S_{target} \quad 1.2$$

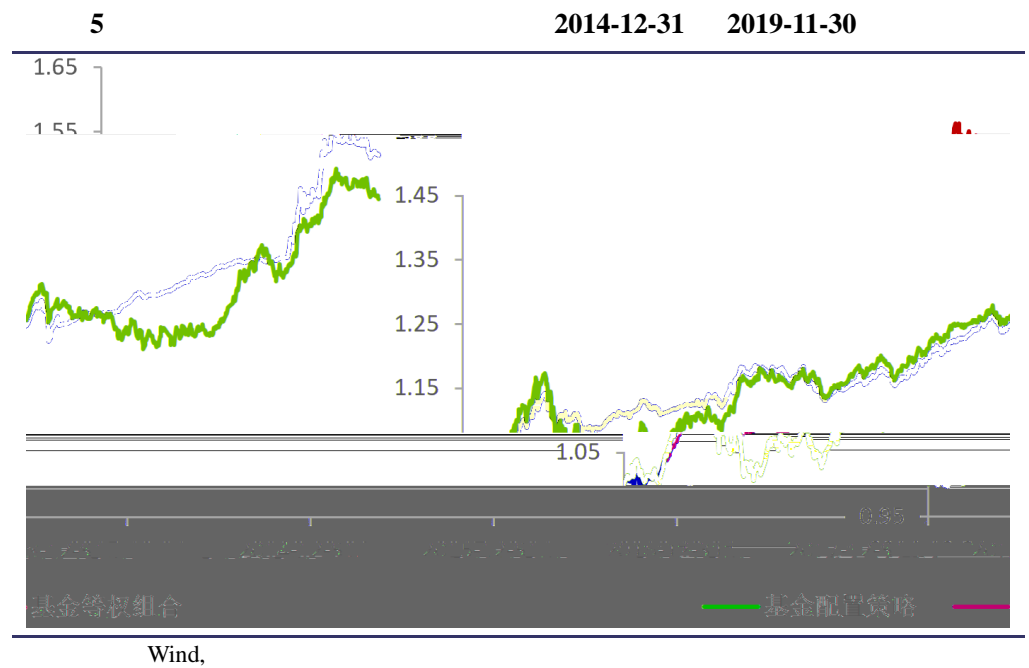
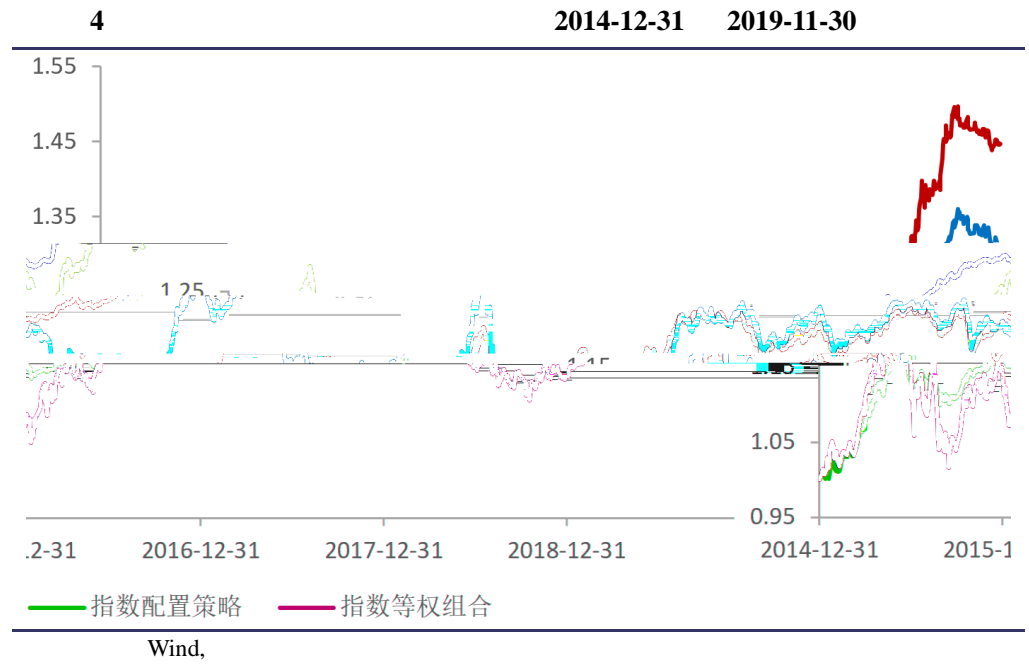
$$W_{opt}$$

3

3.1

	Wind	A	881001.WI	-
CBA00301.CS	SGE	9999	AU9999.SGE	

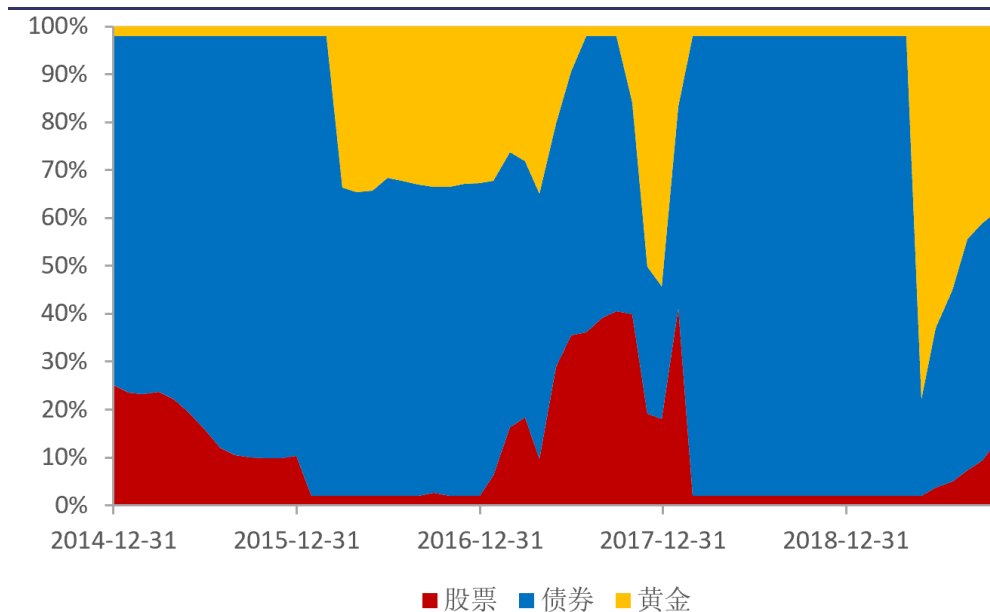
300



6

2014-12-31

2019-11-30



Wind,

7

-

-

2014-12-31

2019-11-30

	16.84%	44.73%	38.43%	100%

Wind,

8

-

-

2014-12-31

2019-11-30

	35.90%	31.17%	32.93%	100%

Wind,

3.2.2

		5%
$\sqrt{\text{TrackingError}}$	4%	
		11.90%
7.8%		1.68

11.31%

6.41% 6.63%

55%

1%

18%

64%

18%

47.25%

27.51% 25.24%

48.43%

20.55% 31.02%

9

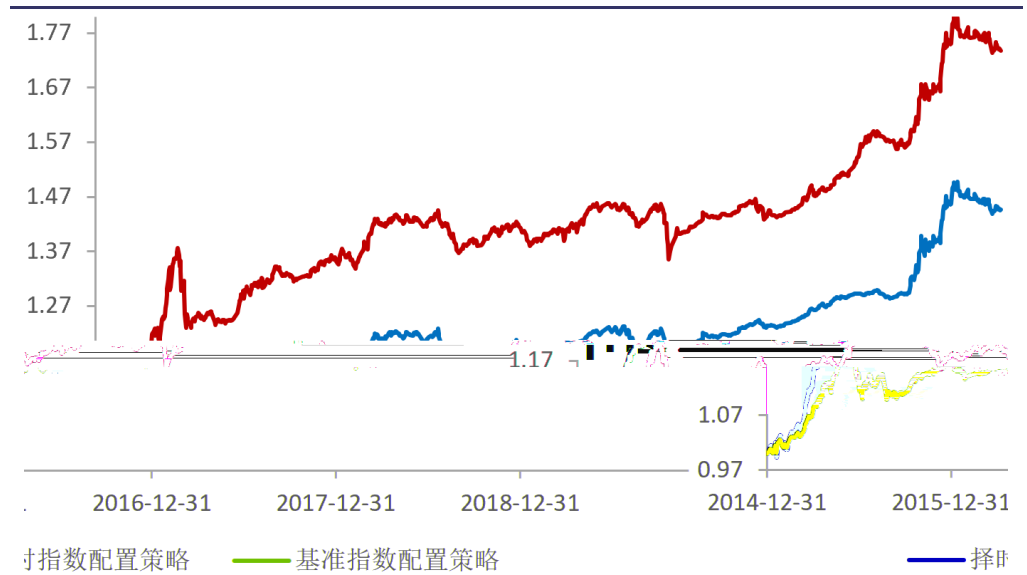
2014-12-31 2019-11-30

	11.90%	7.80%	11.31%	8.81%
	7.09%	5.64%	6.41%	5.13%
	1.68	1.38	1.76	1.72
	10.56%	8.65%	6.63%	5.56%
	3.40	1.83	3.38	1.82

Wind,

10

2014-12-31 2019-11-30



Wind,

11

2014-12-31 2019-11-30



Wind,

12

2014-12-31

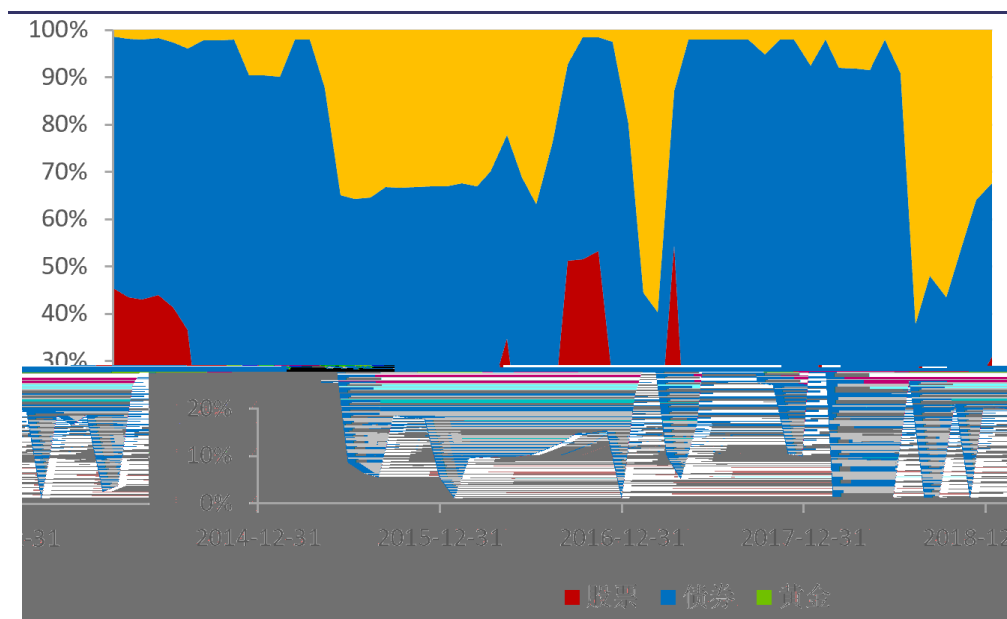
2019-11-30

	2015	2016	2017	2018	2019
	21.44%	3.91%	9.54%	3.09%	19.42%
	10.02%	4.61%	3.75%	4.53%	7.06%
	2.14	0.85	2.55	0.68	2.75
	-6.63%	-4.19%	-2.37%	-6.17%	-3.02%

Wind,

13

2014-12-31 2019-11-30



Wind,

14

-

-

2014-12-31 2019-11-30

	47.25%	27.51%	25.24%	100%

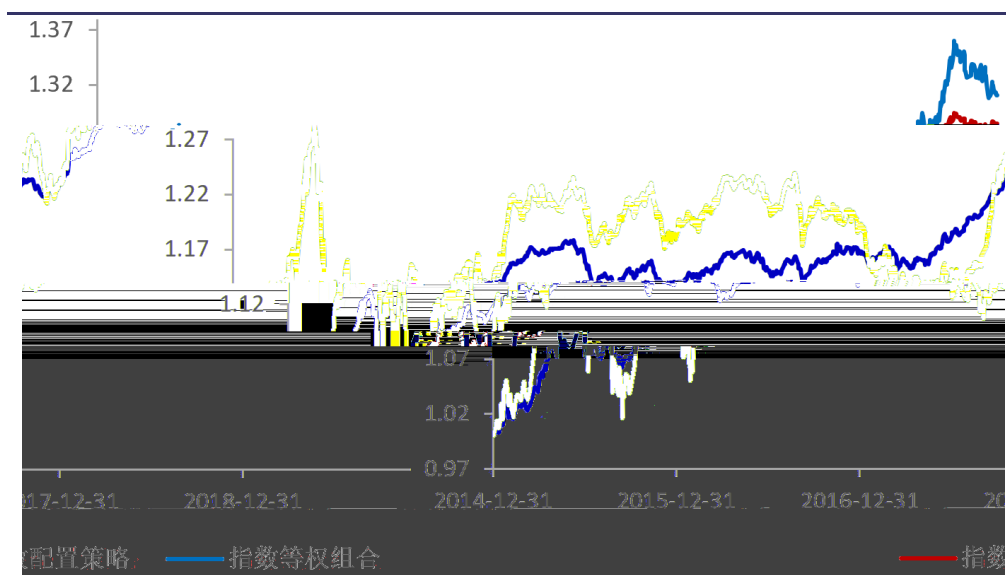
Wind,

15

-

17

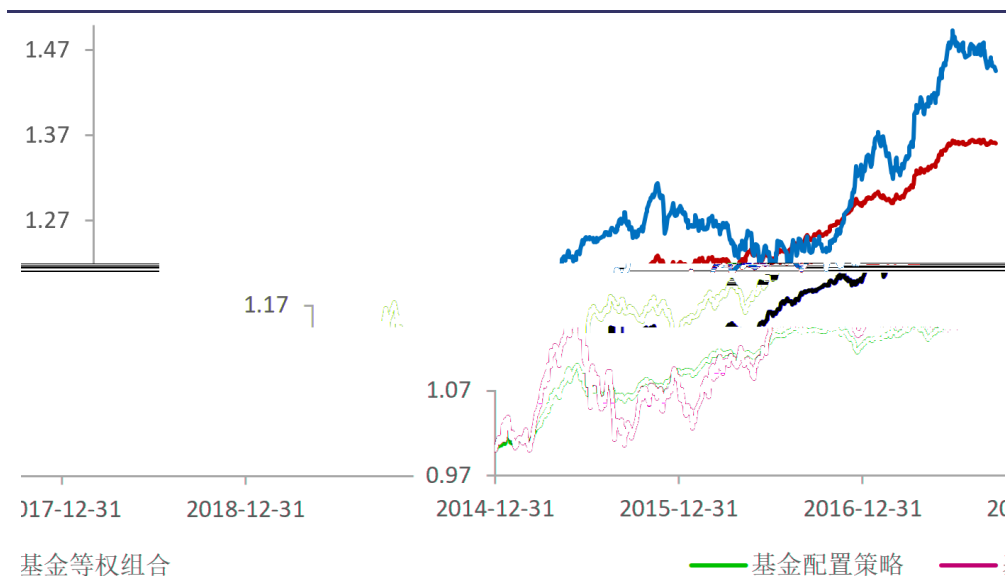
2014-12-31 2019-11-30



Wind,

18

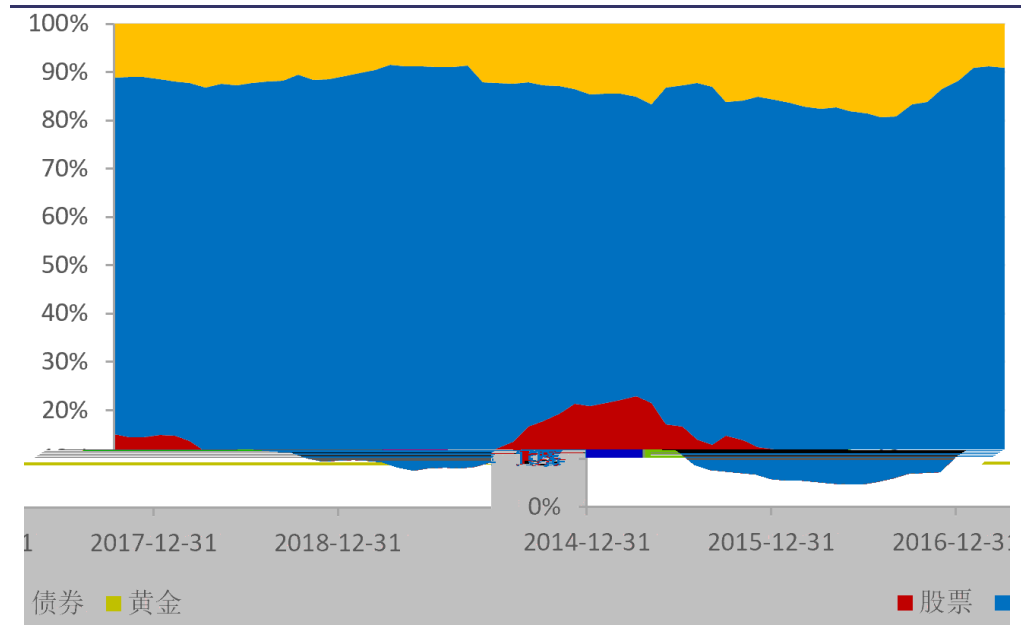
2014-12-31 2019-11-30



Wind,

19

2014-12-31 2019-11-30



Wind,

20

2014-12-31

2019-11-30

	16.49%	62.83%	20.67%	100%

Wind,

21

2014-12-31 2019-11-30

	57.53%	17.51%	24.97%	100%

Wind,

3.2.4

		11.33%	5.23%
	1.74		
10.27%		5.63%	7.55%

61%

2%

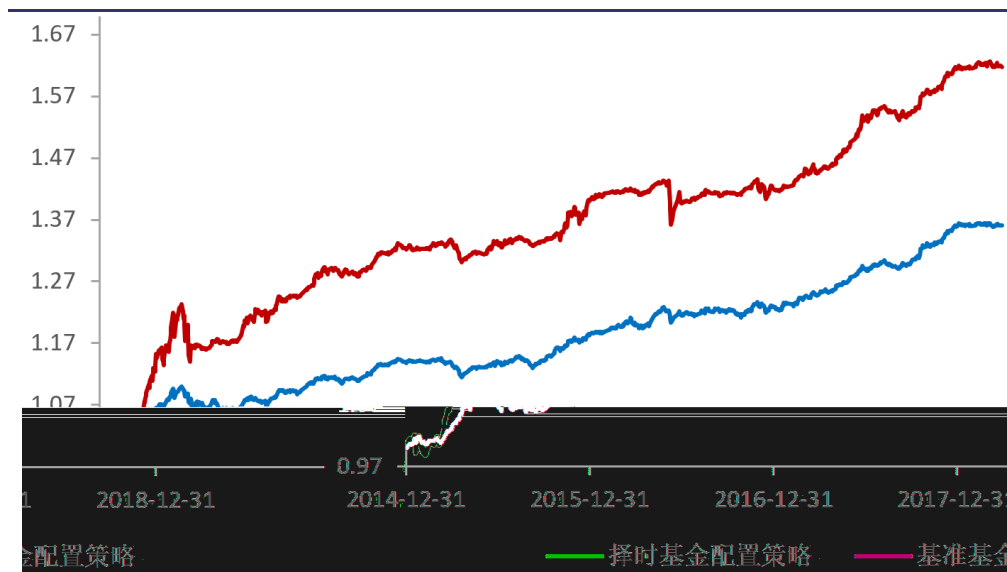
19%

70%

12%

24

2014-12-31 2019-11-30



Wind,

25

2014-12-31

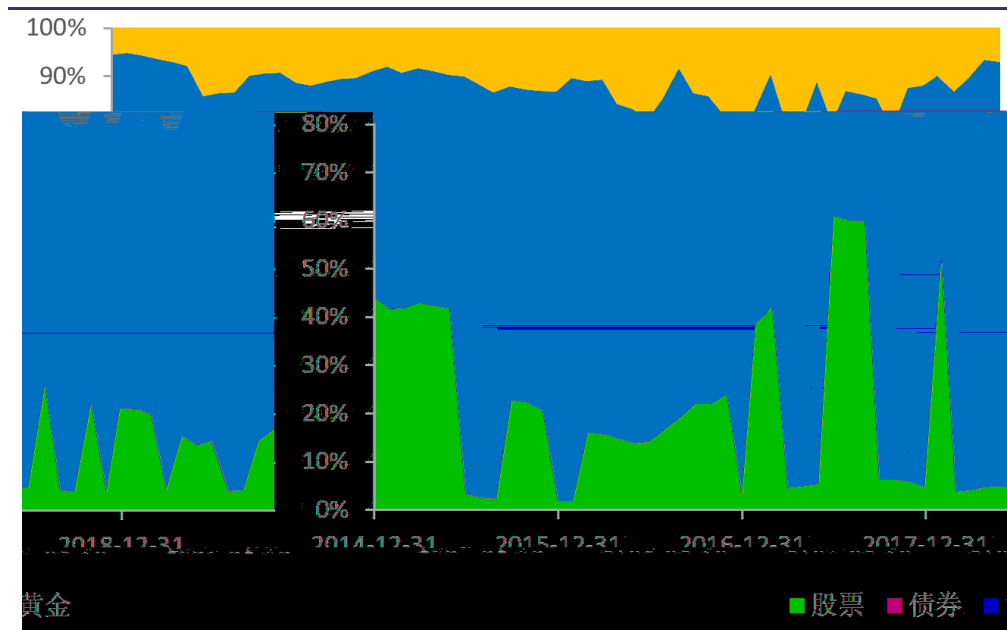
2019-11-30

	2015	2016	2017	2018	2019
	22.54%	5.82%	8.32%	2.82%	11.96%
	10.34%	2.90%	3.42%	4.32%	3.28%
	2.18	2.00	2.43	0.65	3.64
	-7.55%	-2.78%	-2.02%	-5.02%	-1.45%

Wind,

26

2014-12-31 2019-11-30



Wind,

A	12		15%
			5% 15%
			-5% 5%
			-5%
500			

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1934

15a-6