



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	-	-		
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	-	-		

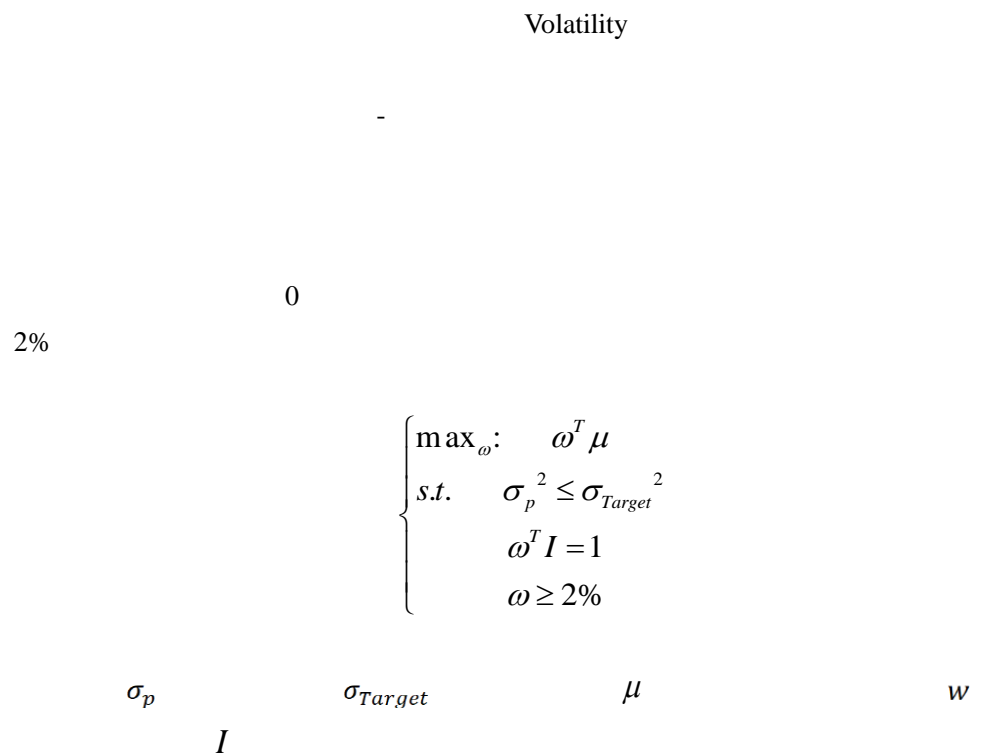


2014-12-31	2019-11-30	.....	- 17 -
22		2014-12-31 2019-11-30 ...	- 18 -
23		2014-12-31 2019-11-30	..... - 18 -
24		2014-12-31 2019-11-30	..... - 19 -
25		- - 2014-12-31	..... - 19 -
2019-11-30		.....	- 19 -
26		2014-12-31 2019-11-30 ..	- 19 -
27		- -	..... - 20 -
2014-12-31	2019-11-30	.....	- 20 -
28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

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

$R(w), \sigma_p$	Σ	w
I 表示		
i	Marginal Risk Contribution	MRC_i
i		

$$MRC_i = \frac{\partial R(w)}{\partial w} = \frac{\sum_{j=1}^N w_j \sigma_{ij}}{\sigma_p}$$

i	Total Risk Contribution	TRC_i	i
---	-------------------------	---------	---

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



$$\sum_{i=1}^N TRC_i = \frac{\sum_{i=1}^N \sum_{j=1}^N w_i w_j \sigma_{ij}}{\sigma_p} = \sigma_p$$

$$i \qquad \qquad \qquad i \qquad \qquad \qquad s_i$$

:

$$s_i = \frac{TRC_i}{\sigma_p}$$

$$1$$

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

w

$$\min_w \sum_{i=1}^N \left(\frac{TRC_i}{\sigma_p} - s_i \right)^2 = \min_w \sum_{i=1}^N \left(\frac{\sum_{j=1}^N w_i w_j \sigma_{ij}}{\sigma_p^2} - s_i \right)^2$$

$$w^T I = 1$$

$$w \geq 0$$

$$s_i = 1/N,$$

Risk Parity



TRC_i i w σ_{ij} i j
 σ_p I

2



up_{stock}

50%

W_{target}^{stock}

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

$down_{stock}$

50%

W_{bench}

W_{target}^{stock}

W_{target}

W_{target}

1

W_{target}

W_{target}

W_{opt}

W_{target}

W_{opt}

$$\left\{ \begin{array}{l} \min_{w_{opt}} : (w_{opt} - w_{target})^T (w_{opt} - w_{target}) \\ s.t. : (w_{opt} - w_{bench})^T \Sigma (w_{opt} - w_{bench}) \leq \sigma_{TrackingError}^2 \\ w_{opt}^T I = 1 \\ w_{opt} \geq 0 \end{array} \right.$$

Σ

W_{bench}

W_{target}

W_{opt}

I

$\sigma_{TrackingError}$

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}

1.2

W_{opt}

3

3.1

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

300



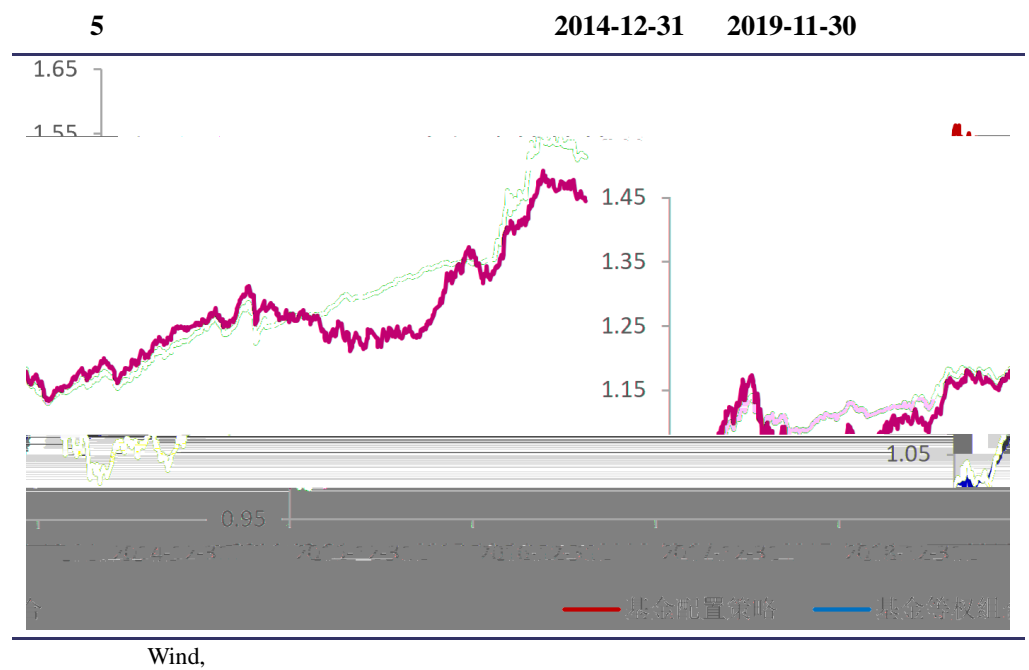
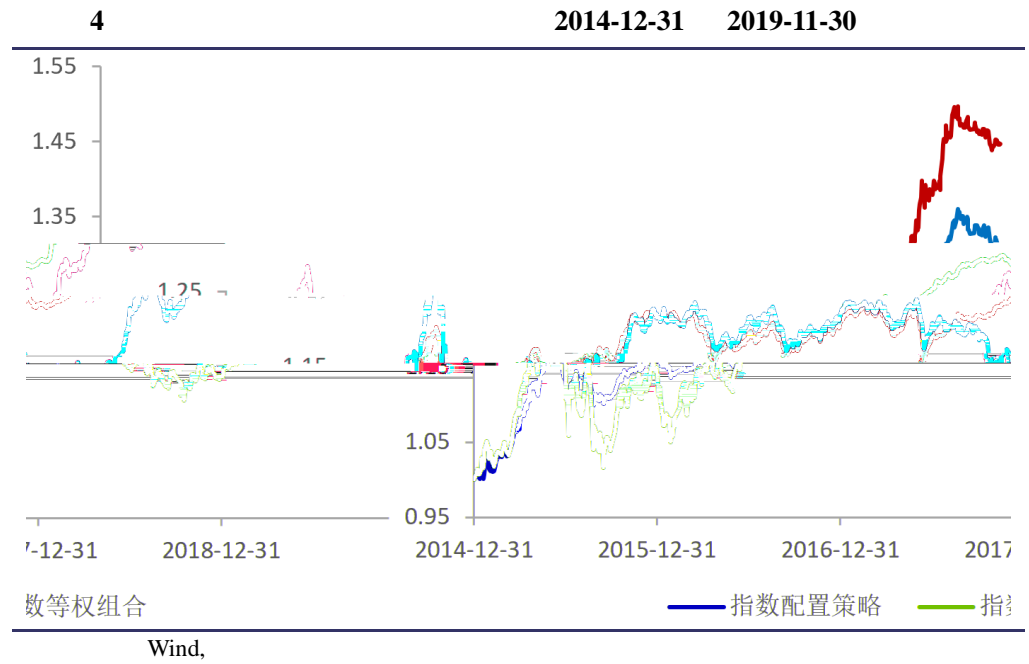
41% 2%
 11% 72% 17%

 38.43% 44.73% 16.84%

 35.90% 31.17% 32.93%

1	2014-12-31	2019-11-30
A	-	()
2.39%	4.26%	SGE 9999 6.75%
28.97%	1.70%	11.64%
0.08	2.51	0.58
55.99%	4.60%	16.84%

Wind,

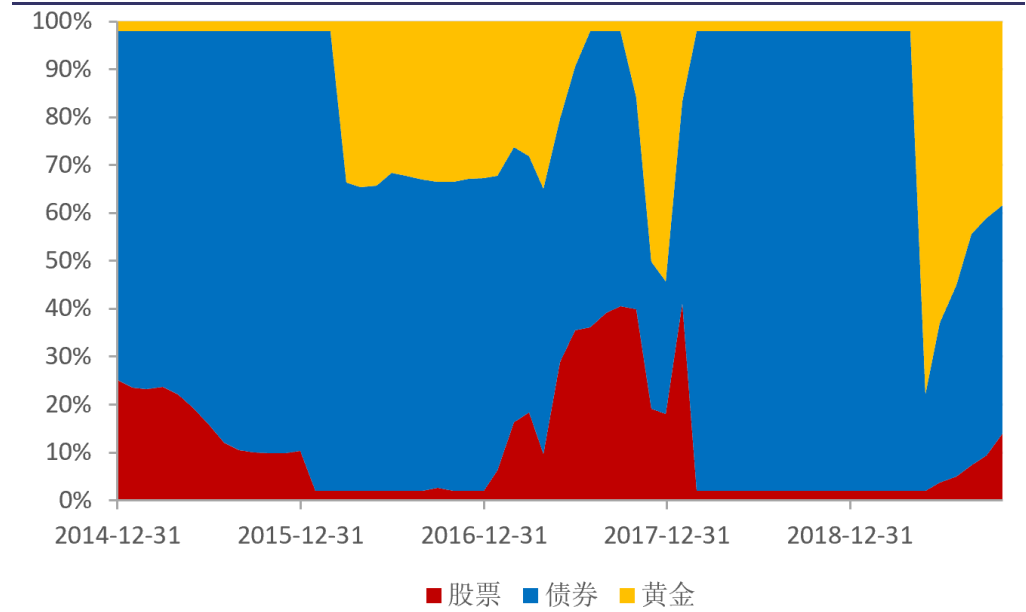




6

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%
$\sigma_{TrackingError}$	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

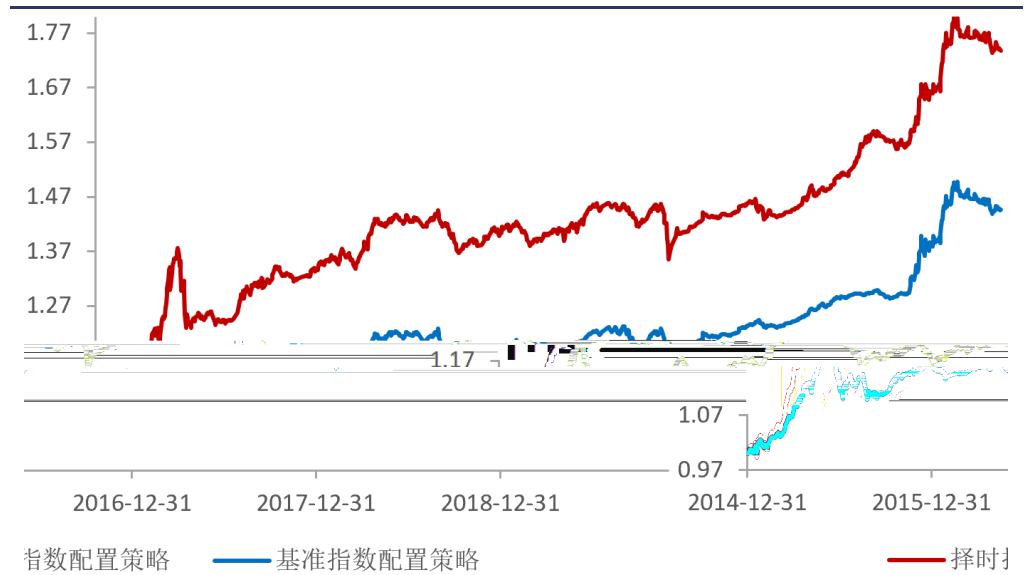
2014-12-31 2019-11-30

	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

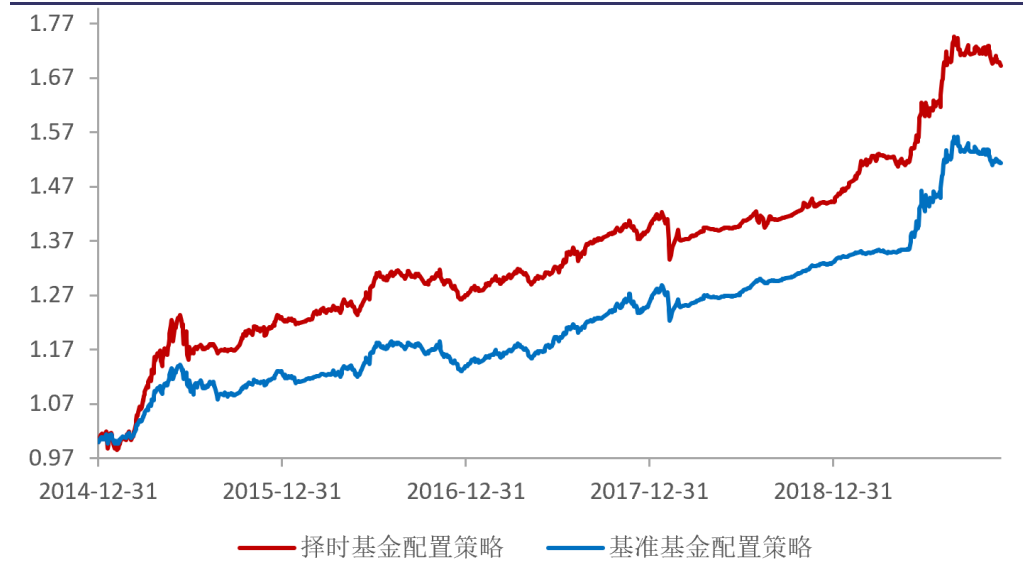


Wind,



11

2014-12-31 2019-11-30



Wind,

12

-

-

2014-12-31

2019-11-30

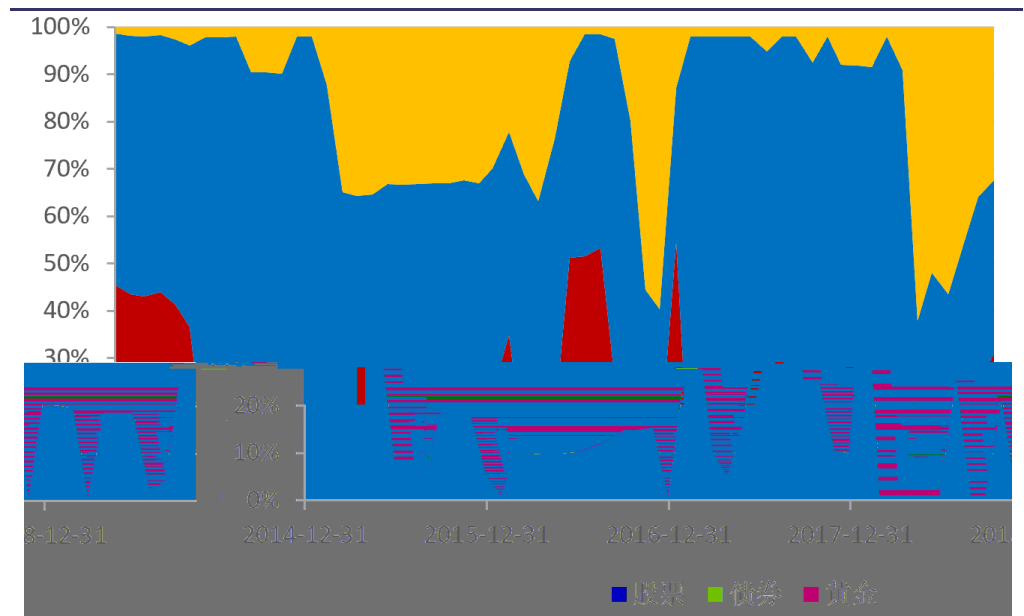
	2015	2016	2017	2018	2019
	21.44%	3.91%	9.54%	3.09%	19.42%
	10.02%	4.61%	3.75%	4.53%	7.06%
	2.14	0.85	2.55	0.68	2.75
	-6.63%	-4.19%	-2.37%	-6.17%	-3.02%

Wind,

13

2014-12-31

2019-11-30



Wind,



14

-

-

2014-12-31 2019-11-30

	47.25%	27.51%	25.24%	100%

Wind,

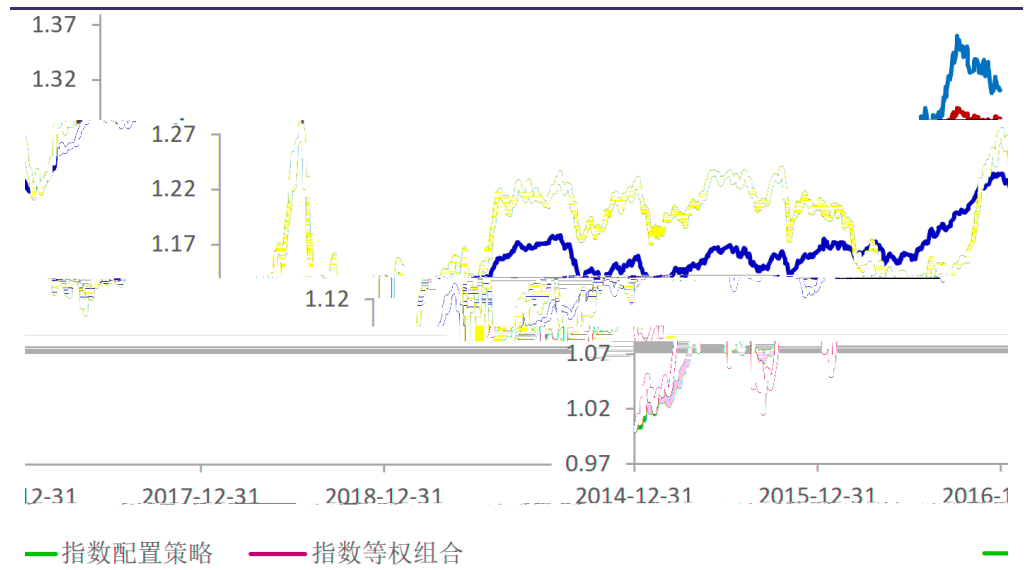
15

-



17

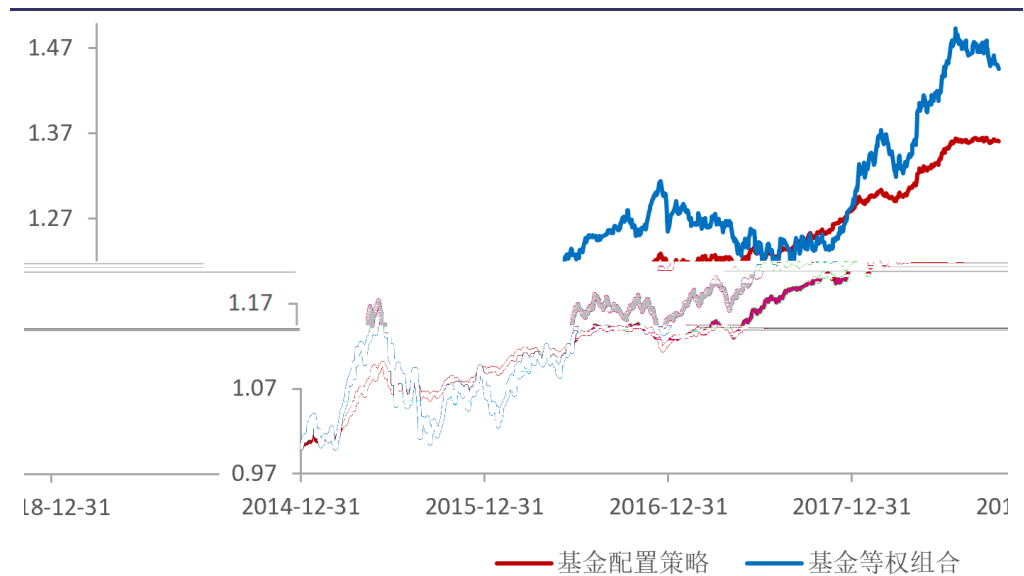
2014-12-31 2019-11-30



Wind,

18

2014-12-31 2019-11-30

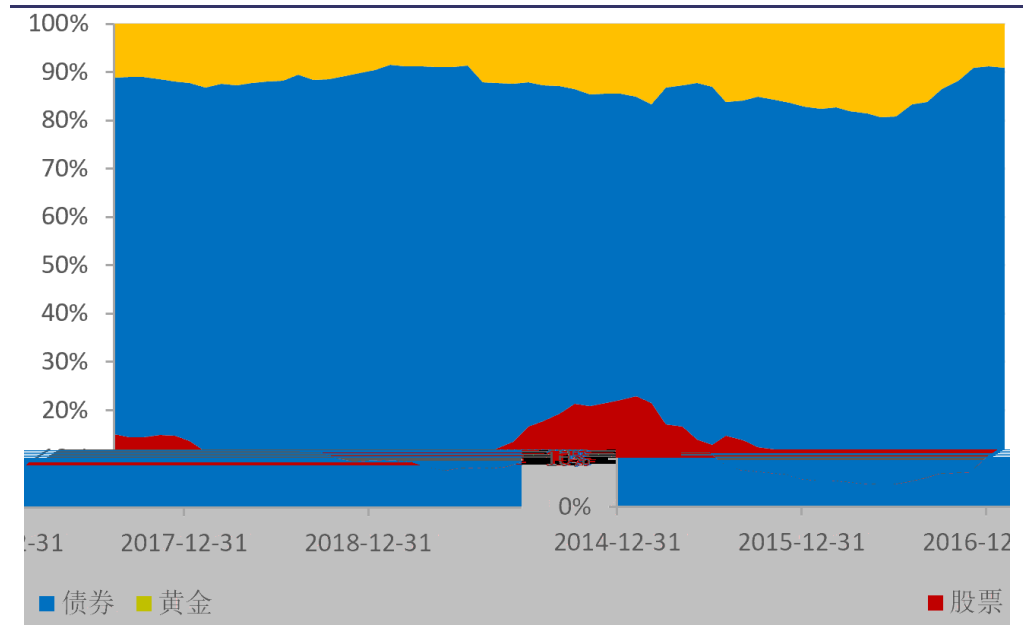


Wind,



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

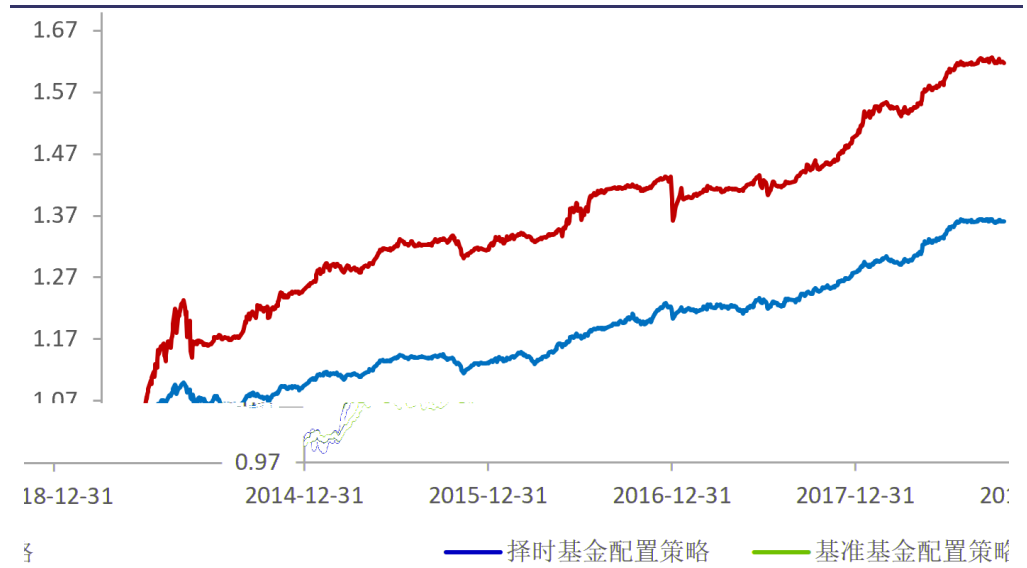
		11.33%	5.23%
	1.74		
10.27%		5.63%	7.55%

2%



24

2014-12-31 2019-11-30



Wind,

25

2014-12-31

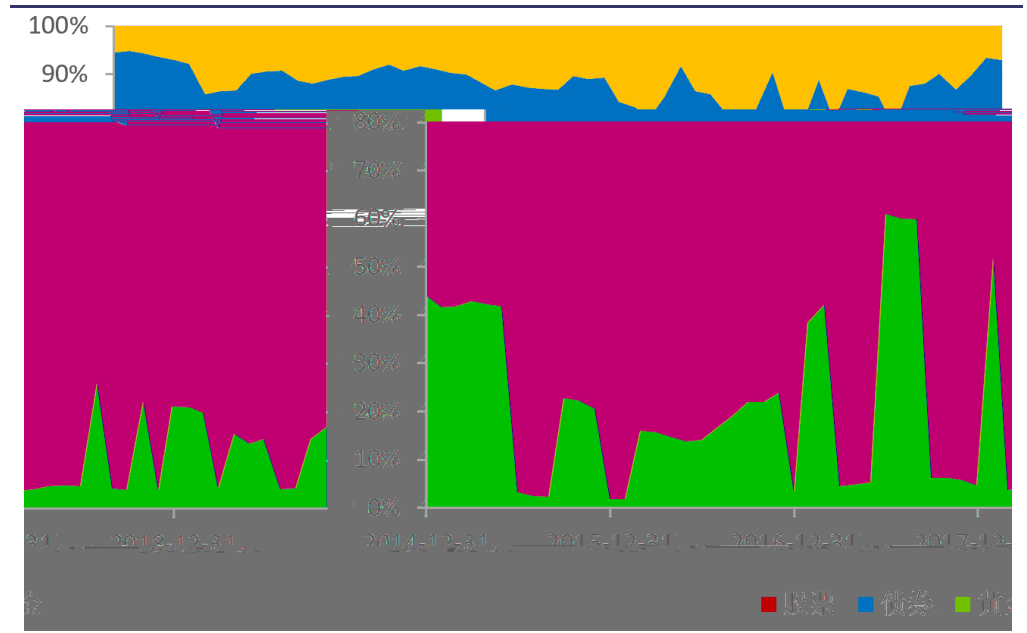
2019-11-30

	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,



27

2014-12-31 2019-11-30

	59.52%	29.48%	11.00%
Wind,			100%

28

2014-12-31 2019-11-30

	58.20%	18.71%	23.09%
Wind,			100%

4

		11.31%
6.63%		1.76
10.27%	1.82	7.55%



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

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1934

15a-6