yumingming@xyzq.com.cn
S0190514100003

xuyinsh@xyzq.com.cn
S0190514070004

2020 6 29

7

15

- **4**

2020-06-02

GDP
2020-04-24

7

15

2019-12-27
:

A
2019-11-03

- AdaBoost

2019-1017

5.49%

0.72

6.65%

2019-09-19

1.01

2019-06-28

1

1.1

-

1

2008

2

3

1996

2004

GDP CPI

BlackRock

SSGA Invesco

1

Ang (2010)

2

3

1.2

BlackRock Greenberge 2016 Factors to Assets: Mapping Factor Exposures to Asset Allocations

--

2020-04-02 6

1 Greenberge 2016 6

The Journal of Portfolio Management,

BlackRock Bass 2017 Total Portfolio Factor, Not Just Asset, Allocation Greenberge 2016

--

2020-05-21 13

6 6 Greenberge

Bass Greenberge

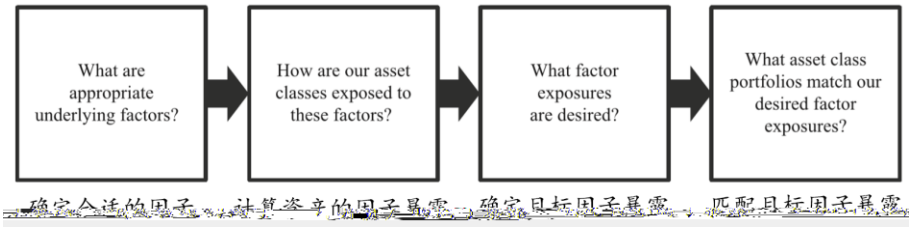
7 3

Blyth 2016 Flexible Indeterminate Factor-Based Asset Allocation

Blyth Lasso

60/40 3

2 Blyth 2016



The Journal of Portfolio Management,

3 Blyth 2016 5

Factor	Suitable	Tradable	Correlation Impact	Relative Confidence
World Equities (cap-weighted world equity index)	Yes	Yes	Moderate	Moderate
U.S. Treasuries (U.S. Treasury index)	Yes	Yes	Low	High
High Yield (high-yield index)	Yes	Yes	Moderate	High
Inflation Protection (long TIPS, short Treasuries)	High	Yes	Yes	Low
USD, short cap-weighted foreign)				(long

The Journal of Portfolio Management,

Bender 2019 Asset Allocation vs. Factor Allocation Can We Build a Unified Method ?

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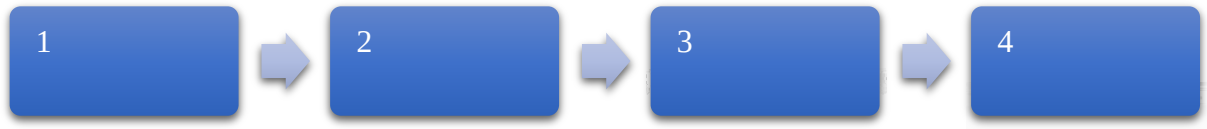
2020-04-09 Bender

Bender

4 Bender 2019

The Journal of Portfolio Management,

5



1.1

Bender 2019
5 7
Bass 2017

Lasso

Greenberge Blyth Bass
Bender

Greenberge Bass
Blyth

Bender

6

	Greenberge 2016	Blyth 2016	Bass 2017	Bender 2019
1	6 15	5 10	7 13	3 2 10
2		Lasso		
3		&		
4				

2

3

4 Greenberg 2016

Bass 2017

5 Bender 2019

2

2.1

5 14

300 500 500

4

SEG 9999 NYMEX

Shibor 3

7

		Wind	
	300	000300.SH	2004/12/31
	500	000905.SH	2004/12/31
		399006.SZ	2010/5/31
	500	SPX.GI	1928/1/3
	( )	CBA00601.CS	2001/12/31
	( )	CBA03801.CS	2006/12/31
	( )	CBA03501.CS	2006/12/31
		000832.CSI	2002/12/31
	SEG 9999	Au9999.SGE	2004/1/2
	NYMEX	CL.NYM	2004/12/31
		NH0200.NHF	2004/6/1
		NH0300.NHF	2004/6/1
			2013/12/06
	Shibor-3		2006/10/8

Wind

2013 12 6 2014

1 1

500 NYMEX

2.2

Bass 2017 7

CPI PPI

CPI PPI

8

500

BlackRock Bass 2017 SSGA Kelly 2014 Invesco Raol 2017

7

Z-score

9 PCA

		Wind	
	300	000300.SH	2004/12/31
	500	000905.SH	2004/12/31
		399006.SZ	2010/5/31
	500	SPX.GI	1928/1/3
	( )	CBA00601.CS	2001/12/31

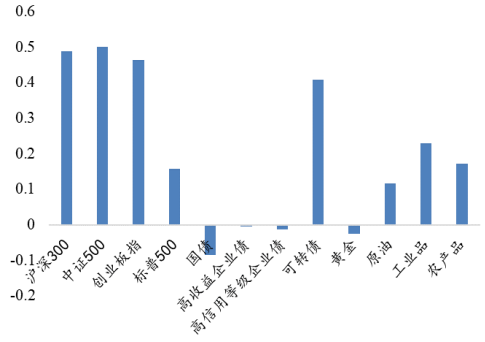
7

5

10 14 7 88.7% 5

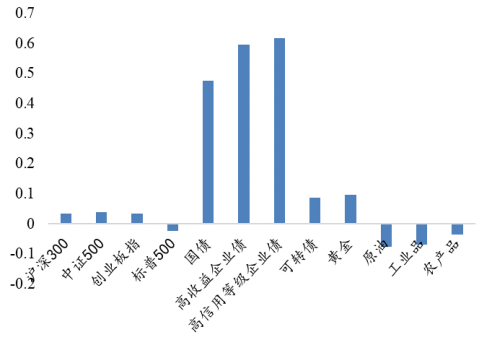
78.1%

10



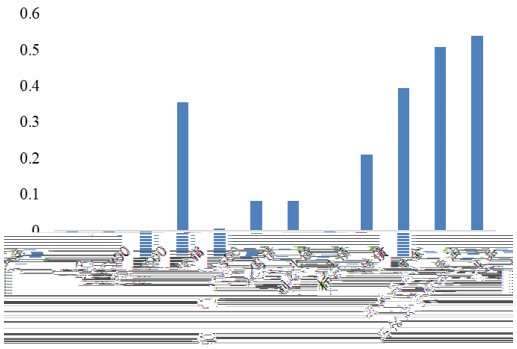
Wind,

11



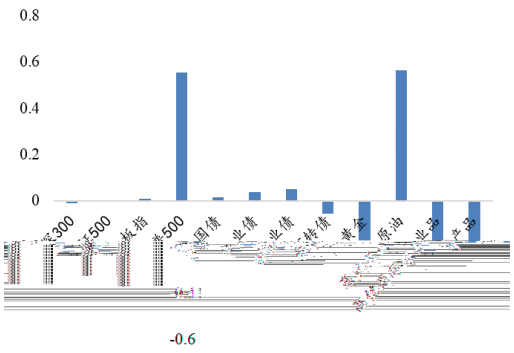
Wind,

12



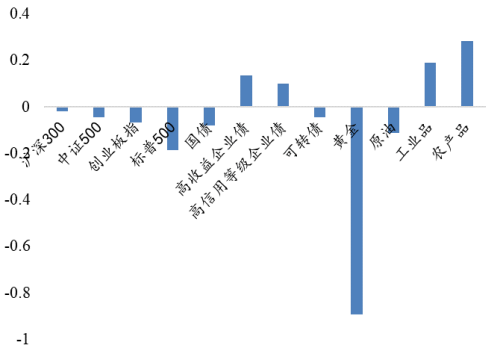
Wind,

13



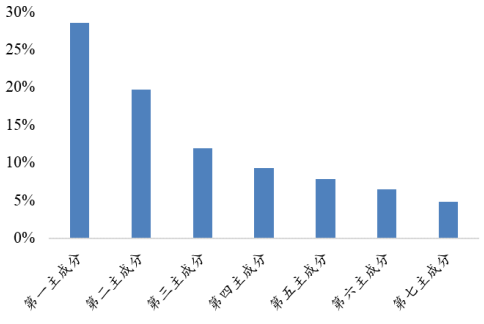
Wind,

14



Wind,

15



Wind,

CPI PPI

16 18

82.84%

77.70% CPI PPI

95.06%

3

8

16

The Journal of Portfolio Management,

17

2014 1 -2020 5

2014 1 1

2015.01.01-2020.05.29

3

r f_i

R

3 3 2015.01

$$r = \alpha + \sum b_i f_i + \varepsilon \quad (1)$$

2019 12 7 R

19 2019.12.31

R

4.1

60/40

60%

40%

20

300	500		500										
20%	20%	10%	10%	10%	10%	10%	10%	0	0	0	0	0	0

Wind,

21

$\sum$ K K

Q N N 1

e_b

λ $0 \le \lambda \le 1$ 0.99

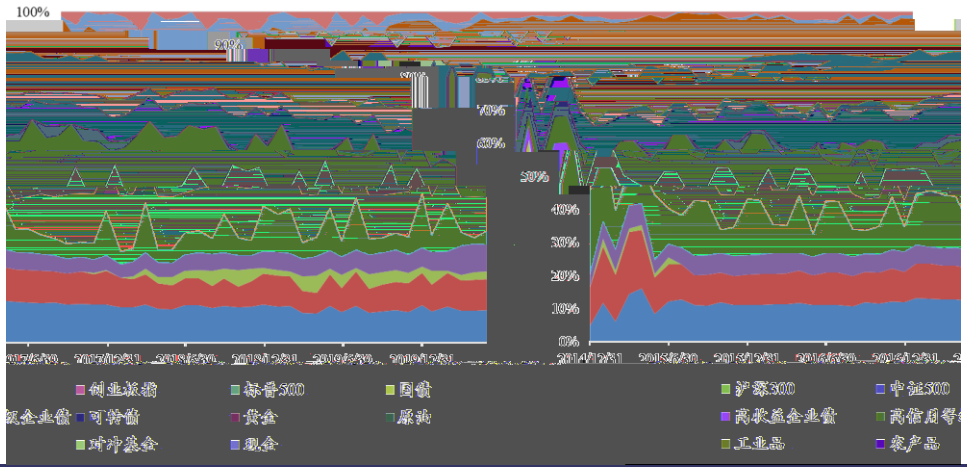
2

Ledoit 2004

Ledoit 2004 2 $1\text{-}\lambda \quad I + \lambda \sum$

4.3

23



Wind,

24

25 5.49%

0.72

24

Wind,

25 **2015.01.01 - 2020.05.29**

	33.57%	**5.49%**	7.66%	**0.72**	**0.33**	**15.70%**
	26.39%	4.42%	15.35%	0.29	0.09	32.48%
	33.17%	5.43%	9.39%	0.58	0.26	19.39%

Wind,

5

Greenberg 2016 Bass 2017

Bender 2019 Asset Allocation vs. Factor Allocation Can We Build a Unified Method --

2020-04-09

5.2

$$r = Bf + \varepsilon \tag{3}$$

r N N 1

$B = [b_1, ..., b_K]$ N K

f K K 1

(3) f

$$f = [B' \sum^{-1} B]^{-1} B' \sum^{-1} r \tag{4}$$

P

$$P = [B' \sum^{-1} B]^{-1} B' \sum^{-1} \tag{4}$$

3

3

5.3

$$\min_{\lambda} \ \lambda' \Omega \lambda \tag{5}$$
$$s.t. \quad \lambda' 1 = 1$$

5.4

P Jones 2017 The Black-Litterman Model for Structured Equity Portfolios alpha

α

ω_{OFP}

$$\omega_{OFP} = P' \lambda = \delta \sum^{-1} \alpha \tag{6}$$

α α

$$\alpha=\delta\sum P'\lambda \quad (7)$$

P δ 1

7 α

5.5

α

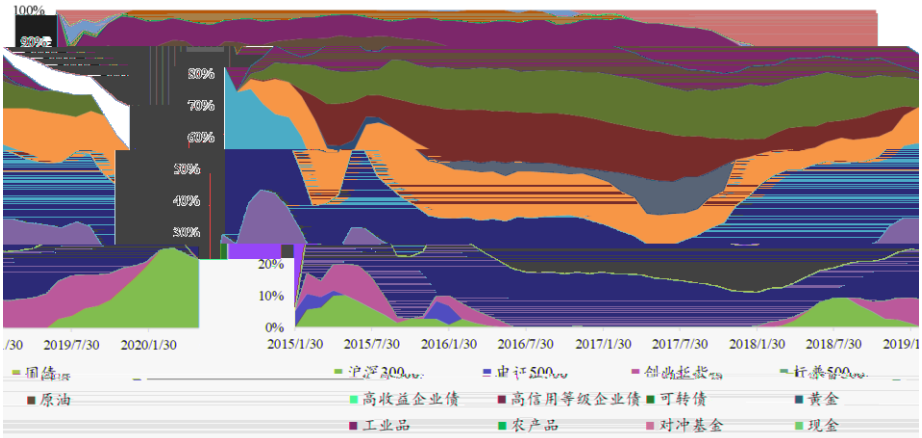
$$\max_{w} w'\alpha-\frac{1}{2}w'\sum w \quad (8)$$

α $\sum$ w

6.65%

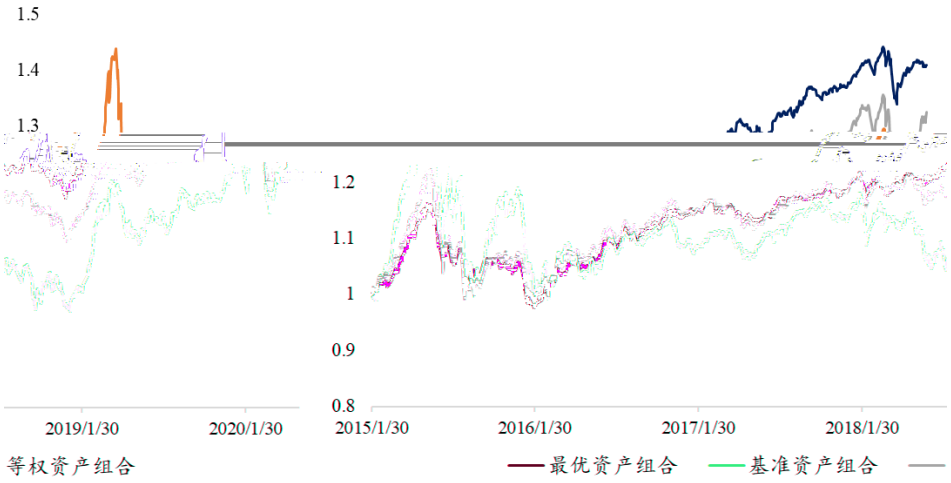
6.61% **1.01** **0.55**

26



Wind,

27



Wind,

28 **2015.02.01 - 2020.05.29**

	40.98%	**6.65%**	6.61%	**1.01**	**0.55**	16.11%
	24.07%	4.13%	15.31%	0.27	0.07	32.48%
	32.58%	5.43%	9.40%	0.58	0.26	19.39%

Wind,

6

4

7

15

5.49%	0.72
6.65%	1.01

1
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			15%
( )			5% 15%
12			-5% 5%
( )			-5%
A			
500			

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200135 100033

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