Clusters with significance level: 0.05 1.00 -0.75 -Cluster MPT - Beta 0.25 -0.00 --0.2 -0.1 MPT – Alpha 0.0 0.1 -0.3

Clusters with significance level: 0.10 1.00 -0.75 -Cluster 2 MPT - Beta 3 0.25 -0.00 --0.2 -0.1 MPT – Alpha 0.0 0.1 -0.3

Clusters with significance level: 0.15 1.00 -0.75 -Cluster 2 MPT - Beta 5 8 0.25 -• 10 0.00 --0.2 0.0 0.1 -0.3 -0.1 MPT – Alpha

Clusters with significance level: 0.25 1.00 -Cluster 0.75 -3 MPT - Beta 6 10 0.25 -11 12 13 14 0.00 --0.2 0.0 0.1 -0.3 -0.1 MPT – Alpha

Clusters with significance level: 0.35 1.00 -Cluster 2 3 0.75 -6 7 8 MPT - Beta 9 10 11 12 13 0.25 -14 15 16 17 18 19 0.00 -• 20 -0.2 0.1 -0.3 0.0 -0.1 MPT - Alpha

Clusters with significance level: 0.50 1.00 -Cluster 0.75 -20 21 22 23 MPT - Beta 24 25 26 27 28 29 0.25 -30 31 32 33 34 0.00 -0.0 0.1 -0.2 -0.3 -0.1

MPT - Alpha

Clusters with significance level: 0.65 1.00 -Cluster 0.75 -36 37 38 39 MPT - Beta 0.25 -13 49 50 51 0.00 --0.2 0.0 0.1 -0.3 -0.1

MPT - Alpha

Clusters with significance level: 0.75 1.00 -Cluster 0.75 -20 36 52 37 53 MPT - Beta 55 56 59 0.25 -62 63 31 0.00 --0.2 -0.3 0.0 0.1 -0.1 MPT - Alpha

Clusters with significance level: 0.85 1.00 -Cluster 56 0.75 -21 57 58 23 59 60 MPT - Beta 63 66 0.25 -67 68 33 69 52 70 18 36 0.00 --0.2 0.0 0.1 -0.3 -0.1 MPT - Alpha

Clusters with significance level: 0.95 1.00 -Cluster 0.75 -MPT - Beta 0.25 -• 68

0.0

0.1

0.00 -

-0.2

-0.1 MPT – Alpha

-0.3

Clusters with significance level: 1.00 1.00 -Cluster 0.75 -MPT - Beta 0.25 -0.00 -

0.0

0.1

-0.2

-0.1 MPT – Alpha

-0.3

Clusters with significance level: 0.05 1.00 -0.75 -Cluster MPT - R Squared 0.25 -0.00 --0.2 0.1 -0.3 -0.1 MPT – Alpha 0.0

Clusters with significance level: 0.10 1.00 -0.75 -Cluster MPT - R Squared 8 0.25 -0.00 --0.2 0.1 -0.3 -0.1 MPT – Alpha 0.0

Clusters with significance level: 0.15 1.00 -0.75 -Cluster 2 MPT - R Squared • 10 0.25 -0.00 --0.2 0.1 -0.3 -0.1 MPT – Alpha 0.0

Clusters with significance level: 0.25 1.00 -Cluster 0.75 -MPT - R Squared 6 10 11 12 0.25 -13 14 0.00 -0.1 -0.2 -0.3 -0.1 MPT – Alpha 0.0

Clusters with significance level: 0.35 1.00 -Cluster 2 3 0.75 -6 7 MPT - R Squared 8 9 10 11 12 13 14 15 0.25 -16 17 18 19 • 20 0.00 -

> -0.1 MPT – Alpha

-0.2

-0.3

0.1

Clusters with significance level: 0.50 1.00 -Cluster 0.75 -20 21 22 23 MPT - R Squared 24 25 26 27 28 29 30 31 0.25 -32 33 34 0.00 -

> -0.1 MPT – Alpha

-0.2

-0.3

0.0

Clusters with significance level: 0.65 1.00 -Cluster 36 0.75 -37 38 39 MPT - R Squared 0.50 -0.25 -49 50 51 0.00 -

-0.2

-0.1 MPT – Alpha

-0.3

0.1

Clusters with significance level: 0.75 1.00 -Cluster 0.75 -20 52 37 53 MPT - R Squared 55 0.50 -56 58 59 60 0.25 -62 63 31 0.00 --0.2 0.1 0.0 -0.3 -0.1 MPT - Alpha

Clusters with significance level: 0.85 1.00 -Cluster 56 57 0.75 -58 59 60 MPT - R Squared 0.50 -63 66 67 68 0.25 -69 52 70 71 18 36 0.00 --0.2 0.1 0.0 -0.3 -0.1 MPT - Alpha

Clusters with significance level: 0.95 1.00 -Cluster 0.75 -72 73 6 23 74 MPT - R Squared 75 76 0.50 -77 78 62 79 80 64 81 82 0.25 -66 83

0.1

0.0

0.00 -

-0.2

-0.1 MPT – Alpha

-0.3

Clusters with significance level: 1.00 1.00 -Cluster 0.75 -MPT - R Squared 0.50 -0.25 -

0.1

0.0

0.00 -

-0.3

-0.2

-0.1 MPT – Alpha

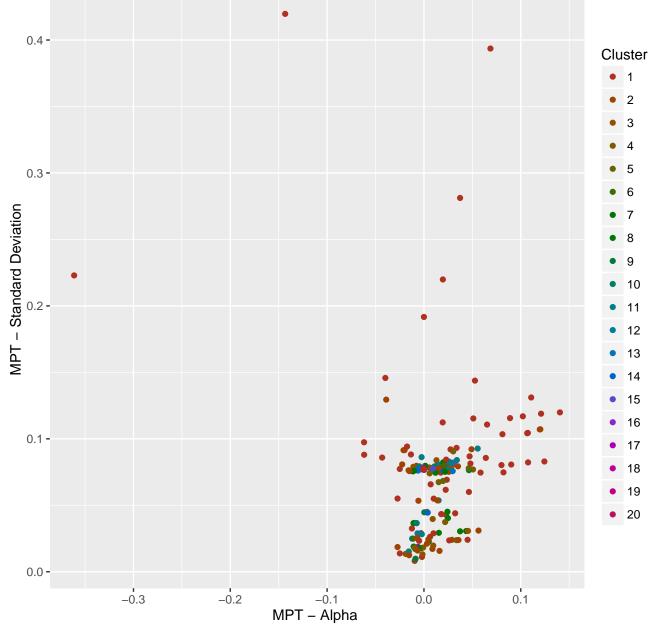
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Clusters with significance level: 0.10 0.4 -0.3 -Cluster MPT – Standard Deviation 2 3 • 8 0.1 -0.0 --0.2 0.0 0.1 -0.3 -0.1 MPT – Alpha

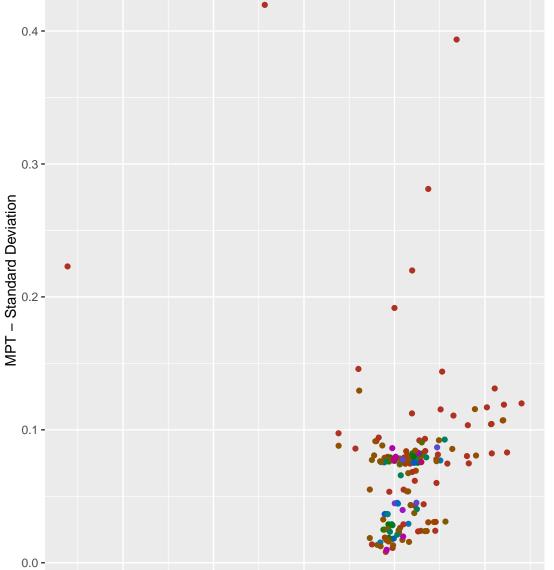
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Clusters with significance level: 0.25 0.4 -Cluster 0.3 -3 MPT – Standard Deviation 6 7 10 11 12 13 0.1 -• 14 0.0 --0.2 0.0 0.1 -0.3 -0.1 MPT – Alpha

Clusters with significance level: 0.35



Clusters with significance level: 0.50 0.4 -



-0.1 MPT – Alpha

-0.2

-0.3

Cluster

0.1

Clusters with significance level: 0.65 0.4 -Cluster 36 37 0.3 -38 39 MPT - Standard Deviation 13 30 49 0.1 -50 34 51 0.0 --0.2 0.1 0.0 -0.3 -0.1

MPT - Alpha

Clusters with significance level: 0.75 0.4 -Cluster 0.3 -20 36 52 MPT - Standard Deviation 37 53 55 56 58 59 60 61 30 62 0.1 -31 63 16 0.0 --0.2 0.0 0.1 -0.3 -0.1

MPT - Alpha

Clusters with significance level: 0.85 0.4 -Cluster 0.3 -23 MPT - Standard Deviation 0.2 -

0.0

0.1

0.1 -

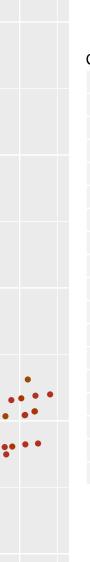
0.0 -

-0.2

-0.1

MPT - Alpha

-0.3



12

18

30

33

36

52

56 57 58

59

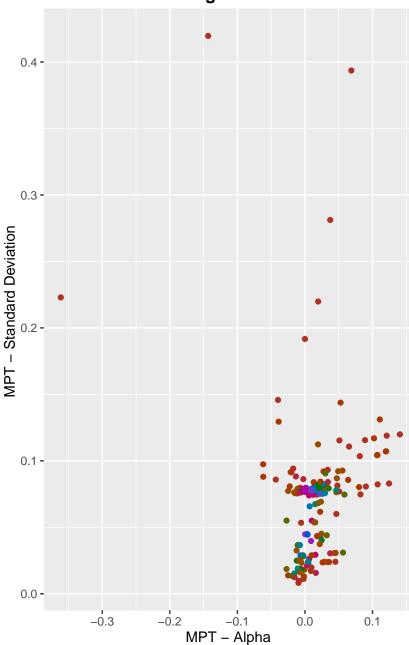
60

62 63

66 67 68

69

Clusters with significance level: 0.95 0.4 -

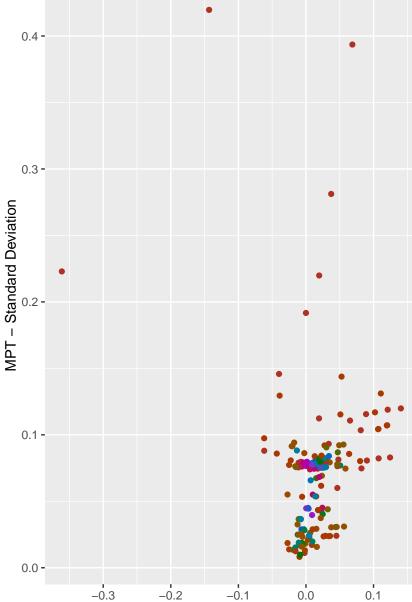




Cluster

• 68

Clusters with significance level: 1.00 0.4 -Cluster 0.3 -



MPT - Alpha

Clusters with significance level: 0.05 2 -1 -Cluster MPT - Sharpe Ratio **-1** --0.2 0.1 -0.1 MPT – Alpha 0.0 -0.3

Clusters with significance level: 0.10 2 -1 -Cluster MPT - Sharpe Ratio • 8 **-1** --0.2 0.1 -0.1 MPT – Alpha 0.0 -0.3

Clusters with significance level: 0.15 2 -1 -Cluster MPT - Sharpe Ratio 5 • 10 **-1** --0.2 -0.1 MPT – Alpha 0.0 0.1 -0.3

Clusters with significance level: 0.25 2 -Cluster 1 -MPT - Sharpe Ratio 6 10 11 12 13 14 **-1** --0.2 -0.1 MPT – Alpha 0.0 0.1 -0.3

Clusters with significance level: 0.35 2 -Cluster 2 3 1 -6 MPT - Sharpe Ratio 9 10 11 12 13 14 15 16 17 -1 **-**18 19 • 20

-0.2

-0.3

-0.1 MPT – Alpha 0.0

0.1

Clusters with significance level: 0.50 2 -Cluster 1 -20 21 22 23 MPT - Sharpe Ratio 24 25 26 27 28 29 30 31 32 -1 **-**33 34 0.0 0.1 -0.3 -0.2 -0.1

MPT - Alpha

Clusters with significance level: 0.65 2 -Cluster 1 -37 38 39 MPT - Sharpe Ratio 13 49 -1 **-**50 51 -0.2 -0.1 MPT – Alpha 0.0 0.1 -0.3

Clusters with significance level: 0.75 2 -Cluster 1 -52 20 36 37 53 MPT - Sharpe Ratio 55 56 57 58 59 60 61 30 62 15 63 31 -1 **-**-0.2 0.0 -0.3 0.1 -0.1

MPT - Alpha

Clusters with significance level: 0.85 2 -Cluster 1 -MPT - Sharpe Ratio -1 **-**

0.0

0.1

-0.2

-0.1 MPT – Alpha

-0.3

Clusters with significance level: 0.95 2 -Cluster 1 -MPT - Sharpe Ratio -1 **-**

0.1

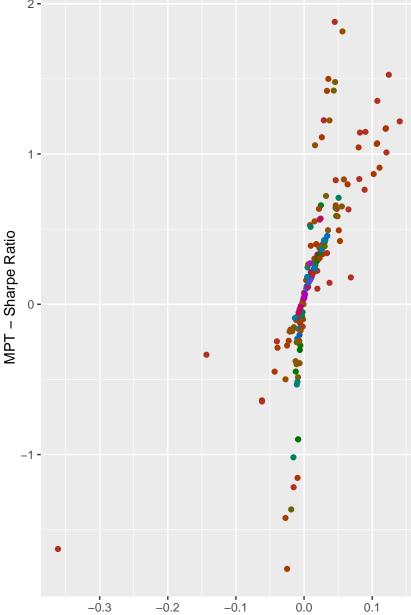
0.0

-0.2

-0.1 MPT – Alpha

-0.3

Clusters with significance level: 1.00 2 -Cluster 1 -



MPT - Alpha



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2	

Clusters with significance level: 0.05 1.00 -0.75 -Cluster MPT - R Squared 0.25 -0.00 -0.25 0.00 0.75 0.50 1.00 MPT – Beta

Clusters with significance level: 0.10 1.00 -0.75 -Cluster MPT - R Squared 2 3 0.25 -0.00 -0.25 0.00 0.75 0.50 1.00 MPT – Beta

Clusters with significance level: 0.15 1.00 -0.75 -Cluster 2 MPT - R Squared 5 • 10 0.25 -0.00 -0.25 0.00 0.75 0.50 1.00 MPT – Beta

Clusters with significance level: 0.25 1.00 -Cluster 0.75 -MPT - R Squared 6 7 10 11 12 0.25 -13 • 14 0.00 -0.25 0.00 0.75 0.50 1.00 MPT - Beta

Clusters with significance level: 0.35 1.00 -Cluster 2 3 0.75 -6 7 MPT - R Squared 8 9 10 11 12 13 14 15 0.25 -16 17 18 19 • 20 0.00 -0.25 0.00 0.50 0.75 1.00 MPT - Beta

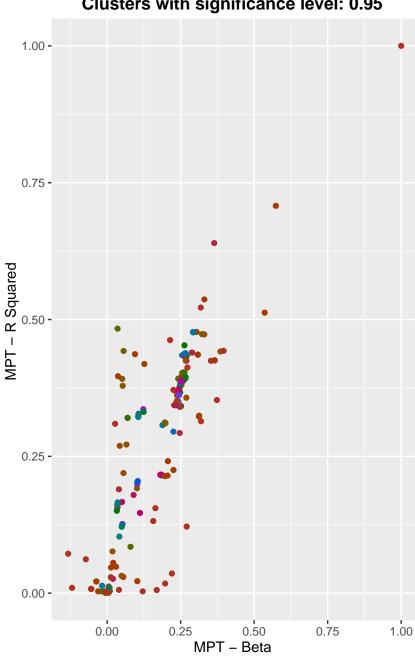
Clusters with significance level: 0.50 1.00 -Cluster 0.75 -20 21 22 23 MPT - R Squared 24 25 26 27 28 29 30 31 0.25 -32 33 34 0.00 -0.00 0.25 0.75 0.50 1.00

Clusters with significance level: 0.65 1.00 -Cluster 36 0.75 -37 38 39 MPT - R Squared 0.50 -13 0.25 -50 51 0.00 -0.25 0.00 0.50 0.75 1.00 MPT - Beta

Clusters with significance level: 0.75 1.00 -Cluster 0.75 -20 36 52 37 53 MPT - R Squared 55 0.50 -56 59 0.25 -62 15 31 63 0.00 -0.00 0.25 0.50 0.75 1.00 MPT - Beta

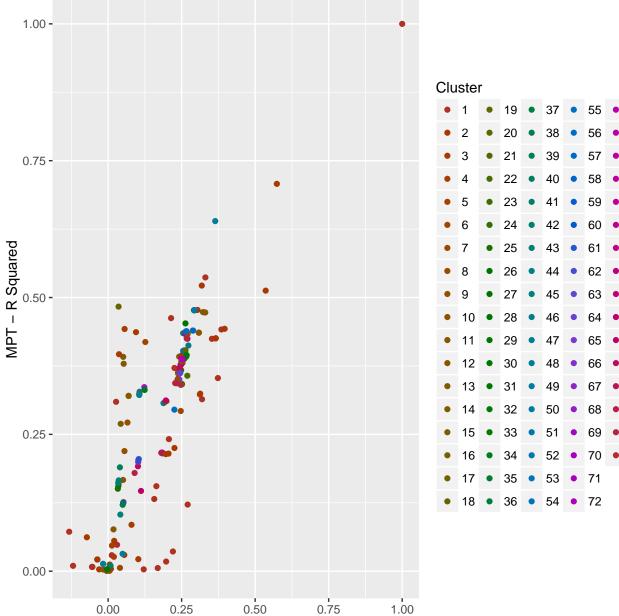
Clusters with significance level: 0.85 1.00 -Cluster 56 57 0.75 -58 59 60 MPT - R Squared 63 0.50 -66 67 68 0.25 -33 69 16 52 70 35 18 36 0.00 -0.00 0.25 0.50 0.75 1.00 MPT - Beta

Clusters with significance level: 0.95 1.00 -



Cluster

Clusters with significance level: 1.00 1.00 -



MPT - Beta

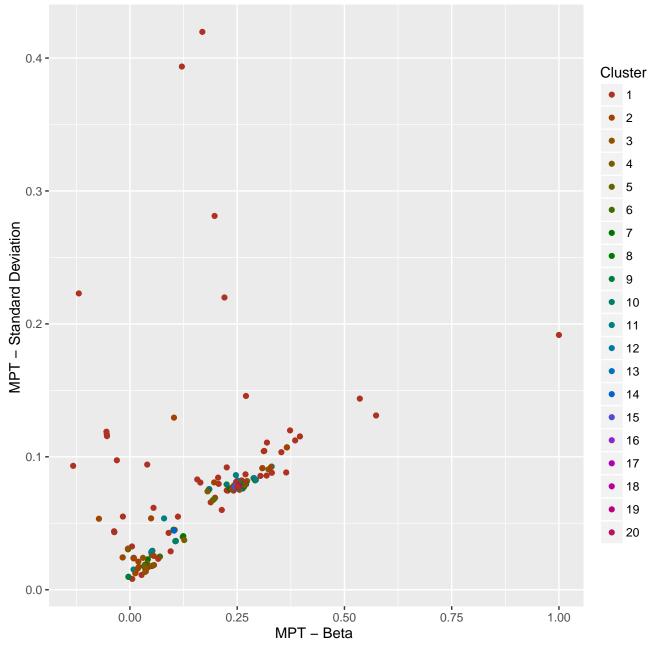
Clusters with significance level: 0.05 0.4 -0.3 -MPT – Standard Deviation Cluster 0.1 -0.0 -0.25 0.00 0.75 0.50 1.00 MPT - Beta

Clusters with significance level: 0.10 0.4 -0.3 -Cluster MPT – Standard Deviation 2 3 • 8 0.1 -0.0 -0.25 0.00 0.75 0.50 1.00 MPT - Beta

Clusters with significance level: 0.15 0.4 -Cluster 0.3 -1 MPT – Standard Deviation 2 5 8 • 10 0.1 -0.0 -0.25 0.00 0.75 0.50 1.00

Clusters with significance level: 0.25 0.4 -Cluster 2 0.3 -3 MPT – Standard Deviation 6 7 10 11 12 13 0.1 -• 14 0.0 -0.00 0.25 0.75 0.50 1.00 MPT - Beta

Clusters with significance level: 0.35



Clusters with significance level: 0.50 0.4 -Cluster 19 20 0.3 -21 22 MPT - Standard Deviation 23 24 25 26 27 28 29 30 31 32 0.1 -33 34

0.50

MPT - Beta

0.75

1.00

0.0 -

0.00

0.25

Clusters with significance level: 0.65 0.4 -Cluster 36 37 0.3 -38 39 MPT - Standard Deviation 13 30 32 49 0.1 -50 34 51 0.0 -0.25 0.75 0.00 0.50 1.00 MPT - Beta

Clusters with significance level: 0.75 0.4 -Cluster 0.3 -20 36 52 MPT - Standard Deviation 37 53 55 56 58 59 60 61 62 0.1 -15 31 63 0.0 -0.25 0.00 0.75 0.50 1.00

Clusters with significance level: 0.85 0.4 -Cluster 56 57 58 0.3 -59 MPT - Standard Deviation 60 62 63 0.2 -66 67 68 33 69 0.1 -52 70 71 18 36

0.75

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Clusters with significance level: 0.95 0.4 -0.3 -MPT - Standard Deviation 0.2 -0.1 -

0.0 -

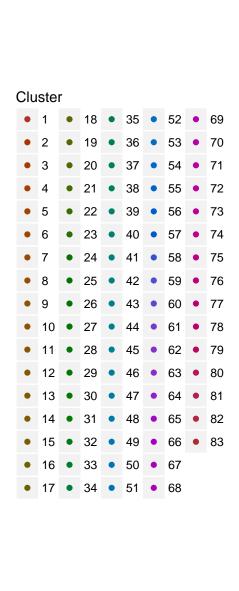
0.00

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1.00

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Clusters with significance level: 1.00 0.4 -0.3 -MPT - Standard Deviation 0.2 -0.1 -

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0.50



Clusters with significance level: 0.05 2 -Cluster MPT - Sharpe Ratio _1 **-**0.00 0.25 0.50 0.75 1.00 MPT - Beta

Clusters with significance level: 0.10 2 -Cluster MPT - Sharpe Ratio 2 3 _1 **-**0.00 0.25 0.50 0.75 1.00 MPT - Beta

Clusters with significance level: 0.15 2 -Cluster MPT - Sharpe Ratio 5 • 10 _1 **-**0.00 0.25 0.50 0.75 1.00 MPT - Beta

Clusters with significance level: 0.25 2 -Cluster MPT - Sharpe Ratio 6 10 11 12 13 14 _1 **-**0.00 0.25 0.50 0.75 1.00 MPT - Beta

Clusters with significance level: 0.35 2 -Cluster 2 3 1 -6 7 MPT - Sharpe Ratio 8 9 10 11 12 13 14 15 16 17 _1 **-**18 19 • 20 0.00 0.25 0.50 0.75 1.00 MPT - Beta

Clusters with significance level: 0.50 2 -Cluster 1 -20 21 22 23 MPT - Sharpe Ratio 24 25 26 27 28 29 30 31 32 -1 **-**33 34 0.00 0.25 0.50 0.75 1.00 MPT - Beta

Clusters with significance level: 0.65 2 -Cluster 36 1 -37 38 39 40 MPT - Sharpe Ratio 0 -13 30 49 **-1** -50 51 0.00 0.25 0.50 0.75 1.00 MPT - Beta

Clusters with significance level: 0.75 2 -Cluster 1 -51 20 36 52 37 53 MPT - Sharpe Ratio 54 55 23 56 0 -57 58 59 60 61 30 62 **-1-**15 63 0.00 0.25 0.50 0.75 1.00

MPT - Beta

Clusters with significance level: 0.85 2 -Cluster 1 -MPT - Sharpe Ratio 0 -**-1-**

0.00

0.25

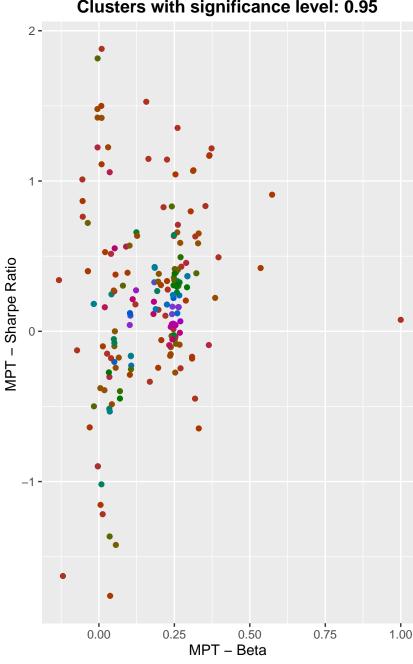
0.50

MPT - Beta

0.75

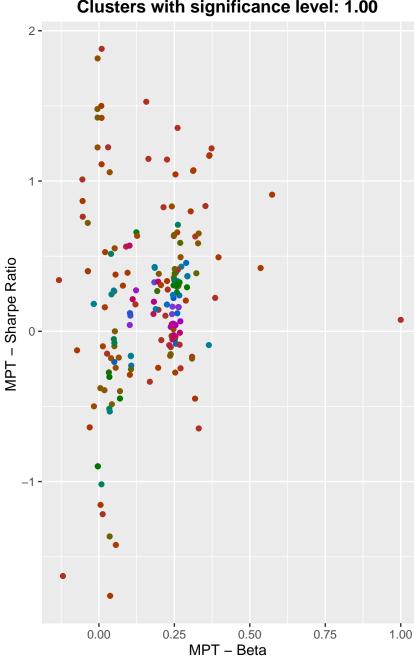
1.00

Clusters with significance level: 0.95



Cluster

Clusters with significance level: 1.00



Cluster

•	1	

Clusters with significance level: 0.05 0.4 -0.3 -MPT – Standard Deviation Cluster 0.1 -0.0 -0.25 0.50 MPT – R Squared 0.75 0.00 1.00

Clusters with significance level: 0.10 0.4 -0.3 -Cluster MPT – Standard Deviation 2 3 • 8 0.1 -0.0 -0.25 0.50 MPT – R Squared 0.75 0.00 1.00

Clusters with significance level: 0.15 0.4 -Cluster 0.3 -1 MPT – Standard Deviation 2 5 8 9 • 10 0.1 -0.0 -

> 0.50 MPT – R Squared

0.75

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Clusters with significance level: 0.25 0.4 -Cluster 2 0.3 -3 MPT – Standard Deviation 6 7 10 11 12 13 0.1 -• 14

> 0.50 MPT – R Squared

0.75

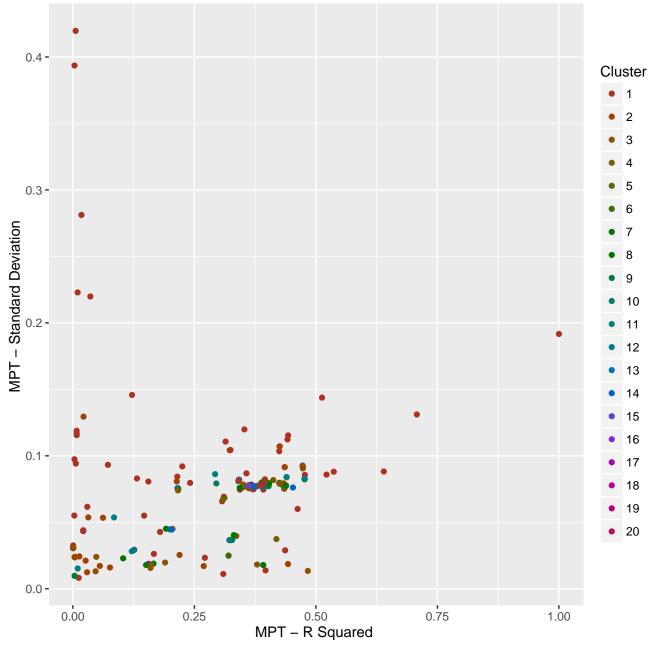
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Clusters with significance level: 0.35



Clusters with significance level: 0.50 0.4 -Cluster 0.3 -MPT - Standard Deviation 0.1 -

0.50

MPT - R Squared

0.75

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19 20

21 22

23242526272829303132

Clusters with significance level: 0.65 0.4 -Cluster 36 37 0.3 -38 39 MPT - Standard Deviation 0.2 -13 30 32 49 0.1 -50 34 51 0.0 -

0.25

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0.50

MPT - R Squared

0.75

1.00

Clusters with significance level: 0.75 0.4 -Cluster 0.3 -20 36 52 MPT - Standard Deviation 37 53 55 56 0.2 -58 59 60 61 30 62 0.1 -15 31 63 16 0.0 -

0.75

1.00

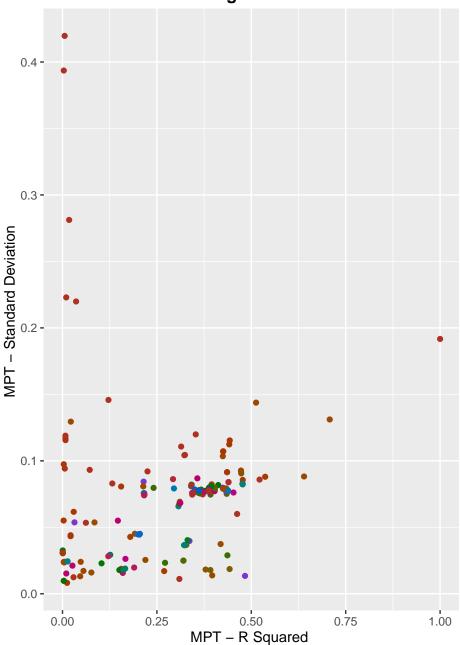
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MPT - R Squared

Clusters with significance level: 0.85 0.4 -



Cluster

Clusters with significance level: 0.95 0.4 -Cluster 0.3 -MPT - Standard Deviation 0.2 -0.1 -

0.75

1.00

0.50

MPT - R Squared

0.0 -

0.00

0.25

Clusters with significance level: 1.00 0.4 -Cluster 0.3 -MPT - Standard Deviation 0.2 -0.1 -

0.75

1.00

0.0 -

0.00

0.25

0.50

MPT - R Squared

Clusters with significance level: 0.05 2 -Cluster MPT - Sharpe Ratio -1 **-**0.50 MPT – R Squared 0.25 0.75 0.00 1.00

Clusters with significance level: 0.10 2 -Cluster MPT - Sharpe Ratio 2 3 -1 **-**0.50 MPT – R Squared 0.25 0.75 0.00 1.00

Clusters with significance level: 0.15 2 -Cluster MPT - Sharpe Ratio 5 • 10 -1 **-**0.50 MPT – R Squared 0.25 0.75 0.00 1.00

Clusters with significance level: 0.25 2 -Cluster MPT - Sharpe Ratio 6 10 11 12 13 14 -1 **-**0.50 MPT – R Squared 0.25 0.75 0.00 1.00

Clusters with significance level: 0.35 2 -Cluster 2 3 1 -6 MPT - Sharpe Ratio 8 9 10 11 12 13 14 15 16 17 -1 **-**18 19 • 20

> 0.50 MPT – R Squared

0.25

0.00

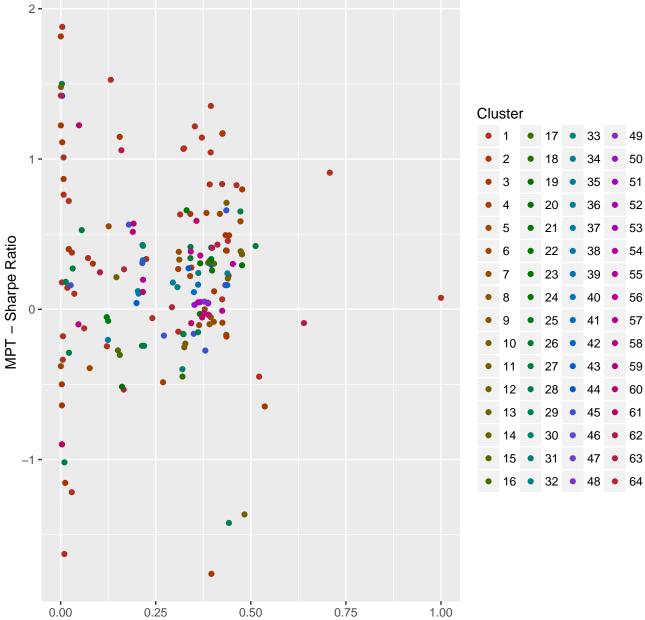
0.75

1.00

Clusters with significance level: 0.50 2 -Cluster 20 21 22 23 MPT - Sharpe Ratio 24 25 26 27 28 29 30 31 32 -1 **-**33 34 0.50 MPT – R Squared 0.00 0.25 0.75 1.00

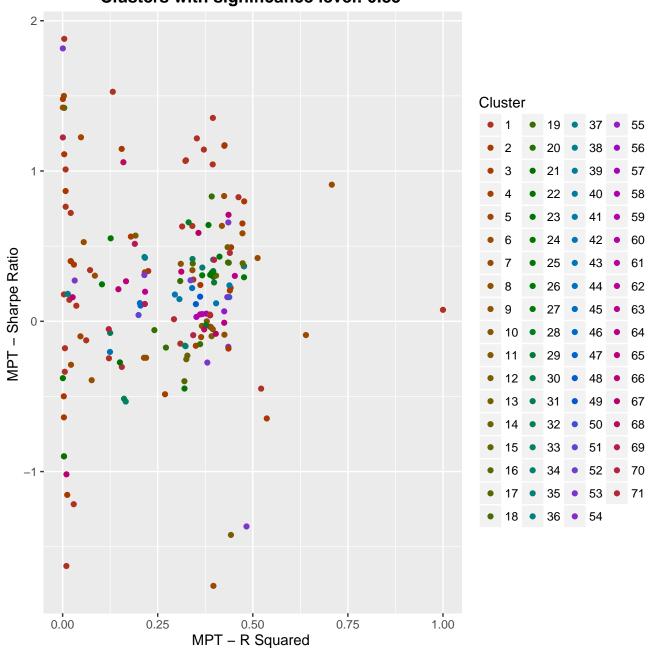
Clusters with significance level: 0.65 2 -Cluster 36 37 38 39 40 MPT - Sharpe Ratio 0 -13 30 32 49 -1 **-**50 51 0.25 0.50 MPT – R Squared 0.75 0.00 1.00

Clusters with significance level: 0.75 2 -

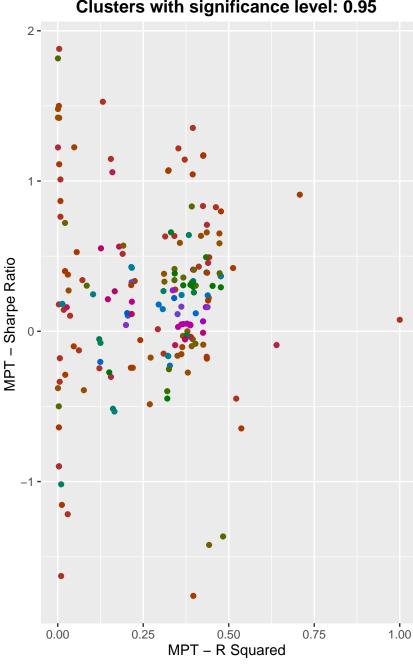


MPT - R Squared

Clusters with significance level: 0.85



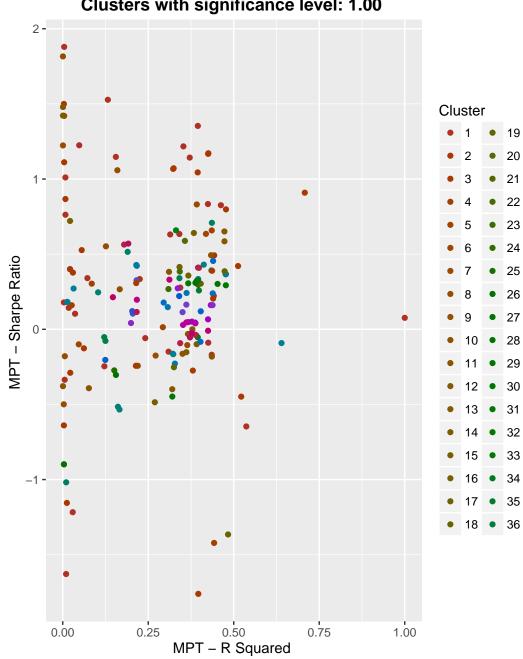
Clusters with significance level: 0.95



Cluster

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•	2	

Clusters with significance level: 1.00



Clusters with significance level: 0.05 2 -1 -Cluster MPT - Sharpe Ratio -1 **-**0.1 0.3 0.0 0.2 0.4 MPT - Standard Deviation

Clusters with significance level: 0.10 2 -1 -Cluster MPT - Sharpe Ratio -1 **-**0.1 0.0 0.2 0.3 0.4 MPT - Standard Deviation

Clusters with significance level: 0.15 2 -1 -Cluster MPT - Sharpe Ratio • 10 -1 **-**0.1 0.0 0.2 0.3 0.4 MPT - Standard Deviation

Clusters with significance level: 0.25 2 -Cluster 1 -MPT - Sharpe Ratio 10 11 12 13 -1 **-**14 0.1 0.0 0.2 0.3 0.4 MPT - Standard Deviation

Clusters with significance level: 0.35 2 -Cluster 2 3 1 -6 MPT - Sharpe Ratio 9 10 11 12 13 14 15 16 -1 **-**17 18 19 • 20 0.1 0.0 0.3 0.4 0.2 MPT - Standard Deviation

Clusters with significance level: 0.50 2 -Cluster 1 -20 21 22 23 MPT - Sharpe Ratio 24 25 26 27 28 29 30 31 32 -1 **-**33 0.1 0.2 0.0 0.3 0.4

MPT - Standard Deviation

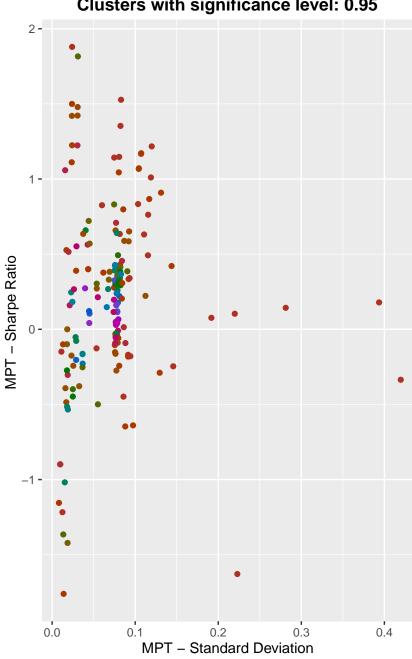
Clusters with significance level: 0.65 2 -Cluster 1 -37 38 39 MPT - Sharpe Ratio 0 -13 -1 **-**51 0.1 0.0 0.2 0.3 0.4 MPT - Standard Deviation

Clusters with significance level: 0.75 2 -Cluster 1 -20 36 52 37 53 MPT - Sharpe Ratio 55 56 0 -58 59 30 62 15 31 63 -1 **-**0.1 0.0 0.2 0.4 0.3 MPT - Standard Deviation

Clusters with significance level: 0.85 2 -Cluster 56 1 -57 58 23 59 60 MPT - Sharpe Ratio 62 63 0 -12 66 68 69 33 52 70 -1 **-**35 18 36 0.1 0.0 0.2 0.4 0.3

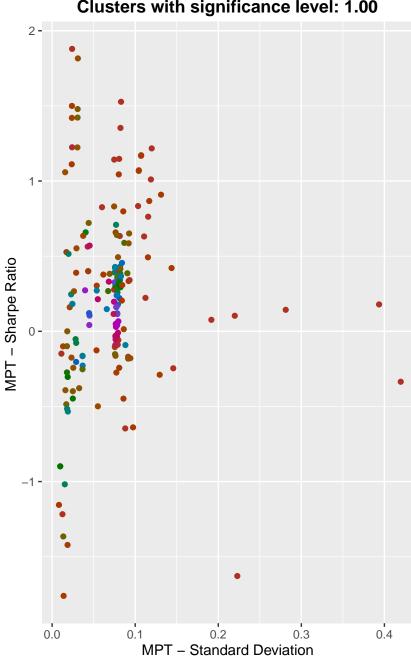
MPT - Standard Deviation

Clusters with significance level: 0.95 2 -



Cluster

Clusters with significance level: 1.00 2 -



Cluster

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