

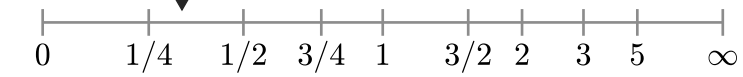
$\Omega_1$ : Market caps, 2007-Q4, top  $10^{1.5}$

$\Omega_2$ : Market caps, 2018-Q4, top  $10^{1.5}$

Divergence contribution  $\delta D_{1/3,\tau}^R$  (%)

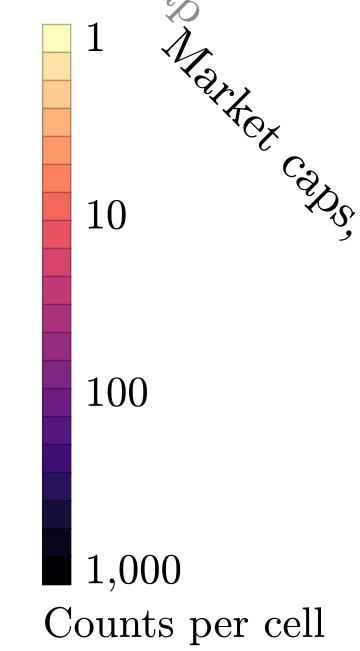
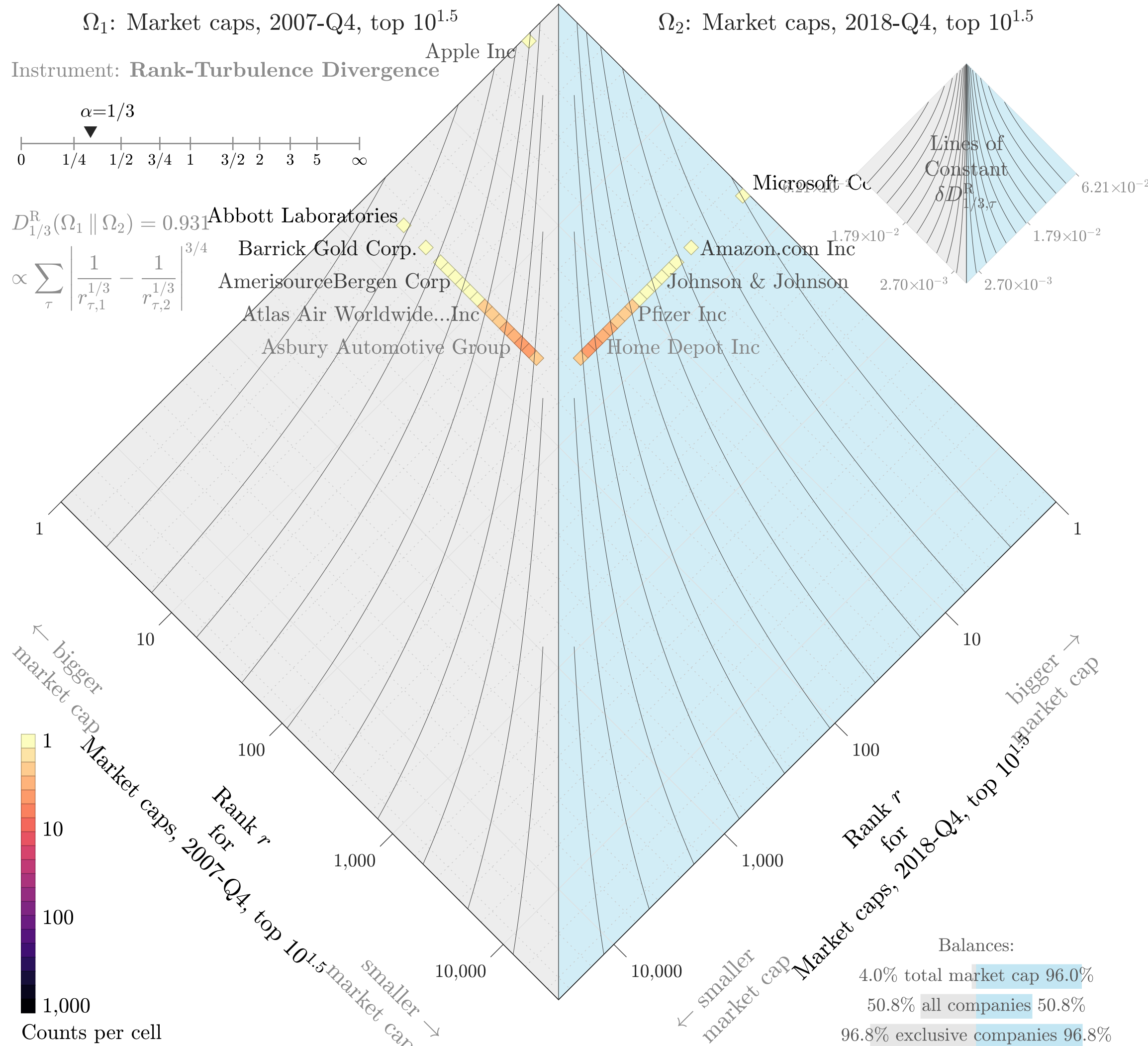
Instrument: Rank-Turbulence Divergence

$\alpha=1/3$



$$D_{1/3}^R(\Omega_1 \parallel \Omega_2) = 0.931$$

$$\propto \sum_{\tau} \left| \frac{1}{r_{\tau,1}^{1/3}} - \frac{1}{r_{\tau,2}^{1/3}} \right|^{3/4}$$



Balances:  
 4.0% total market cap 96.0%  
 50.8% all companies 50.8%  
 96.8% exclusive companies 96.8%

50.4%—49.6%

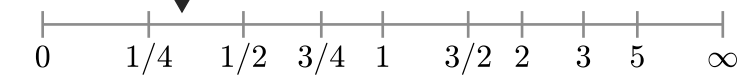
$\Omega_1$ : Market caps, 2007-Q4, top  $10^{2.0}$

$\Omega_2$ : Market caps, 2018-Q4, top  $10^{2.0}$

Divergence contribution  $\delta D_{1/3,\tau}^R$  (%)

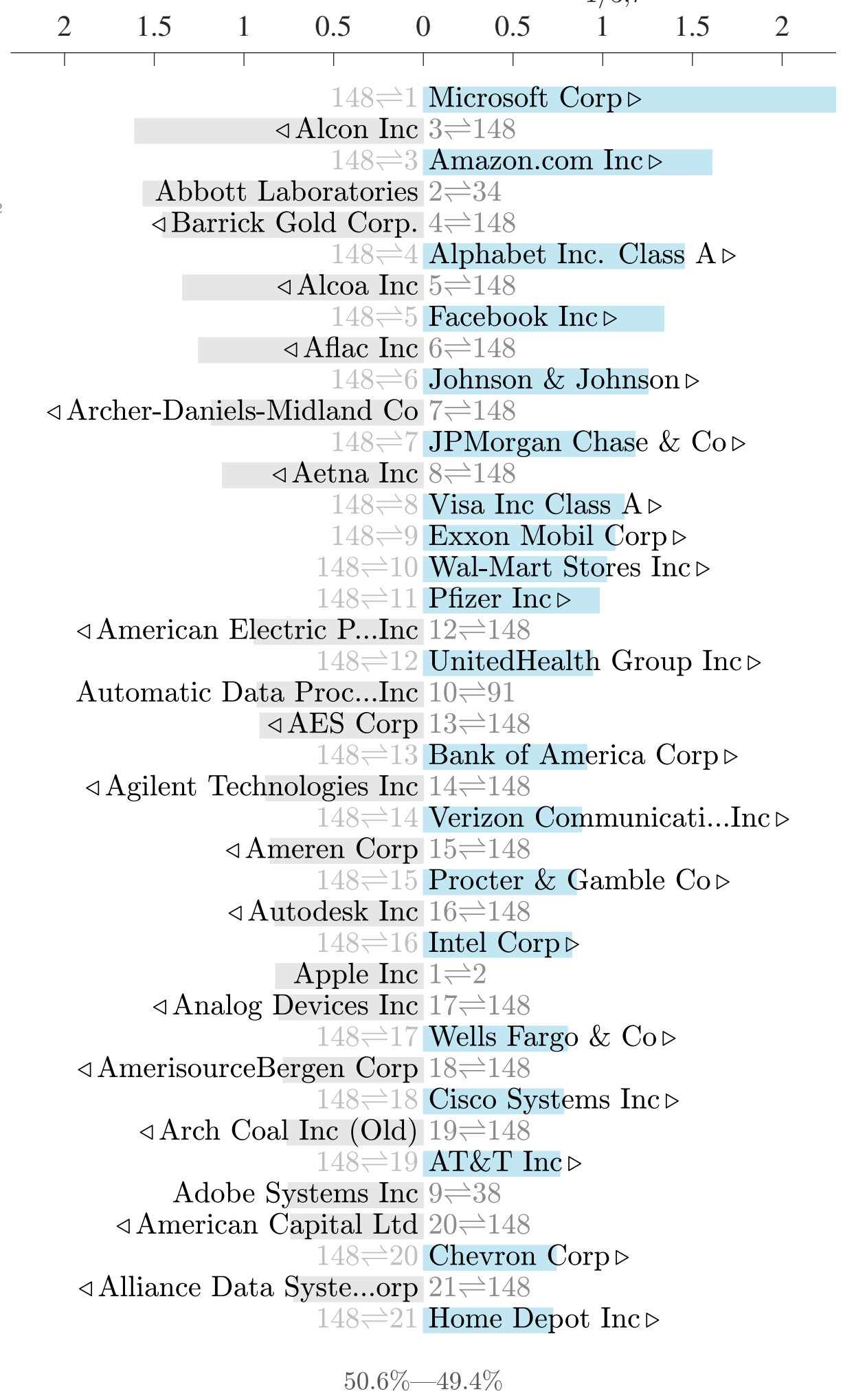
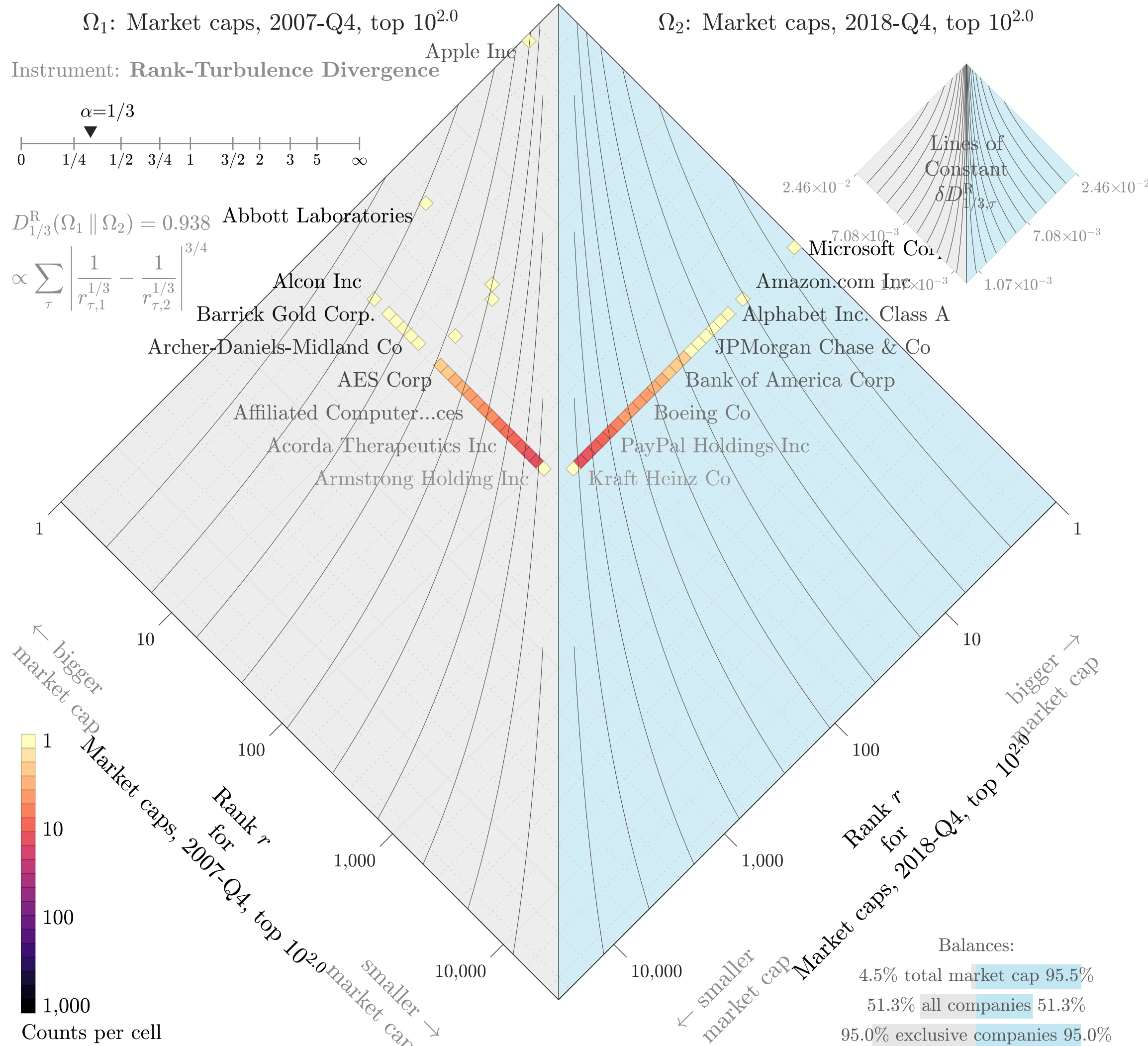
Instrument: Rank-Turbulence Divergence

$\alpha=1/3$



$$D_{1/3}^R(\Omega_1 \parallel \Omega_2) = 0.938$$

$$\propto \sum_{\tau} \left| \frac{1}{r_{\tau,1}^{1/3}} - \frac{1}{r_{\tau,2}^{1/3}} \right|^{3/4}$$



Balances:  
 4.5% total market cap 95.5%  
 51.3% all companies 51.3%  
 95.0% exclusive companies 95.0%

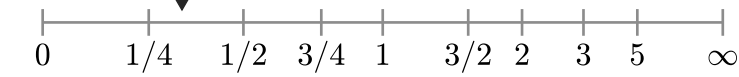
$\Omega_1$ : Market caps, 2007-Q4, top  $10^{2.5}$

$\Omega_2$ : Market caps, 2018-Q4, top  $10^{2.5}$

Divergence contribution  $\delta D_{1/3,\tau}^R$  (%)

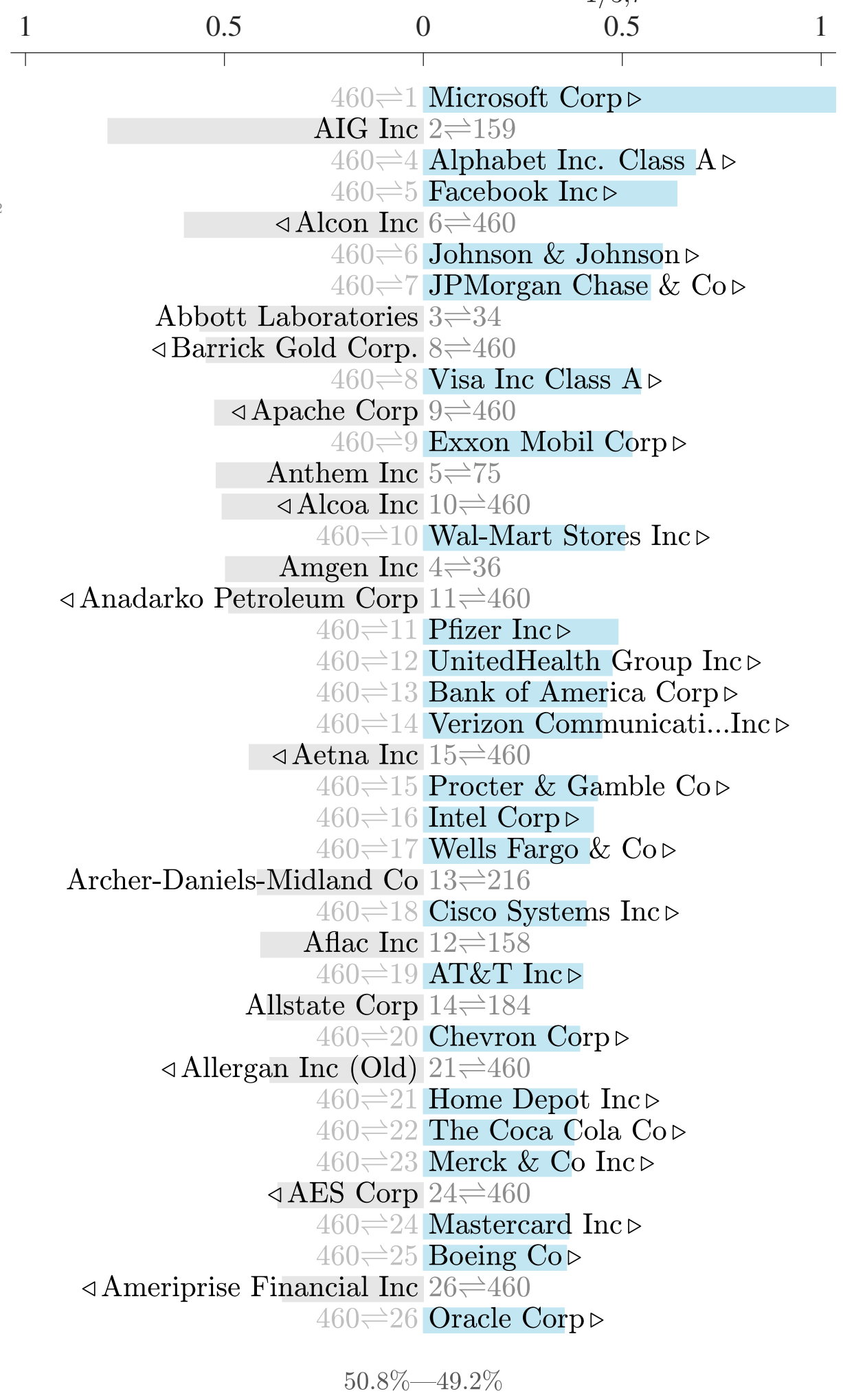
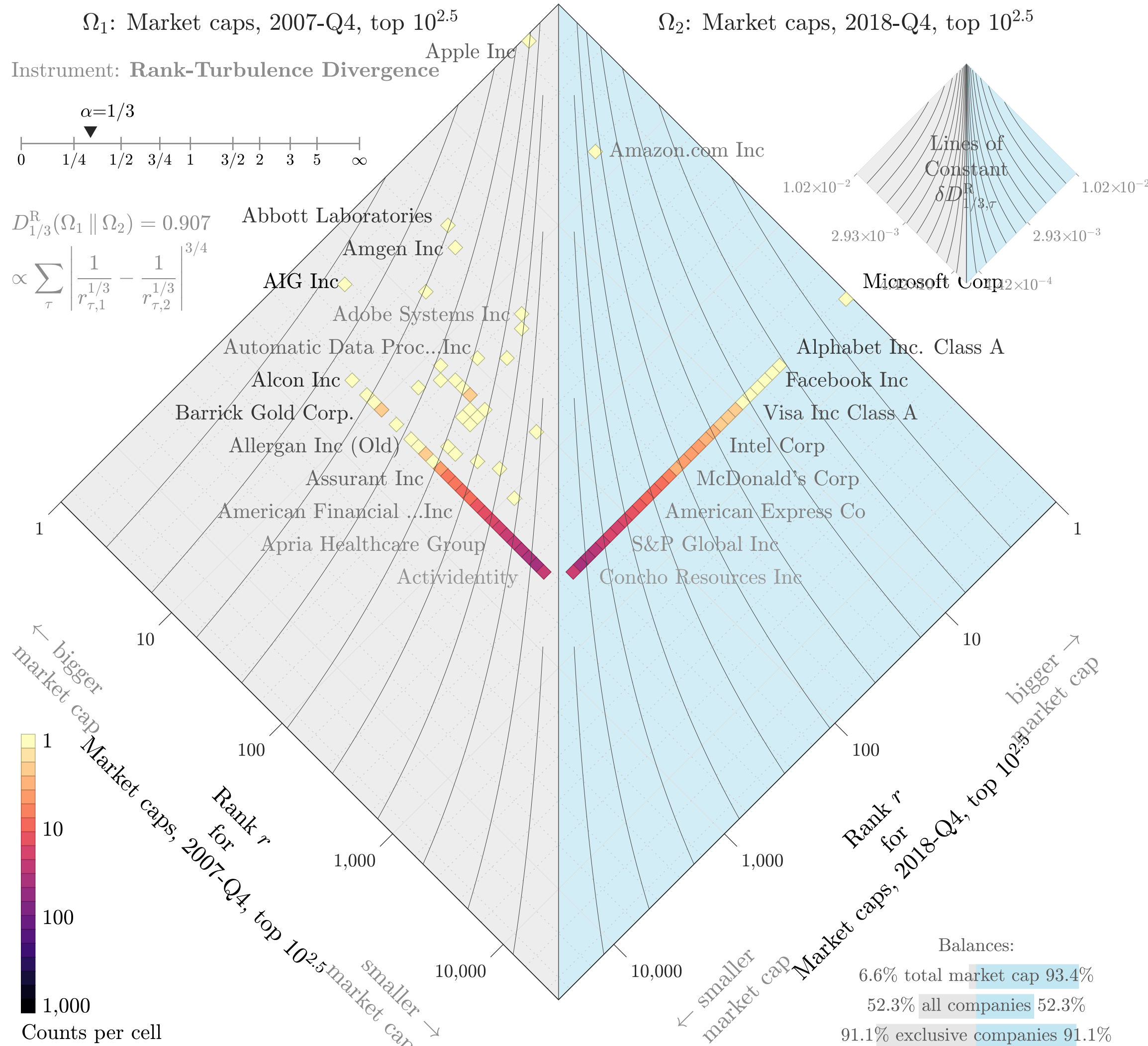
Instrument: Rank-Turbulence Divergence

$\alpha=1/3$



$$D_{1/3}^R(\Omega_1 \parallel \Omega_2) = 0.907$$

$$\propto \sum_{\tau} \left| \frac{1}{r_{\tau,1}^{1/3}} - \frac{1}{r_{\tau,2}^{1/3}} \right|^{3/4}$$



Balances:  
 6.6% total market cap 93.4%  
 52.3% all companies 52.3%  
 91.1% exclusive companies 91.1%

50.8%—49.2%

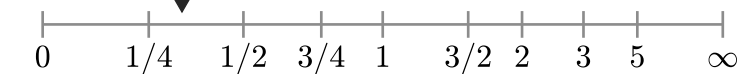
$\Omega_1$ : Market caps, 2007-Q4, top  $10^{3.0}$

$\Omega_2$ : Market caps, 2018-Q4, top  $10^{3.0}$

Divergence contribution  $\delta D_{1/3,\tau}^R$  (%)

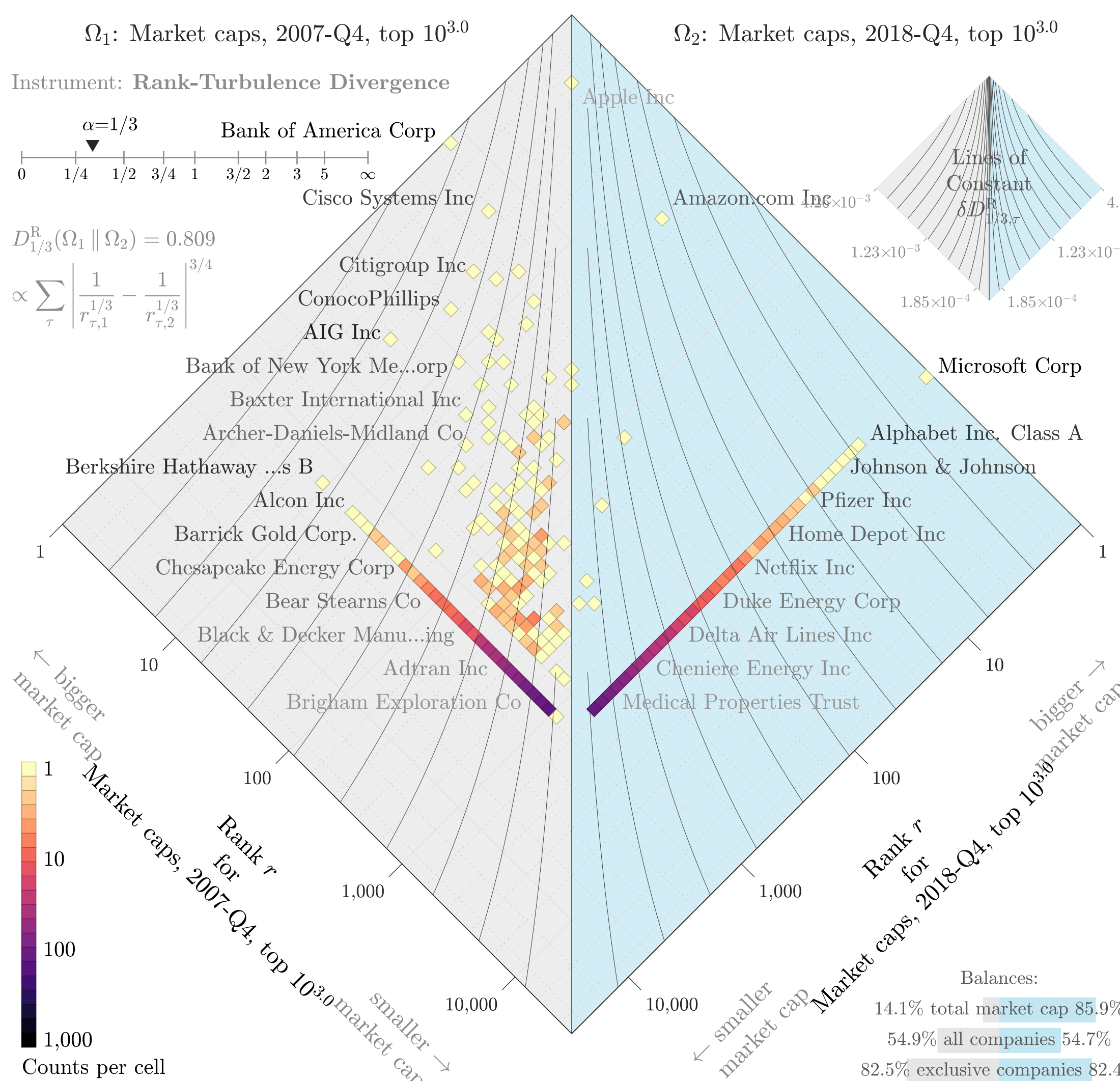
Instrument: Rank-Turbulence Divergence

$\alpha=1/3$



$$D_{1/3}^R(\Omega_1 \parallel \Omega_2) = 0.809$$

$$\propto \sum_{\tau} \left| \frac{1}{r_{\tau,1}^{1/3}} - \frac{1}{r_{\tau,2}^{1/3}} \right|^{3/4}$$



- 1,411  $\rightleftharpoons$  1 Microsoft Corp  $\triangleright$
- Bank of America Corp 1  $\rightleftharpoons$  13
- 1,411  $\rightleftharpoons$  4 Alphabet Inc. Class A  $\triangleright$
- 1,411  $\rightleftharpoons$  5 Facebook Inc  $\triangleright$
- 1,411  $\rightleftharpoons$  6 Johnson & Johnson  $\triangleright$
- AIG Inc 4  $\rightleftharpoons$  159
- 1,411  $\rightleftharpoons$  7 JPMorgan Chase & Co  $\triangleright$
- 1,411  $\rightleftharpoons$  8 Visa Inc Class A  $\triangleright$
- 1,411  $\rightleftharpoons$  9 Exxon Mobil Corp  $\triangleright$
- $\triangleleft$  Berkshire Hathaway ...s B 9  $\rightleftharpoons$  1,409
- 1,411  $\rightleftharpoons$  10 Wal-Mart Stores Inc  $\triangleright$
- 1,411  $\rightleftharpoons$  11 Pfizer Inc  $\triangleright$
- 1,411  $\rightleftharpoons$  12 UnitedHealth Group Inc  $\triangleright$
- 1,411  $\rightleftharpoons$  14 Verizon Communicati...Inc  $\triangleright$
- 19  $\rightleftharpoons$  3 Amazon.com Inc
- 1,411  $\rightleftharpoons$  15 Procter & Gamble Co  $\triangleright$
- Cisco Systems Inc 3  $\rightleftharpoons$  18
- ConocoPhillips 6  $\rightleftharpoons$  72
- 1,411  $\rightleftharpoons$  16 Intel Corp  $\triangleright$
- 1,411  $\rightleftharpoons$  17 Wells Fargo & Co  $\triangleright$
- $\triangleleft$  Alcon Inc 17  $\rightleftharpoons$  1,409
- 1,411  $\rightleftharpoons$  19 AT&T Inc  $\triangleright$
- 1,411  $\rightleftharpoons$  20 Chevron Corp  $\triangleright$
- $\triangleleft$  Anheuser-Busch Inc. 20  $\rightleftharpoons$  1,409
- Citigroup Inc 5  $\rightleftharpoons$  35
- 1,411  $\rightleftharpoons$  21 Home Depot Inc  $\triangleright$
- 1,411  $\rightleftharpoons$  22 The Coca Cola Co  $\triangleright$
- $\triangleleft$  Barrick Gold Corp. 22  $\rightleftharpoons$  1,409
- 1,411  $\rightleftharpoons$  23 Merck & Co Inc  $\triangleright$
- 1,411  $\rightleftharpoons$  24 Mastercard Inc  $\triangleright$
- 1,411  $\rightleftharpoons$  26 Oracle Corp  $\triangleright$
- $\triangleleft$  Alcoa Inc 26  $\rightleftharpoons$  1,409
- 1,411  $\rightleftharpoons$  27 Walt Disney Co  $\triangleright$
- $\triangleleft$  Anadarko Petroleum Corp 27  $\rightleftharpoons$  1,409
- Bank of New York Me...orp 11  $\rightleftharpoons$  112
- 1,411  $\rightleftharpoons$  28 PepsiCo Inc  $\triangleright$
- 1,411  $\rightleftharpoons$  30 Unilever N.V.  $\triangleright$
- 1,411  $\rightleftharpoons$  31 AbbVie Inc  $\triangleright$
- 1,411  $\rightleftharpoons$  32 McDonald's Corp  $\triangleright$
- $\triangleleft$  Burlington Northern...orp 32  $\rightleftharpoons$  1,409

Balances:  
 14.1% total market cap 85.9%  
 54.9% all companies 54.7%  
 82.5% exclusive companies 82.4%

51.6%—48.4%

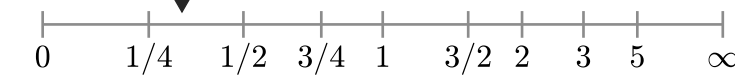
$\Omega_1$ : Market caps, 2007-Q4, top  $10^{3.5}$

$\Omega_2$ : Market caps, 2018-Q4, top  $10^{3.5}$

Divergence contribution  $\delta D_{1/3,\tau}^R$  (%)

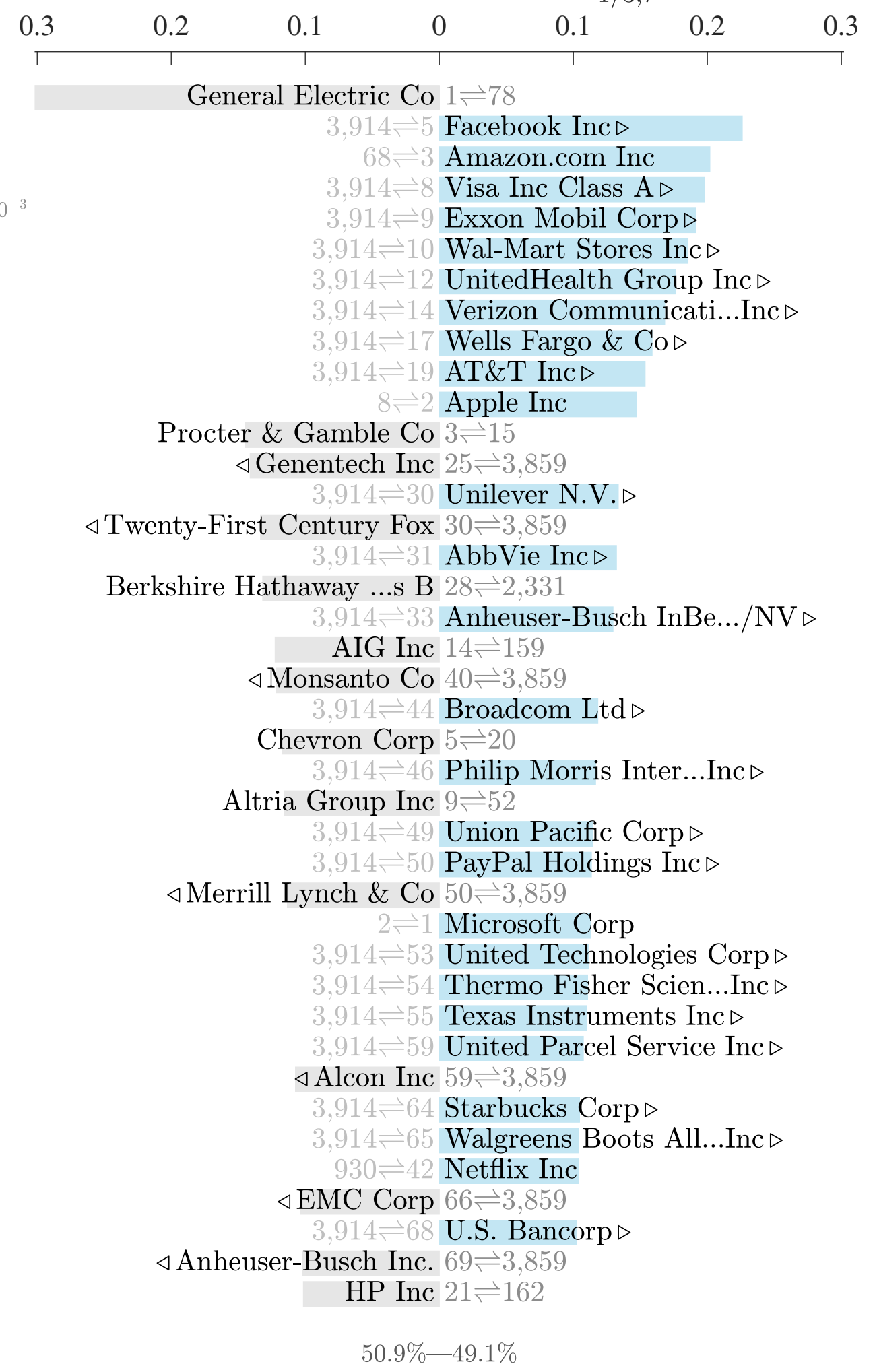
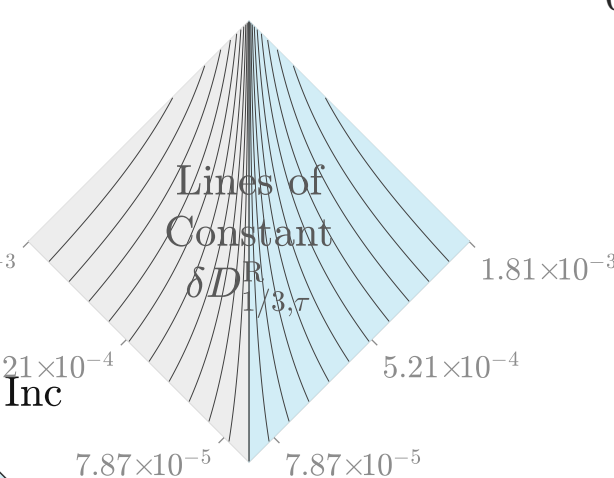
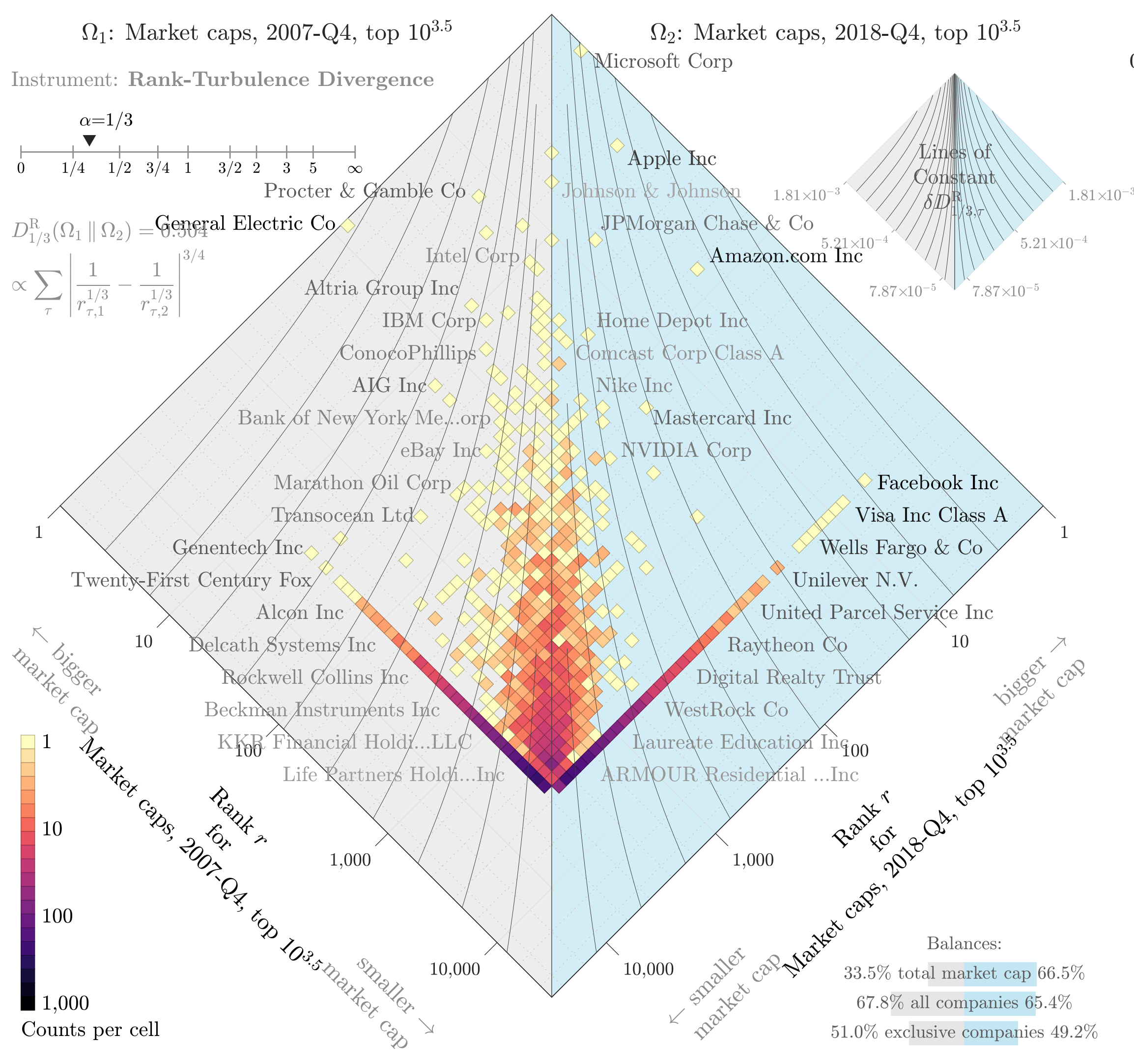
Instrument: Rank-Turbulence Divergence

$\alpha=1/3$



$$D_{1/3}^R(\Omega_1 \parallel \Omega_2) = 0.504$$

$$\propto \sum_{\tau} \left| \frac{1}{r_{\tau,1}^{1/3}} - \frac{1}{r_{\tau,2}^{1/3}} \right|^{3/4}$$



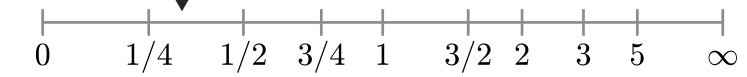
$\Omega_1$ : Market caps, 2007-Q4, top  $10^{4.0}$

$\Omega_2$ : Market caps, 2018-Q4, top  $10^{4.0}$

Divergence contribution  $\delta D_{1/3,\tau}^R$  (%)

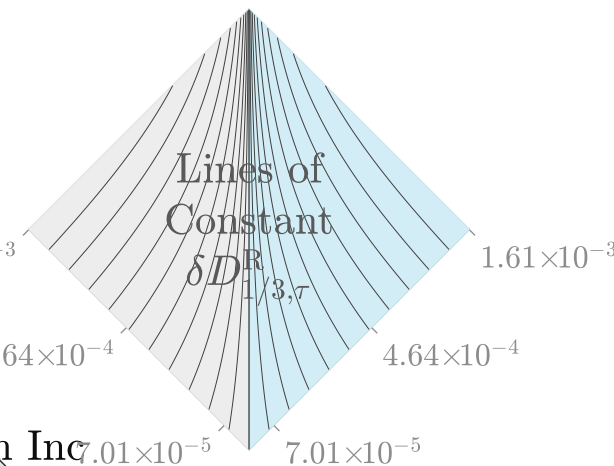
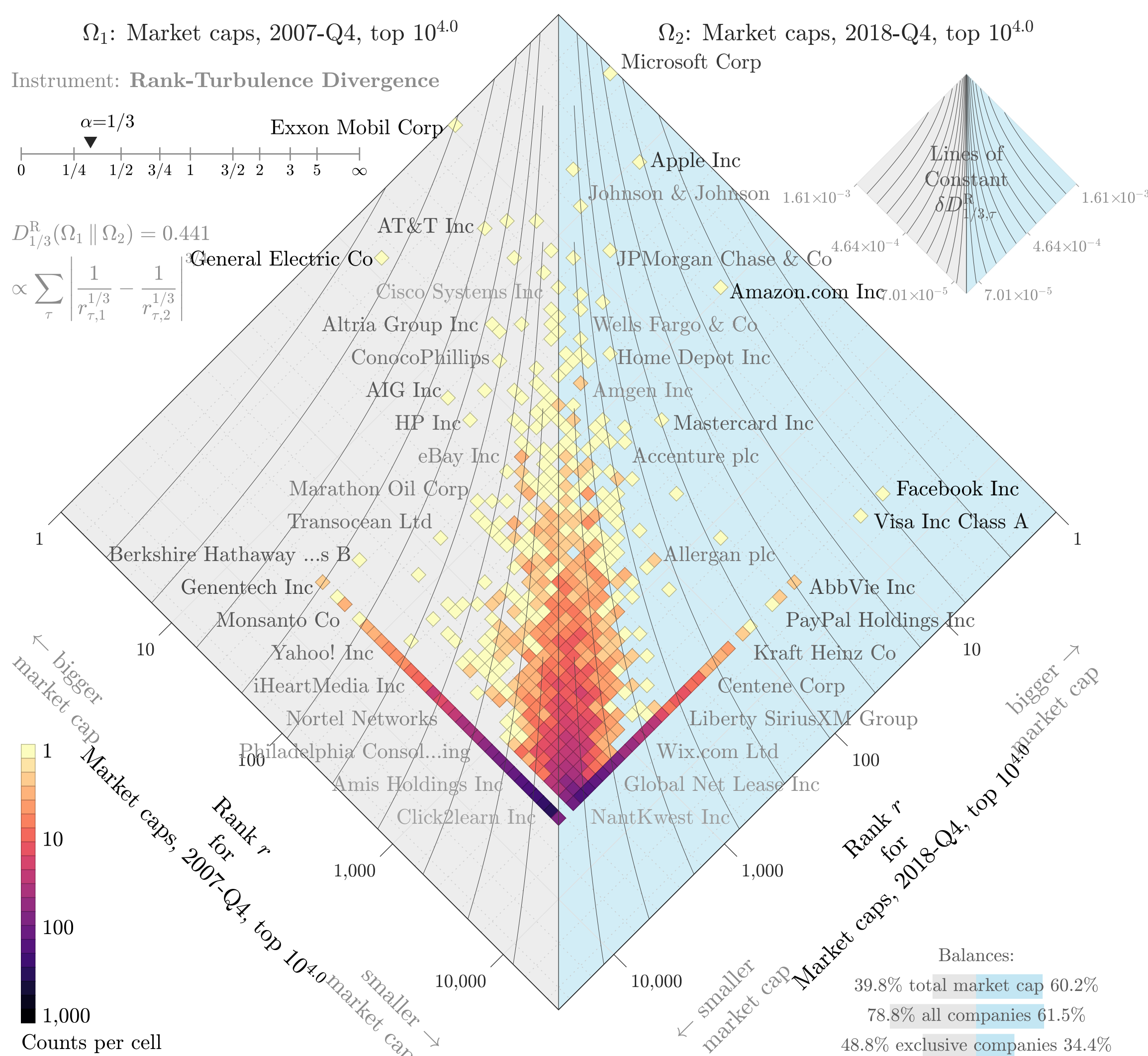
Instrument: Rank-Turbulence Divergence

$\alpha=1/3$



$$D_{1/3}^R(\Omega_1 \parallel \Omega_2) = 0.441$$

$$\propto \sum_{\tau} \left| \frac{1}{r_{\tau,1}^{1/3}} - \frac{1}{r_{\tau,2}^{1/3}} \right|$$



Divergence contribution $\delta D_{1/3,\tau}^R$ (%)								
0.2	0.15	0.1	0.05	0	0.05	0.1	0.15	0.2
General Electric Co	2	78						
Facebook Inc	4,635	5						
Exxon Mobil Corp	1	9						
Amazon.com Inc	86	3						
Visa Inc Class A	4,635	8						
Apple Inc	11	2						
Microsoft Corp	3	1						
AbbVie Inc	4,635	31						
Genentech Inc	31	4,187						
AT&T Inc	4	19						
Anheuser-Busch InBev/NV	4,635	33						
Wachovia Corp	33	4,187						
Twenty-First Century Fox	40	4,187						
Broadcom Ltd	4,635	44						
Berkshire Hathaway ...s B	38	2,331						
Philip Morris Inter...Inc	4,635	46						
Time Warner Inc	47	4,187						
Wyeth Corp	48	4,187						
PayPal Holdings Inc	4,635	50						
AIG Inc	17	159						
Monsanto Co	54	4,187						
Netflix Inc	1,214	42						
Merrill Lynch & Co	66	4,187						
Mastercard Inc	214	24						
Procter & Gamble Co	5	15						
Schering-Plough Corp	74	4,187						
Alcon Inc	76	4,187						
Charter Communicati...Inc	4,635	79						
Altria Group Inc	12	52						
EMC Corp	83	4,187						
Anheuser-Busch Inc.	87	4,187						
Tesla Inc	4,635	90						
Salesforce.com Inc	476	41						
DowDuPont Inc	91	4,187						
Barrick Gold Corp.	95	4,187						
Kraft Heinz Co	4,635	98						
HP Inc	26	162						
Lehman Brothers Holding	103	4,187						
JPMorgan Chase & Co	19	7						
Yahoo! Inc	109	4,187						

Balances:

39.8% total market cap 60.2%

78.8% all companies 61.5%

48.8% exclusive companies 34.4%

49.6%—50.4%