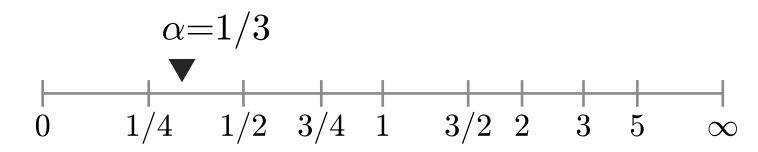


Ω_1 : Market caps, 1995-Q4

Ω_2 : Market caps, 2001-Q4

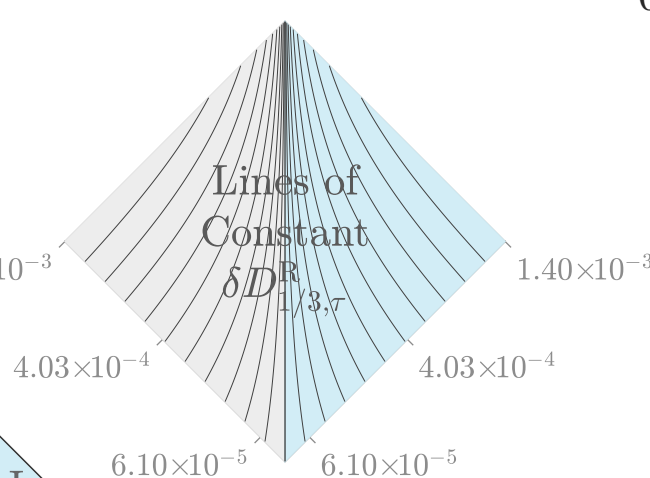
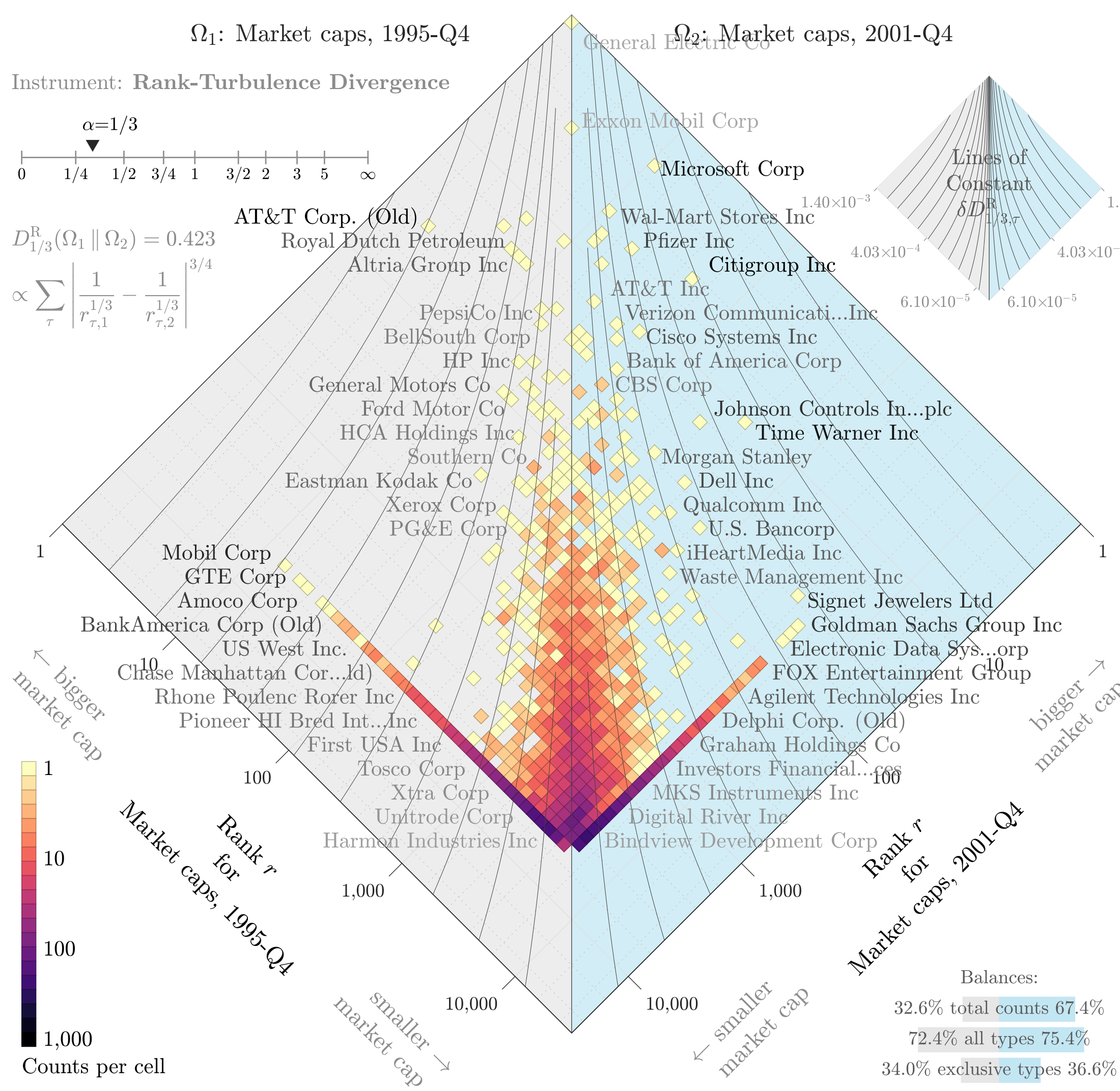
Divergence contribution $\delta D_{1/3,\tau}^R$ (%)

Instrument: Rank-Turbulence Divergence



$$D_{1/3}^R(\Omega_1 \parallel \Omega_2) = 0.423$$

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



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
AT&T Corp. (Old)	2	37						
	53	4	Citigroup Inc					
◁ Mobil Corp	14	5,178						
	10	2	Microsoft Corp					
◁ GTE Corp	19	5,178						
	376	11	Time Warner Inc					
◁ Amoco Corp	24	5,178						
◁ Ameritech Corp	31	5,178						
The Coca Cola Co	4	18						
◁ Citicorp Inc (Old)	37	5,178						
	3,566	36	Signet Jewelers Ltd					
	236	16	Johnson Controls In...plc					
◁ BankAmerica Corp (Old)	40	5,178						
◁ Nynex Corp	41	5,178						
	5,089.5	48	Goldman Sachs Group Inc					
◁ Chrysler Corp	49	5,178						
◁ Texaco Inc	50	5,178						
◁ Pharmacia & Upjohn Inc	54	5,178						
◁ Capital Cities/ABC Inc	56	5,178						
◁ MCI Communications Corp	60	5,178						
◁ Atlantic Richfield Co	61	5,178						
	5,089.5	61	AT&T Wireless					
◁ US West Inc.	66	5,178						
	21	6	Pfizer Inc					
	5,089.5	73	Electronic Data Sys...orp					
◁ J. P. Morgan & Co I...ld)	74	5,178						
Royal Dutch Petroleum	6	19						
◁ Waste Management In...ld)	80	5,178						
◁ Time Warner Inc (Old)	82	5,178						
◁ Pacific Telesis Group	84	5,178						
◁ Airtouch Communicat...Inc	86	5,178						
	379	35	Dell Inc					
◁ Warner Lambert Phar... Co	91	5,178						
◁ Tele Communications Inc	93	5,178						
◁ Seagram Co. Ltd.	94	5,178						
◁ General RE Corp	96	5,178						
Altria Group Inc	7	21						
◁ First Chicago NBD Corp	97	5,178						
	5,089.5	100	El Paso Corp					
	5,089.5	101	Qwest Communication...Inc					

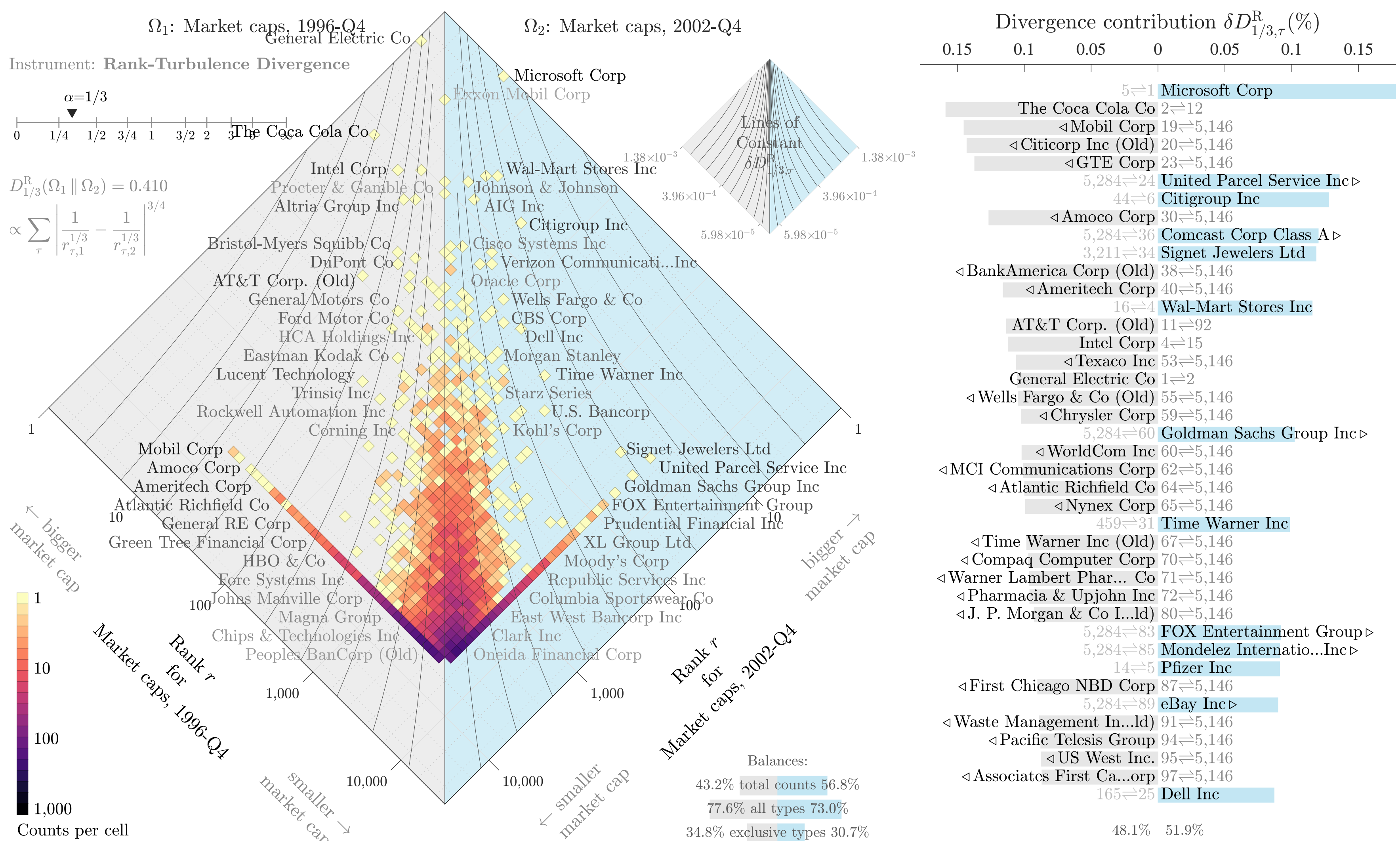
Balances:

32.6% total counts 67.4%

72.4% all types 75.4%

34.0% exclusive types 36.6%

48.6%—51.4%



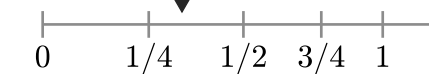
Ω_1 : Market caps, 1997-Q4

Ω_2 : Market caps, 2003-Q4

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

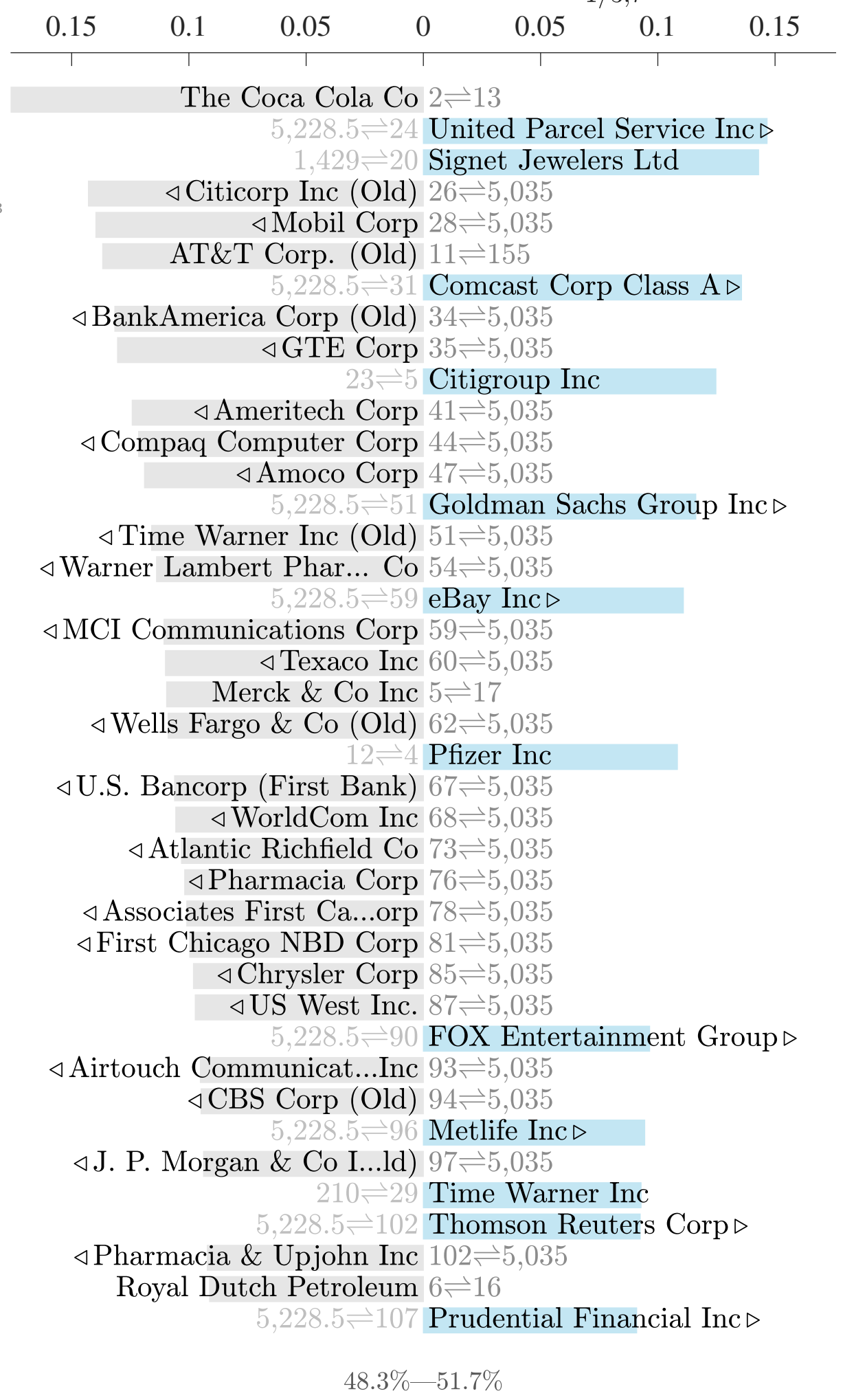
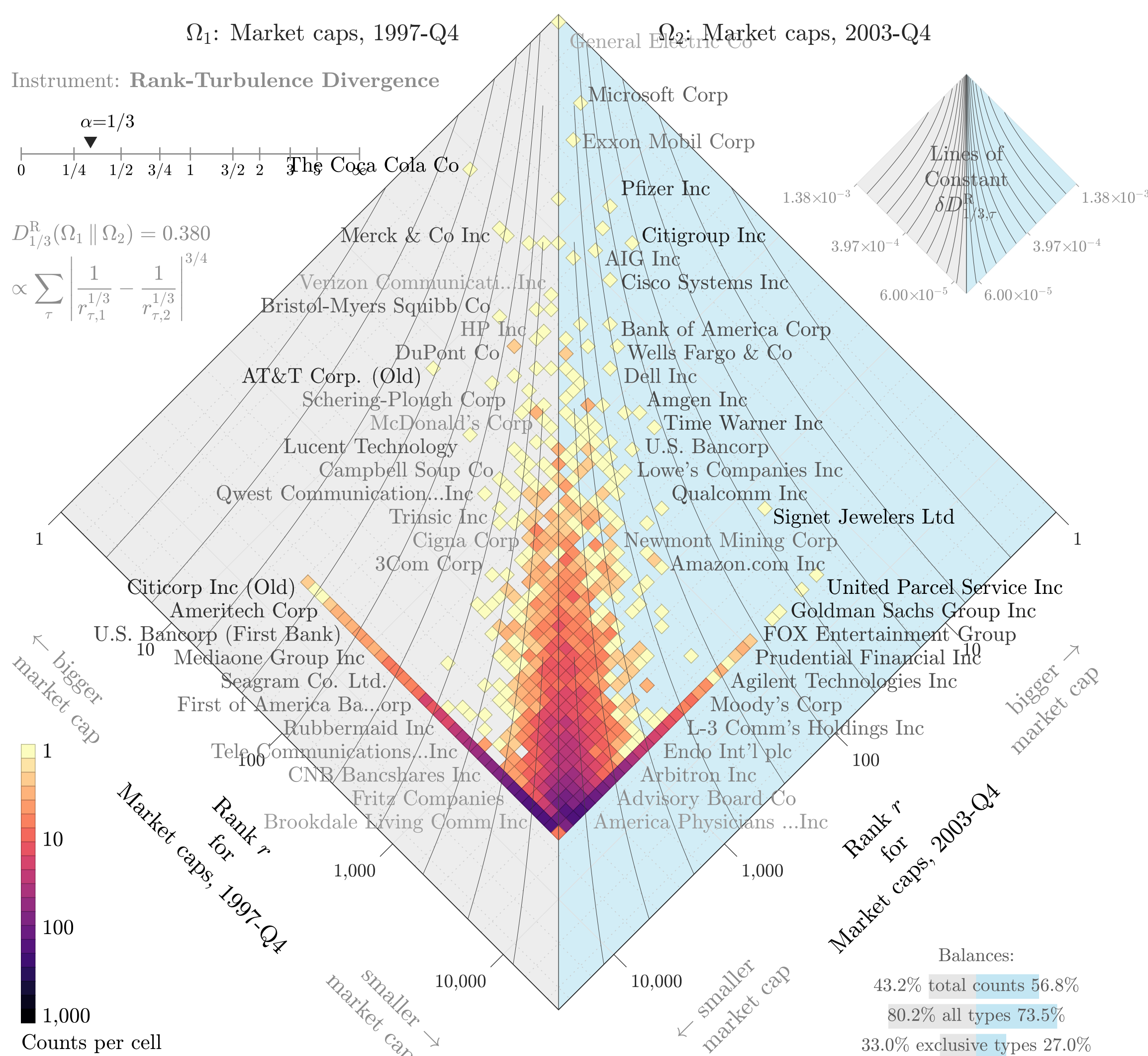
Instrument: Rank-Turbulence Divergence

$\alpha=1/3$



$$D_{1/3}^R(\Omega_1 \parallel \Omega_2) = 0.380$$

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



Balances:
 43.2% total counts 56.8%
 80.2% all types 73.5%
 33.0% exclusive types 27.0%

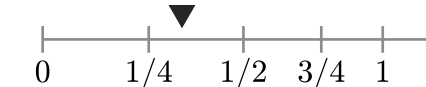
Ω_1 : Market caps, 1998-Q4

Ω_2 : Market caps, 2004-Q4

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

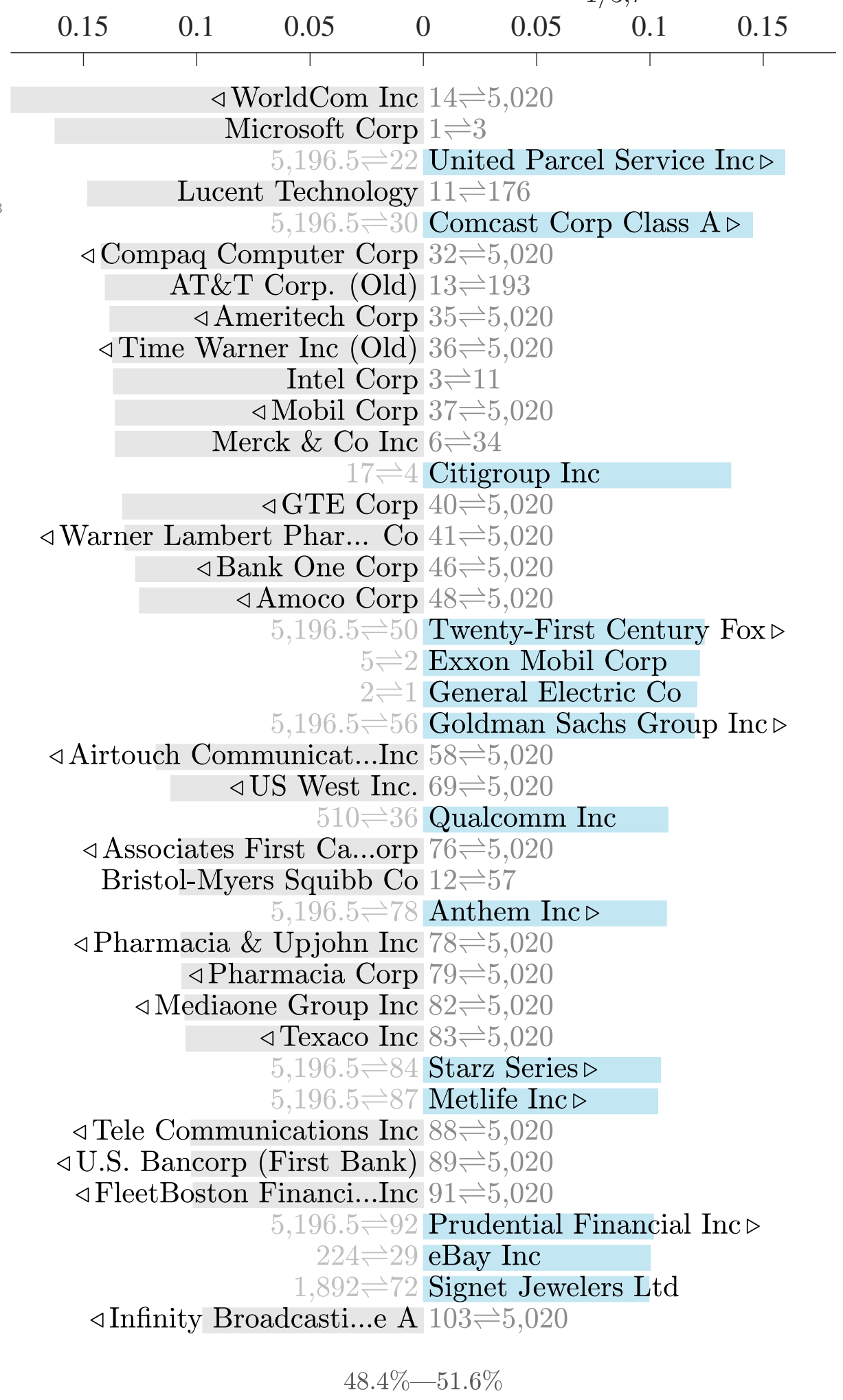
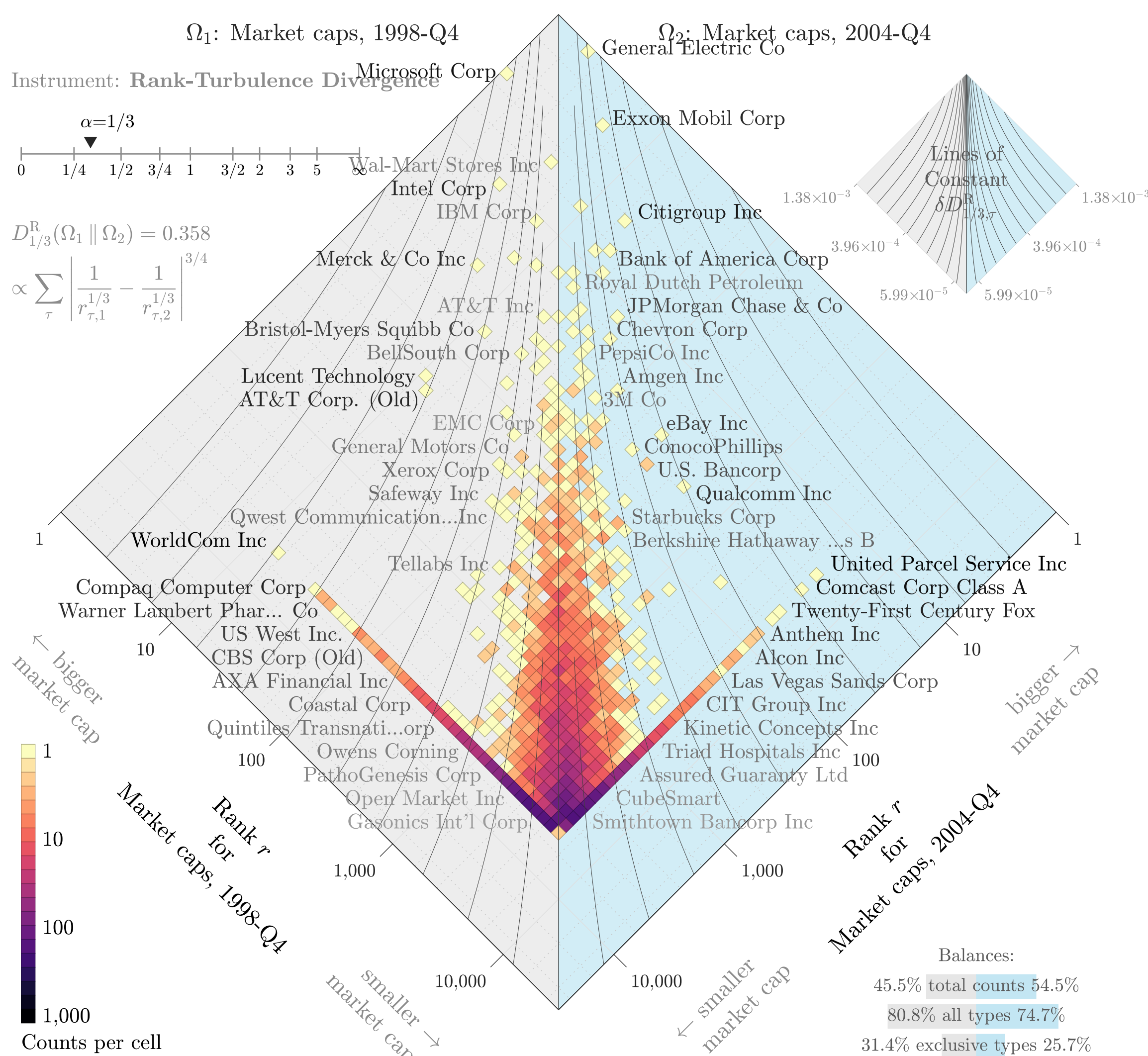
Instrument: Rank-Turbulence Divergence

$\alpha=1/3$



$$D_{1/3}^R(\Omega_1 \parallel \Omega_2) = 0.358$$

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



Balances:
 45.5% total counts 54.5%
 80.8% all types 74.7%
 31.4% exclusive types 25.7%

48.4%—51.6%

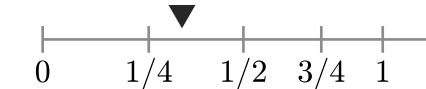
Ω_1 : Market caps, 1999-Q4

Ω_2 : Market caps, 2005-Q4

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

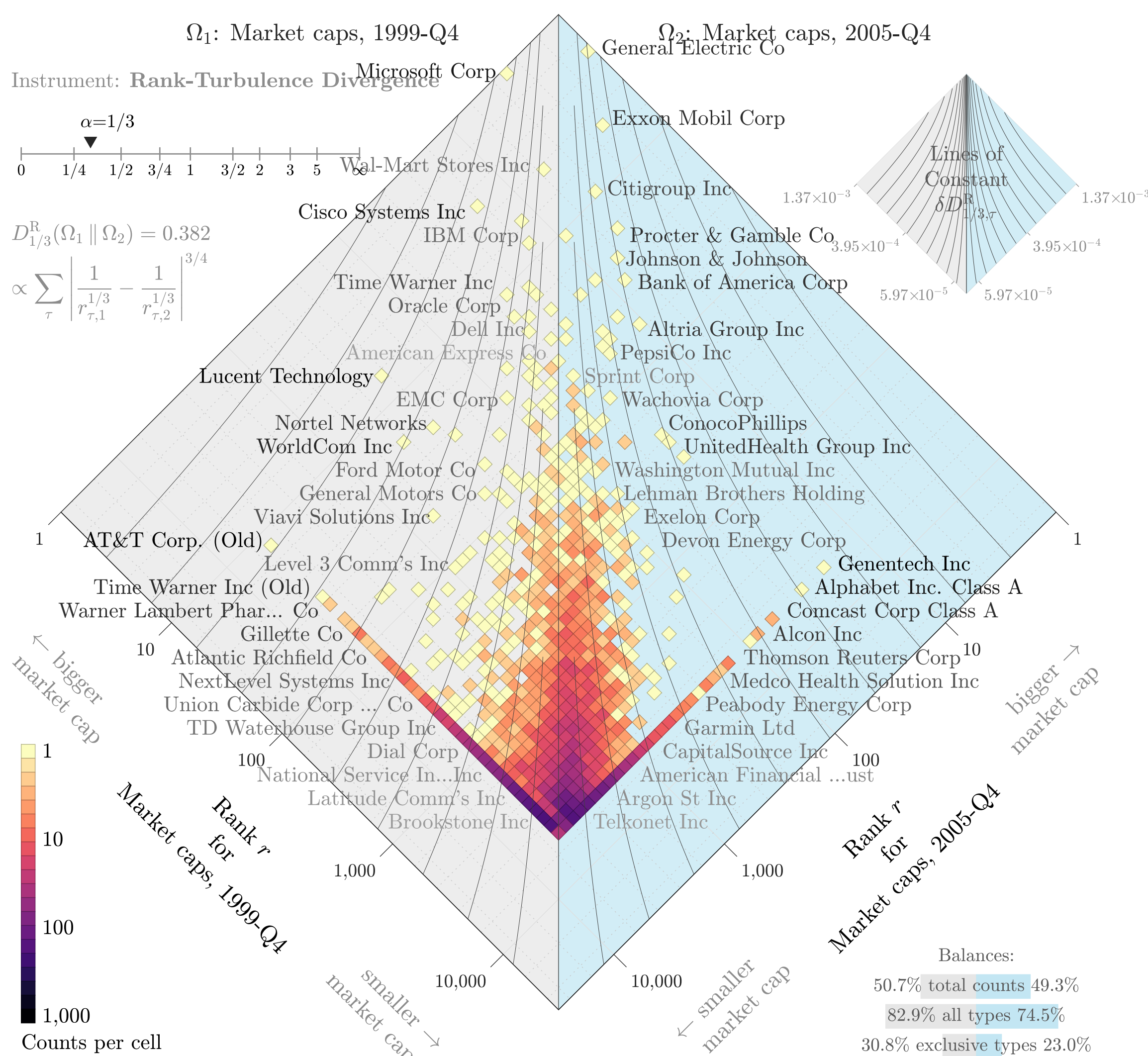
Instrument: Rank-Turbulence Divergence

$\alpha=1/3$



$$D_{1/3}^R(\Omega_1 \parallel \Omega_2) = 0.382$$

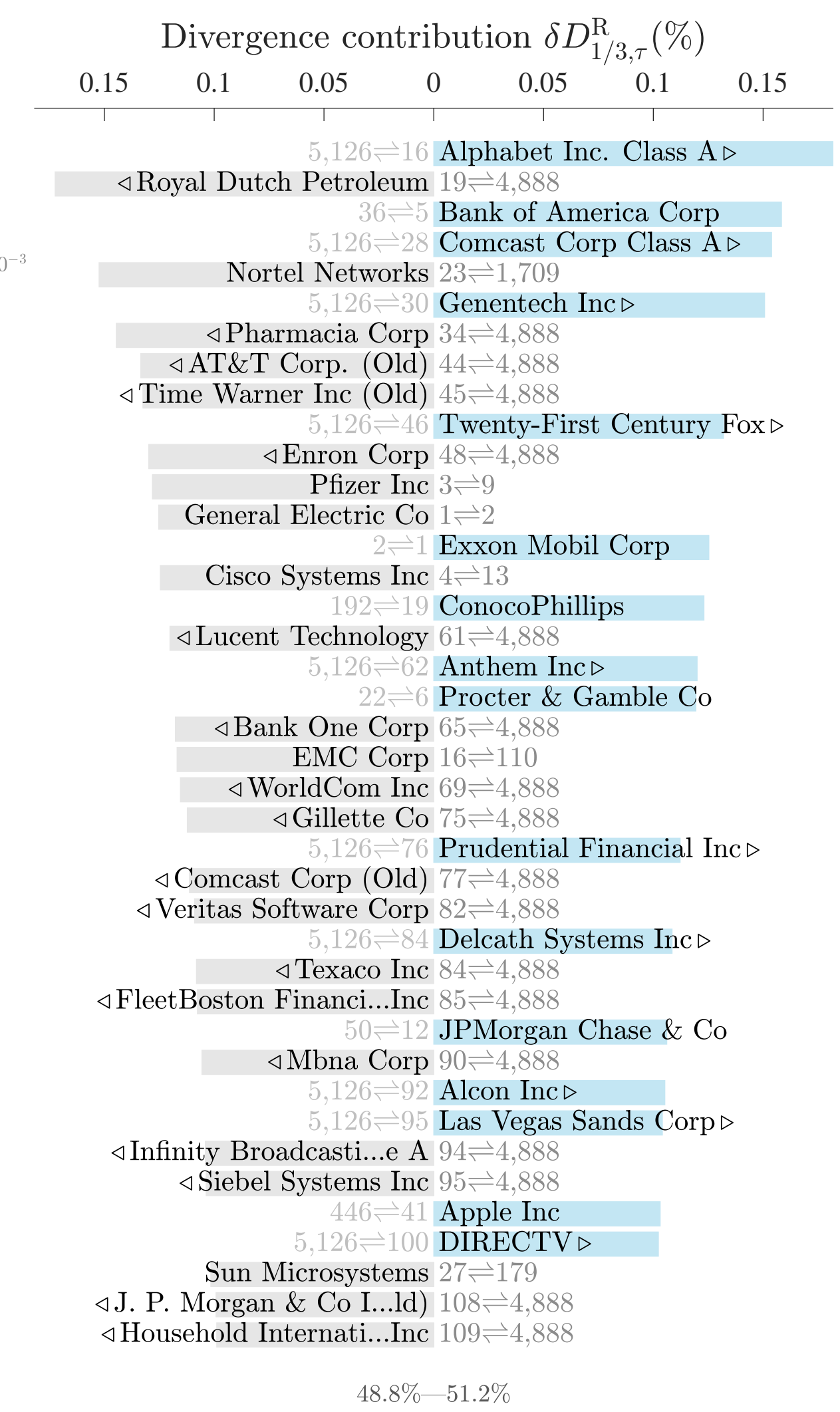
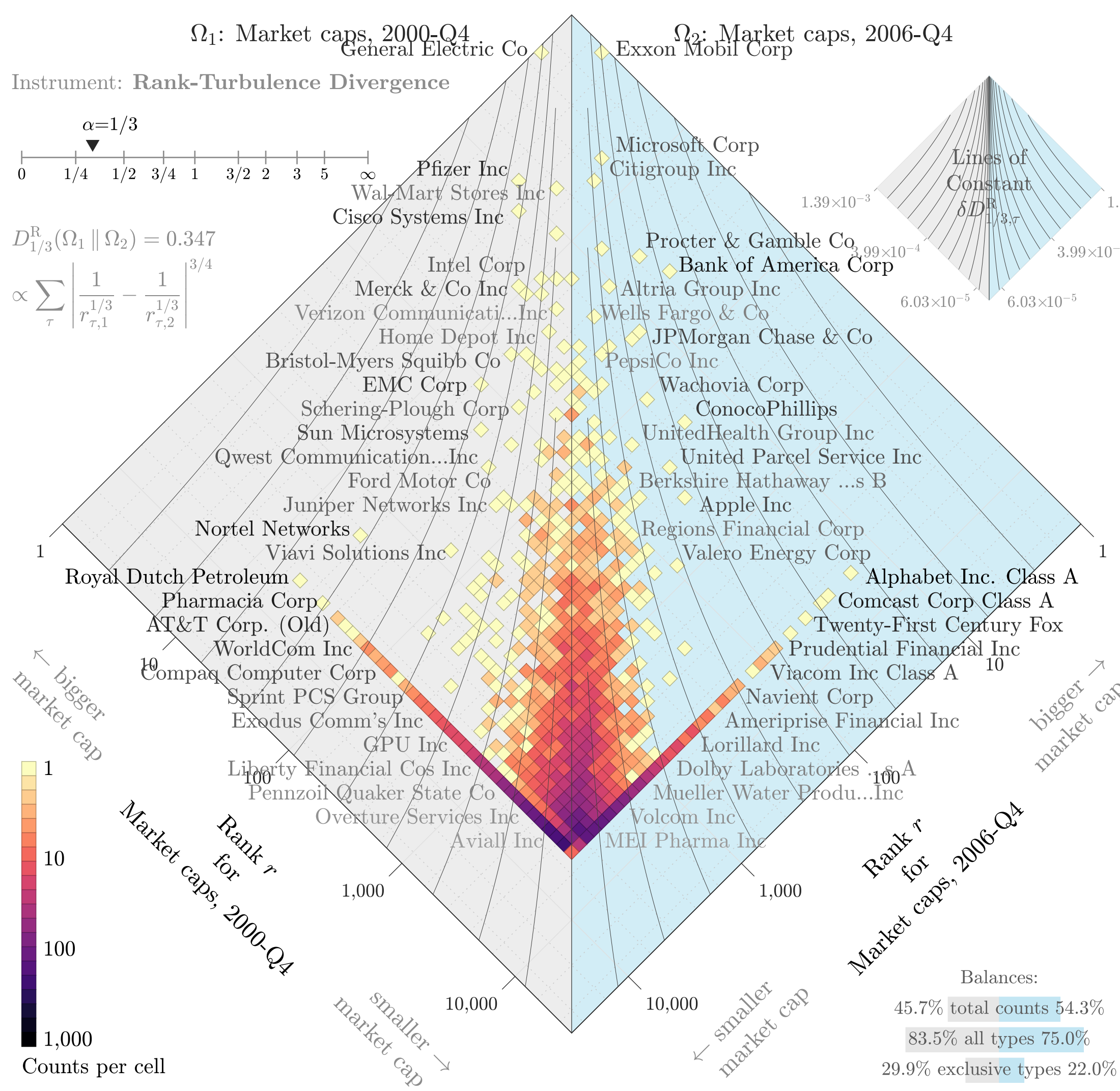
$$\propto \sum_{\tau} \left| \frac{1}{r_{\tau,1}^{1/3}} - \frac{1}{r_{\tau,2}^{1/3}} \right|^{3/4}$$

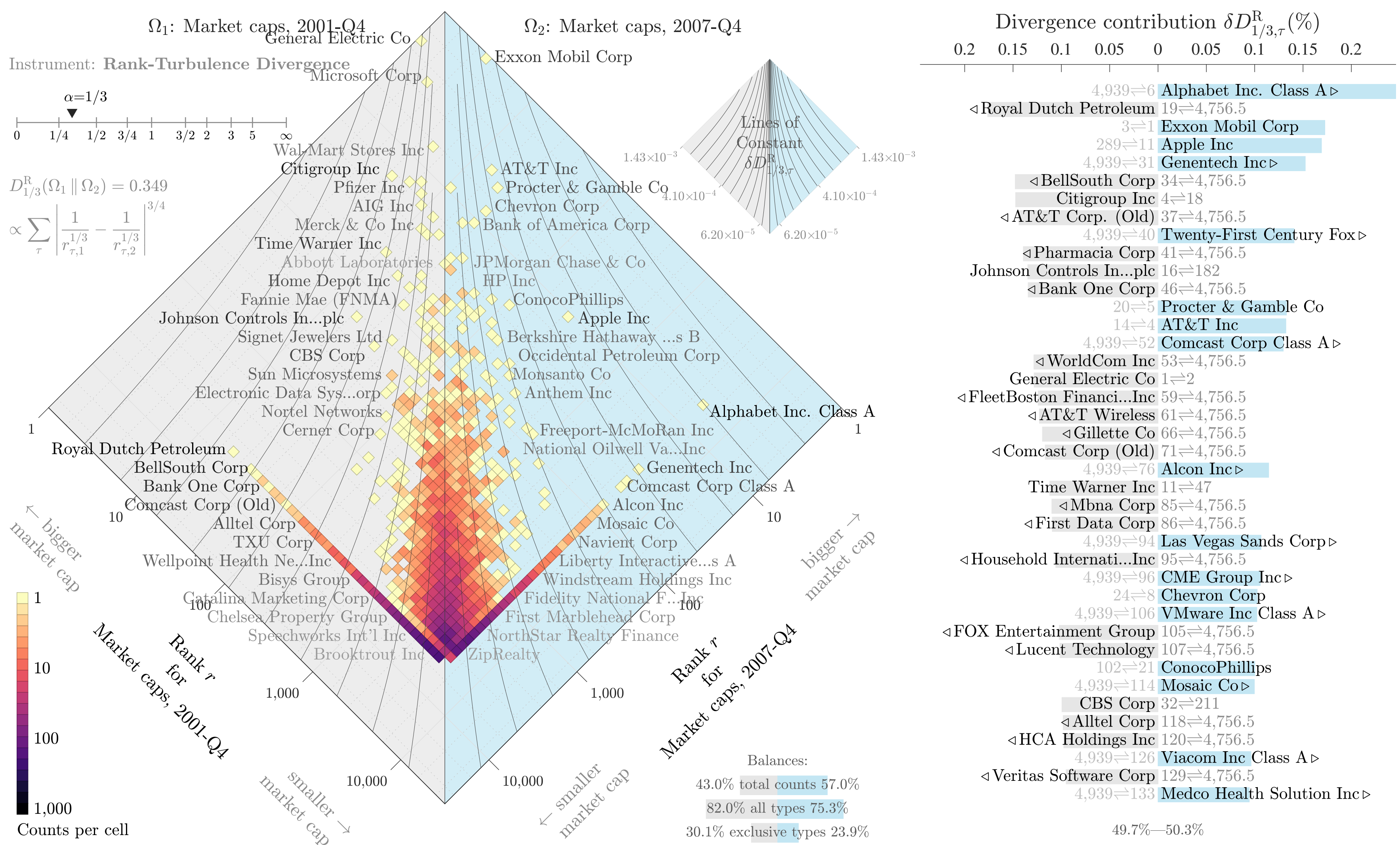


Divergence contribution $\delta D_{1/3,\tau}^R$ (%)						
0.15	0.1	0.05	0	0.05	0.1	0.15
Lucent Technology 7 \Rightarrow 268						
\triangleleft AT&T Corp. (Old) 13 \Rightarrow 4,976						
5,214 \Rightarrow 19 Genentech Inc \triangleright						
Microsoft Corp 1 \Rightarrow 3						
Cisco Systems Inc 3 \Rightarrow 17						
5,214 \Rightarrow 31 Alphabet Inc. Class A \triangleright						
WorldCom Inc 17 \Rightarrow 443						
\triangleleft Time Warner Inc (Old) 35 \Rightarrow 4,976						
\triangleleft Warner Lambert Phar... Co 41 \Rightarrow 4,976						
\triangleleft GTE Corp 43 \Rightarrow 4,976						
Nortel Networks 20 \Rightarrow 255						
5 \Rightarrow 2 Exxon Mobil Corp						
2 \Rightarrow 1 General Electric Co						
5,214 \Rightarrow 55 Comcast Corp Class A \triangleright						
18 \Rightarrow 5 Procter & Gamble Co						
5,214 \Rightarrow 57 Anthem Inc \triangleright						
5,214 \Rightarrow 59 Twenty-First Century Fox \triangleright						
\triangleleft CBS Corp (Old) 61 \Rightarrow 4,976						
\triangleleft Mediaone Group Inc 63 \Rightarrow 4,976						
\triangleleft Compaq Computer Corp 64 \Rightarrow 4,976						
34 \Rightarrow 8 Bank of America Corp						
57 \Rightarrow 11 Altria Group Inc						
\triangleleft Gillette Co 68 \Rightarrow 4,976						
289 \Rightarrow 26 UnitedHealth Group Inc						
344 \Rightarrow 29 United Parcel Service Inc						
5,214 \Rightarrow 74 Alcon Inc \triangleright						
\triangleleft Infinity Broadcasti...e A 74 \Rightarrow 4,976						
5,214 \Rightarrow 78 Metlife Inc \triangleright						
5,214 \Rightarrow 79 Prudential Financial Inc \triangleright						
\triangleleft Veritas Software Corp 79 \Rightarrow 4,976						
Actua Corp 67 \Rightarrow 2,622						
\triangleleft Bank One Corp 80 \Rightarrow 4,976						
\triangleleft US West Inc. 81 \Rightarrow 4,976						
\triangleleft Comcast Corp (Old) 82 \Rightarrow 4,976						
Sun Microsystems 26 \Rightarrow 218						
23 \Rightarrow 7 Johnson & Johnson						
\triangleleft Nextel Communications Inc 84 \Rightarrow 4,976						
\triangleleft Sprint PCS Group 85 \Rightarrow 4,976						
5,214 \Rightarrow 89 Delcath Systems Inc \triangleright						
Global Crossing Ltd 73 \Rightarrow 2,435						

Balances:
 50.7% total counts 49.3%
 82.9% all types 74.5%
 30.8% exclusive types 23.0%

48.0%—52.0%



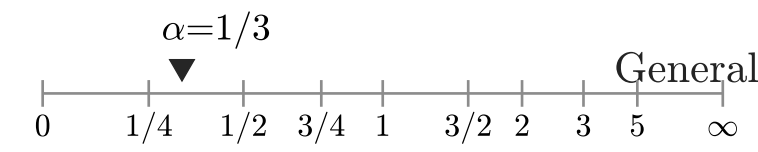


Ω_1 : Market caps, 2002-Q4

Ω_2 : Market caps, 2008-Q4

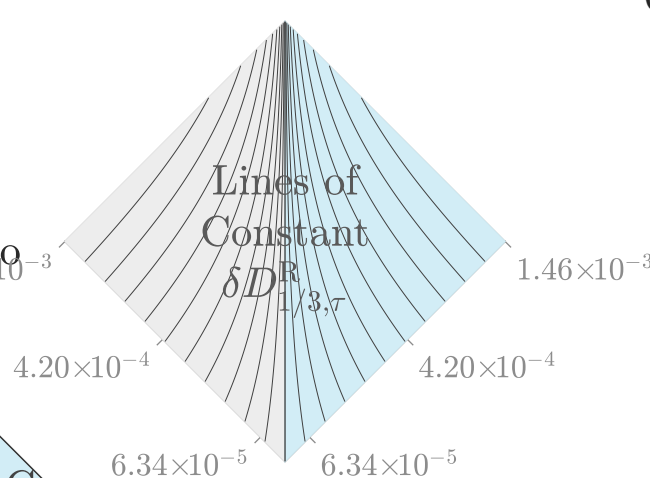
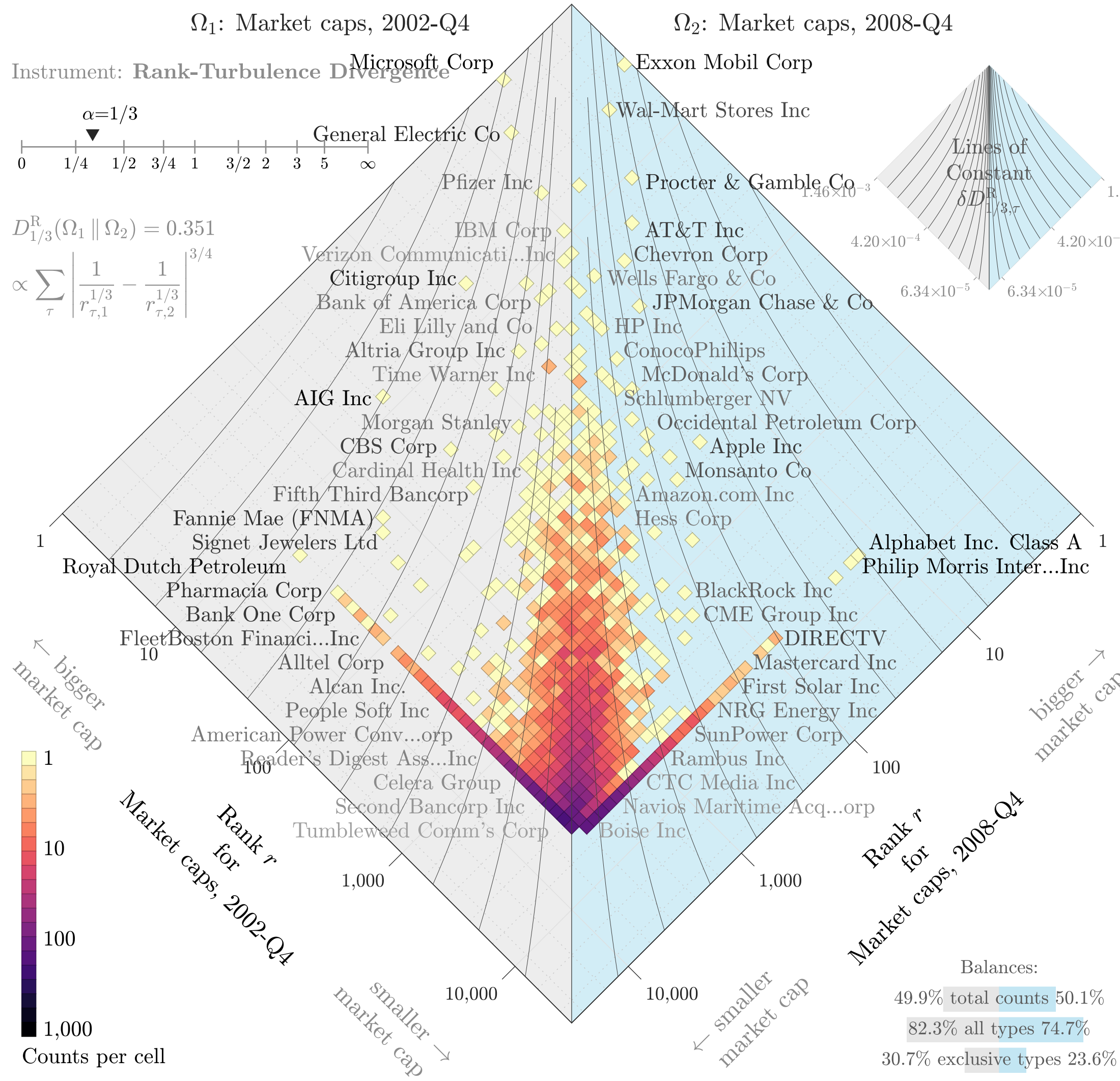
Divergence contribution $\delta D_{1/3,\tau}^R$ (%)

Instrument: Rank-Turbulence Divergence



$$D_{1/3}^R(\Omega_1 \parallel \Omega_2) = 0.351$$

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



Company	Rank 2002-Q4	Rank 2008-Q4	Divergence Contribution (%)
Microsoft Corp	1	4	48.6%
AIG Inc	8	383	48.6%
Alphabet Inc. Class A	4,808	14	48.6%
Philip Morris Inter...Inc	4,808	16	48.6%
Royal Dutch Petroleum	17	4,606.5	48.6%
Exxon Mobil Corp	3	1	48.6%
Genentech Inc	4,808	23	48.6%
Citigroup Inc	6	51	48.6%
General Electric Co	2	7	48.6%
Pharmacia Corp	35	4,606.5	48.6%
Procter & Gamble Co	11	3	48.6%
Fannie Mae (FNMA)	27	1,224	48.6%
BellSouth Corp	41	4,606.5	48.6%
Signet Jewelers Ltd	34	1,429	48.6%
Bank One Corp	46	4,606.5	48.6%
Anheuser-Busch Inc.	48	4,606.5	48.6%
AT&T Inc	18	5	48.6%
WMIH Corp	57	4,606.5	48.6%
Washington Mutual Inc	58	4,606.5	48.6%
Apple Inc	336	25	48.6%
Gillette Co	61	4,606.5	48.6%
CBS Corp	26	329	48.6%
Freddie Mac (FHLMC)	49	1,617	48.6%
First Data Corp	69	4,606.5	48.6%
FleetBoston Financi...Inc	75	4,606.5	48.6%
JPMorgan Chase & Co	42	10	48.6%
DIRECTV	4,808	78	48.6%
Twenty-First Century Fox	4,808	80	48.6%
Mbna Corp	80	4,606.5	48.6%
Visa Inc Class A	4,808	81	48.6%
FOX Entertainment Group	83	4,606.5	48.6%
HCA Holdings Inc	88	4,606.5	48.6%
Wal-Mart Stores Inc	4	2	48.6%
AT&T Corp. (Old)	92	4,606.5	48.6%
iHeartMedia Inc	84	3,187	48.6%
Medco Health Solution Inc	4,808	95	48.6%
Time Warner Cable Inc	4,808	101	48.6%
Covidien plc	4,808	110	48.6%
Chevron Corp	23	8	48.6%
Starz Series	81	1,655	48.6%

Balances:

49.9% total counts 50.1%

82.3% all types 74.7%

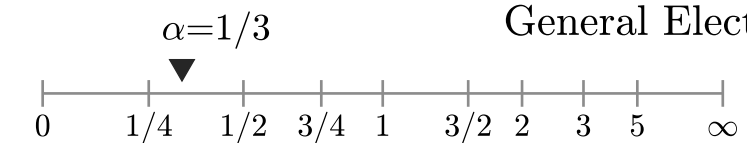
30.7% exclusive types 23.6%

Ω_1 : Market caps, 2003-Q4

Ω_2 : Market caps, 2009-Q4

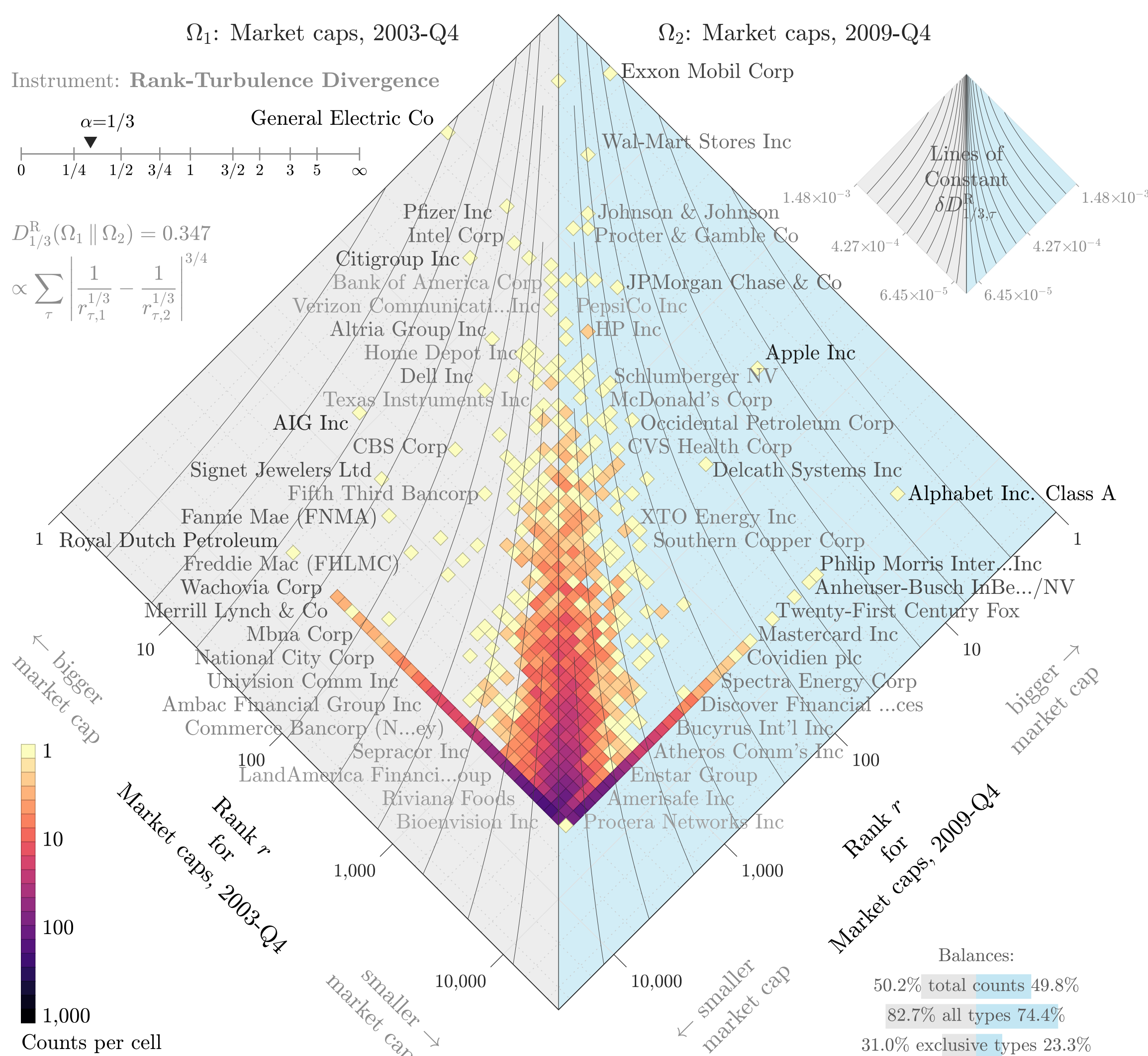
Divergence contribution $\delta D_{1/3,\tau}^R$ (%)

Instrument: Rank-Turbulence Divergence



$$D_{1/3}^R(\Omega_1 \parallel \Omega_2) = 0.347$$

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

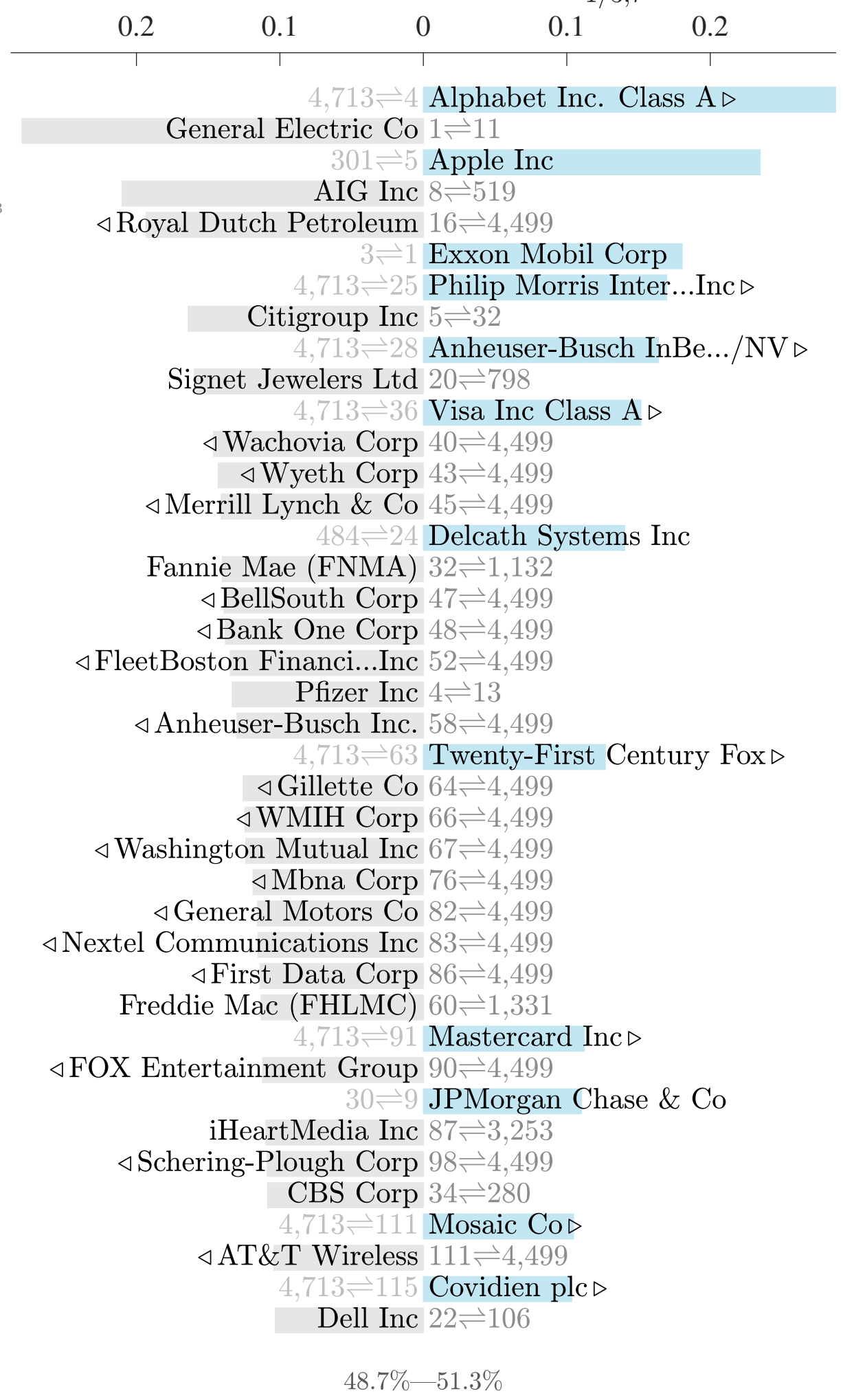


Balances:

50.2% total counts 49.8%

82.7% all types 74.4%

31.0% exclusive types 23.3%



Ω_1 : Market caps, 2004-Q4

Ω_2 : Market caps, 2010-Q4

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

Instrument: Rank-Turbulence Divergence

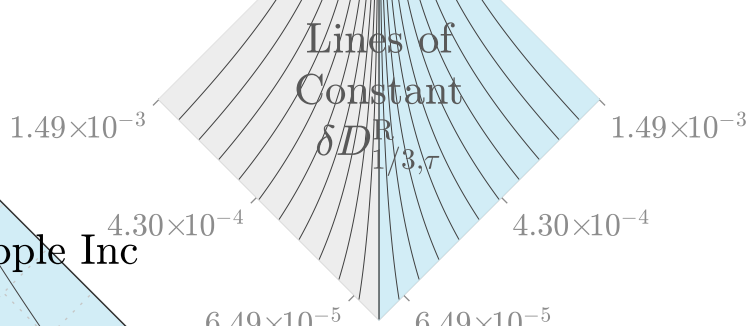
General Electric Co

Exxon Mobil Corp

0.3 0.2 0.1 0 0.1 0.2 0.3

$\alpha=1/3$

0 1/4 1/2 3/4 1 3/2 2 3 5 ∞

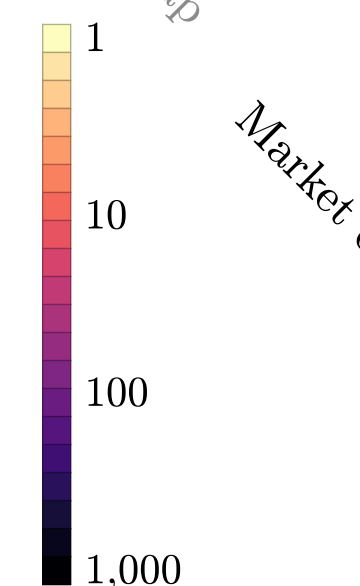


$D_{1/3}^R(\Omega_1 \parallel \Omega_2) = 0.333$

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

← bigger market cap

→ bigger market cap



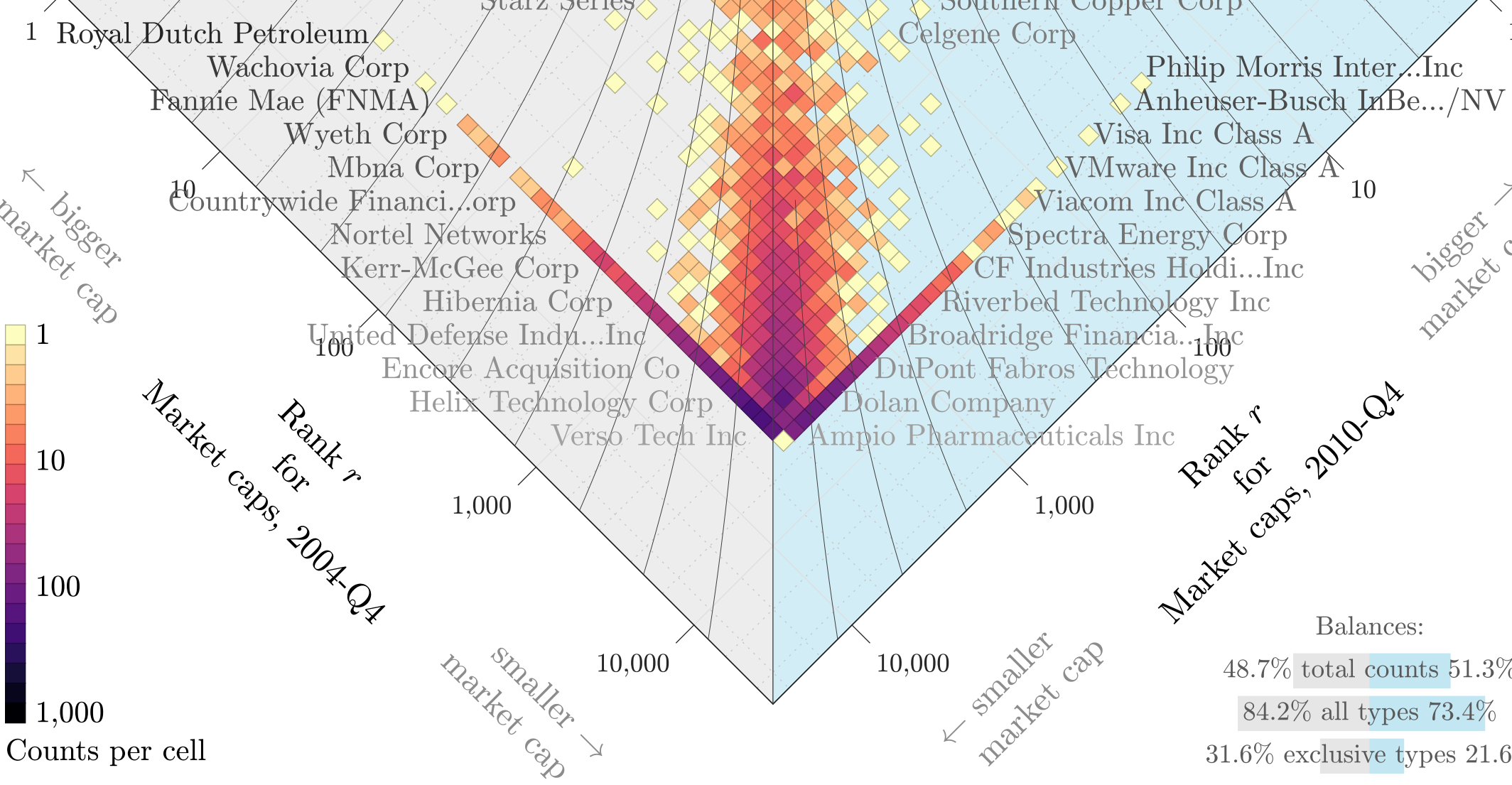
Counts per cell

Rank r for Market caps, 2004-Q4

Rank r for Market caps, 2010-Q4

→ smaller market cap

← smaller market cap



100 ⇌ 2	Apple Inc
General Electric Co 1 ⇌ 7	
122 ⇌ 4	Delcath Systems Inc
↵ Royal Dutch Petroleum 15 ⇌ 4,422	
114 ⇌ 6	Berkshire Hathaway ...s B
260 ⇌ 8	Alphabet Inc. Class A
4,695.5 ⇌ 25	Philip Morris Inter...Inc
↵ Wachovia Corp 27 ⇌ 4,422	
4,695.5 ⇌ 30	Anheuser-Busch InBe.../NV
Citigroup Inc 4 ⇌ 18	
AIG Inc 9 ⇌ 75	
↵ Fannie Mae (FNMA) 37 ⇌ 4,422	
↵ Wyeth Corp 47 ⇌ 4,422	
↵ Merrill Lynch & Co 49 ⇌ 4,422	
2 ⇌ 1	Exxon Mobil Corp
4,695.5 ⇌ 54	Visa Inc Class A
↵ BellSouth Corp 54 ⇌ 4,422	
↵ Freddie Mac (FHLMC) 55 ⇌ 4,422	
↵ Gillette Co 61 ⇌ 4,422	
↵ Anheuser-Busch Inc. 67 ⇌ 4,422	
↵ Washington Mutual Inc 71 ⇌ 4,422	
↵ WMIH Corp 73 ⇌ 4,422	
↵ Mbna Corp 75 ⇌ 4,422	
↵ First Data Corp 79 ⇌ 4,422	
4,695.5 ⇌ 82	VMware Inc Class A
↵ Nextel Communications Inc 81 ⇌ 4,422	
↵ Schering-Plough Corp 83 ⇌ 4,422	
↵ FOX Entertainment Group 85 ⇌ 4,422	
Dell Inc 20 ⇌ 121	
Pfizer Inc 6 ⇌ 17	
Bank of America Corp 7 ⇌ 20	
Altria Group Inc 14 ⇌ 53	
↵ National City Corp 109 ⇌ 4,422	
4,695.5 ⇌ 111	Mastercard Inc
399 ⇌ 45	Freeport-McMoRan Inc
↵ Lehman Brothers Holding 115 ⇌ 4,422	
↵ Guidant Corp 118 ⇌ 4,422	
4,695.5 ⇌ 129	Viacom Inc Class A
↵ Countrywide Financi...orp 128 ⇌ 4,422	
4,695.5 ⇌ 131	Time Warner Cable Inc

Balances:
48.7% total counts 51.3%
84.2% all types 73.4%
31.6% exclusive types 21.6%

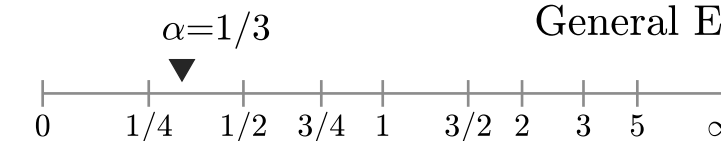
48.7%—51.3%

Ω_1 : Market caps, 2005-Q4

Ω_2 : Market caps, 2011-Q4

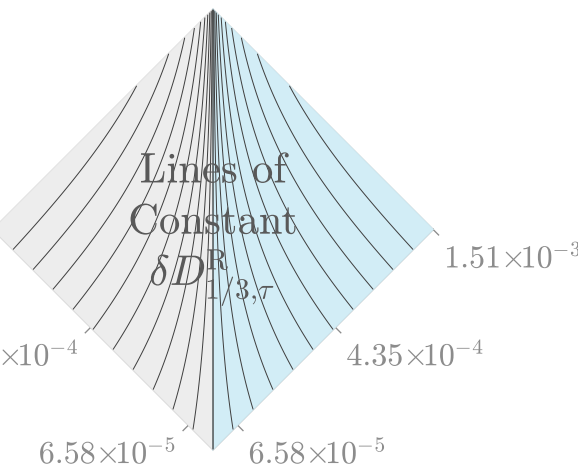
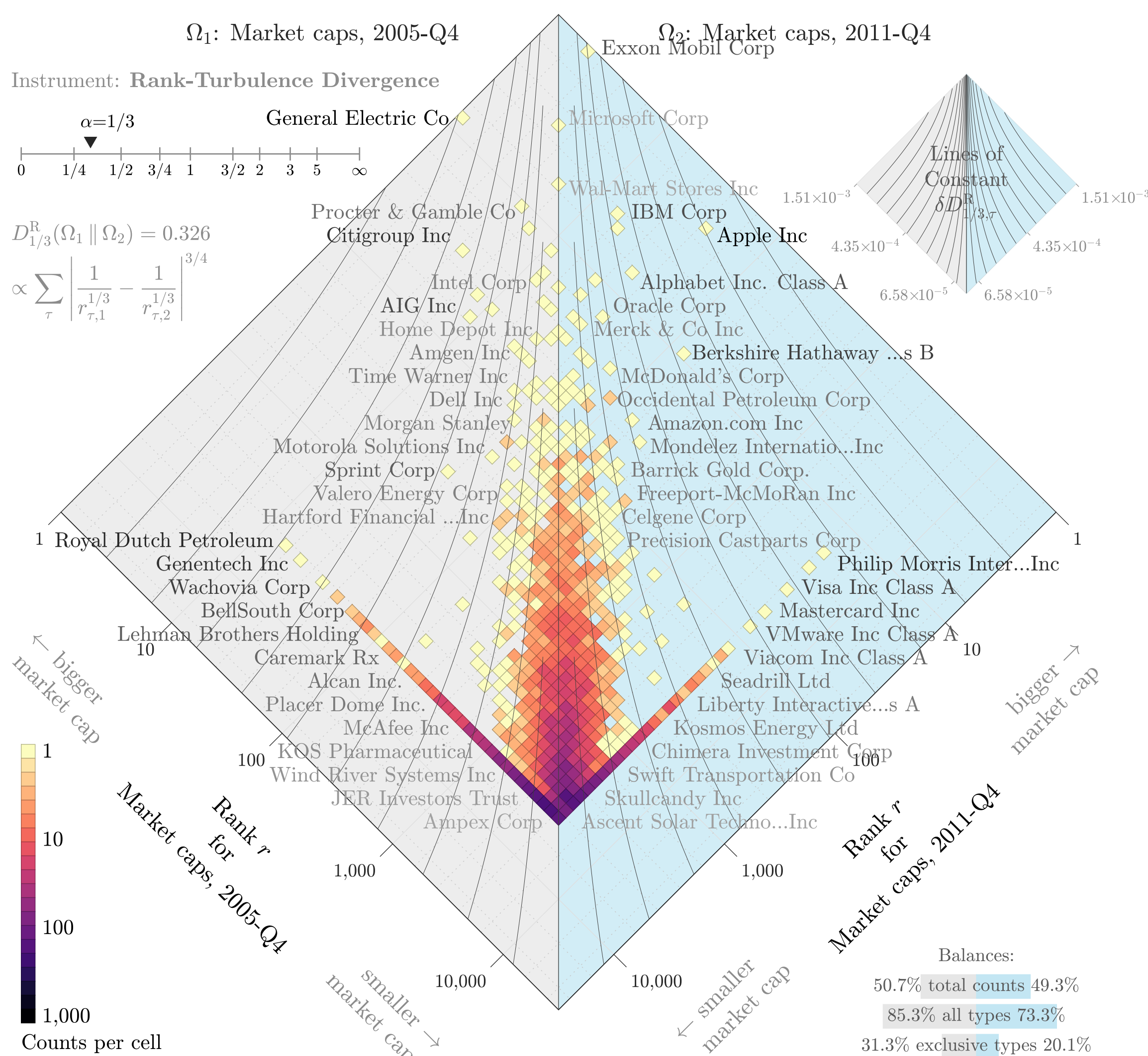
Divergence contribution $\delta D_{1/3,\tau}^R$ (%)

Instrument: Rank-Turbulence Divergence



$$D_{1/3}^R(\Omega_1 \parallel \Omega_2) = 0.326$$

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



0.2	0.1	0	0.1	0.2
		44 \rightleftharpoons 2	Apple Inc	
General Electric Co	1 \rightleftharpoons 8			
◁Royal Dutch Petroleum	14 \rightleftharpoons 4,316.5			
	4,616 \rightleftharpoons 17	Philip Morris Inter...Inc		
◁Genentech Inc	19 \rightleftharpoons 4,316.5			
Citigroup Inc	4 \rightleftharpoons 31			
	4,616 \rightleftharpoons 25	Anheuser-Busch InBe.../NV		
	118 \rightleftharpoons 9	Berkshire Hathaway ...s B		
◁Wachovia Corp	30 \rightleftharpoons 4,316.5			
	4,616 \rightleftharpoons 36	Visa Inc Class A		
◁Merrill Lynch & Co	41 \rightleftharpoons 4,316.5			
AIG Inc	9 \rightleftharpoons 62			
◁Wyeth Corp	42 \rightleftharpoons 4,316.5			
	15 \rightleftharpoons 4	IBM Corp		
Bank of America Corp	8 \rightleftharpoons 46			
	2 \rightleftharpoons 1	Exxon Mobil Corp		
	31 \rightleftharpoons 7	Alphabet Inc. Class A		
	4,616 \rightleftharpoons 57	Mastercard Inc		
◁BellSouth Corp	61 \rightleftharpoons 4,316.5			
◁Fannie Mae (FNMA)	63 \rightleftharpoons 4,316.5			
	16 \rightleftharpoons 5	Chevron Corp		
◁Freddie Mac (FHLMC)	67 \rightleftharpoons 4,316.5			
◁Washington Mutual Inc	70 \rightleftharpoons 4,316.5			
◁WMIH Corp	71 \rightleftharpoons 4,316.5			
◁Alcon Inc	74 \rightleftharpoons 4,316.5			
	4,616 \rightleftharpoons 76	VMware Inc Class A		
◁Lehman Brothers Holding	82 \rightleftharpoons 4,316.5			
◁Mbna Corp	83 \rightleftharpoons 4,316.5			
◁Anheuser-Busch Inc.	84 \rightleftharpoons 4,316.5			
◁First Data Corp	85 \rightleftharpoons 4,316.5			
◁Burlington Resources	87 \rightleftharpoons 4,316.5			
	Sprint Corp	37 \rightleftharpoons 397		
	Altria Group Inc	11 \rightleftharpoons 41		
◁Schering-Plough Corp	96 \rightleftharpoons 4,316.5			
◁Burlington Northern...orp	109 \rightleftharpoons 4,316.5			
	4,616 \rightleftharpoons 120	Viacom Inc Class A		
◁Alltel Corp	120 \rightleftharpoons 4,316.5			
◁TXU Corp	121 \rightleftharpoons 4,316.5			
◁Caremark Rx	126 \rightleftharpoons 4,316.5			
	156 \rightleftharpoons 30	Amazon.com Inc		
		48.5%—51.5%		

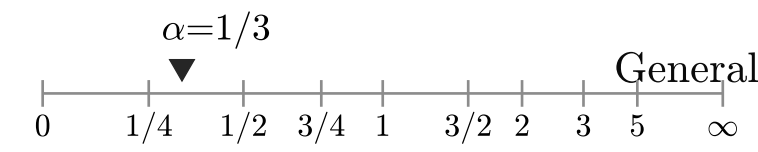
Balances:
50.7% total counts 49.3%
85.3% all types 73.3%
31.3% exclusive types 20.1%

Ω_1 : Market caps, 2006-Q4

Ω_2 : Market caps, 2012-Q4

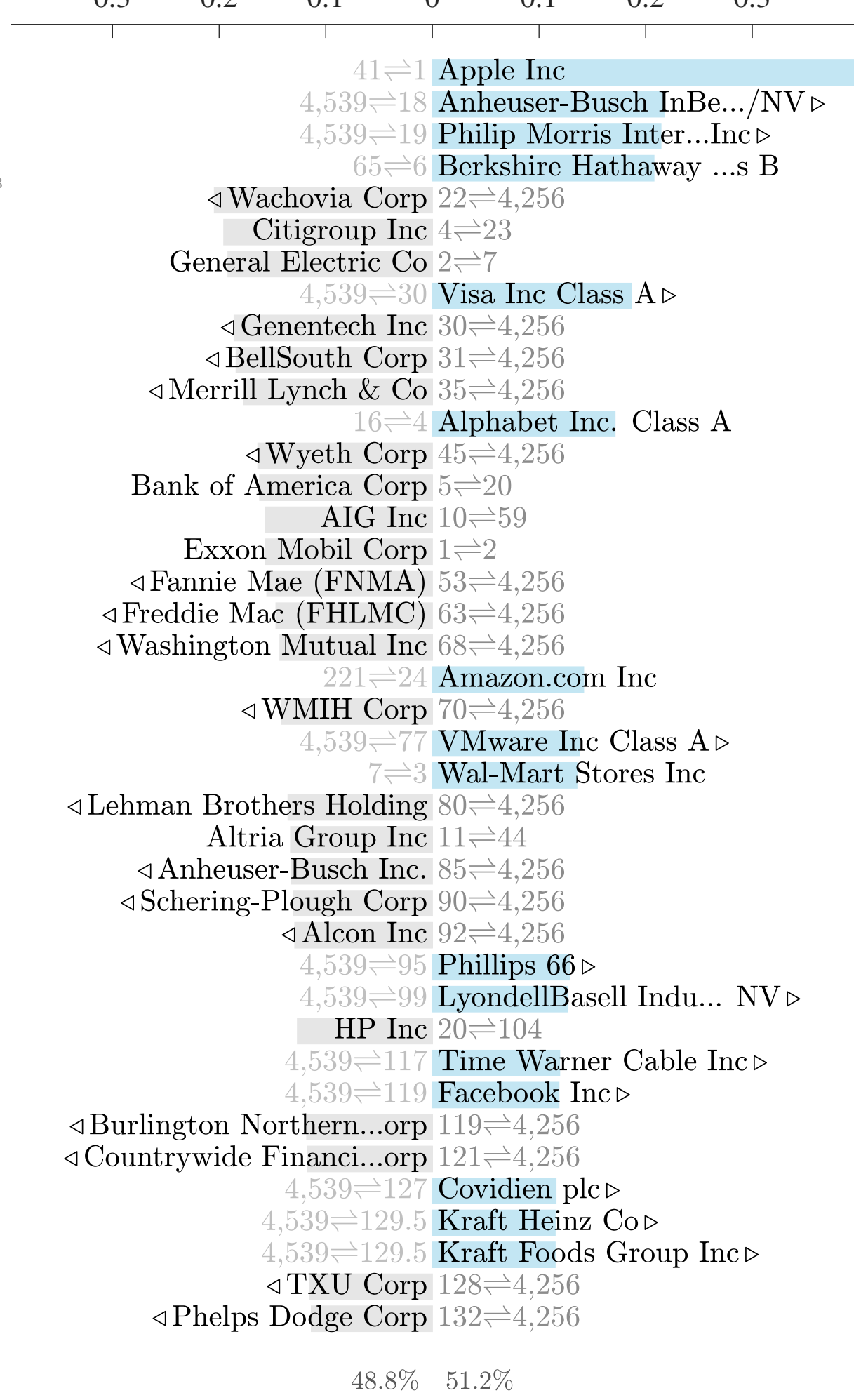
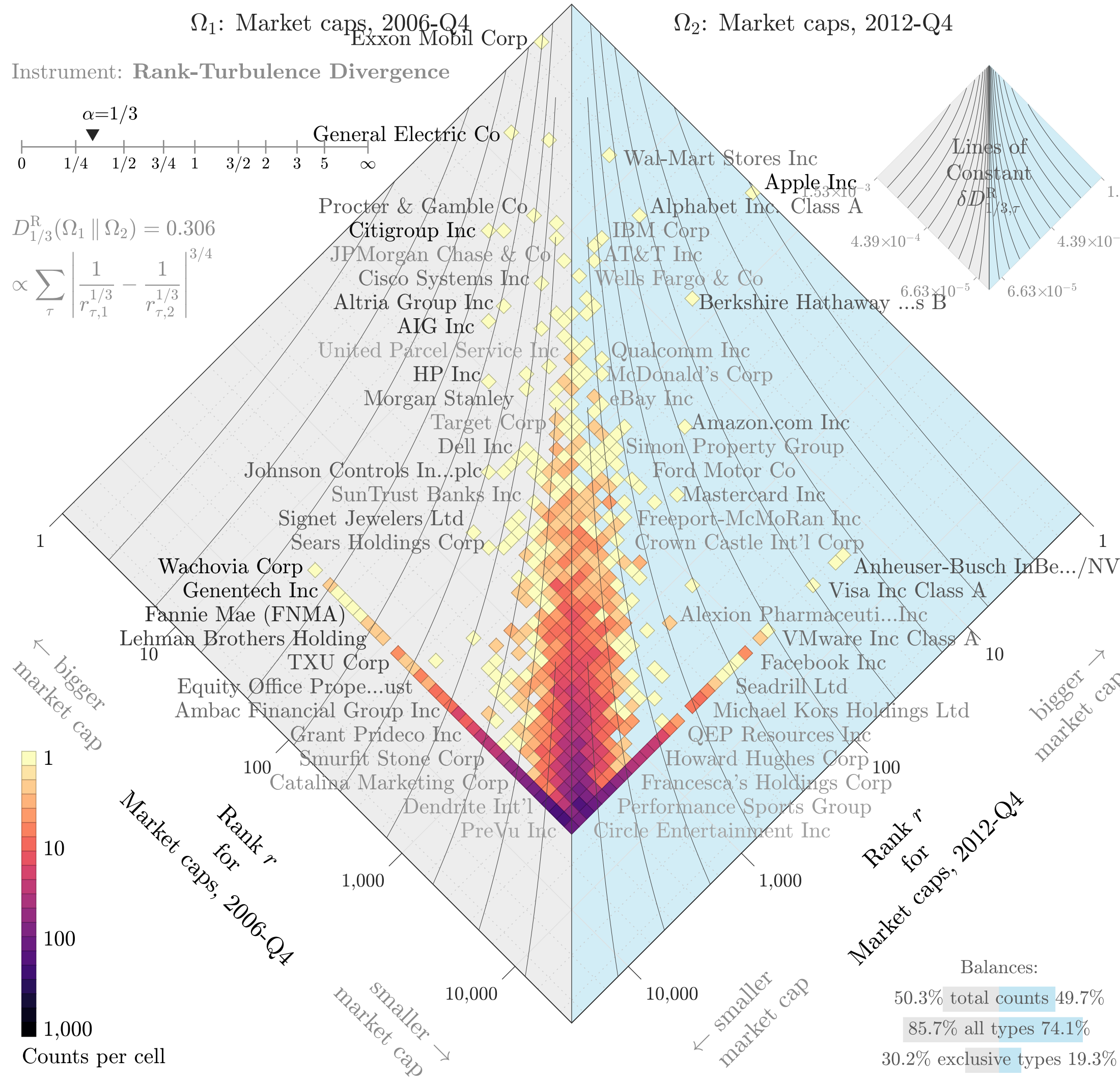
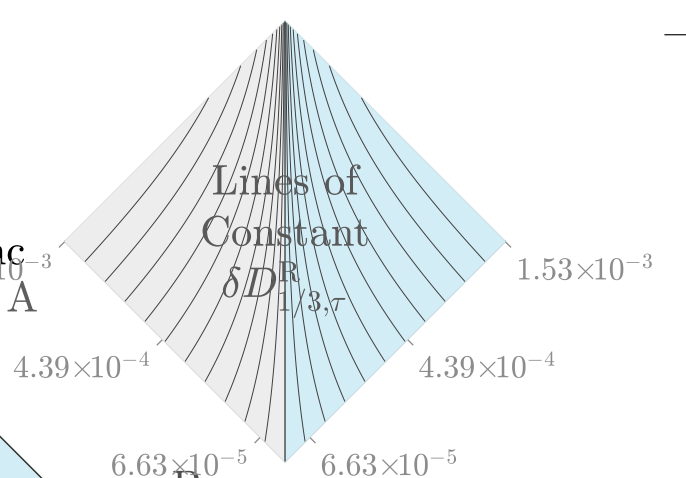
Divergence contribution $\delta D_{1/3,\tau}^R$ (%)

Instrument: Rank-Turbulence Divergence



$$D_{1/3}^R(\Omega_1 \parallel \Omega_2) = 0.306$$

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

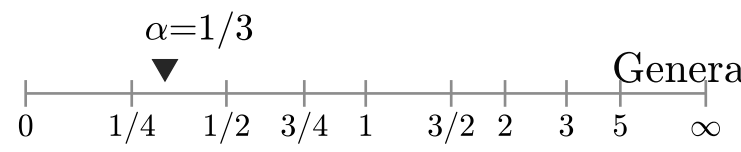


Ω_1 : Market caps, 2007-Q4

Ω_2 : Market caps, 2013-Q4

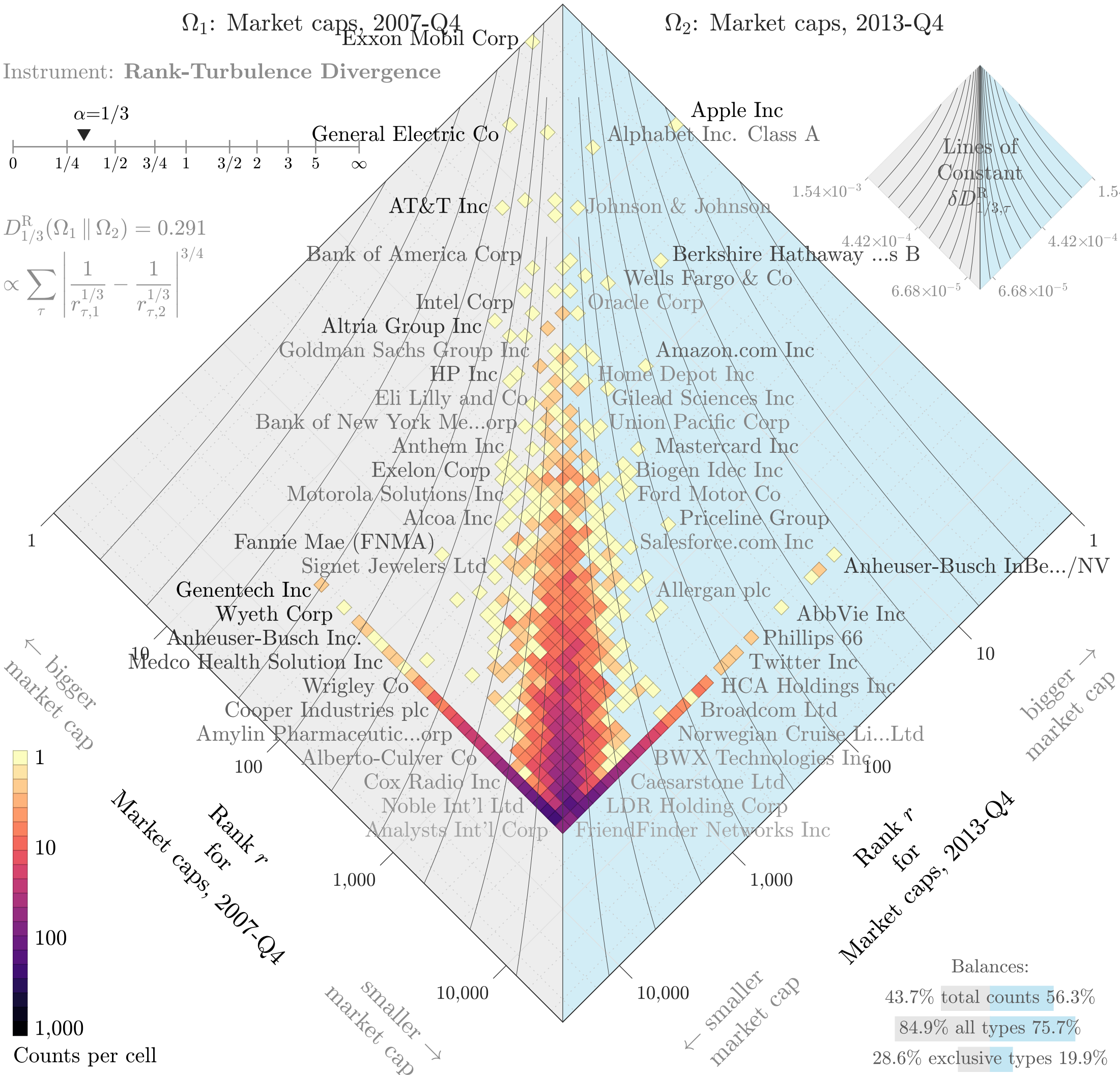
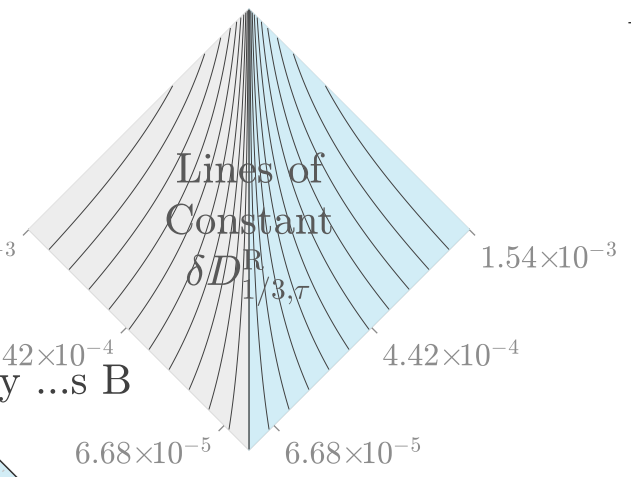
Divergence contribution $\delta D_{1/3,\tau}^R$ (%)

Instrument: Rank-Turbulence Divergence



$$D_{1/3}^R(\Omega_1 \parallel \Omega_2) = 0.291$$

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



11 \Rightarrow 1	Apple Inc
4,449.5 \Rightarrow 18	Anheuser-Busch InBe.../NV \triangleright
4,449.5 \Rightarrow 23	Visa Inc Class A \triangleright
38 \Rightarrow 5	Berkshire Hathaway ...s B
4,449.5 \Rightarrow 25	Philip Morris Inter...Inc \triangleright
4,449.5 \Rightarrow 26	Facebook Inc \triangleright
\triangleleft Genentech Inc	31 \Rightarrow 4,228
\triangleleft Wachovia Corp	33 \Rightarrow 4,228
General Electric Co	2 \Rightarrow 6
AT&T Inc	4 \Rightarrow 15
4,449.5 \Rightarrow 47	AbbVie Inc \triangleright
\triangleleft Wyeth Corp	48 \Rightarrow 4,228
Exxon Mobil Corp	1 \Rightarrow 2
\triangleleft Merrill Lynch & Co	66 \Rightarrow 4,228
\triangleleft Dell Inc	70 \Rightarrow 4,228
\triangleleft Schering-Plough Corp	74 \Rightarrow 4,228
\triangleleft Alcon Inc	76 \Rightarrow 4,228
86 \Rightarrow 16	Amazon.com Inc
Altria Group Inc	12 \Rightarrow 51
\triangleleft Anheuser-Busch Inc.	87 \Rightarrow 4,228
4,449.5 \Rightarrow 93	Phillips 66 \triangleright
4,449.5 \Rightarrow 95	LyondellBasell Indu... NV \triangleright
\triangleleft Lehman Brothers Holding	103 \Rightarrow 4,228
4,449.5 \Rightarrow 118	Kinder Morgan Inc \triangleright
6 \Rightarrow 3	Alphabet Inc. Class A
4,449.5 \Rightarrow 124	Twitter Inc \triangleright
\triangleleft Burlington Northern...orp	123 \Rightarrow 4,228
Procter & Gamble Co	5 \Rightarrow 11
28 \Rightarrow 10	Wells Fargo & Co
\triangleleft Medco Health Solution Inc	133 \Rightarrow 4,228
4,449.5 \Rightarrow 141.5	Kraft Heinz Co \triangleright
4,449.5 \Rightarrow 141.5	Kraft Foods Group Inc \triangleright
\triangleleft XTO Energy Inc	145 \Rightarrow 4,228
Fannie Mae (FNMA)	82 \Rightarrow 897
606 \Rightarrow 69	Priceline Group
214 \Rightarrow 40	Mastercard Inc
\triangleleft NYSE Euronext Inc	154 \Rightarrow 4,228
AIG Inc	17 \Rightarrow 54
4,449.5 \Rightarrow 162	Marathon Petroleum Corp \triangleright
4,449.5 \Rightarrow 177	LinkedIn Corp \triangleright

Balances:

43.7% total counts 56.3%

84.9% all types 75.7%

28.6% exclusive types 19.9%

49.5%—50.5%

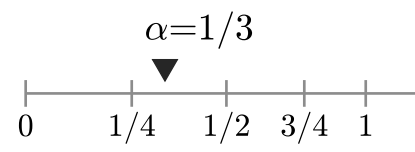
Ω_1 : Market caps, 2008-Q4

Ω_2 : Market caps, 2014-Q4

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



Instrument: Rank-Turbulence Divergence



$D_{1/3}^R(\Omega_1 || \Omega_2) = 0.305$
 $\propto \sum_{\tau} \left| \frac{1}{r_{\tau,1}^{1/3}} - \frac{1}{r_{\tau,2}^{1/3}} \right|^{3/4}$

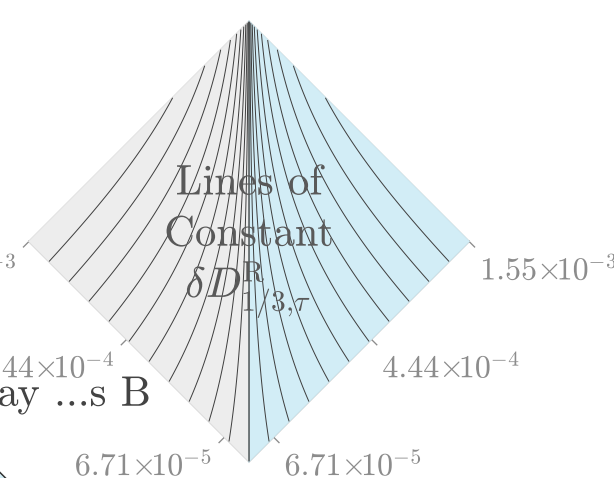
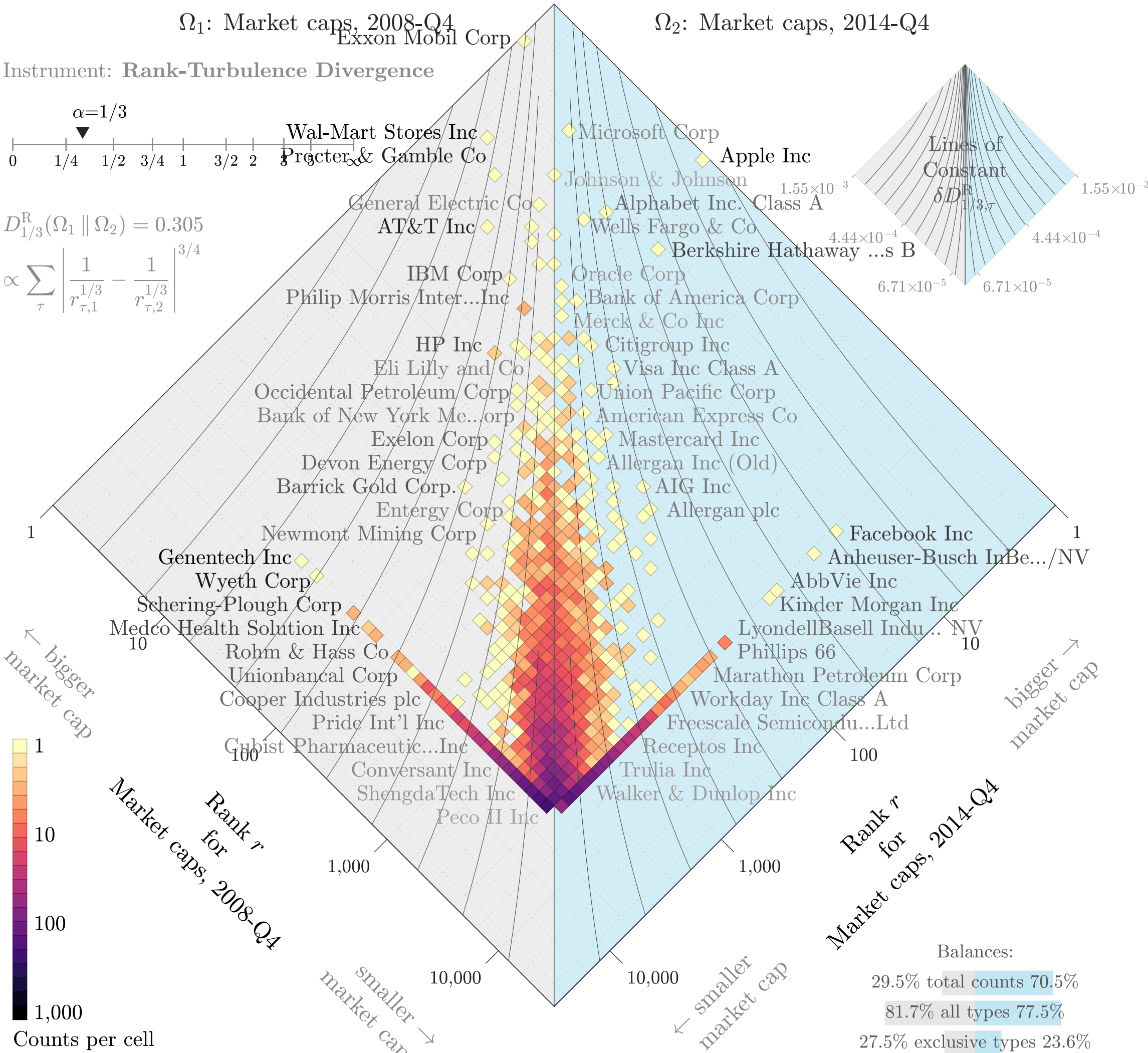
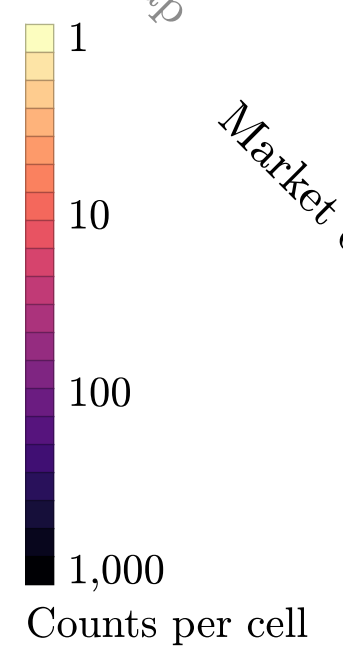


Table of company names and their corresponding divergence contribution values. Includes companies like Apple Inc, Facebook Inc, Berkshire Hathaway, etc.

Balances:
29.5% total counts 70.5%
81.7% all types 77.5%
27.5% exclusive types 23.6%

50.8%—49.2%



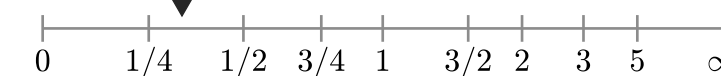
Ω_1 : Market caps, 2009-Q4

Ω_2 : Market caps, 2015-Q4

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

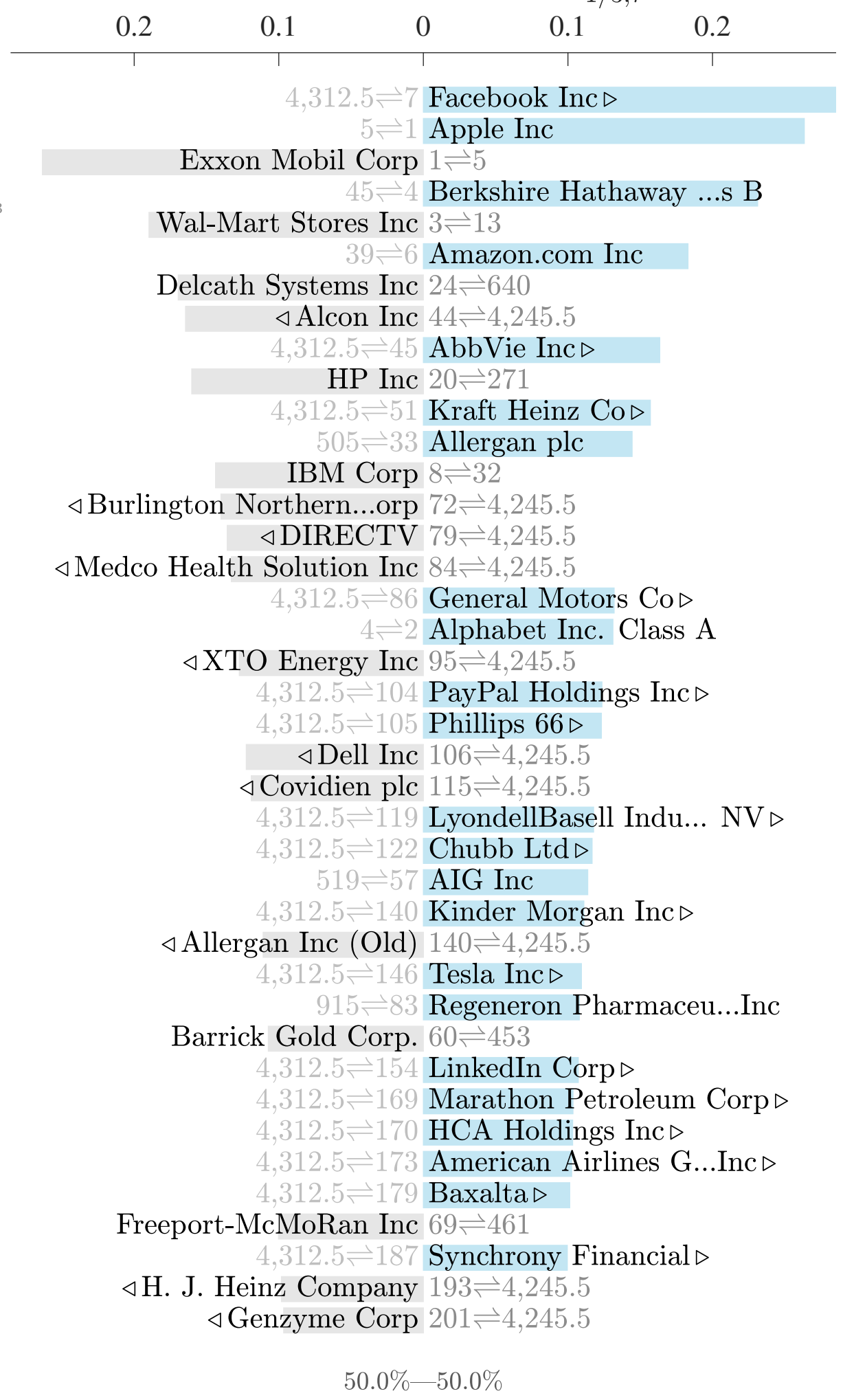
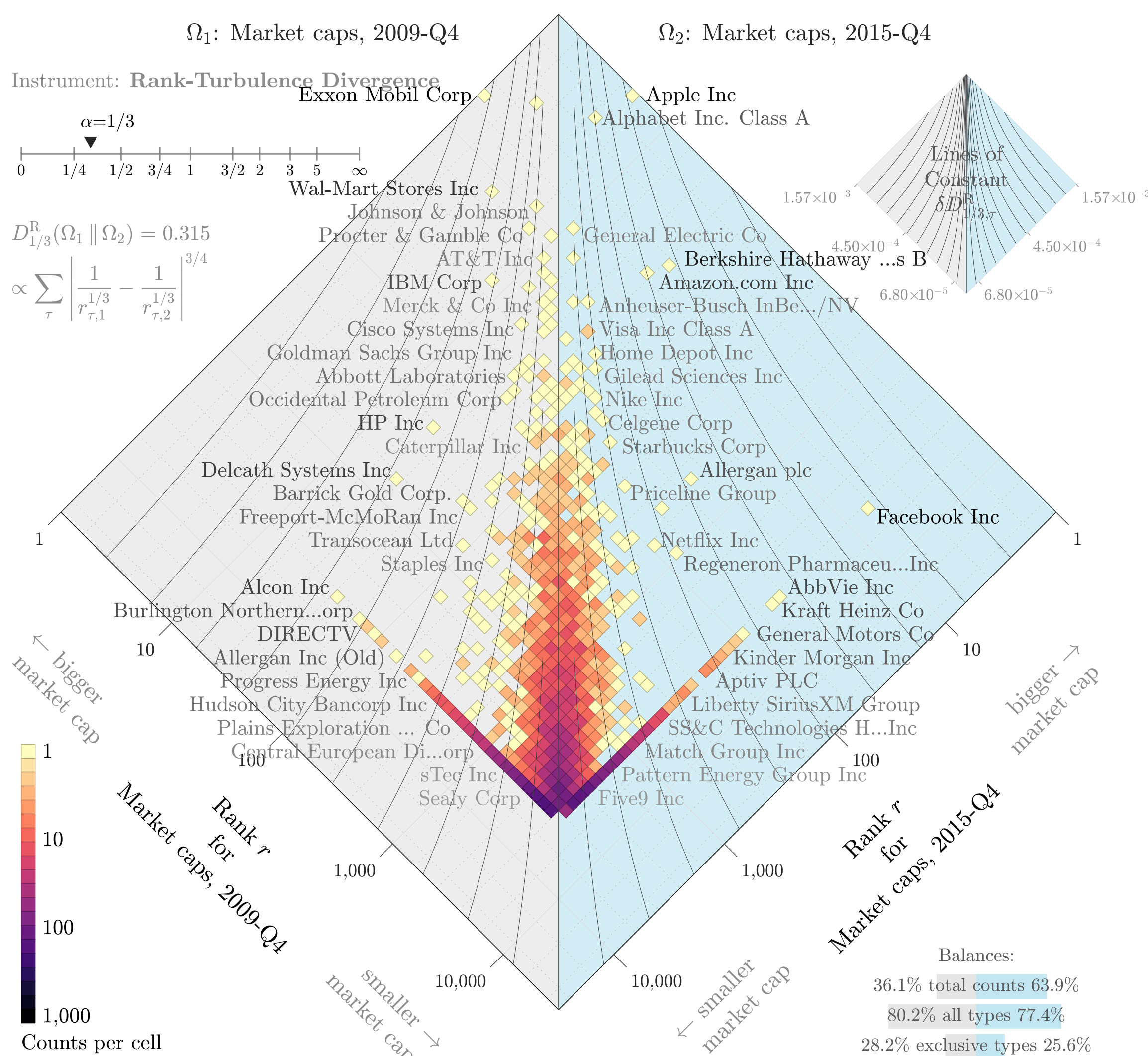
Instrument: Rank-Turbulence Divergence

$\alpha=1/3$



$$D_{1/3}^R(\Omega_1 \parallel \Omega_2) = 0.315$$

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



Balances:
 36.1% total counts 63.9%
 80.2% all types 77.4%
 28.2% exclusive types 25.6%

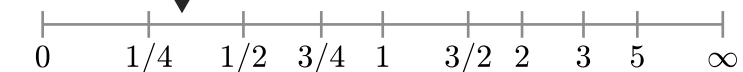
50.0%—50.0%

Ω_1 : Market caps, 2010-Q4

Ω_2 : Market caps, 2016-Q4

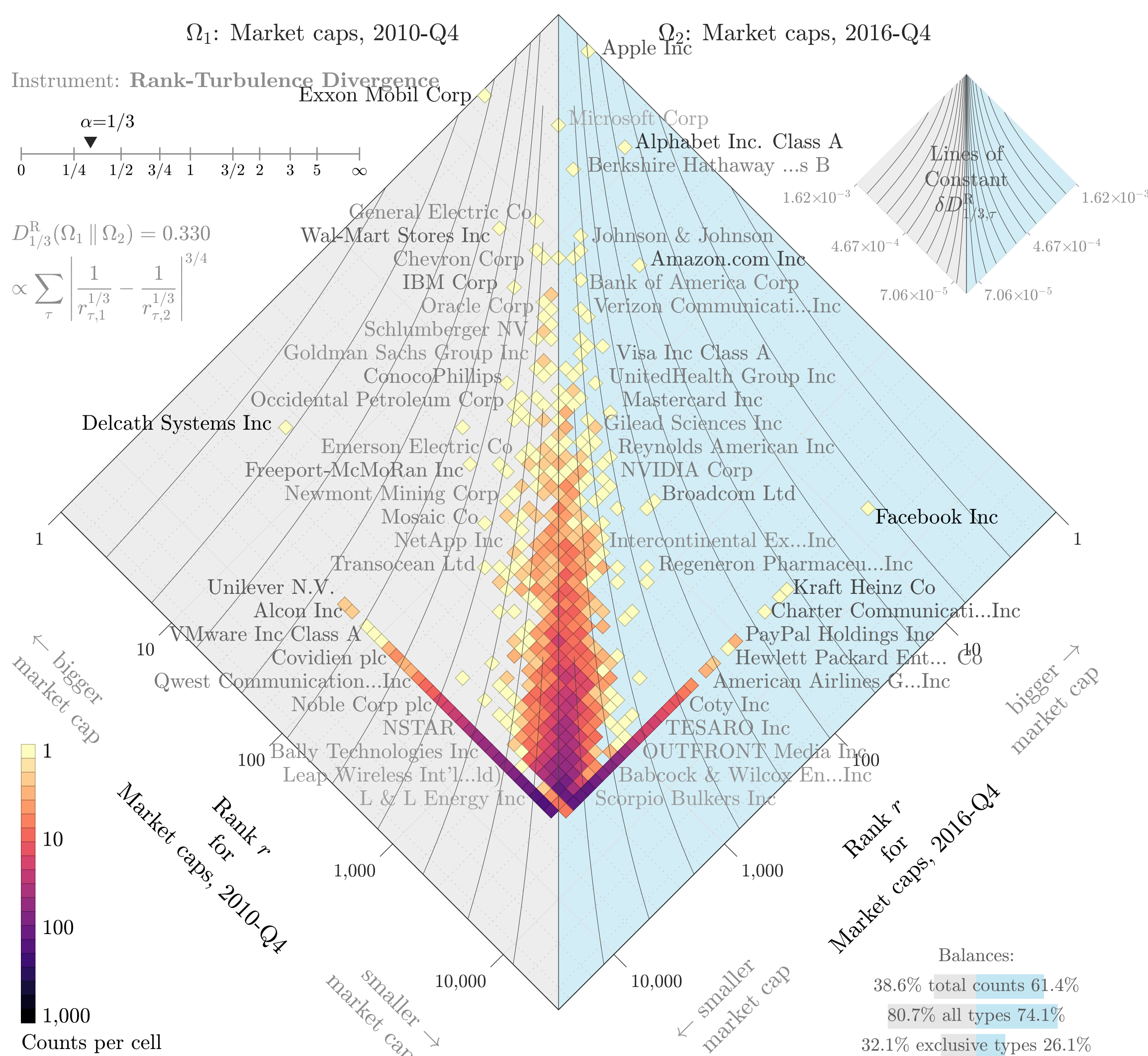
Instrument: Rank-Turbulence Divergence

$\alpha=1/3$



$$D_{1/3}^R(\Omega_1 \parallel \Omega_2) = 0.330$$

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



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



Delcath Systems Inc	4 \Rightarrow 1,287
Facebook Inc	4,192.5 \Rightarrow 7
Exxon Mobil Corp	1 \Rightarrow 5
Alphabet Inc. Class A	8 \Rightarrow 2
Amazon.com Inc	33 \Rightarrow 6
Kraft Heinz Co	4,192.5 \Rightarrow 39
AbbVie Inc	4,192.5 \Rightarrow 41
Unilever N.V.	47 \Rightarrow 4,039
Barrick Gold Corp.	49 \Rightarrow 4,039
Apple Inc	2 \Rightarrow 1
Alcon Inc	55 \Rightarrow 4,039
Wal-Mart Stores Inc	5 \Rightarrow 17
EMC Corp	58 \Rightarrow 4,039
Charter Communications Inc	4,192.5 \Rightarrow 62
VMware Inc Class A	82 \Rightarrow 4,039
DIRECTV	87 \Rightarrow 4,039
HP Inc	28 \Rightarrow 194
PayPal Holdings Inc	4,192.5 \Rightarrow 105
Kinder Morgan Inc	4,192.5 \Rightarrow 109
Phillips 66	4,192.5 \Rightarrow 111
Medco Health Solution Inc	116 \Rightarrow 4,039
Johnson Controls (Old)	117 \Rightarrow 4,039
Dell Inc	121 \Rightarrow 4,039
IBM Corp	10 \Rightarrow 29
Hewlett Packard Enterprise Co	4,192.5 \Rightarrow 130
Time Warner Cable Inc	131 \Rightarrow 4,039
Covidien plc	138 \Rightarrow 4,039
Freeport-McMoRan Inc	45 \Rightarrow 266
Allergan Inc (Old)	150 \Rightarrow 4,039
Chubb Corp. (Old)	156 \Rightarrow 4,039
Broadcom Corp	157 \Rightarrow 4,039
Precision Castparts Corp	158 \Rightarrow 4,039
Broadcom Ltd	419 \Rightarrow 60
Synchrony Financial	4,192.5 \Rightarrow 170
Genzyme Corp	171 \Rightarrow 4,039
Peabody Energy Corp	177 \Rightarrow 4,039
HCA Holdings Inc	4,192.5 \Rightarrow 180
Weatherford Int'l plc	184 \Rightarrow 4,039
Marathon Petroleum Corp	4,192.5 \Rightarrow 188
Zoetis Inc	4,192.5 \Rightarrow 189

Balances:

38.6% total counts 61.4%

80.7% all types 74.1%

32.1% exclusive types 26.1%

48.4%—51.6%

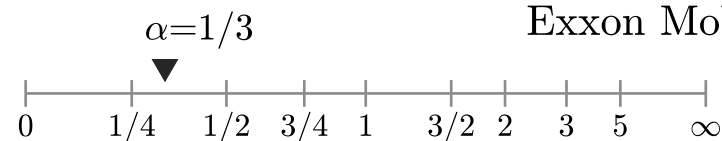
Ω_1 : Market caps, 2011-Q4

Ω_2 : Market caps, 2017-Q4

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



Instrument: Rank-Turbulence Divergence



$D_{1/3}^R(\Omega_1 || \Omega_2) = 0.342$

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

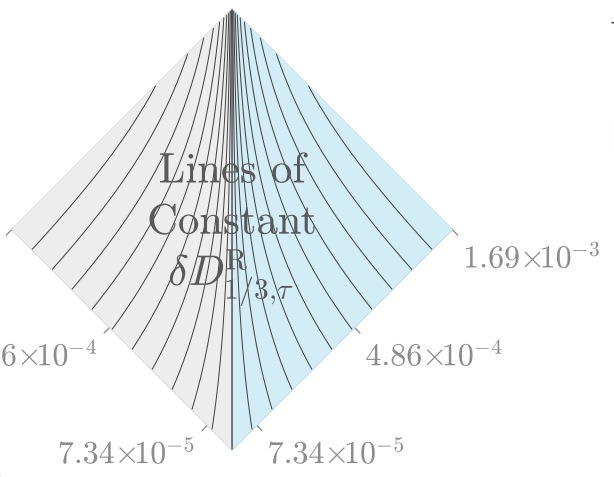
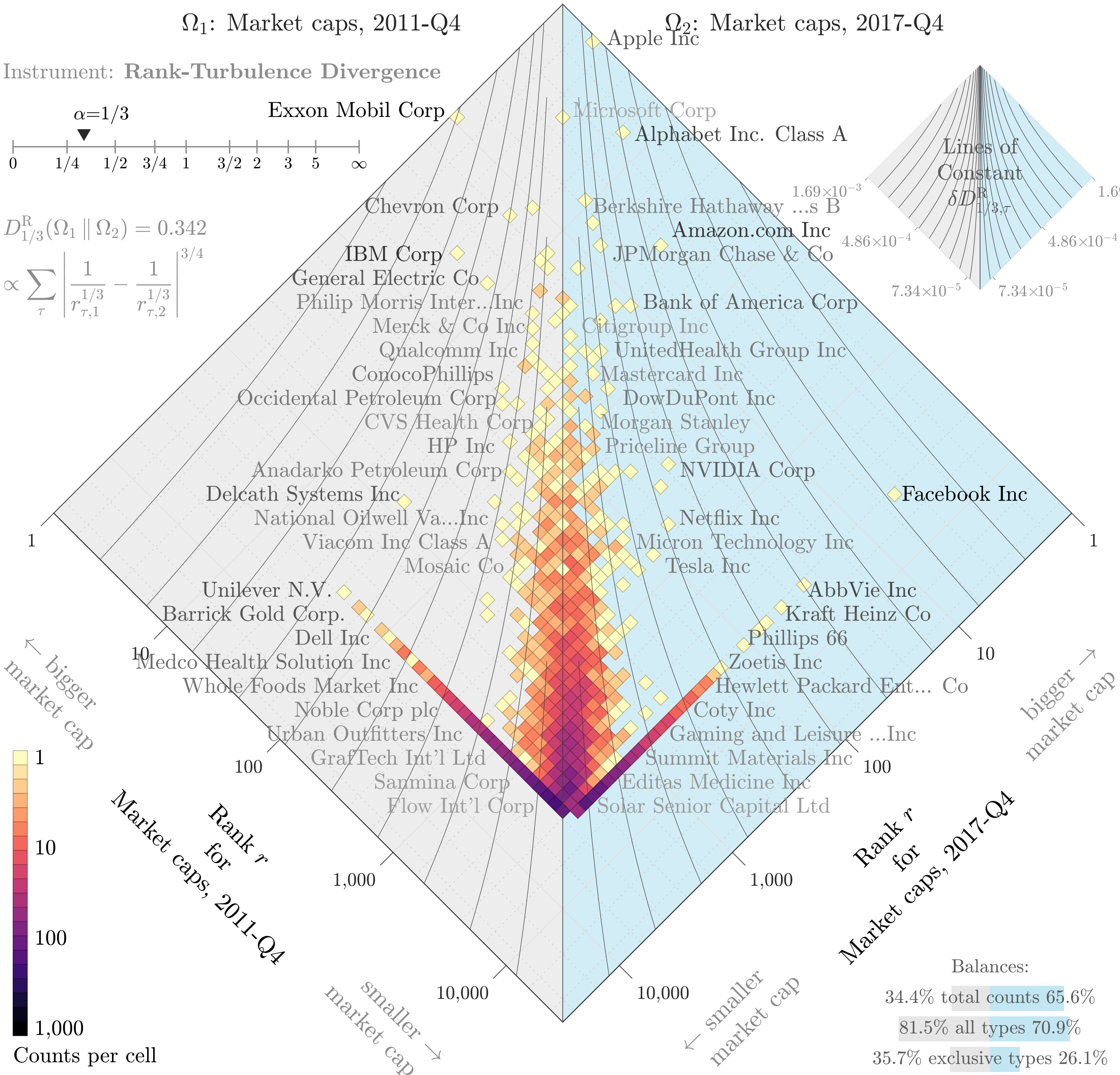
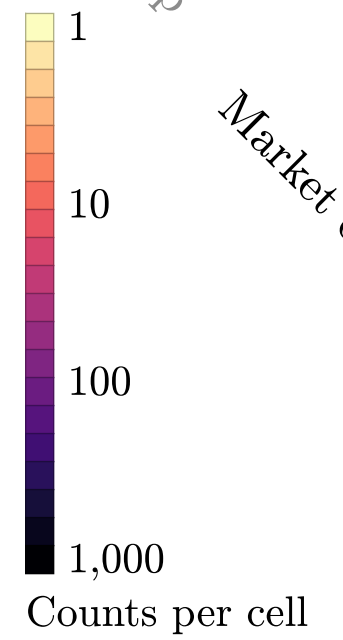


Table of company names, ranks, and divergence contributions. Includes a 'Balances' section at the bottom.



Balances:
34.4% total counts 65.6%
81.5% all types 70.9%
35.7% exclusive types 26.1%

Ω_1 : Market caps, 2012-Q4

Ω_2 : Market caps, 2018-Q4

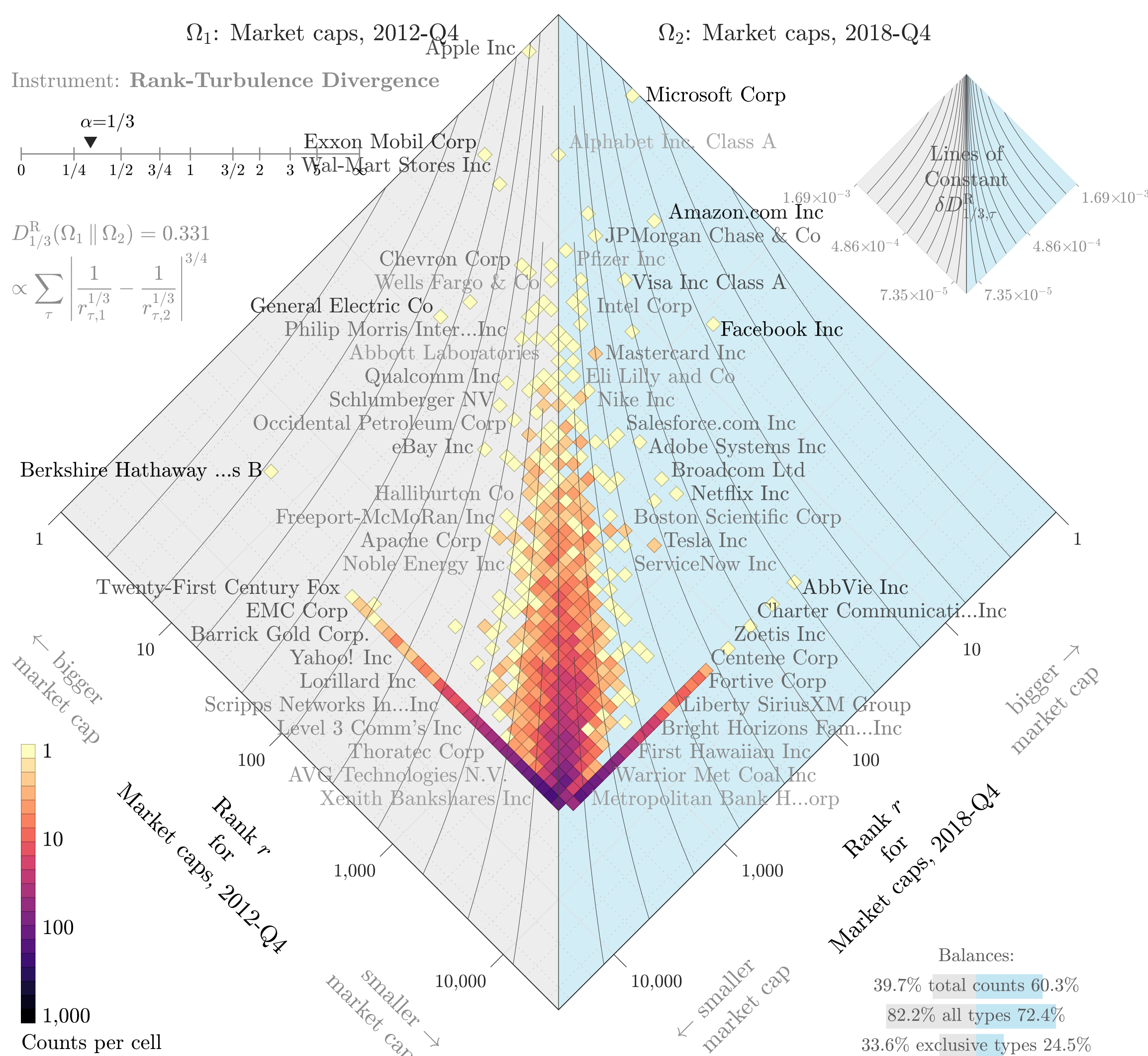
Divergence contribution $\delta D_{1/3,\tau}^R$ (%)

Instrument: Rank-Turbulence Divergence

$\alpha=1/3$

$$D_{1/3}^R(\Omega_1 \parallel \Omega_2) = 0.331$$

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



Divergence contribution $\delta D_{1/3,\tau}^R$ (%)				
0.2	0.1	0	0.1	0.2
Berkshire Hathaway ...s B	6	2,331		
Microsoft Corp	5	1		
Facebook Inc	119	5		
Amazon.com Inc	24	3		
Exxon Mobil Corp	2	9		
General Electric Co	7	78		
AbbVie Inc	4,015	31		
Wal-Mart Stores Inc	3	10		
IBM Corp	8	48		
Twenty-First Century Fox	49	3,798.5		
PayPal Holdings Inc	4,015	50		
Apple Inc	1	2		
EMC Corp	58	3,798.5		
Monsanto Co	62	3,798.5		
Time Warner Inc	68	3,798.5		
Delcath Systems Inc	65	3,183		
Visa Inc Class A	30	8		
Express Scripts Hol... Co	72	3,798.5		
UnitedHealth Group Inc	56	12		
Charter Communicati...Inc	4,015	79		
DowDuPont Inc	80	3,798.5		
Netflix Inc	541	42		
Anadarko Petroleum Corp	86	3,798.5		
Barrick Gold Corp.	91	3,798.5		
Praxair Inc	101	3,798.5		
Priceline Group	107	3,798.5		
Broadcom Ltd	375	44		
DIRECTV	111	3,798.5		
Time Warner Cable Inc	117	3,798.5		
Allergan Inc (Old)	121	3,798.5		
Precision Castparts Corp	125	3,798.5		
Zoetis Inc	4,015	128		
Covidien plc	127	3,798.5		
Kraft Foods Group Inc	129.5	3,798.5		
Chubb Corp. (Old)	135	3,798.5		
NVIDIA Corp	419	56		
Adobe Systems Inc	200	38		
Yahoo! Inc	145	3,798.5		
Reynolds American Inc	148	3,798.5		
Johnson Controls (Old)	162	3,798.5		

Balances:
 39.7% total counts 60.3%
 82.2% all types 72.4%
 33.6% exclusive types 24.5%

48.9%—51.1%