

PRIVATE COMPANY OPERATING METRICS: GLOBAL ANALYSIS

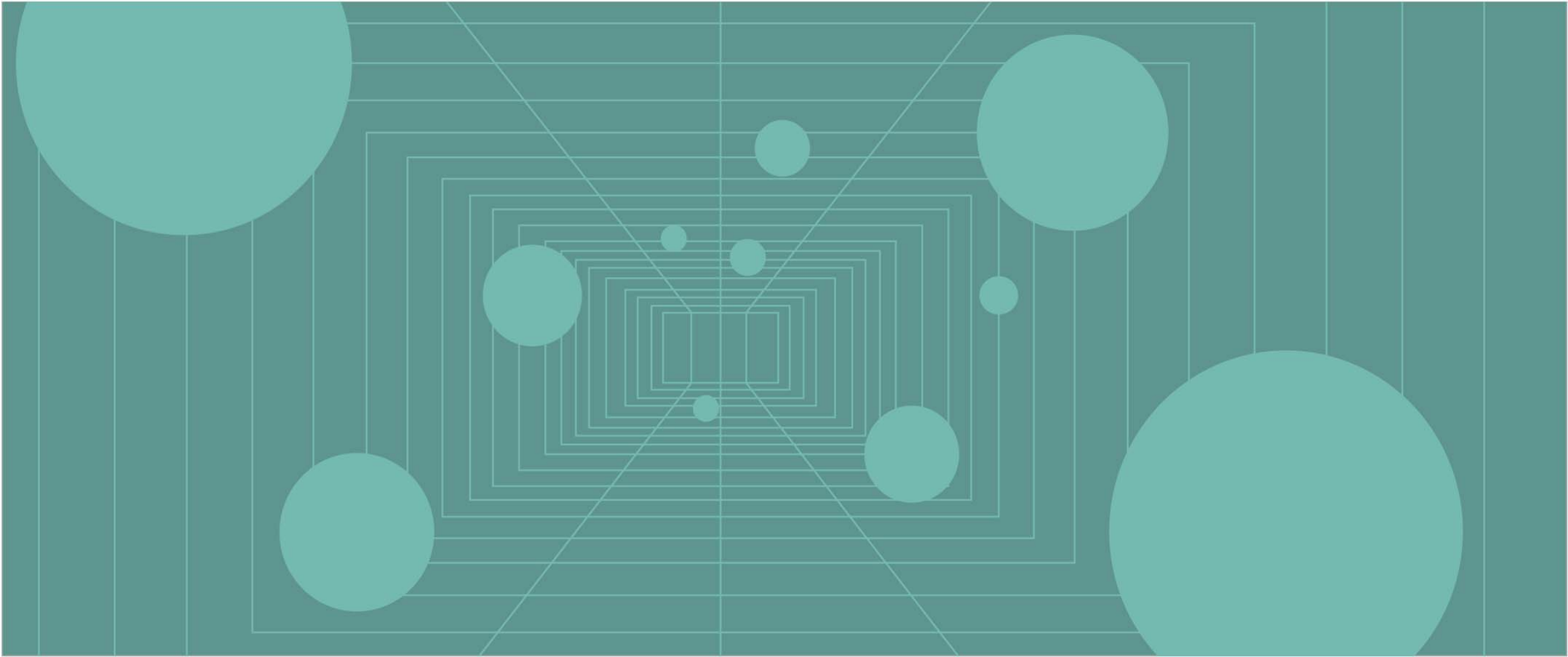


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Introduction to Operating Metrics

- The data in this report on operating metrics provide insights into key parts of the process by which private equity (PE) managers execute their strategy:
 - Purchasing the company and optimizing the capital structure
 - Improving the performance of the company and transforming the business
- PE managers aim to purchase companies at attractive prices, optimize their capital structures, and then—with operational improvements, revenue growth, and/or other acquisitions—seek to sell the company at a higher price.
- Similar metrics can be used to evaluate both private and public companies, though public market analysts typically focus on company earnings and price-earnings ratios rather than EBITDA (earnings before interest, tax, depreciation, and amortization) and use EBITDA multiples as their proxy for cash flow.
- Cambridge Associates has now captured and analyzed current and historical data from global PE funds for eight consecutive years. This year’s report includes data through the period ended December 31, 2018.
- Our analysis allows for the comparison of private and public companies across industry sectors and company sizes for various parts of the investment process. The data shed light on key levers and value drivers in private equity, as well as the risks and returns of private equity versus public equity.

Notes on the Data

- Cambridge Associates collected information from PE firms of all sizes with broad mandates, as well as specialized and sector-focused strategies. The sample of private investments includes about 8,500 companies worldwide, of which about 4,300 are based in the United States, more than 2,200 in Europe, and more than 1,300 in Asia; they were acquired by PE firms from 2000 through 2018 and range in enterprise value from less than \$1 million to larger than \$130 billion. The universe of private investments is subject to change over time.
- Within the report, depending on the metric analyzed, the set of companies included will vary. This is due to the acquisition and disposition of companies during the period analyzed. Additionally, this reflects the impact of a statistical tool, an interquartile range, used to screen for outliers as part of each calculation. Finally, restatements in company data that sometimes occur may lead to changes in historical metrics.
- Operating metrics data were collected directly from investment managers and have not been independently verified.
- Unless specified, the exhibits include unrealized and realized investments.
- For European and Asian comparisons between the total company universe and public markets, the MSCI All Country Europe and MSCI All Country Asia Pacific indexes were selected based on the market capitalization of the underlying stocks.
- Sector classifications are based on the Global Industry Classification Standard (GICS). GICS was developed and is the exclusive property and a service mark of MSCI Inc. and S&P Global Market Intelligence LLC and is licensed for use by Cambridge Associates. GICS sector classifications changed in late 2018 and this report reflects the new definitions.
- Individual company operating metrics (e.g., revenue and EBITDA) have not been adjusted for acquisitions.
- The analyzed holding period for some companies represented in the dataset is short, so EBITDA growth rates may be muted initially, as PE owners may not seek to maximize EBITDA in the first several years of ownership.
- Any company with a negative metric for EBITDA, net debt, or revenue was excluded from analysis using that metric. Metrics are calculated in local currency.
- Company counts for each analysis reflect all submitted transactions, excluding outliers. Starting with this year's analysis, we have refined our methodology to eliminate "duplicate" transactions completed by the same firm across funds in a given year. As a result, there have been changes to metrics previously published. For a "club" or syndicated deal that involves two or more separate firms, there would still be two or more companies in our universe.
- When the operating metrics information is disaggregated into deal types, enterprise values, and sectors, the sample sizes are smaller and may be biased by one or several data points. Time periods with fewer than 15 observations have been marked NA.
- Past results are not an indication of future results, provide no guarantee for the future, and will not be constant over time.

GLOBAL ANALYSIS

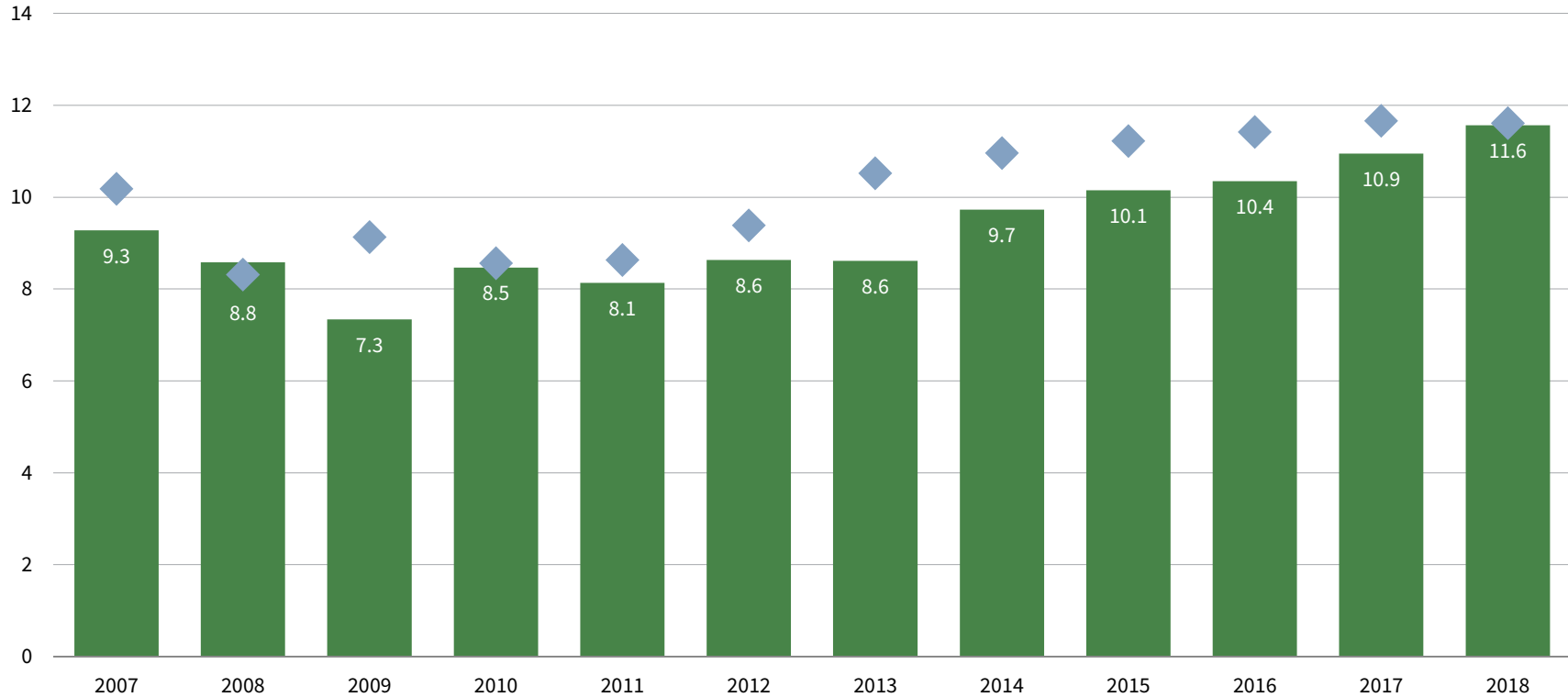
- **EBITDA Purchase Price Multiple**
- Leverage Multiple
- Revenue Growth
- EBITDA Growth
- EBITDA Margin
- Exit Metrics

PE historically transacted at lower valuations than public counterparts, but in 2018, PPMs converged

Over the past four years, the United States represented more than 50% of the PE sample

AVERAGE EBITDA PURCHASE PRICE MULTIPLES AT ACQUISITION OF PRIVATE EQUITY-OWNED COMPANIES VS PUBLIC COMPANIES

As of December 31, 2018 • Enterprise Value/EBITDA



Number of Companies

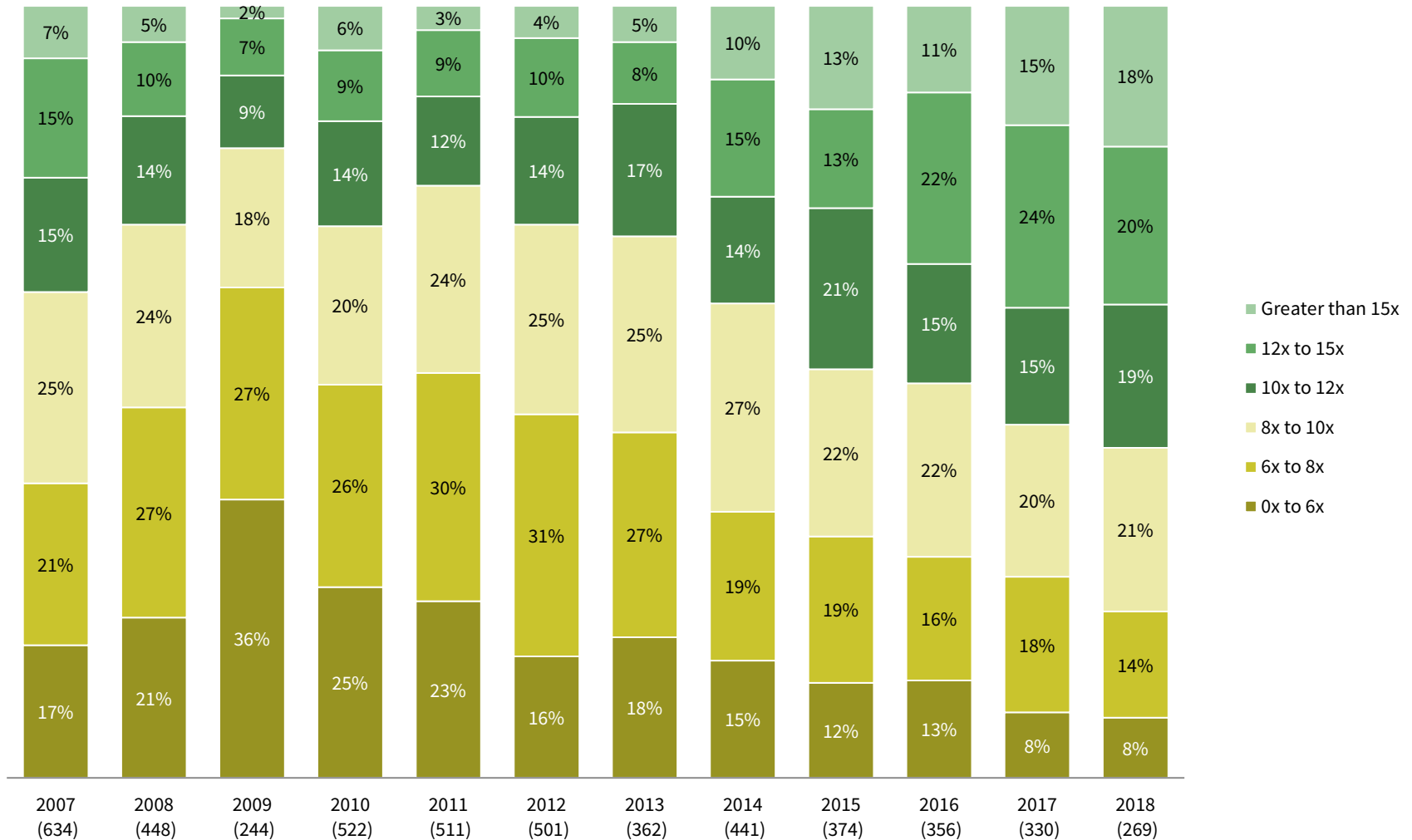
	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
Private Equity-Owned Companies	634	448	244	522	511	501	362	441	374	356	330	269
MSCI All Country World Index	1,345	1,286	1,346	1,436	1,447	1,490	1,521	1,531	1,540	1,547	1,549	1,698

In 2018, PE valuations continued to trend higher

Since 2014, at least 40% of transactions were completed at 10x or higher

AVERAGE EBITDA PURCHASE PRICE MULTIPLE BREAKDOWN OF PRIVATE EQUITY-OWNED COMPANIES

As of December 31, 2018 • Enterprise Value/EBITDA

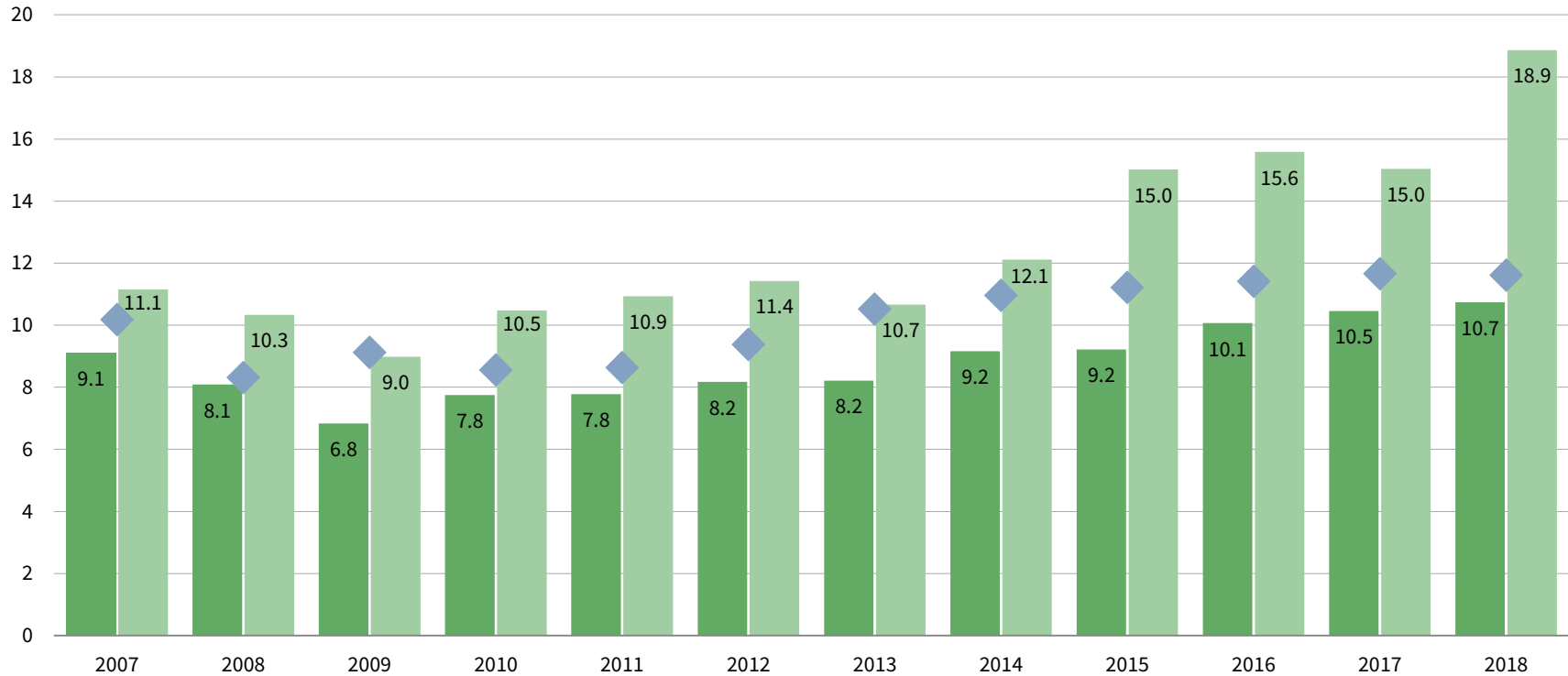


Growth equity has commanded premium multiples, while buyouts transacted at lower multiples than public peers

The United States and Asia dominated the growth equity sample

AVERAGE EBITDA PURCHASE PRICE MULTIPLES AT ACQUISITION OF BUYOUT AND GROWTH EQUITY COMPANIES VS PUBLIC COMPANIES

As of December 31, 2018 • Enterprise Value/EBITDA



Number of Companies

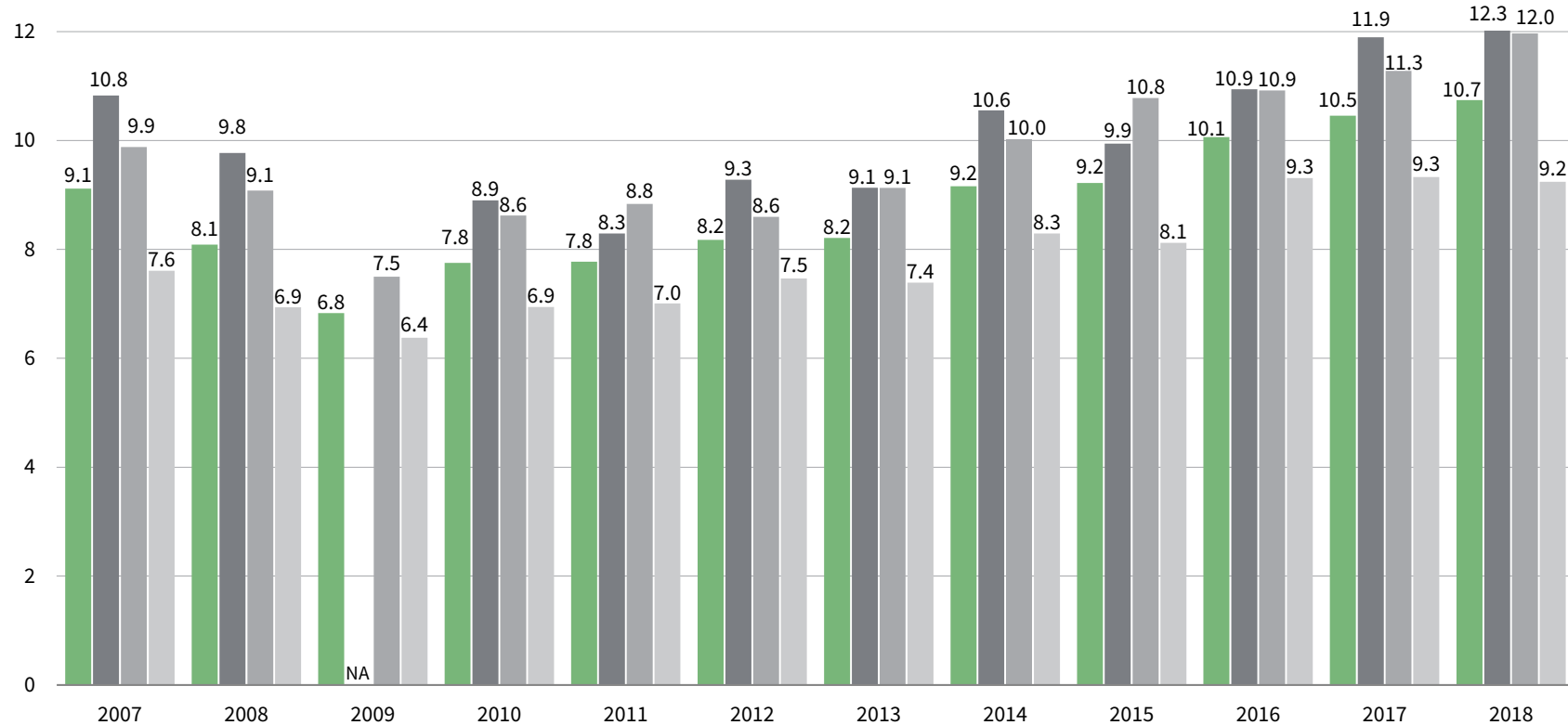
	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
Buyout Companies	449	293	159	340	357	340	245	320	263	265	238	189
Growth Equity Companies	126	114	52	142	107	120	88	102	85	79	76	64
MSCI All Country World Index	1,345	1,286	1,346	1,436	1,447	1,490	1,521	1,531	1,540	1,547	1,549	1,698

Buyout prices generally rose with size of company

Regardless of size, PPMs in 2017 and 2018 eclipsed previous 2007 highs. Since 2014, acquisition PPMs for large companies averaged 11.1x; small companies averaged 8.9x

AVERAGE EBITDA PURCHASE PRICE MULTIPLES AT ACQUISITION OF PRIVATE EQUITY BUYOUT COMPANIES BY ENTERPRISE VALUE SEGMENT

As of December 31, 2018 • Enterprise Value/EBITDA



Number of Companies

	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
Buyout Companies	449	293	159	340	357	340	245	320	263	265	238	189
EV > \$1B	120	54	NA	48	48	55	37	46	34	41	45	37
EV \$250M - \$1B	121	74	41	101	98	110	70	110	95	92	80	65
EV < \$250M	201	161	98	190	206	171	134	158	126	132	108	87

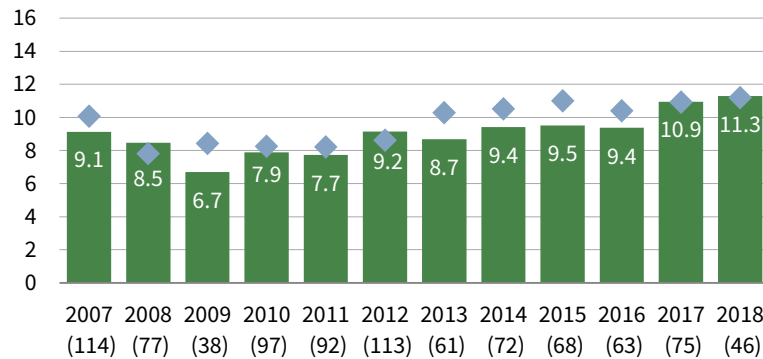
Within PE, acquisition PPMs highest for IT companies, driven largely by growth equity transactions

PE consistently transacted at lower multiples than public peers in healthcare, the only sector where PE maintained a meaningful discount in 2018

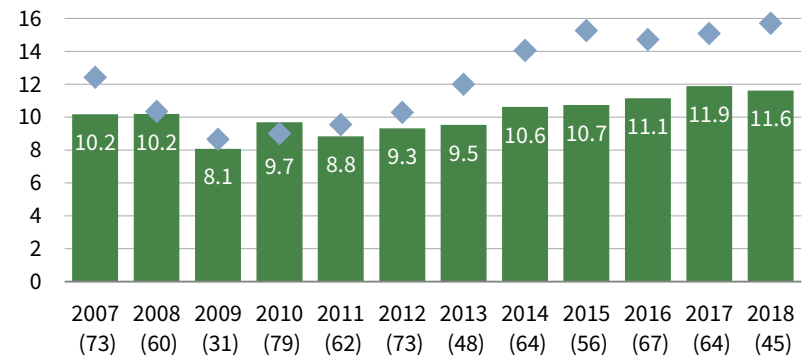
AVERAGE EBITDA PURCHASE PRICE MULTIPLES AT ACQUISITION OF PRIVATE EQUITY-OWNED COMPANIES VS PUBLIC COMPANIES BY SECTOR

As of December 31, 2018 • Enterprise Value/EBITDA

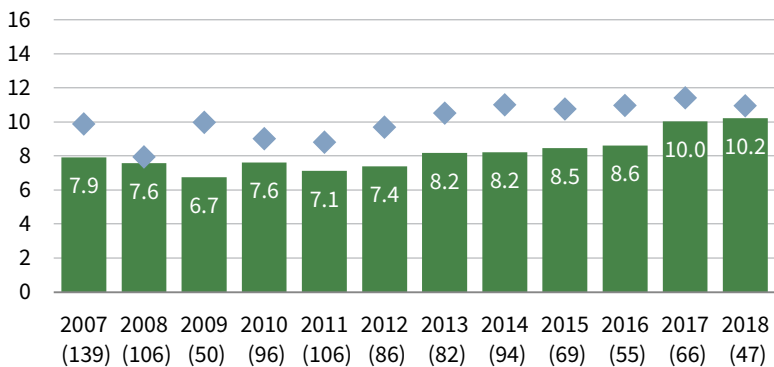
Consumer Discretionary



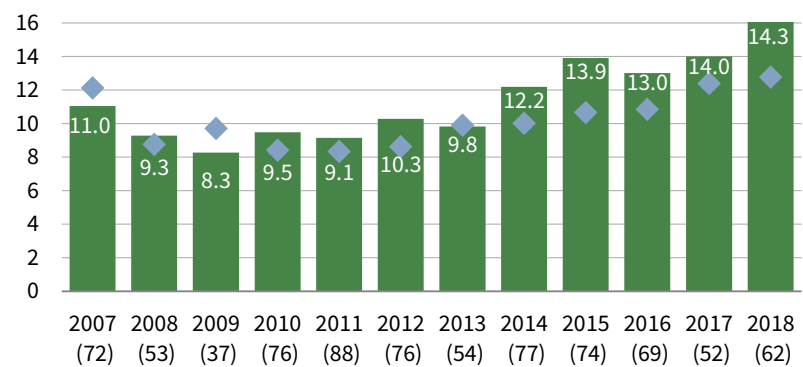
Healthcare



Industrials



Information Technology



■ Private Equity-Owned Companies ◆ MSCI All Country World Index

GLOBAL ANALYSIS

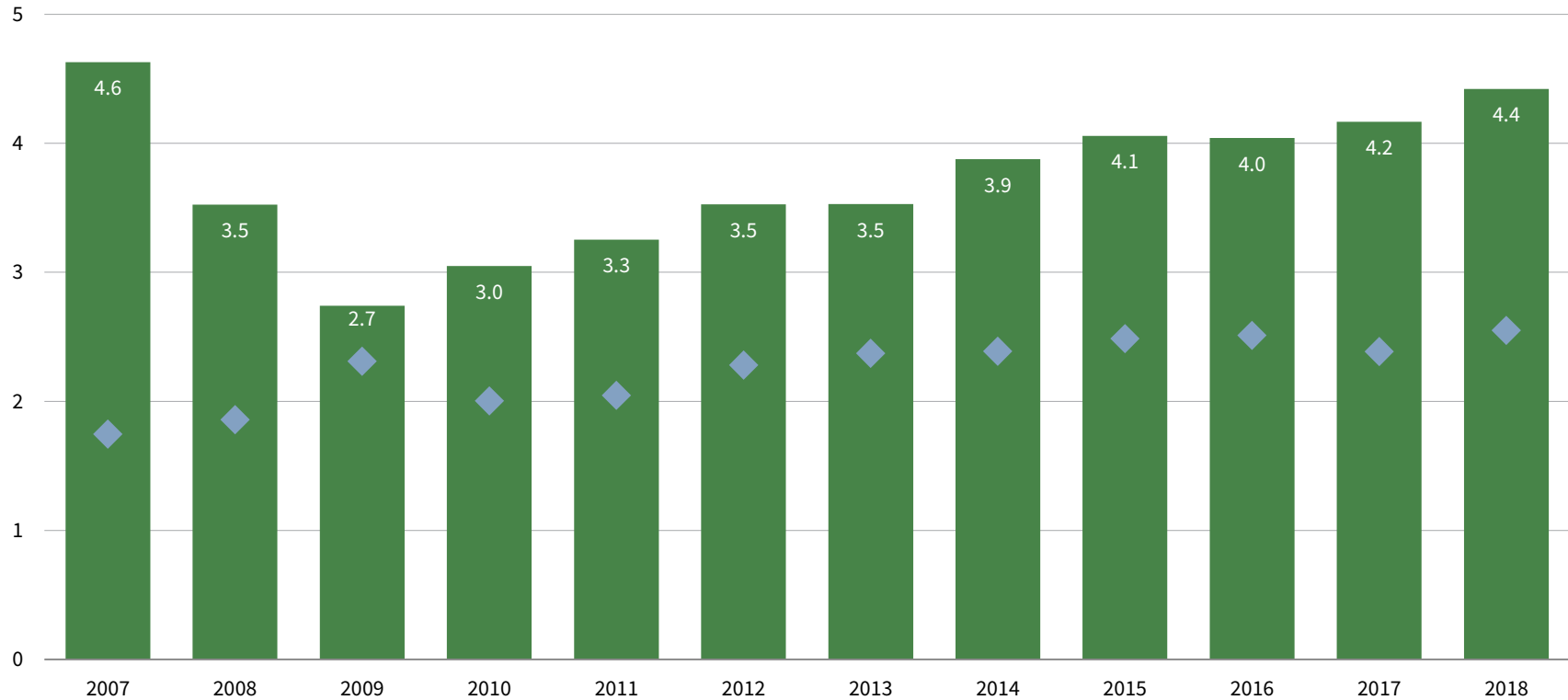
- Purchase Price Multiple
- **Leverage Multiple**
- Revenue Growth
- EBITDA Growth
- EBITDA Margin
- Exit Metrics

While PE leverage levels have steadily increased since 2009, public companies have stayed roughly the same

Overall, leverage multiples outside of the United States have been lower

AVERAGE EBITDA LEVERAGE MULTIPLES AT ACQUISITION OF PRIVATE EQUITY-OWNED COMPANIES VS PUBLIC COMPANIES

As of December 31, 2018 • Net Debt/EBITDA



Number of Companies

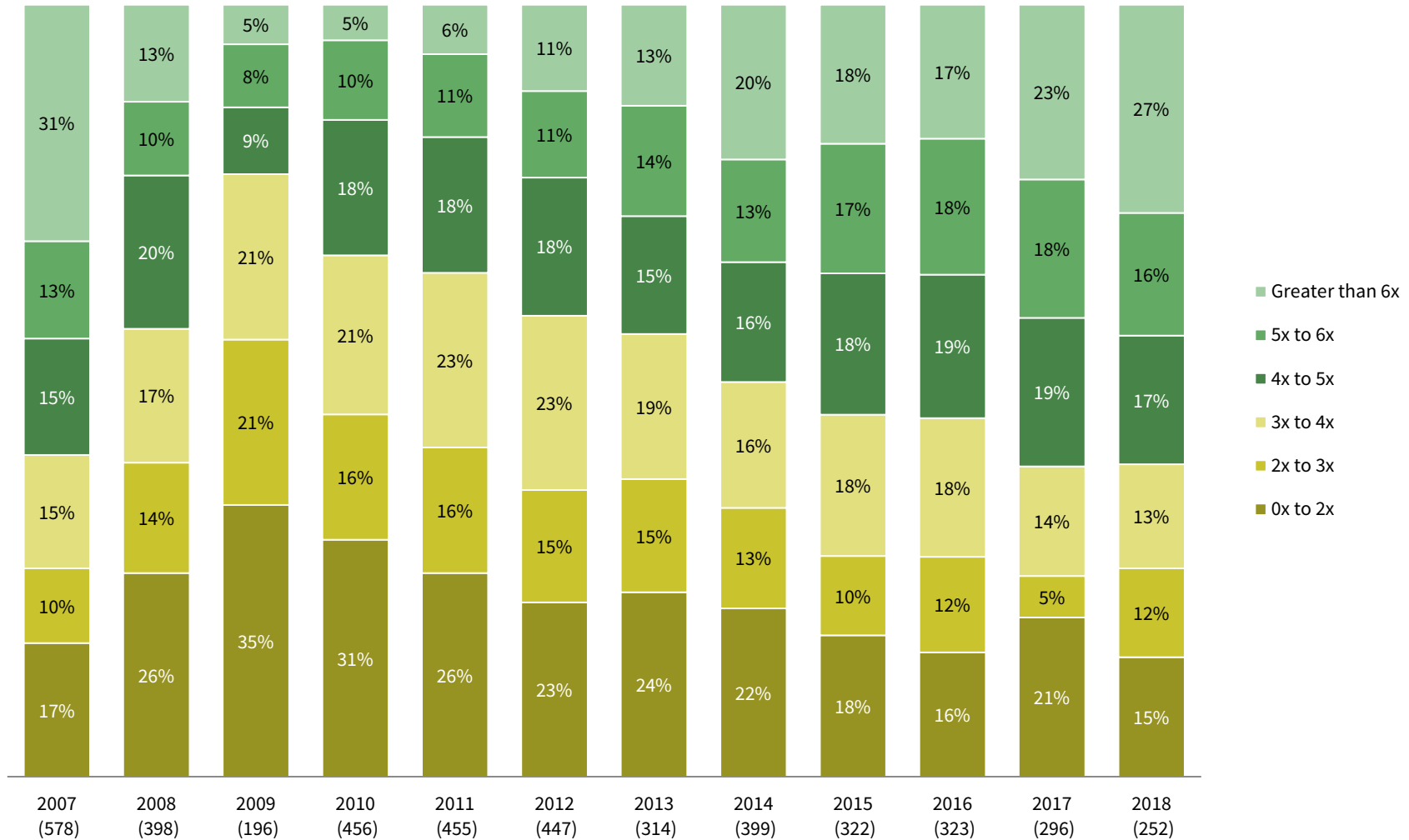
	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
Private Equity-Owned Companies	578	398	196	456	455	447	314	399	322	323	296	252
MSCI All Country World Index	1,000	972	992	1,049	1,058	1,096	1,105	1,144	1,163	1,174	1,154	1,265

In every year but 2017, at least 25% of PE deals were levered between 2.0x and 4.0x

Over the past two years, roughly 25% of PE acquisitions were levered 6.0x or more

AVERAGE LEVERAGE MULTIPLE BREAKDOWN OF PRIVATE EQUITY-OWNED COMPANIES

As of December 31, 2018 • Net Debt/EBITDA



Source: Cambridge Associates LLC Private Investments Database (as reported by investment managers).

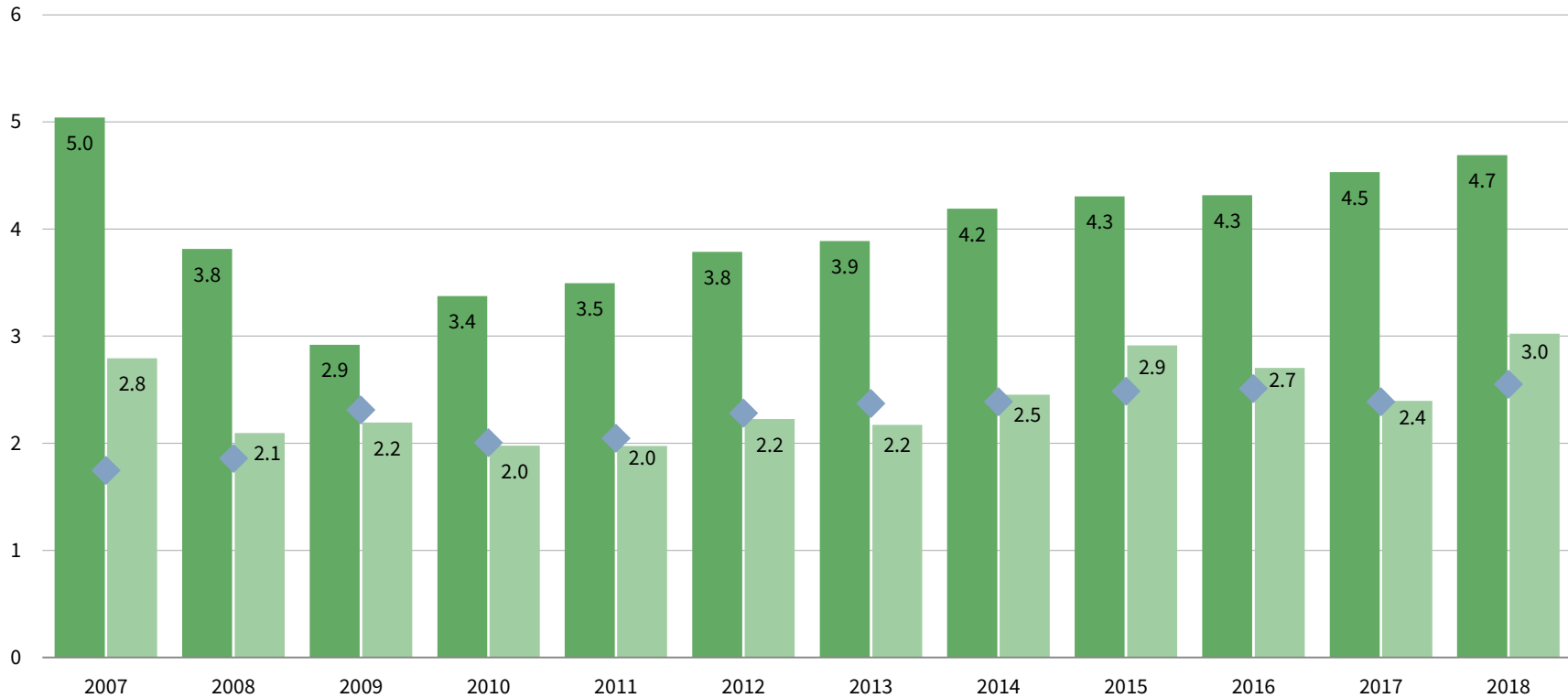
Notes: Outliers were identified and excluded. Numbers in parentheses represent total private companies in a year. Each range includes the lower bound value. For example the "4x to 5x" range includes companies with reported leverage multiples of exactly 4x. Due to rounding, totals may not sum to 100%.

From 2014 to 2018, buyout leverage steadily increased and exceeded 4.0x

Global growth equity leverage was on par or slightly higher than publics in ten of the 12 years analyzed

AVERAGE EBITDA LEVERAGE MULTIPLES AT ACQUISITION OF BUYOUT AND GROWTH EQUITY COMPANIES VS PUBLIC COMPANIES

As of December 31, 2018 • Net Debt/EBITDA



Number of Companies

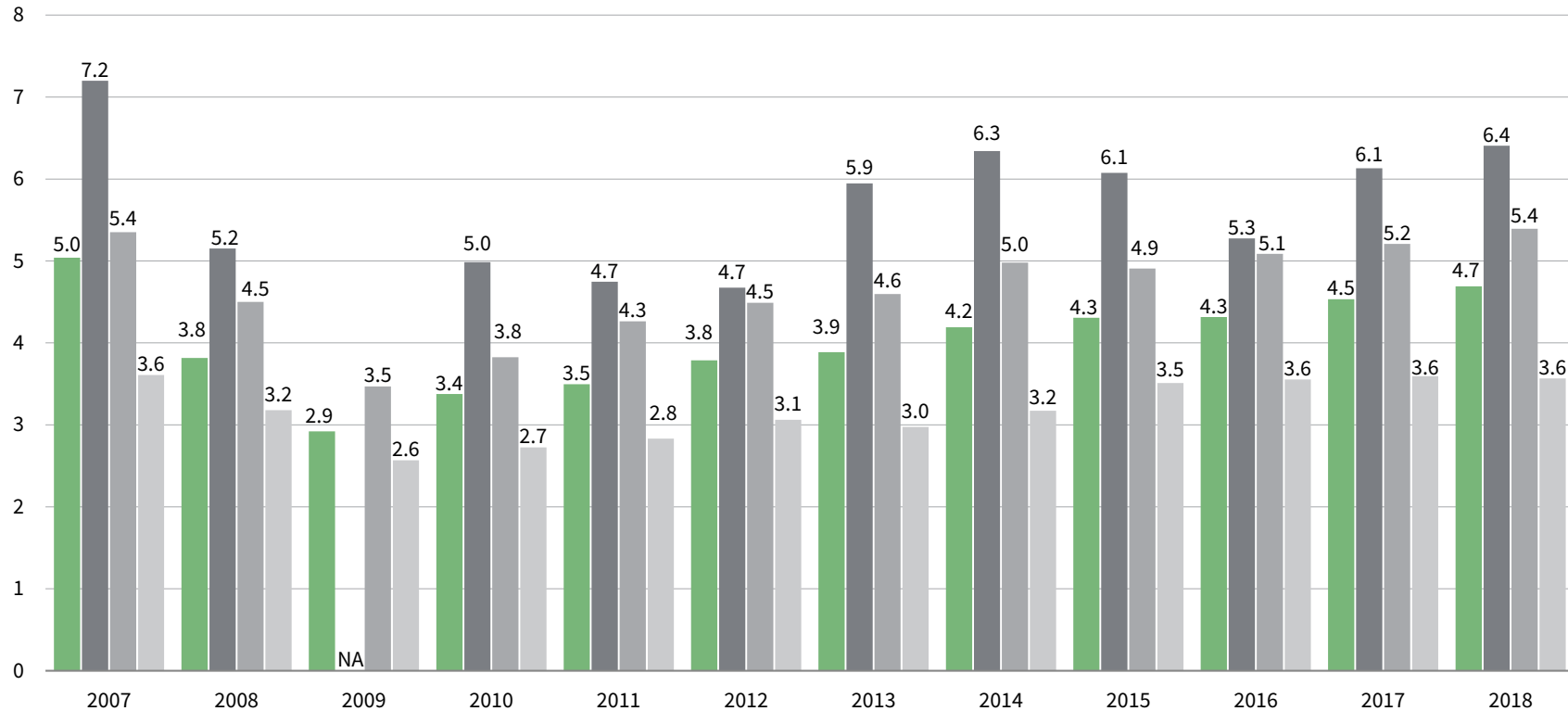
	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
Buyout Companies	435	279	133	321	340	335	235	307	246	251	224	184
Growth Equity Companies	83	77	38	97	73	73	53	67	50	52	58	43
MSCI All Country World Index	1,000	972	992	1,049	1,058	1,096	1,105	1,144	1,163	1,174	1,154	1,265

Similar to PPMs, leverage multiples also increased with size

Since 2013, large companies averaged 6.0x EBITDA and small companies averaged 3.4x

AVERAGE EBITDA LEVERAGE MULTIPLES AT ACQUISITION OF PRIVATE EQUITY BUYOUT COMPANIES BY ENTERPRISE VALUE SEGMENT

As of December 31, 2018 • Net Debt/EBITDA



Number of Companies

	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
Buyout Companies	435	279	133	321	340	335	235	307	246	251	224	184
EV > \$1B	116	55	NA	47	47	58	36	45	34	42	40	35
EV \$250M - \$1B	121	68	38	96	91	103	67	108	92	90	77	61
EV < \$250M	191	152	80	174	201	168	128	142	112	115	96	80

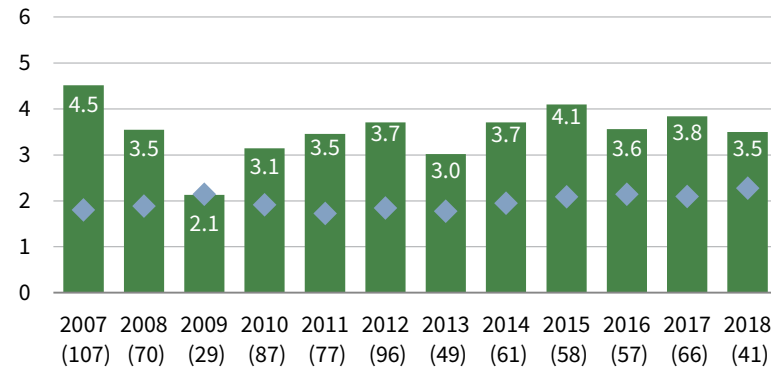
Industrial and IT leverage hit new heights in 2018

From 2007 to 2018, leverage for all sectors averaged at least 3.5x

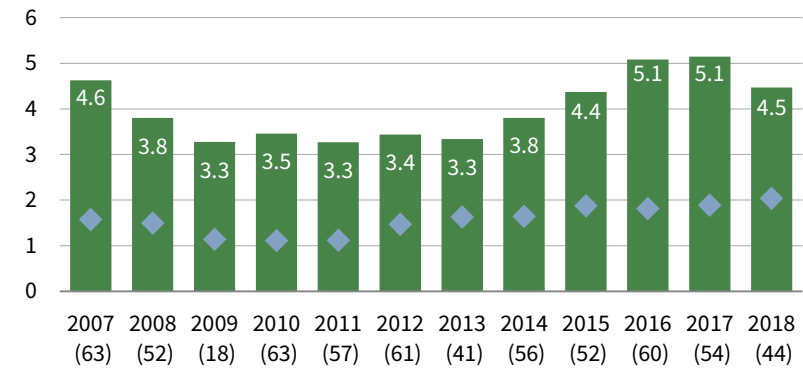
AVERAGE EBITDA LEVERAGE MULTIPLES AT ACQUISITION OF PRIVATE EQUITY-OWNED COMPANIES VS PUBLIC COMPANIES BY SECTOR

As of December 31, 2018 • Net Debt/EBITDA

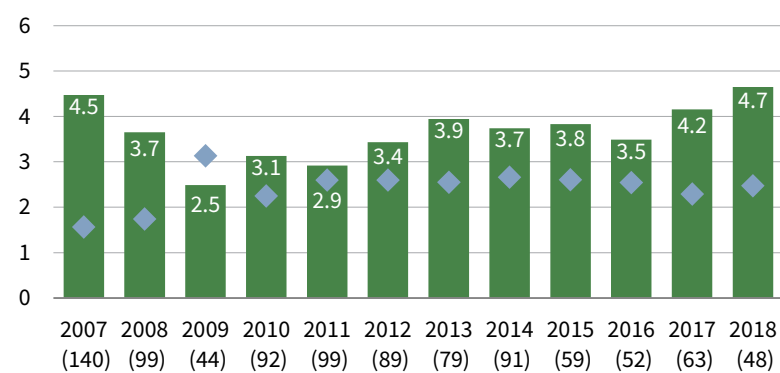
Consumer Discretionary



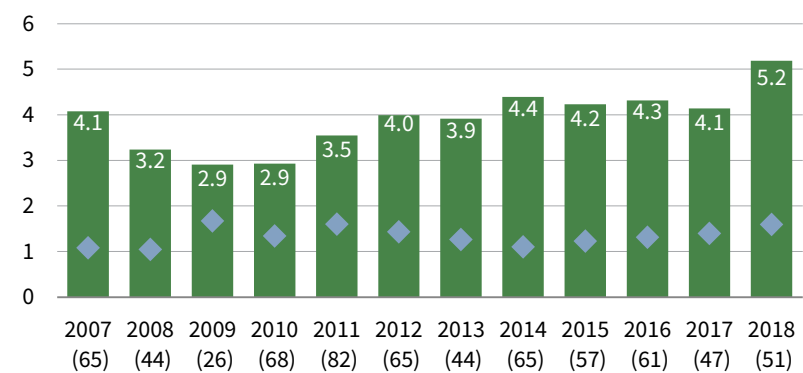
Healthcare



Industrials



Information Technology



■ Private Equity-Owned Companies ◆ MSCI All Country World Index

GLOBAL ANALYSIS

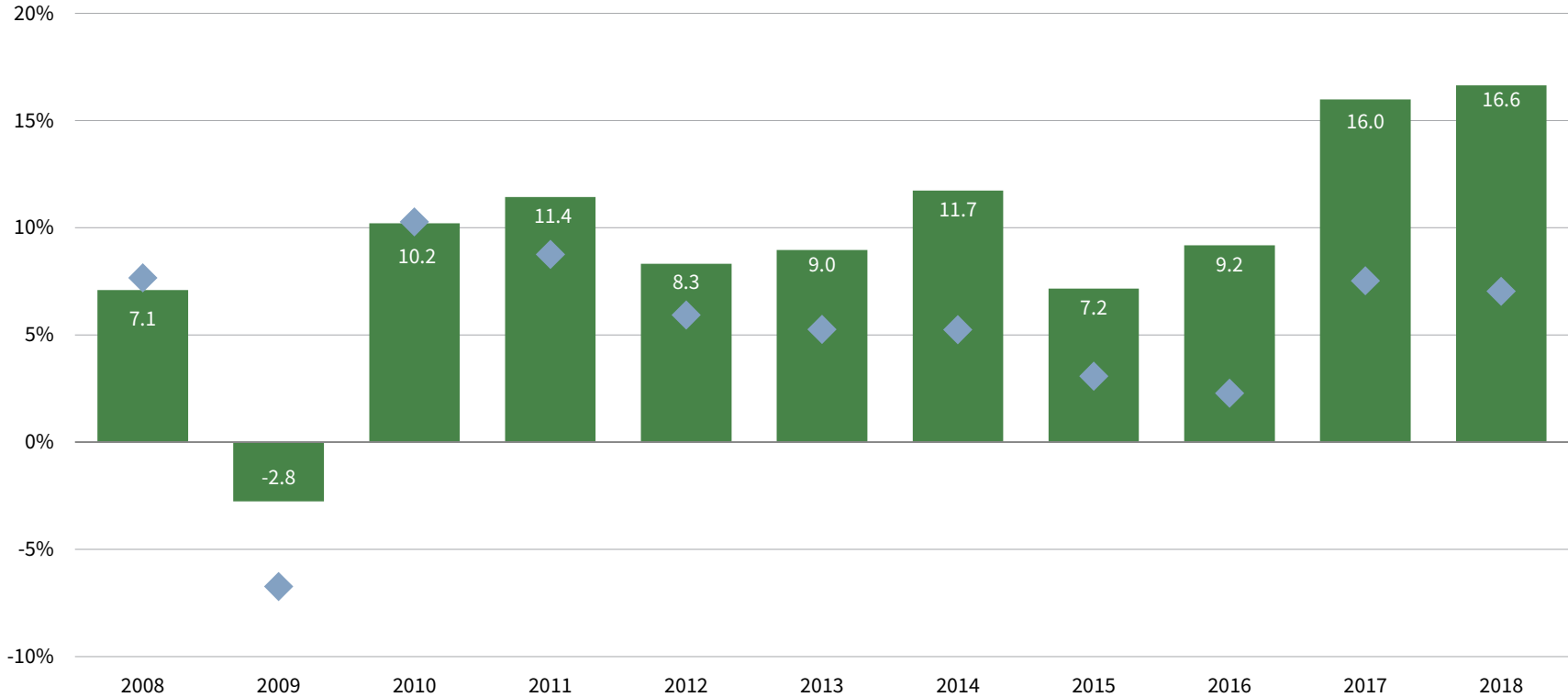
- Purchase Price Multiple
- Leverage Multiple
- **Revenue Growth**
- EBITDA Growth
- EBITDA Margin
- Exit Metrics

PE companies grew revenue faster than public companies in each year

Annual revenue growth has averaged more than 11% since 2010

AVERAGE ANNUAL REVENUE GROWTH OF PRIVATE EQUITY-OWNED COMPANIES VS PUBLIC COMPANIES

As of December 31, 2018 • Annual Growth Rate (%)



Number of Companies

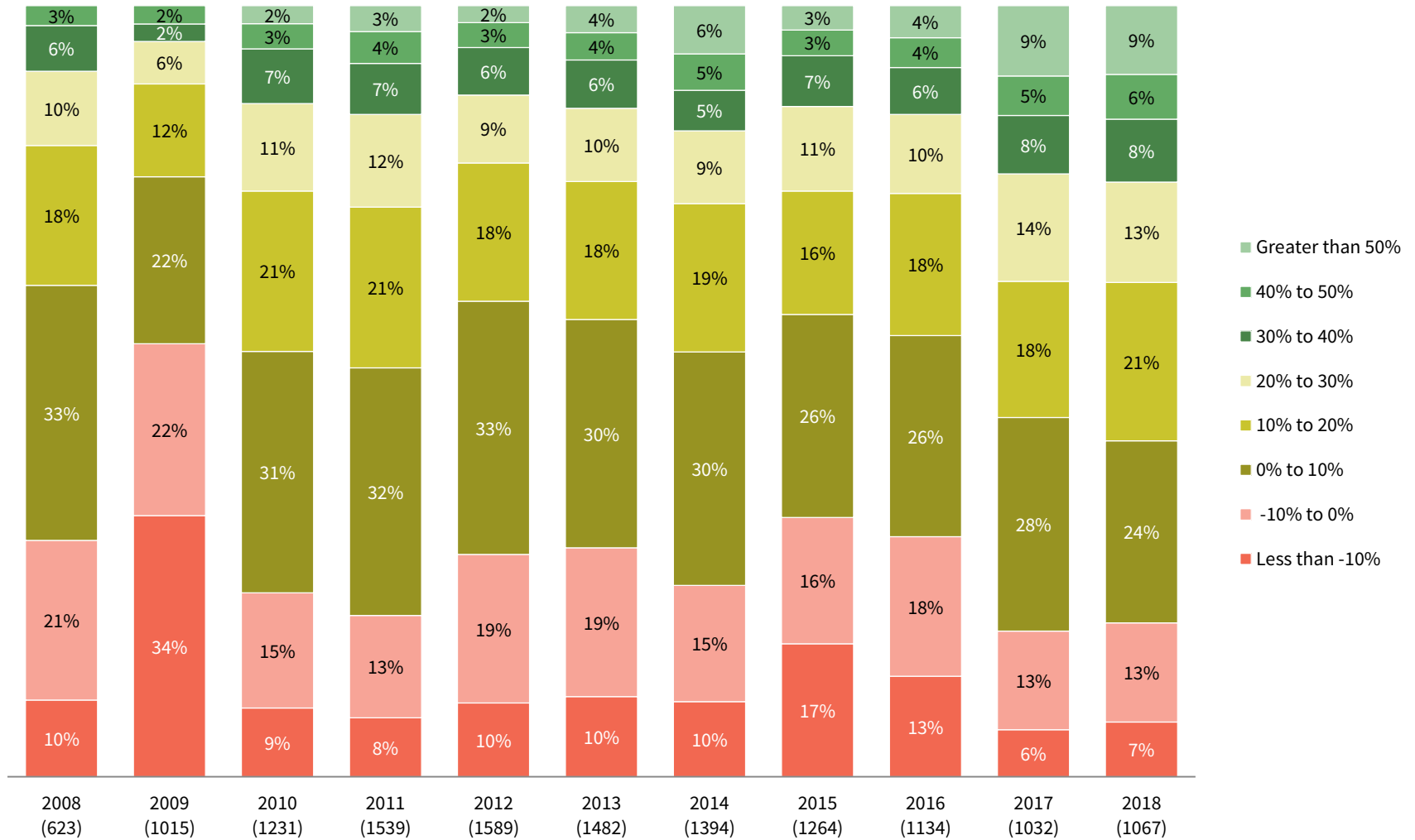
	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
Private Equity-Owned Companies	623	1,015	1,231	1,539	1,589	1,482	1,394	1,264	1,134	1,032	1,067
MSCI All Country World Index	1,838	1,949	1,922	1,944	2,012	1,995	2,046	2,000	2,087	2,072	2,049

PE companies consistently grew revenue by at least 10% per annum

But ~25% of companies experienced revenue declines

AVERAGE ANNUAL REVENUE GROWTH BREAKDOWN OF PRIVATE EQUITY-OWNED COMPANIES

As of December 31, 2018 • Annual Growth Rate (%)

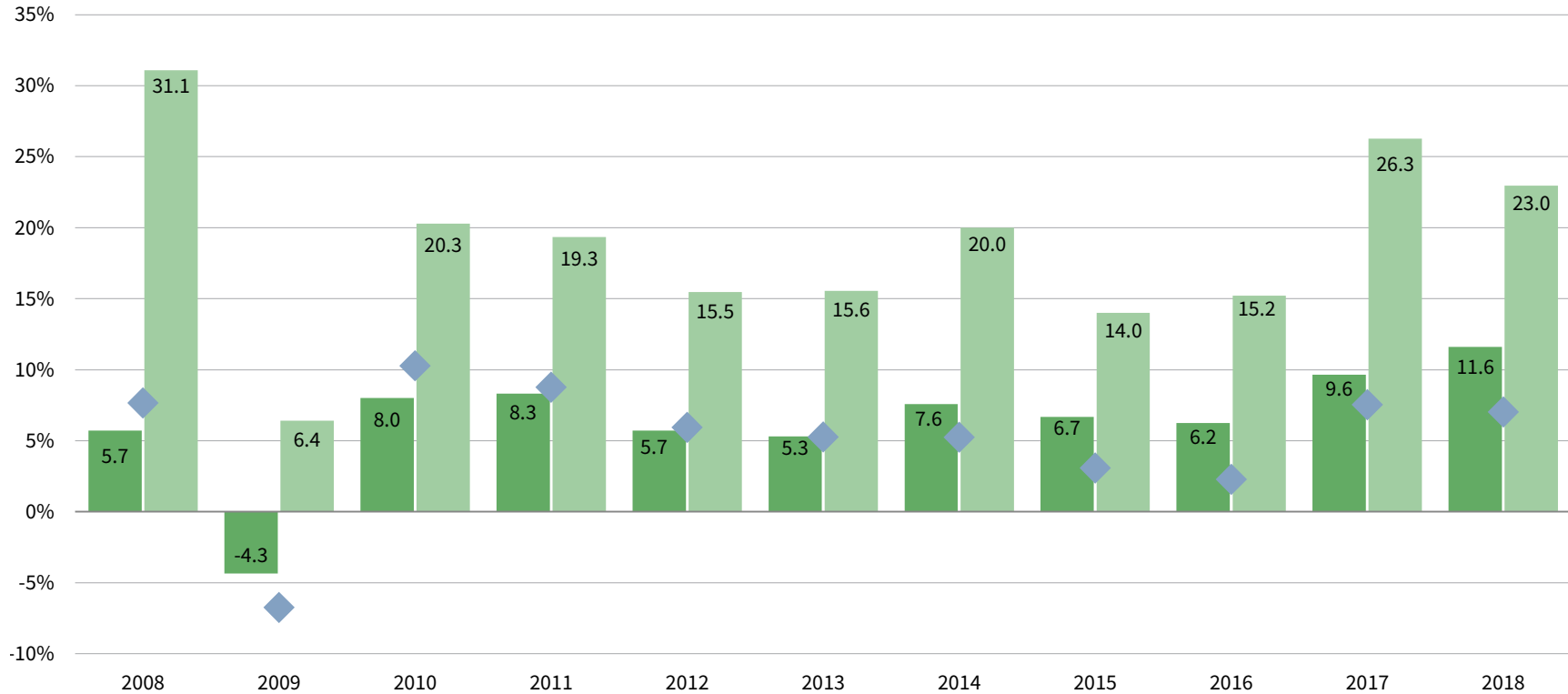


Since 2008, growth equity averaged 18.8% annual revenue growth, compared to 6.4% and 5.1% for buyouts and publics, respectively

2008 revenue growth was highest for all company types across time period; European companies were the largest contributor

AVERAGE ANNUAL REVENUE GROWTH OF BUYOUT AND GROWTH EQUITY COMPANIES VS PUBLIC COMPANIES

As of December 31, 2018 • Annual Growth Rate (%)



Number of Companies

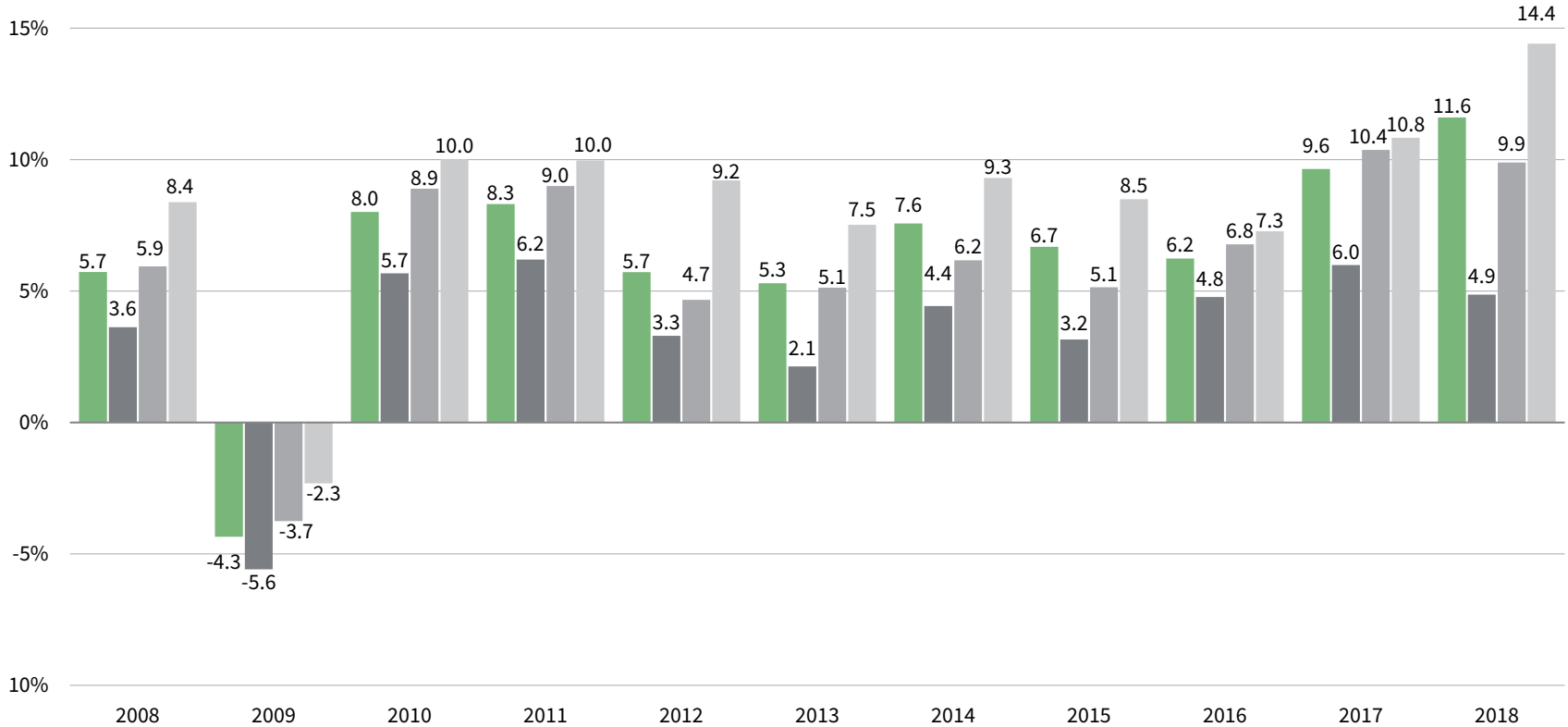
	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
Buyout Companies	510	764	888	1022	956	822	750	662	614	536	560
Growth Equity Companies	100	170	244	345	416	451	473	449	409	365	410
MSCI All Country World Index	1,838	1,949	1,922	1,944	2,012	1,995	2,046	2,000	2,087	2,072	2,049

From 2008 to 2018, small buyouts grew revenue more than twice as fast as large buyouts (8.5% vs 3.5%)

Over the same time period, mid-size companies averaged 6.2% annual revenue growth

AVERAGE ANNUAL REVENUE GROWTH OF PRIVATE EQUITY BUYOUT COMPANIES BY ENTERPRISE VALUE SEGMENT

As of December 31, 2018 • Annual Growth Rate (%)



Number of Companies

	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
Buyout Companies	510	764	888	1022	956	822	750	662	614	536	560
EV > \$1B	178	240	244	273	219	164	125	106	121	96	70
EV \$250M - \$1B	113	191	245	278	252	223	195	197	194	191	208
EV < \$250M	224	337	399	471	478	434	414	335	293	241	279

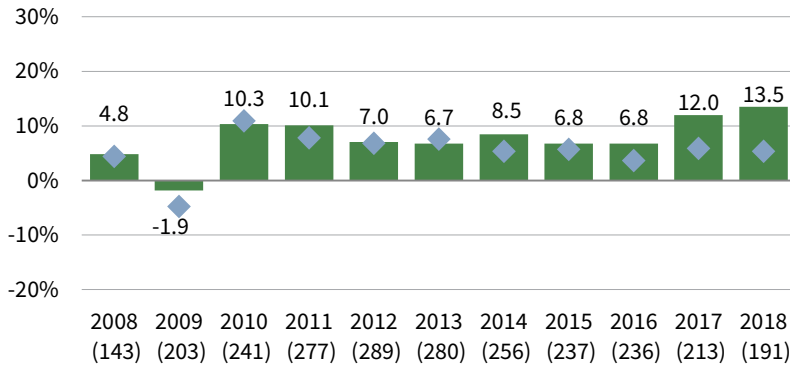
Across all sectors, PE company revenue growth outpaced that of public counterparts

Healthcare was the only sector to grow revenue in 2009

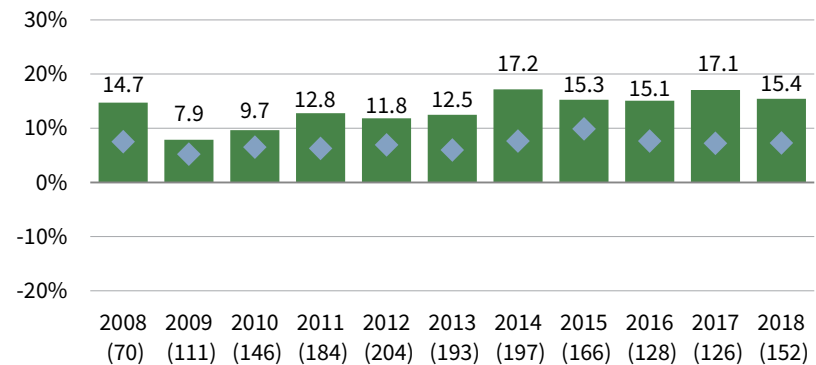
AVERAGE ANNUAL REVENUE GROWTH OF PRIVATE EQUITY-OWNED COMPANIES VS PUBLIC COMPANIES BY SECTOR

As of December 31, 2018 • Annual Growth Rate (%)

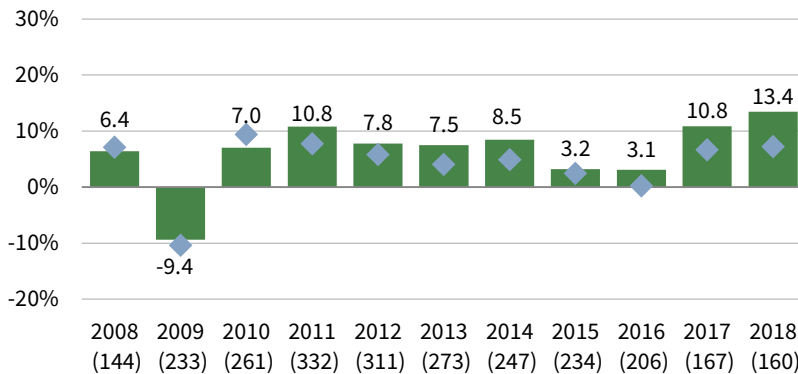
Consumer Discretionary



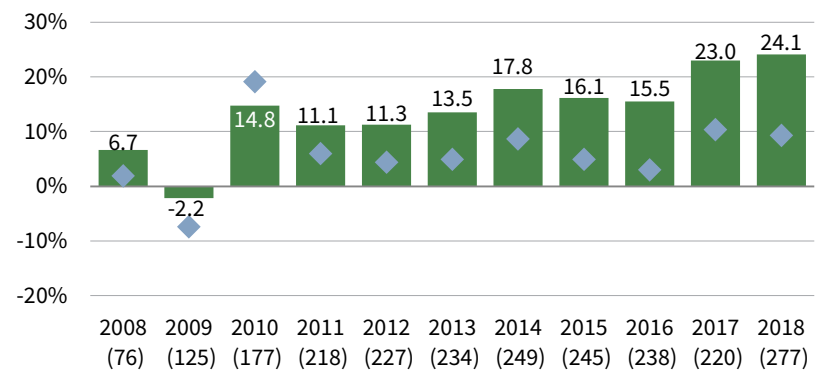
Healthcare



Industrials



Information Technology



■ Private Equity-Owned Companies ◆ MSCI All Country World Index

GLOBAL ANALYSIS

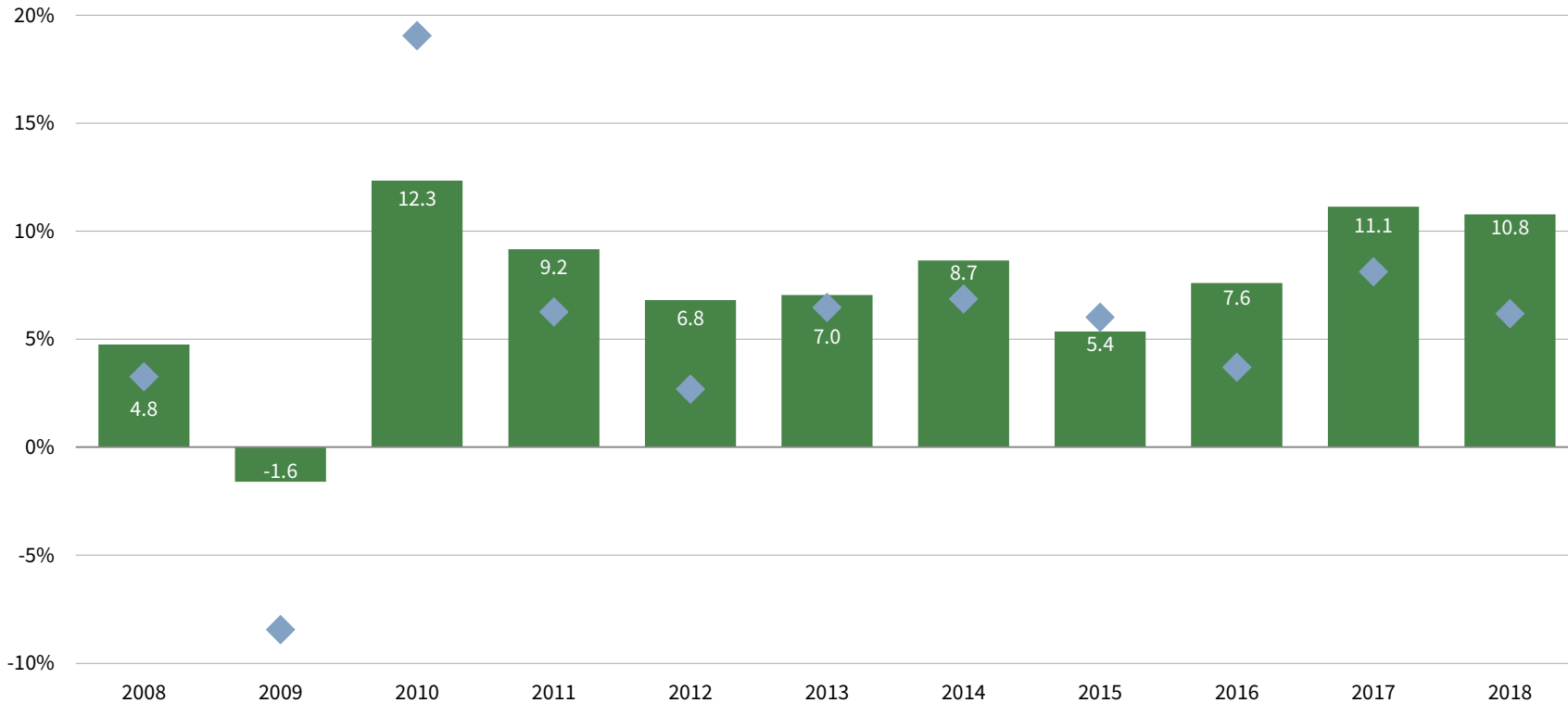
- Purchase Price Multiple
- Leverage Multiple
- Revenue Growth
- **EBITDA Growth**
- EBITDA Margin
- Exit Metrics

In all but one year, PE companies grew EBITDA at a similar or better rate than public peers

The public company EBITDA decline in 2009 and rebound in 2010 were more extreme than those of PE

AVERAGE ANNUAL EBITDA GROWTH OF PRIVATE EQUITY-OWNED COMPANIES VS PUBLIC COMPANIES

As of December 31, 2018 • Annual Growth Rate (%)



Number of Companies

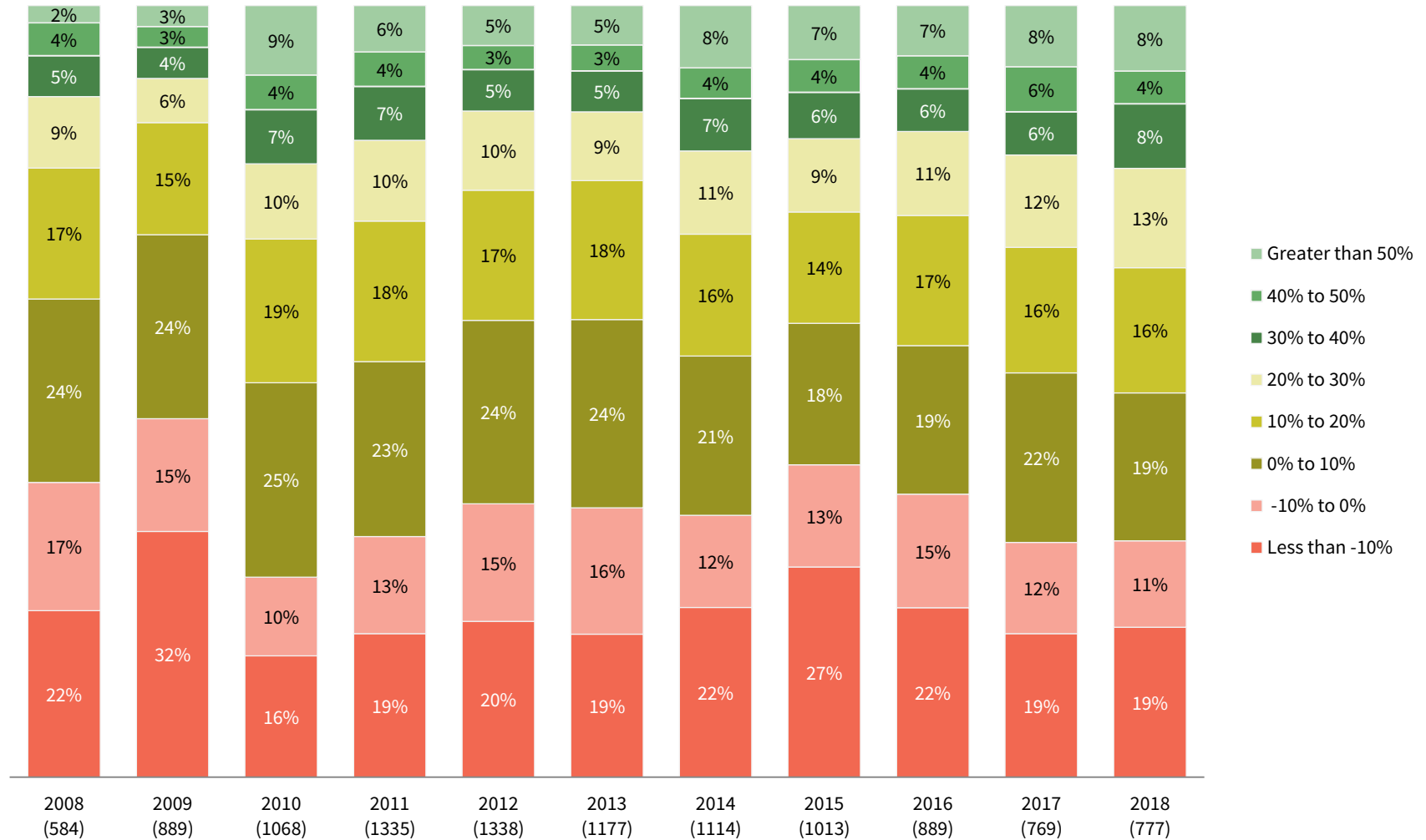
	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
Private Equity-Owned Companies	584	889	1068	1335	1338	1177	1114	1013	889	769	777
MSCI All Country World Index	1,323	1,443	1,475	1,543	1,619	1,614	1,645	1,647	1,695	1,681	1,691

In all years, EBITDA declined for at least 26% of PE companies

Conversely, EBITDA grew annually by at least 10% for more than 40% of the universe

AVERAGE ANNUAL EBITDA GROWTH BREAKDOWN OF PRIVATE EQUITY-OWNED COMPANIES

As of December 31, 2018 • Annual Growth Rate (%)

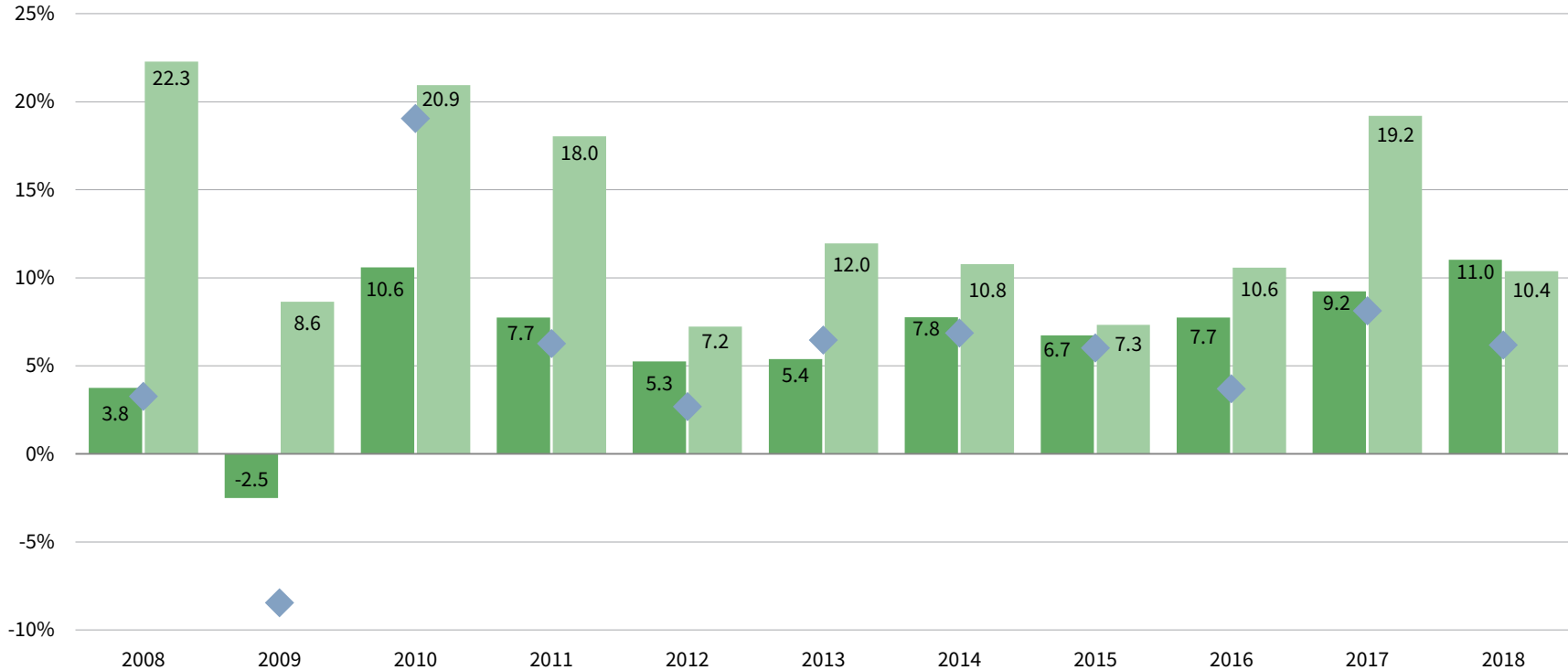


In all but one year, buyout and growth equity companies performed as well or better than public ones

Over the full period, growth equity companies grew EBITDA annually by nearly 8% more than publics, on average

AVERAGE ANNUAL EBITDA GROWTH OF BUYOUT AND GROWTH EQUITY COMPANIES VS PUBLIC COMPANIES

As of December 31, 2018 • Annual Growth Rate (%)



Number of Companies

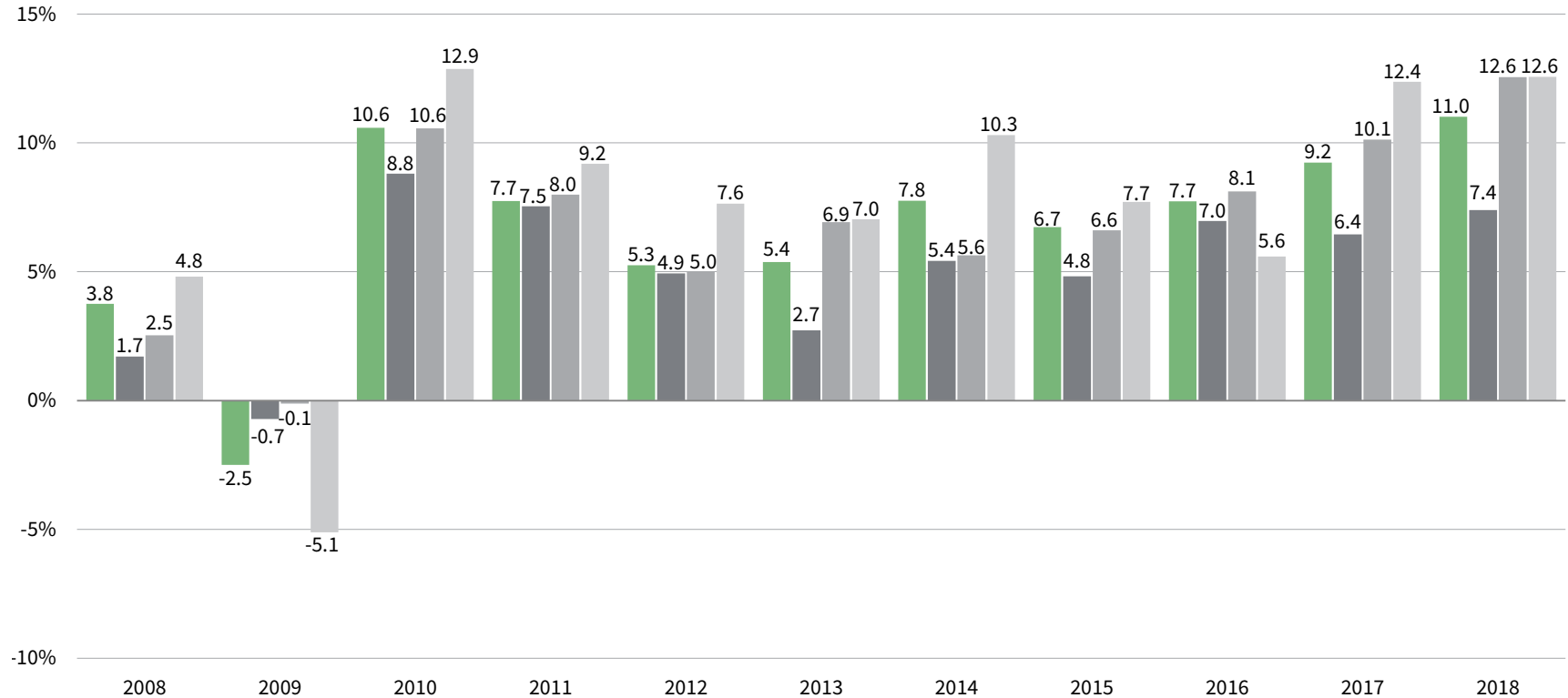
	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
Buyout Companies	488	699	803	964	904	769	713	637	567	503	523
Growth Equity Companies	69	127	194	259	282	274	286	263	227	195	198
MSCI All Country World Index	1,323	1,443	1,475	1,543	1,619	1,614	1,645	1,647	1,695	1,681	1,691

Small buyouts outperformed other size segments in all but two years

2018 was the best year since 2010 for small companies and the best year overall for mid-sized ones

AVERAGE ANNUAL EBITDA GROWTH OF PRIVATE EQUITY BUYOUT COMPANIES BY ENTERPRISE VALUE SEGMENT

As of December 31, 2018 • Annual Growth Rate (%)



Number of Companies

	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
Buyout Companies	488	699	803	964	904	769	713	637	567	503	523
EV > \$1B	182	224	245	272	222	165	125	113	122	94	75
EV \$250M - \$1B	114	183	220	277	251	214	194	195	189	189	204
EV < \$250M	207	301	335	424	436	398	392	309	266	216	252

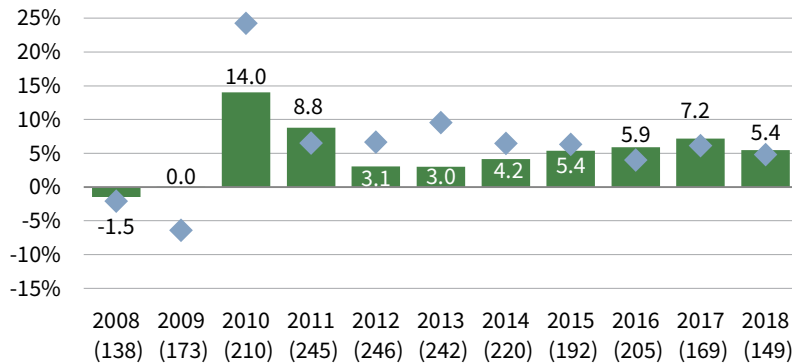
Healthcare EBITDA growth best by far; IT steadily increased from 2014 to 2018

Consumer discretionary EBITDA growth has been middling since 2012

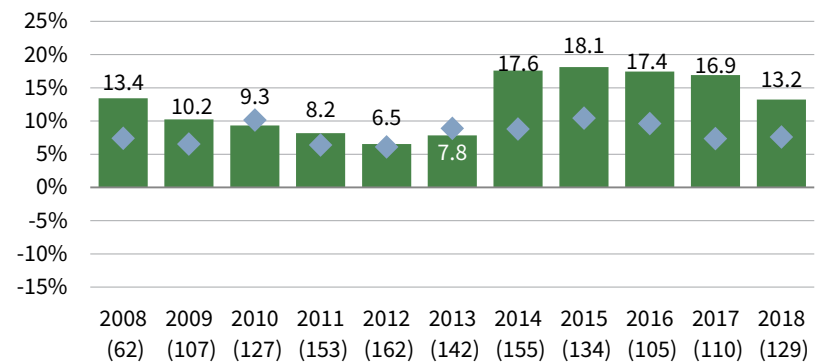
AVERAGE ANNUAL EBITDA GROWTH OF PRIVATE EQUITY-OWNED COMPANIES VS PUBLIC COMPANIES BY SECTOR

As of December 31, 2018 • Annual Growth Rate (%)

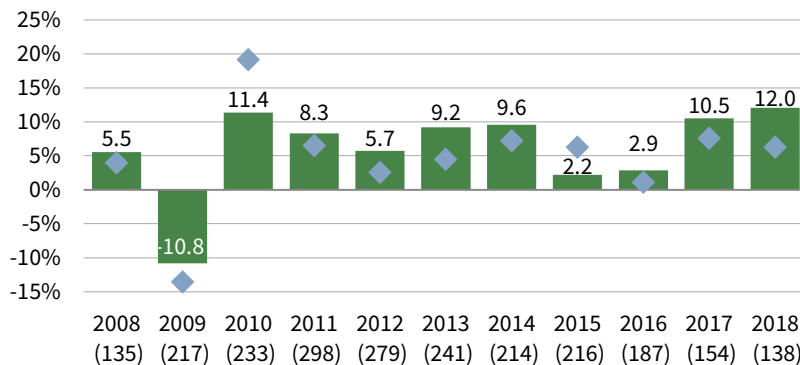
Consumer Discretionary



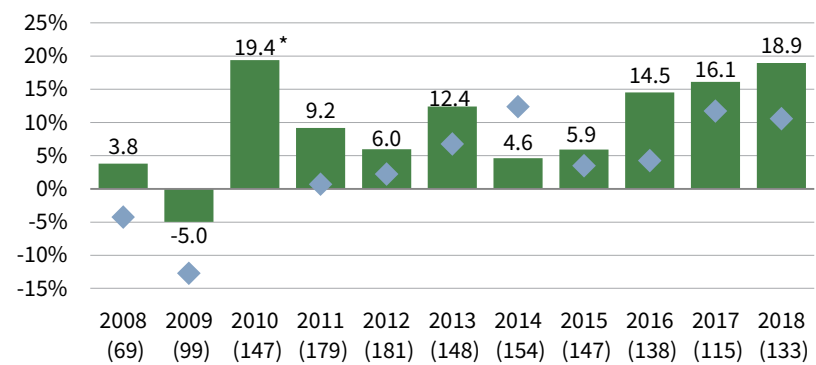
Healthcare



Industrials



Information Technology



■ Private Equity-Owned Companies ◆ MSCI All Country World Index

* Chart capped for scale. IT Public EBITDA Growth for 2010 is 32.7%?

Sources: Cambridge Associates LLC Private Investments Database (as reported by investment managers), FactSet Research Systems, and MSCI Inc. MSCI data provided "as is" without any express or implied warranties.

Notes: Outliers were identified and excluded, and the same methodology was applied to the private equity and public company universes. Numbers in parentheses represent number of private equity-owned companies in each year.

GLOBAL ANALYSIS

- Purchase Price Multiple
- Leverage Multiple
- Revenue Growth
- EBITDA Growth
- **EBITDA Margin**
- Exit Metrics

PE margins globally averaged almost 20%, but trailed public companies in every year

The relationship between PE and publics in US-only analysis was the reverse

AVERAGE ANNUAL EBITDA MARGIN OF PRIVATE EQUITY-OWNED COMPANIES VS PUBLIC COMPANIES

As of December 31, 2018 • EBITDA/Revenue (%)



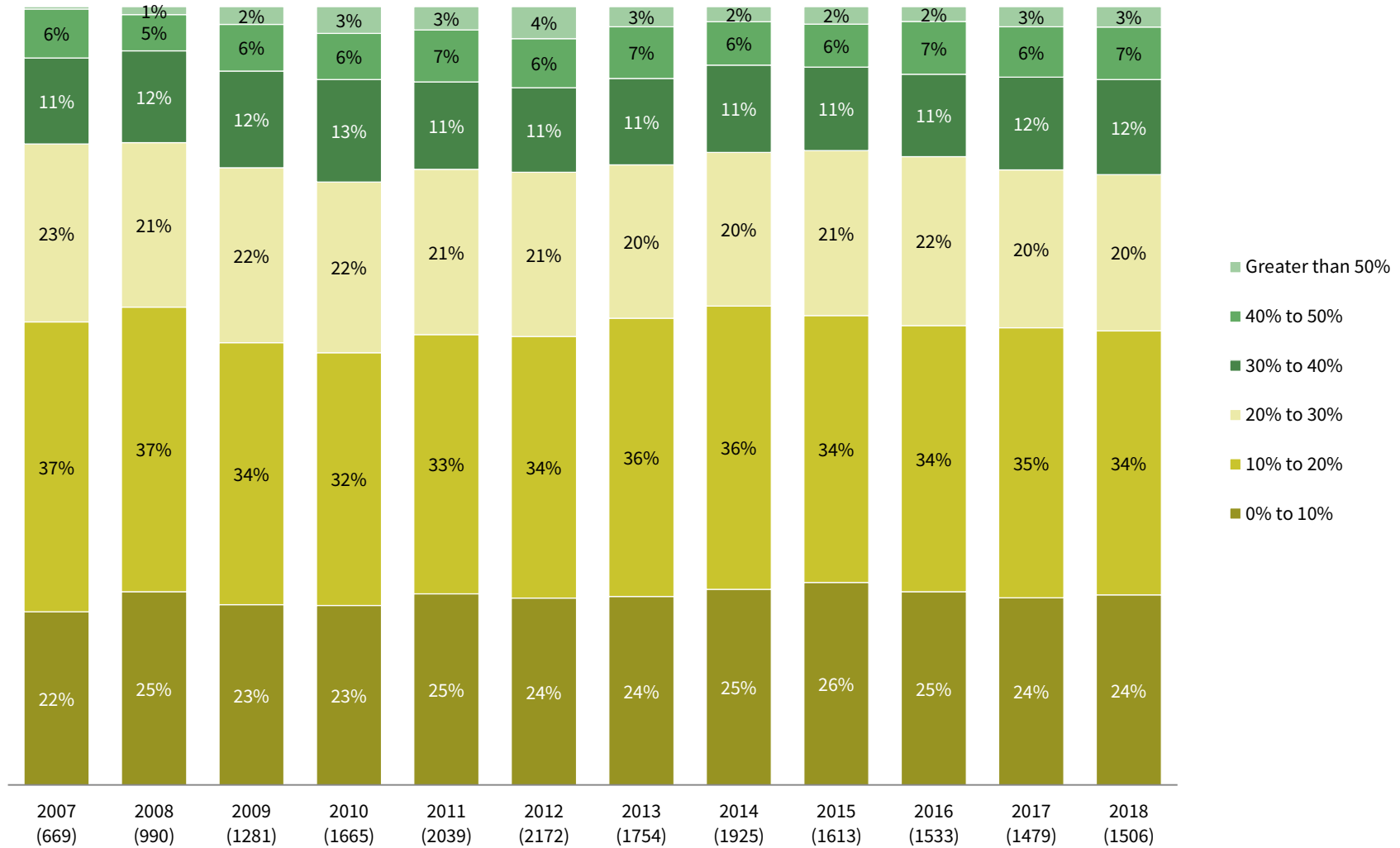
Number of Companies

	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
Private Equity-Owned Companies	669	990	1,281	1,665	2,039	2,172	1,754	1,925	1,613	1,533	1,479	1,506
MSCI All Country World Index	1,886	1,651	1,723	1,827	1,851	1,879	1,884	1,916	1,927	1,938	1,963	2,168

Margins have been consistent across the time period

AVERAGE ANNUAL EBITDA MARGIN BREAKDOWN OF PRIVATE EQUITY-OWNED COMPANIES

As of December 31, 2018 • EBITDA/Revenue (%)



After hitting a high in 2010, growth equity margins have generally decreased

Buyout margins were highest in 2017 and 2018

AVERAGE ANNUAL EBITDA MARGIN OF BUYOUT AND GROWTH EQUITY COMPANIES VS PUBLIC COMPANIES

As of December 31, 2018 • EBITDA/Revenue (%)



Number of Companies

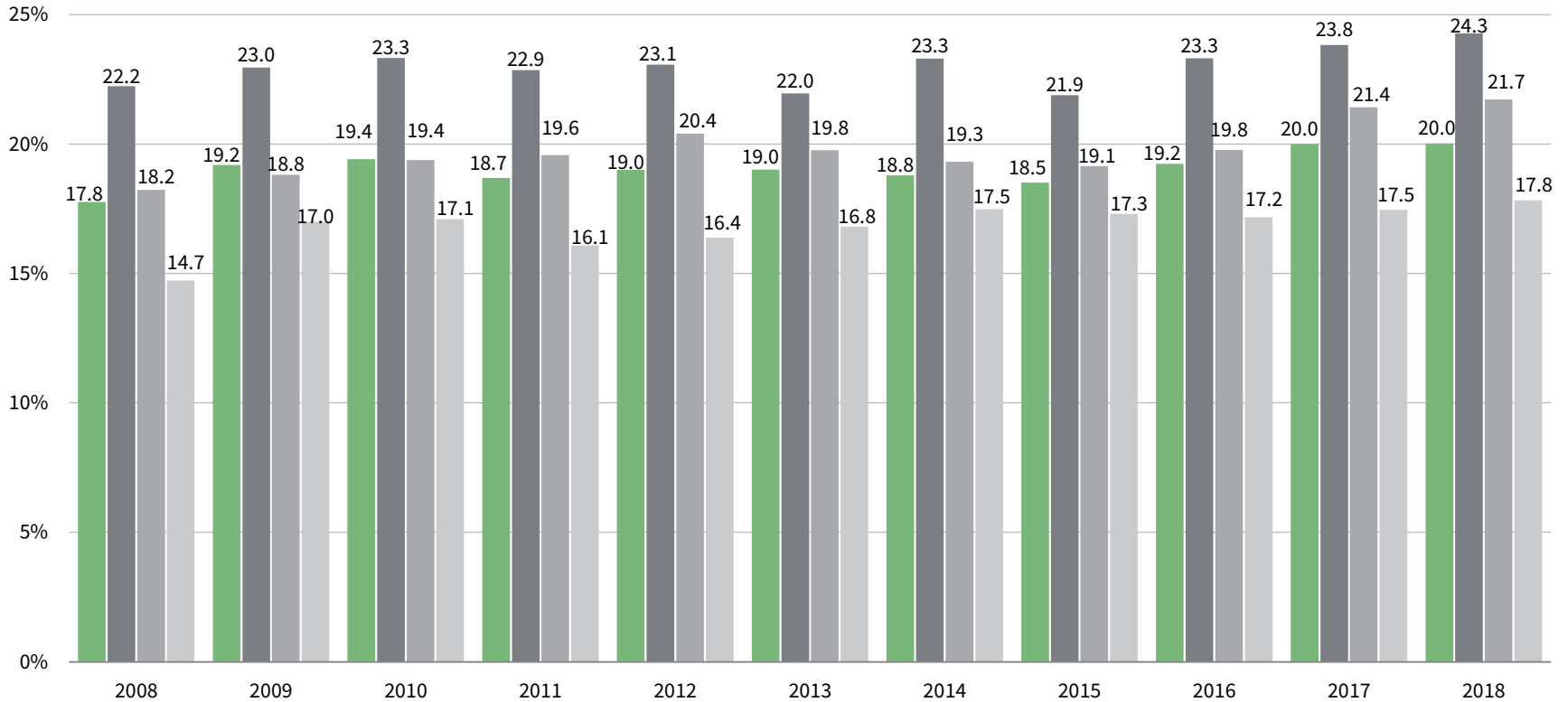
	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
Buyout Companies	550	764	953	1182	1400	1397	1153	1248	1003	1000	960	972
Growth Equity Companies	86	149	230	354	400	500	437	492	416	393	362	398
MSCI All Country World Index	1,886	1,651	1,723	1,827	1,851	1,879	1,884	1,916	1,927	1,938	1,963	2,168

Larger companies operated at highest margins

All size segments hit new heights in 2018

AVERAGE ANNUAL EBITDA MARGIN OF PRIVATE EQUITY BUYOUT COMPANIES BY ENTERPRISE VALUE SEGMENT

As of December 31, 2018 • EBITDA/Revenue (%)



Number of Companies

	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
Buyout Companies	550	764	953	1,182	1,400	1,397	1,153	1,248	1,003	1,000	960	972
EV > \$1B	186	242	272	307	324	289	239	196	183	195	192	143
EV \$250M - \$1B	124	194	250	331	383	384	332	352	325	349	342	330
EV < \$250M	239	327	422	536	680	688	567	683	481	437	417	483

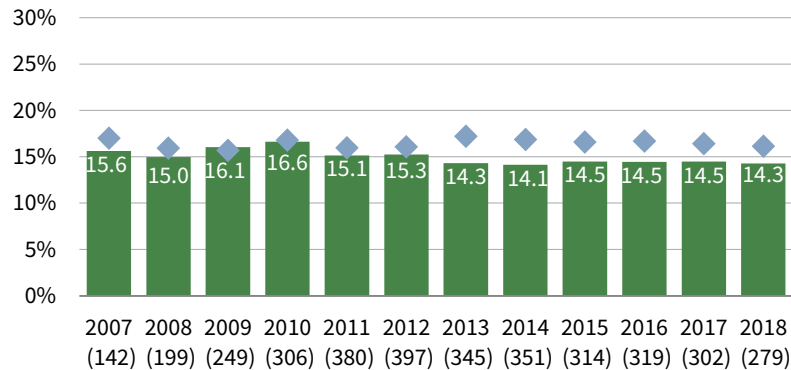
Private equity IT had highest margins in the sample (compared to all sectors and market)

Healthcare is the only sector where PE consistently trailed public peers

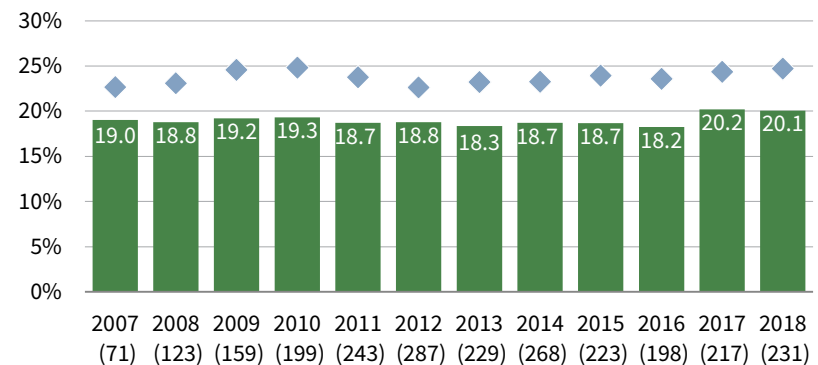
AVERAGE ANNUAL EBITDA MARGIN OF PRIVATE EQUITY-OWNED COMPANIES VS PUBLIC COMPANIES BY SECTOR

As of December 31, 2018 • EBITDA/Revenue (%)

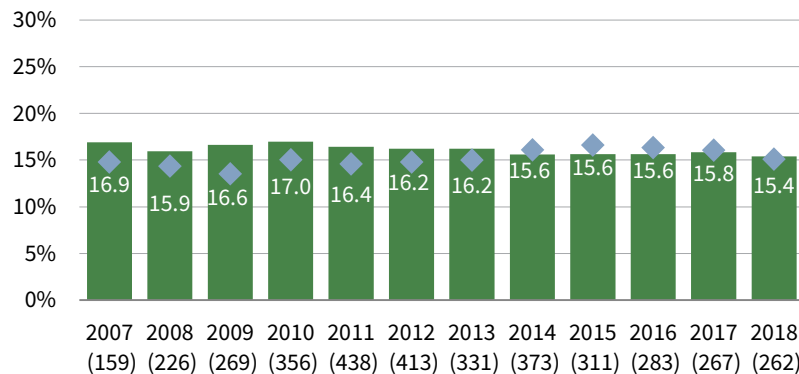
Consumer Discretionary



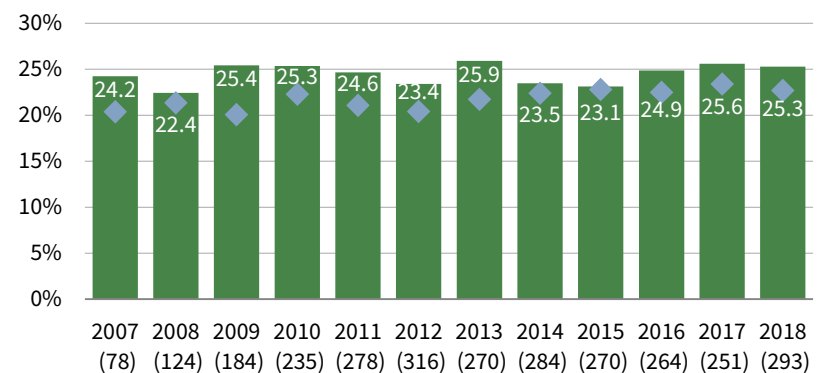
Healthcare



Industrials



Information Technology



■ Private Equity-Owned Companies ◆ MSCI All Country World Index

GLOBAL ANALYSIS

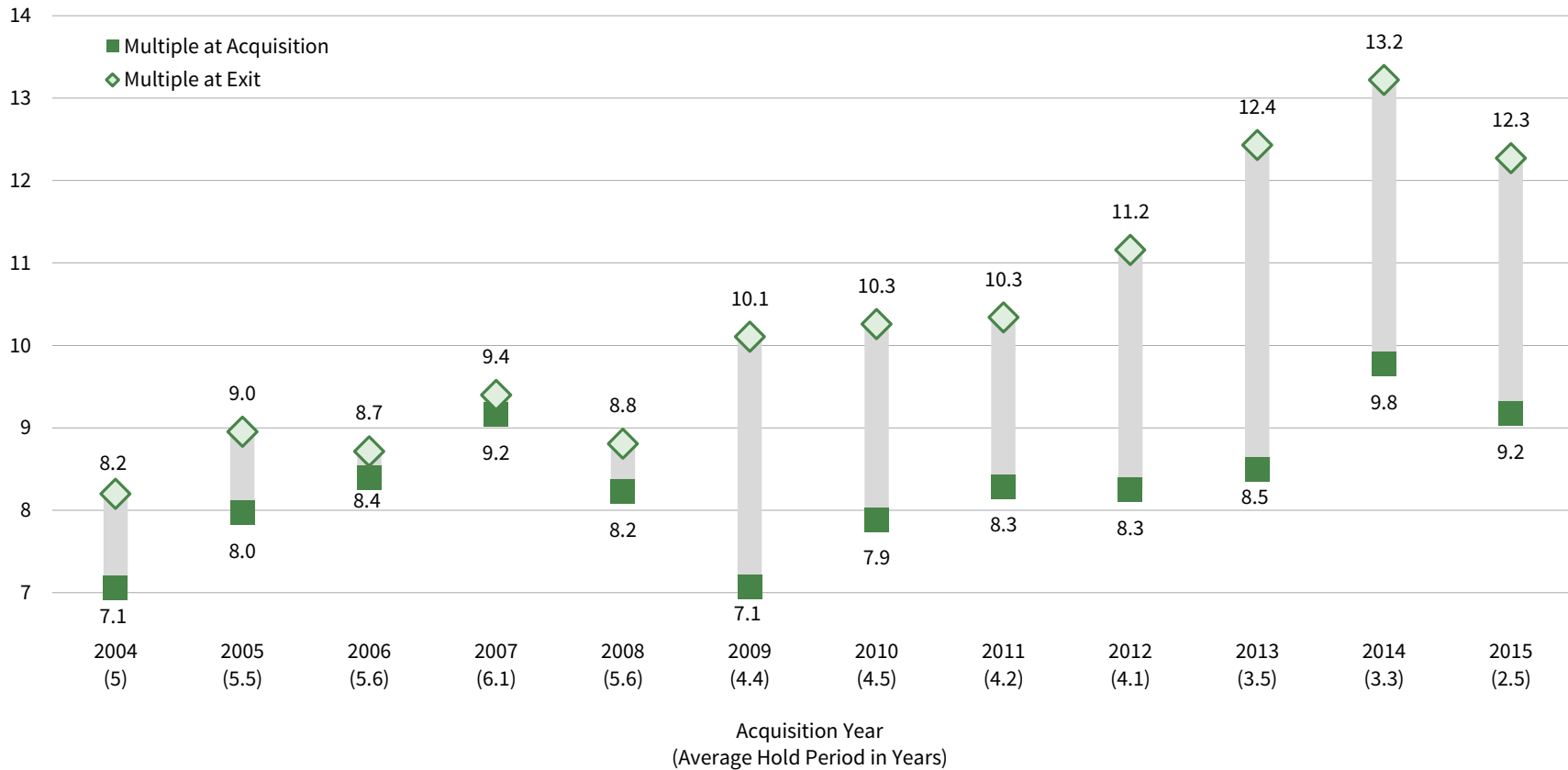
- Purchase Price Multiple
- Leverage Multiple
- Revenue Growth
- EBITDA Growth
- EBITDA Margin
- **Exit Metrics**

All acquisition years had multiple expansion during PE ownership, but ...

... for 2004 to 2008 acquisitions, expansion averaged 0.7x, for those acquired from 2009 to 2015, it averaged 3.1x

MEDIAN EBITDA MULTIPLE EXPANSION OF EXITED PRIVATE EQUITY-OWNED COMPANIES BY ACQUISITION YEAR

As of December 31, 2018 • Enterprise Value/EBITDA



Number of Companies

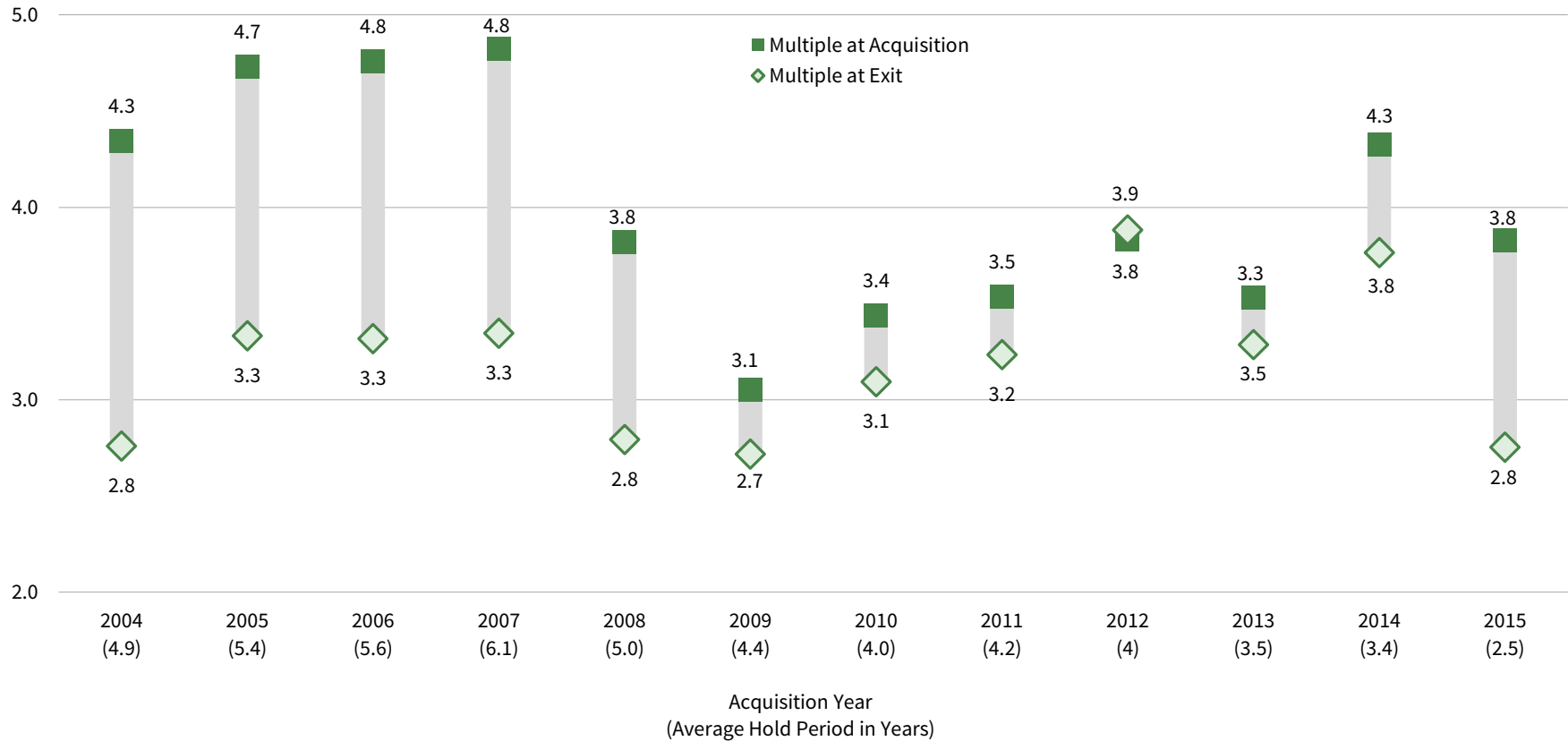
	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
Private Equity-Owned Companies	171	239	366	381	276	149	291	198	181	99	85	46

For all but one acquisition year, exited companies delevered during PE ownership

Delevering was most pronounced for companies acquired from 2004 to 2008

EBITDA LEVERAGE MULTIPLE COMPRESSION OF PRIVATE EQUITY-OWNED COMPANIES BY ACQUISITION YEAR

As of December 31, 2018 • Net Debt/EBITDA



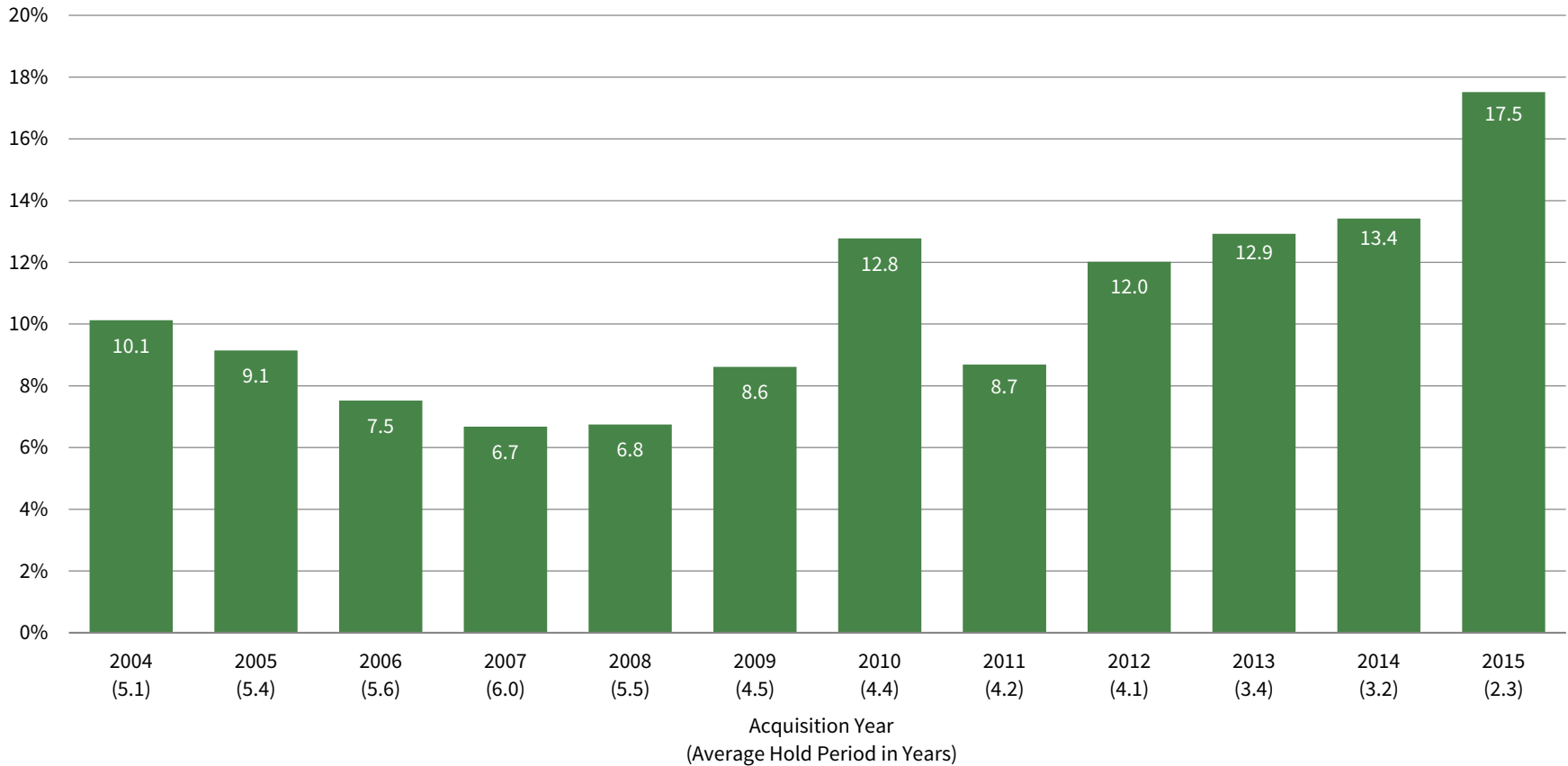
	Number of Companies												
	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	
Private Equity-Owned Companies	161	213	317	339	226	103	227	156	151	84	71	36	

Exited companies acquired in the lead-up to and during the GFC averaged ~8% revenue growth during PE ownership

Exited companies acquired after the GFC averaged 13% revenue growth

MEDIAN REVENUE CAGR OF EXITED PRIVATE EQUITY-OWNED COMPANIES BY ACQUISITION YEAR

As of December 31, 2018 • Compound Annual Growth Rate (%)



Number of Companies

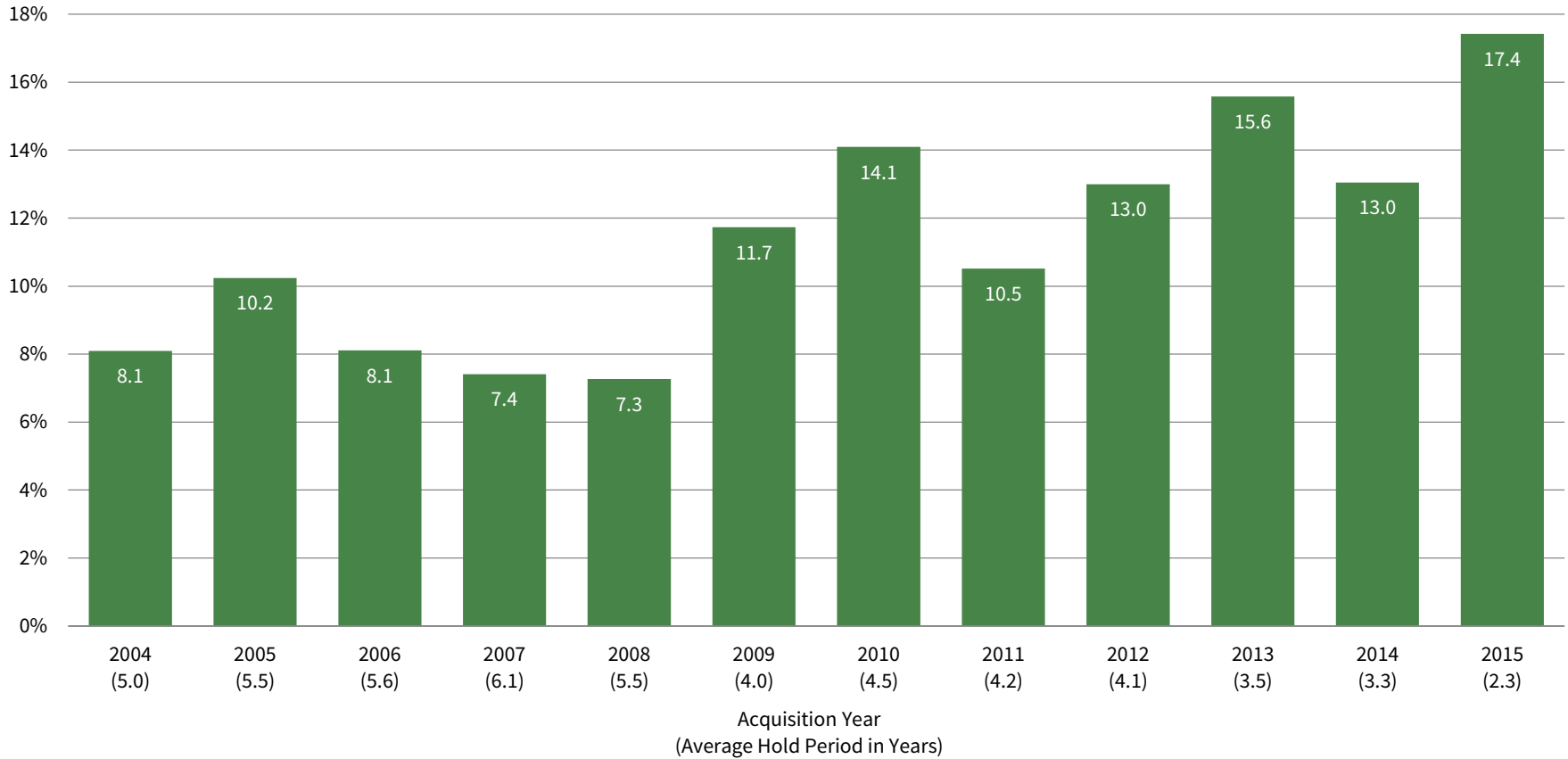
	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
Private Equity-Owned Companies	213	283	424	460	325	183	340	245	200	114	102	66

EBITDA CAGRs were significantly higher for exited companies acquired since 2009

The median hold period for the fastest growers (those with 50%+ CAGRs) was 2.8 years

MEDIAN EBITDA CAGR OF EXITED PRIVATE EQUITY-OWNED COMPANIES BY ACQUISITION YEAR

As of December 31, 2018 • Compound Annual Growth Rate (%)



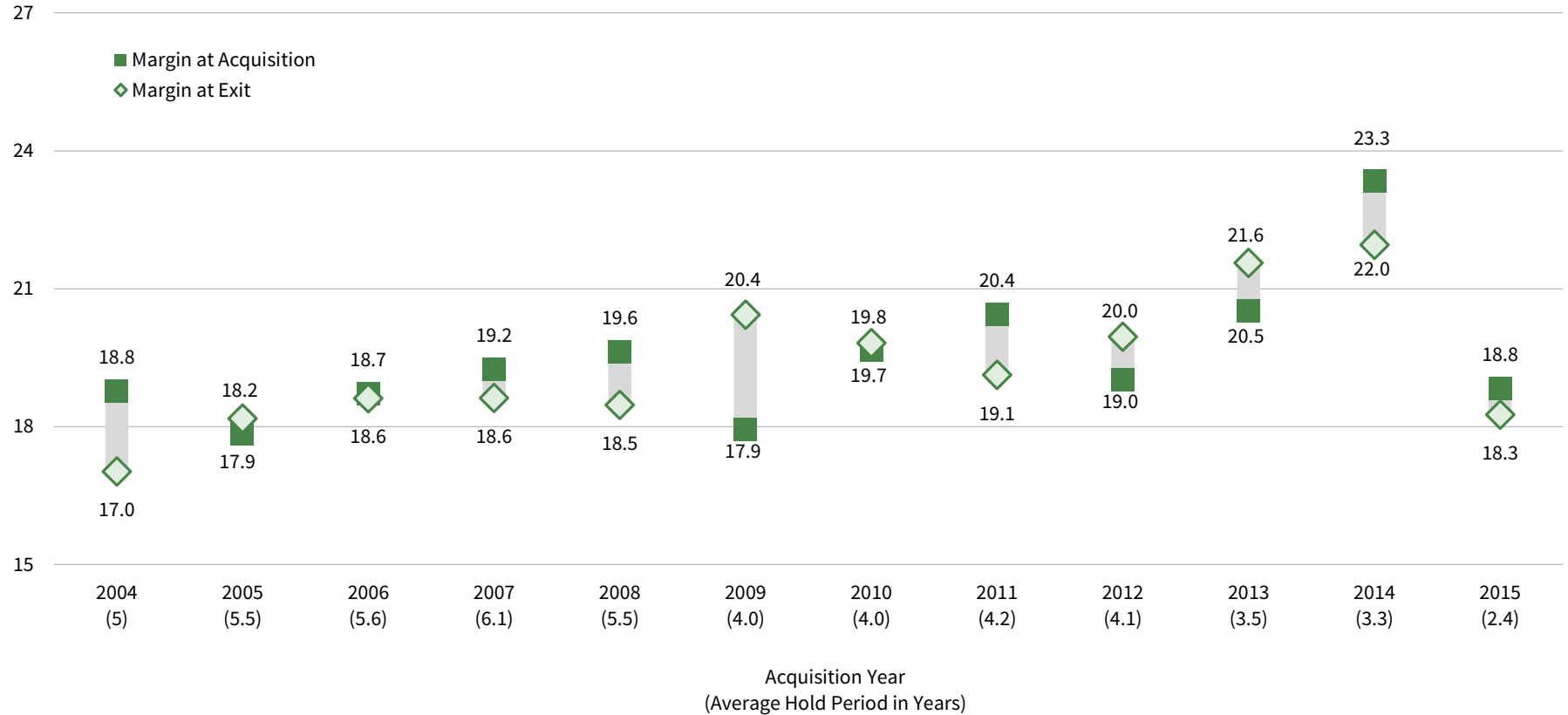
	Number of Companies											
	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
Private Equity-Owned Companies	187	263	386	415	298	156	299	208	187	101	89	53

There has been minimal shift in margins from acquisition to exit

In seven of the acquisition years, margins decreased during PE ownership

MEDIAN EBITDA MARGIN EXPANSION OF EXITED PRIVATE EQUITY-OWNED COMPANIES BY ACQUISITION YEAR

As of December 31, 2018 • EBITDA/Revenue (%)



	Number of Companies												
	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	
Private Equity-Owned Companies	179	253	372	398	283	152	292	203	181	98	84	51	

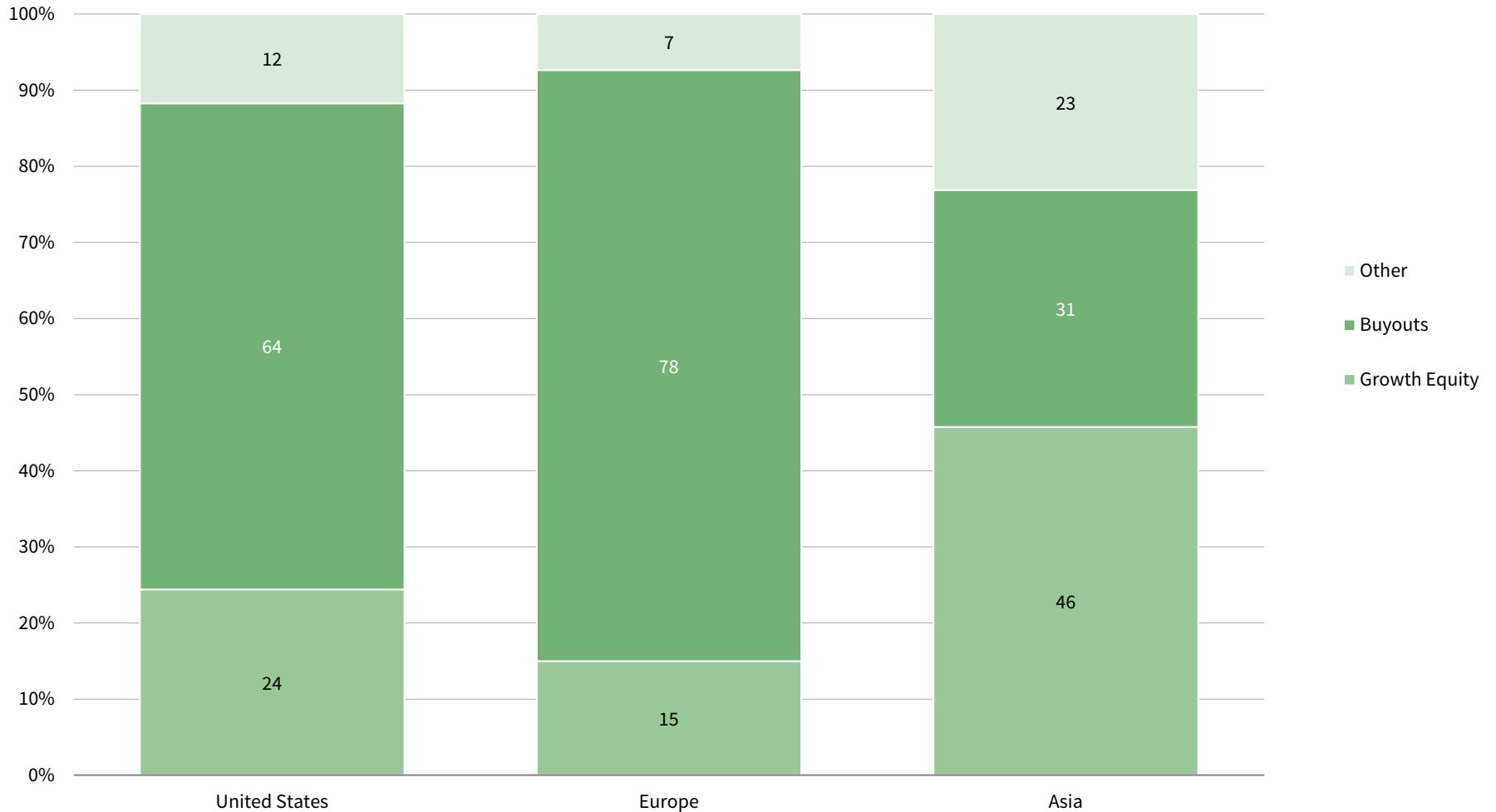
REGIONAL COMPARISONS: ASIA, EUROPE, AND THE UNITED STATES*

* Investments in Asia, Europe, and the United States represent different opportunities that will impact the metrics in this report.

Overall, the United States and Europe samples are largely buyouts; the Asia universe is nearly half growth equity

BREAKDOWN OF INVESTMENT STRATEGIES BY REGION

As of December 31, 2018 • Percent (%)

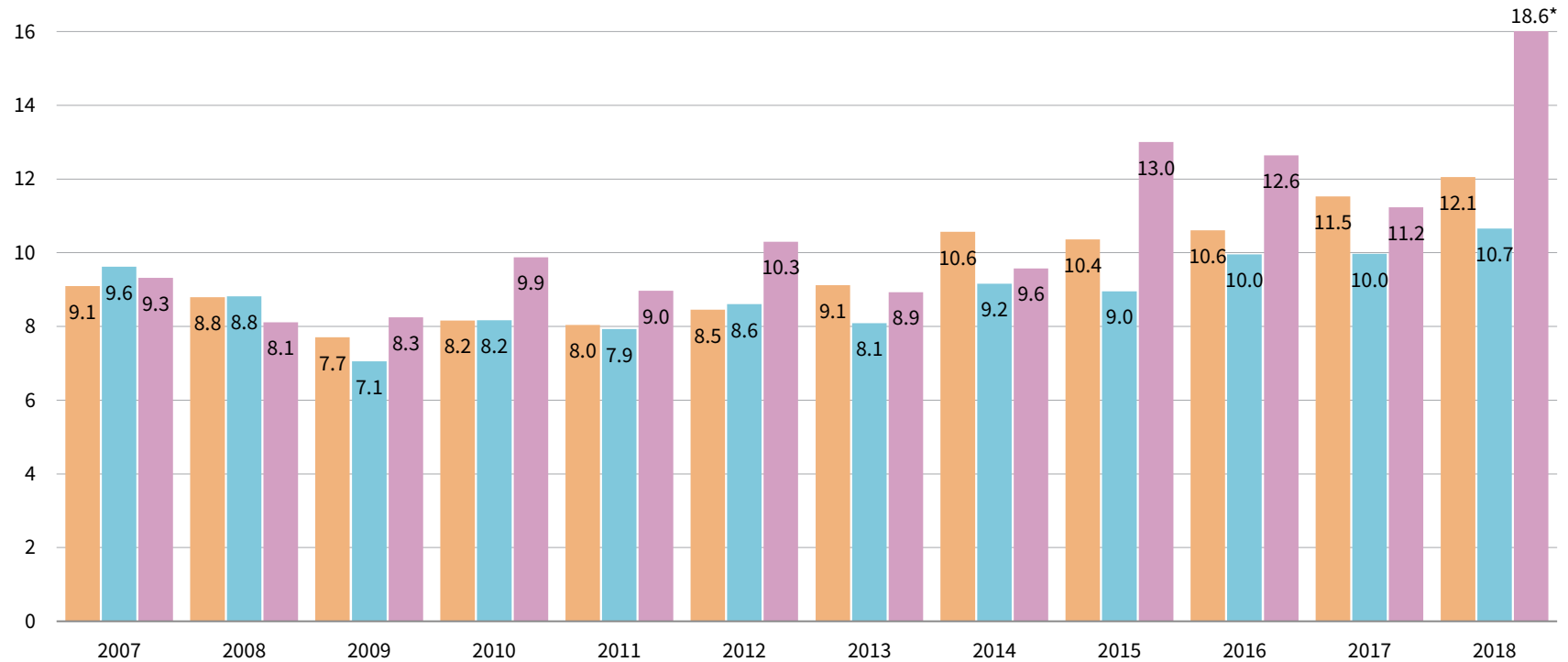


Since 2013, average US valuations have been markedly higher than those in Europe

Reflective of the growth equity bias, acquisition multiples in Asia have been the highest among the regions

AVERAGE EBITDA PURCHASE PRICE MULTIPLES AT ACQUISITION OF PRIVATE COMPANIES BY REGION

As of December 31, 2018 • Enterprise Value/EBITDA



Number of Companies

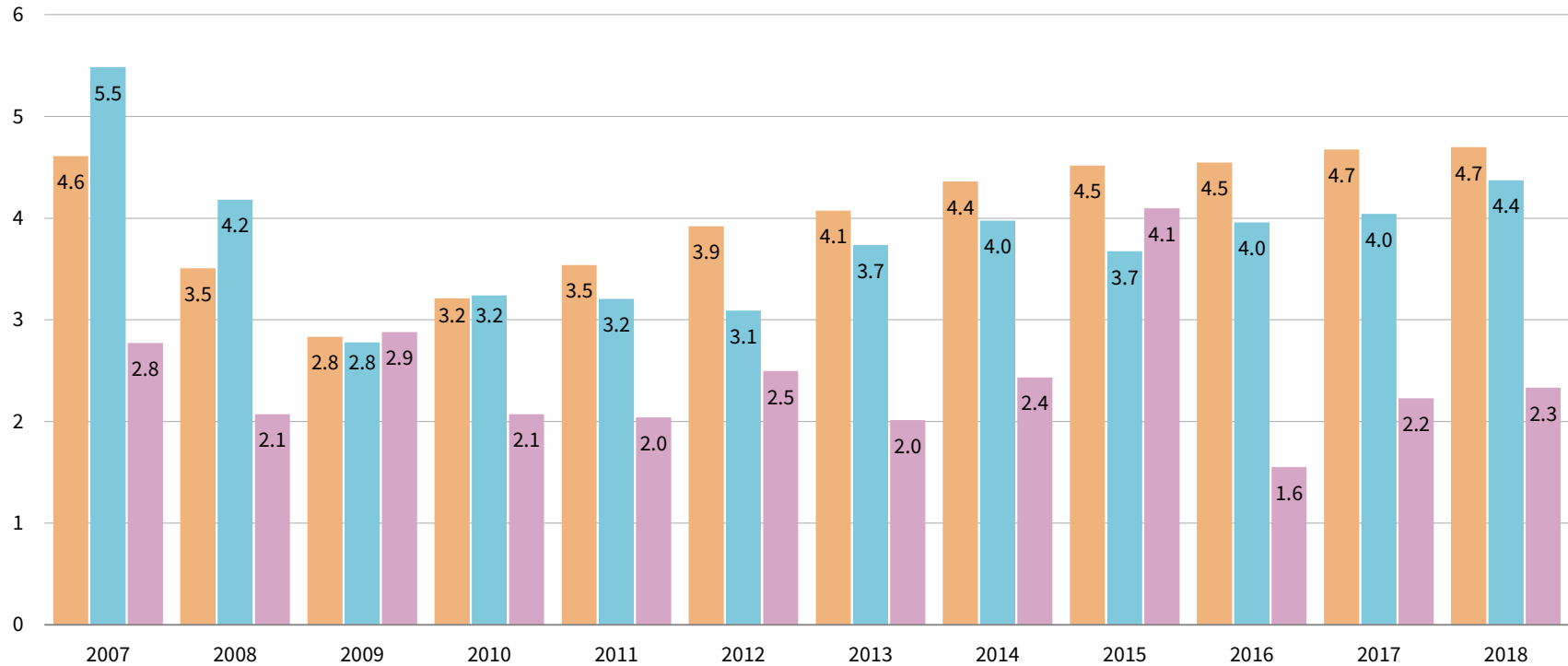
	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
United States	324	197	119	249	233	295	161	216	193	185	184	141
Europe	175	133	67	155	164	115	109	127	98	104	86	92
Asia	100	77	44	94	83	64	65	58	45	43	45	29

Leverage has generally increased in the United States and Europe since 2009

Growth equity influence was also apparent in lower leverage multiples in Asia

AVERAGE EBITDA LEVERAGE MULTIPLES AT ACQUISITION OF PRIVATE COMPANIES BY REGION

As of December 31, 2018 • Net Debt/EBITDA



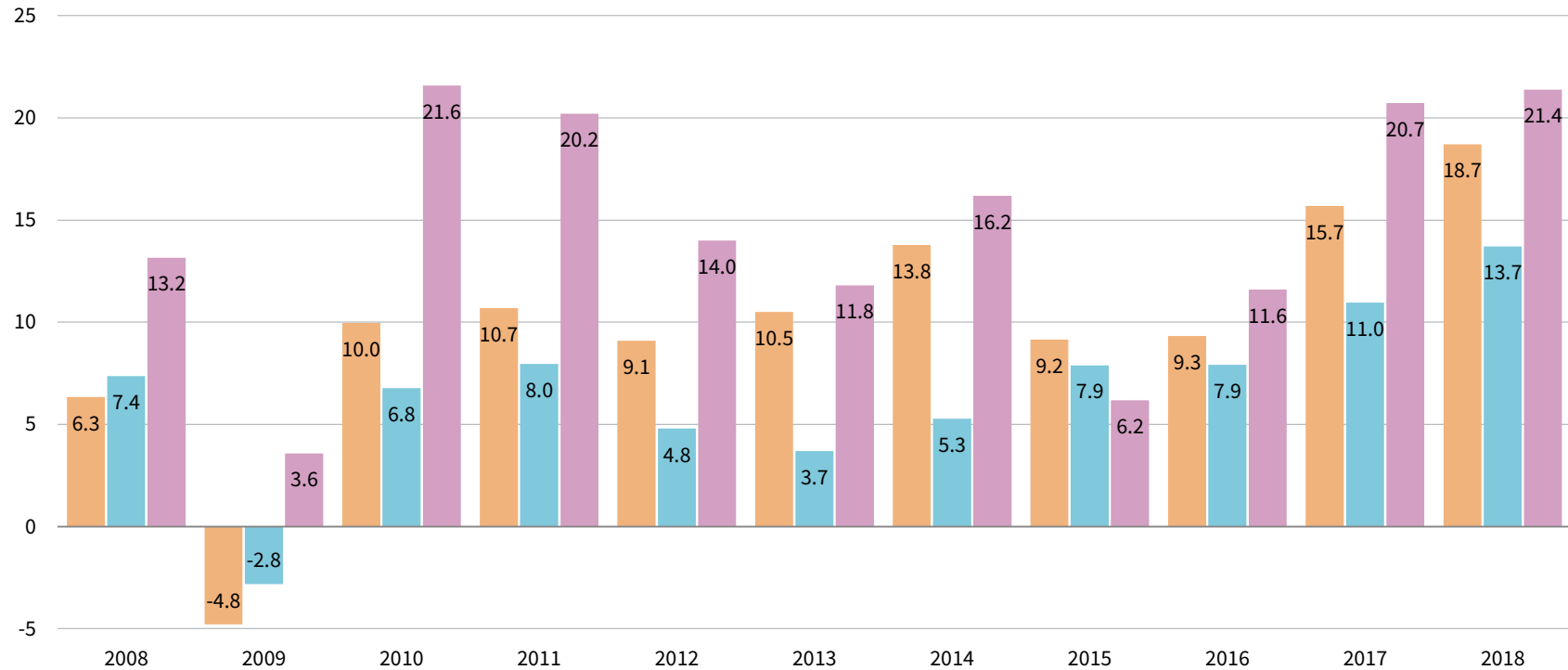
Number of Companies

	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
United States	300	174	104	232	223	269	147	204	179	181	175	140
Europe	171	128	52	144	152	108	97	121	91	96	76	84
Asia	71	59	26	57	47	42	49	41	25	23	34	17

Since 2008, Asian companies have averaged 14.6% revenue growth compared to 6.7% for European companies and 9.9% for US companies

AVERAGE ANNUAL REVENUE GROWTH OF PRIVATE EQUITY-OWNED COMPANIES BY REGION

As of December 31, 2018 • Annual Growth Rate (%)



Number of Companies

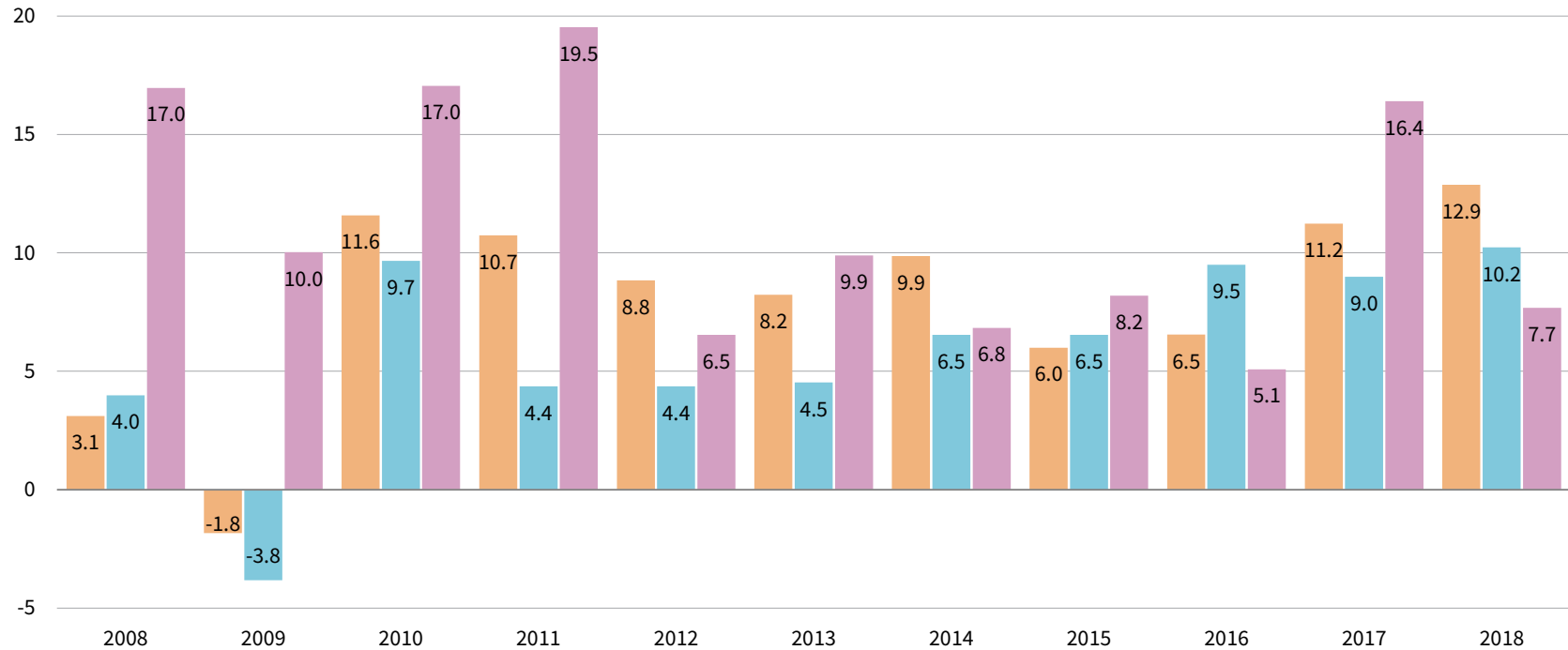
	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
United States	295	509	633	765	791	725	747	665	636	564	552
Europe	254	340	402	467	474	405	342	338	286	251	248
Asia	62	120	138	226	243	261	227	184	130	131	147

Asian companies grew EBITDA the fastest in seven of the years analyzed

Europe trailed other regions over the period with average annual growth of 5.9% vs Asia with 11.3% and the United States with 7.9%

AVERAGE ANNUAL EBITDA GROWTH OF PRIVATE EQUITY-OWNED COMPANIES BY REGION

As of December 31, 2018 • Annual Growth Rate (%)



Number of Companies

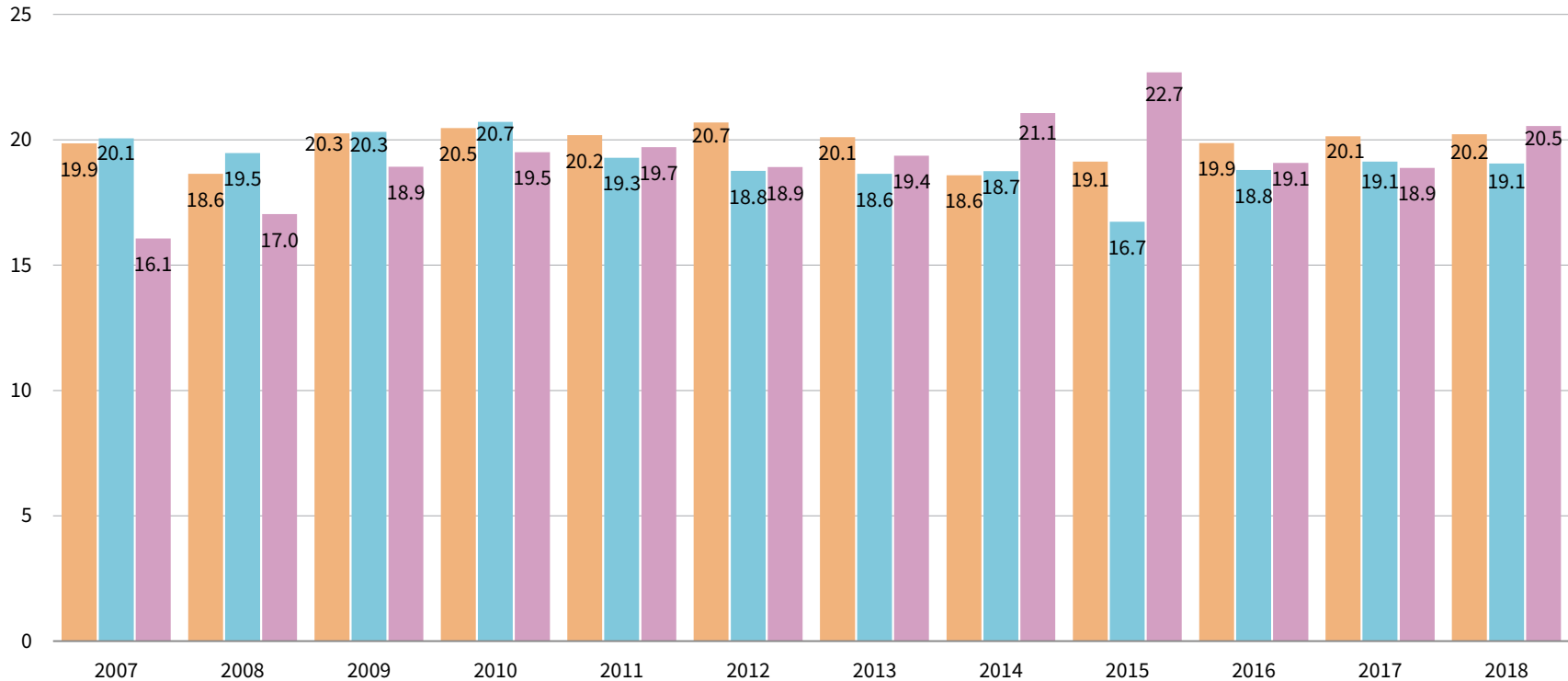
	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
United States	276	448	542	677	688	603	609	511	472	417	379
Europe	234	314	348	432	438	362	308	314	254	208	200
Asia	65	106	133	173	159	152	128	119	91	94	95

EBITDA margins have been consistent over the time period for all regions

US companies generally operated at the highest margins

AVERAGE ANNUAL EBITDA MARGIN OF PRIVATE EQUITY-OWNED COMPANIES BY REGION

As of December 31, 2018 • EBITDA/Revenue (%)



Number of Companies

	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
United States	320	489	654	848	1,046	1,162	886	974	803	811	774	739
Europe	276	347	430	531	630	617	514	558	482	436	367	408
Asia	63	116	140	205	255	263	231	269	199	168	211	179

EUROPEAN ANALYSIS

- **Purchase Price Multiple**
- Leverage Multiple
- Revenue Growth
- EBITDA Growth
- EBITDA Margin
- Exit Metrics

Over the past three years, private valuations in Europe have either equaled or exceeded public ones

Private PPMs hit a new height in 2018

AVERAGE EBITDA PURCHASE PRICE MULTIPLES AT ACQUISITION OF PRIVATE EQUITY-OWNED COMPANIES VS PUBLIC COMPANIES

As of December 31, 2018 • Enterprise Value/EBITDA



Number of Companies

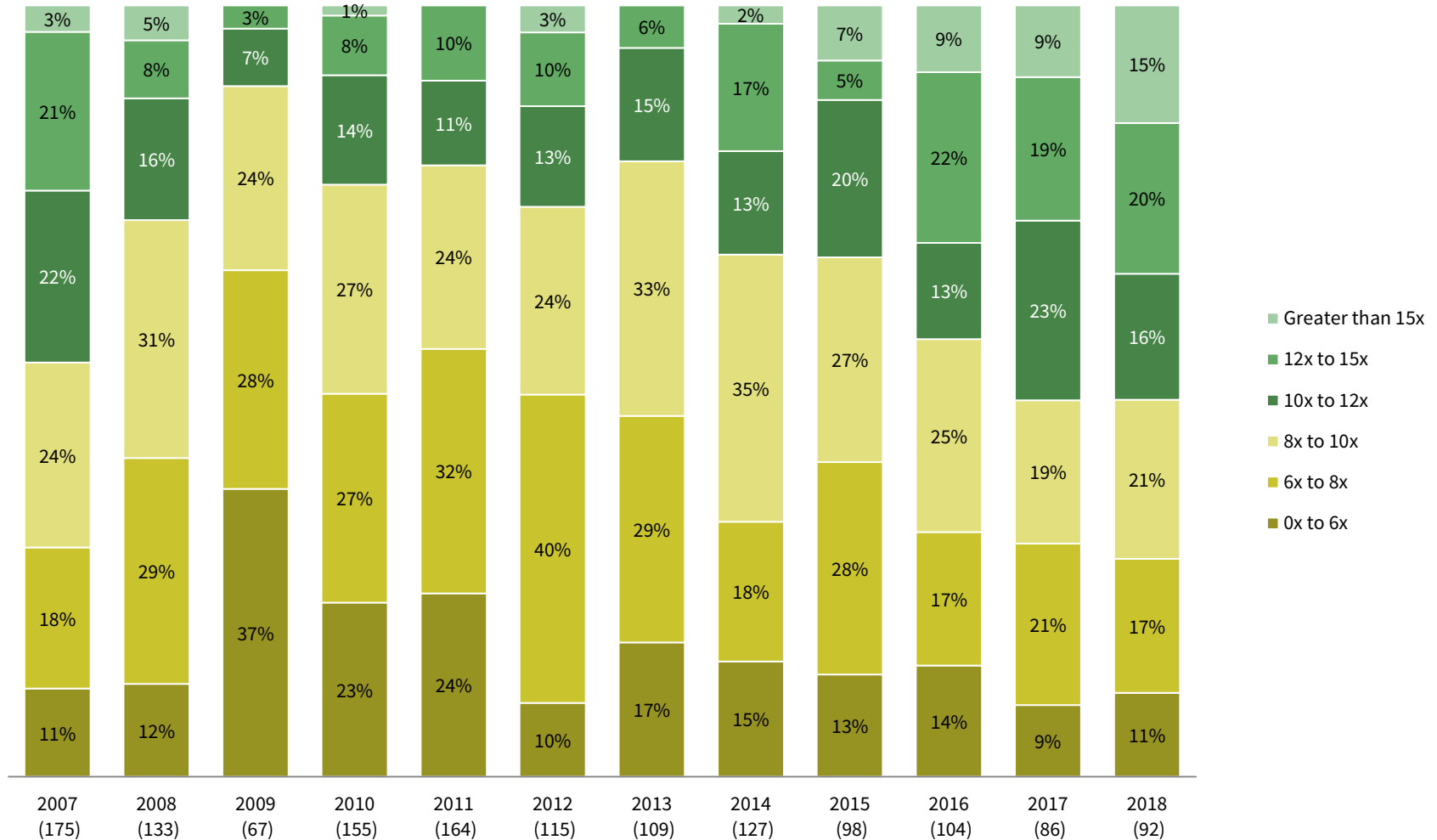
	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
Private Equity-Owned Companies	175	133	67	155	164	115	109	127	98	104	86	92
MSCI All Country Europe Index	321	239	221	229	232	228	228	230	235	222	223	206

PPMs have trended higher since 2014

More than half of the PE deals recorded in Europe in 2017 and 2018 traded at 10x EBITDA or higher

AVERAGE EBITDA PURCHASE PRICE MULTIPLE BREAKDOWN OF PRIVATE EQUITY-OWNED COMPANIES

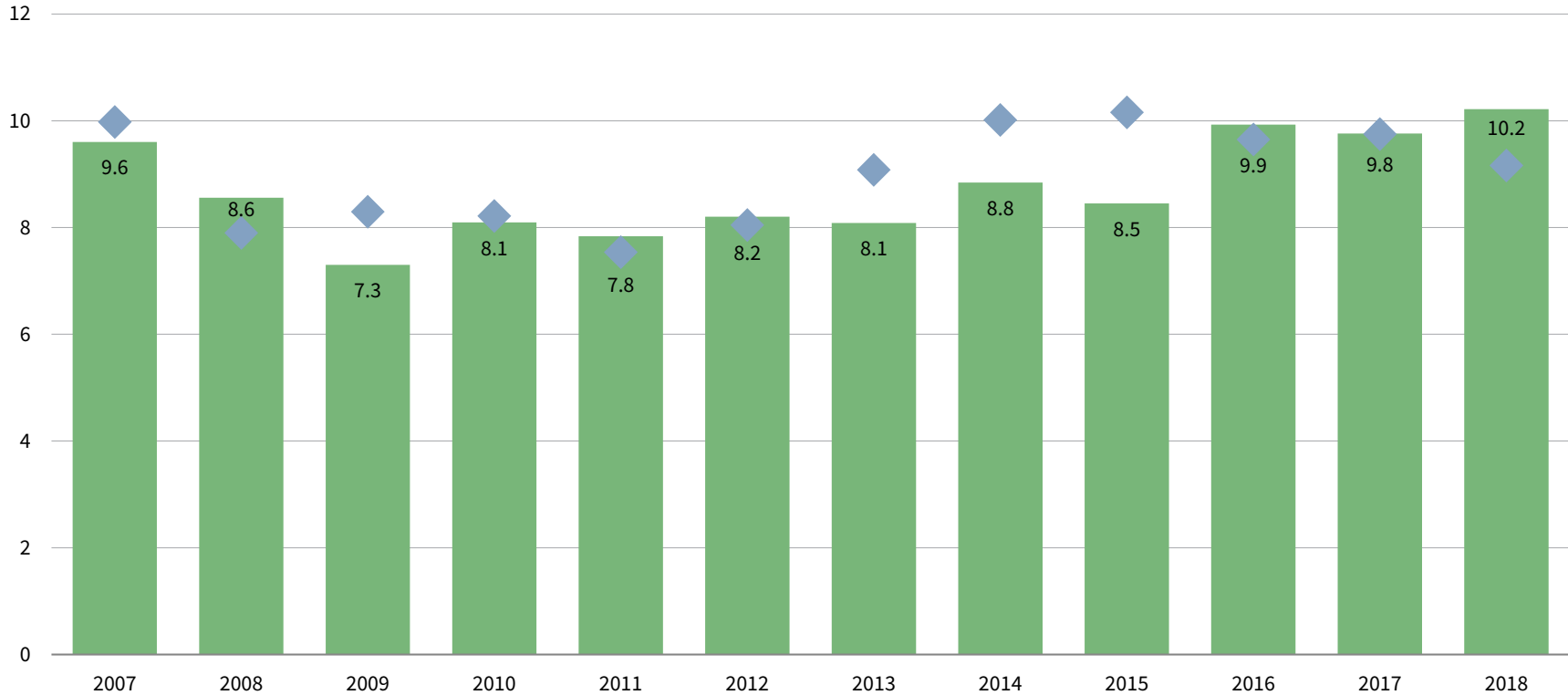
As of December 31, 2018 • Enterprise Value/EBITDA



European buyouts transacted at valuations equal to or higher than publics in eight of the 12 years analyzed

AVERAGE EBITDA PURCHASE PRICE MULTIPLES AT ACQUISITION OF BUYOUT COMPANIES VS PUBLIC COMPANIES

As of December 31, 2018 • Enterprise Value/EBITDA



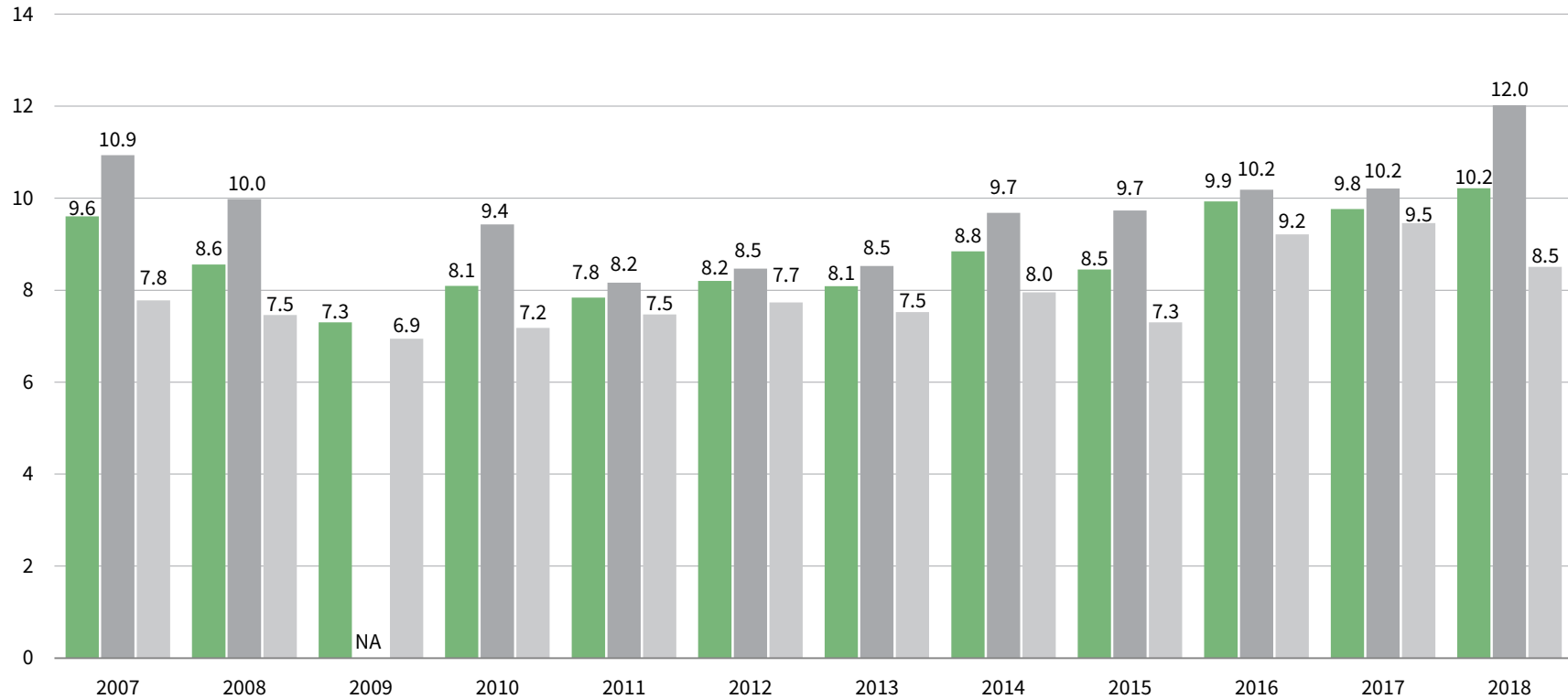
Number of Companies

	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
Buyout Companies	155	108	50	123	138	83	90	105	79	91	74	76
MSCI All Country Europe Index	321	239	221	229	232	228	228	230	235	222	223	206

PPMs have been historically lower in the smaller size segment in Europe

Small buyout PPMs have averaged roughly two turns lower than those for larger counterparts

AVERAGE EBITDA PURCHASE PRICE MULTIPLES AT ACQUISITION OF PRIVATE EQUITY BUYOUT COMPANIES BY ENTERPRISE VALUE SEGMENT
As of December 31, 2018 • Enterprise Value/EBITDA



Number of Companies

	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
Buyout Companies	155	108	50	123	138	83	90	105	79	91	74	76
EV €250M – €1B	55	44	NA	36	44	29	22	34	32	38	21	26
EV < €250M	61	49	32	74	82	43	56	60	42	49	41	38

EUROPEAN ANALYSIS

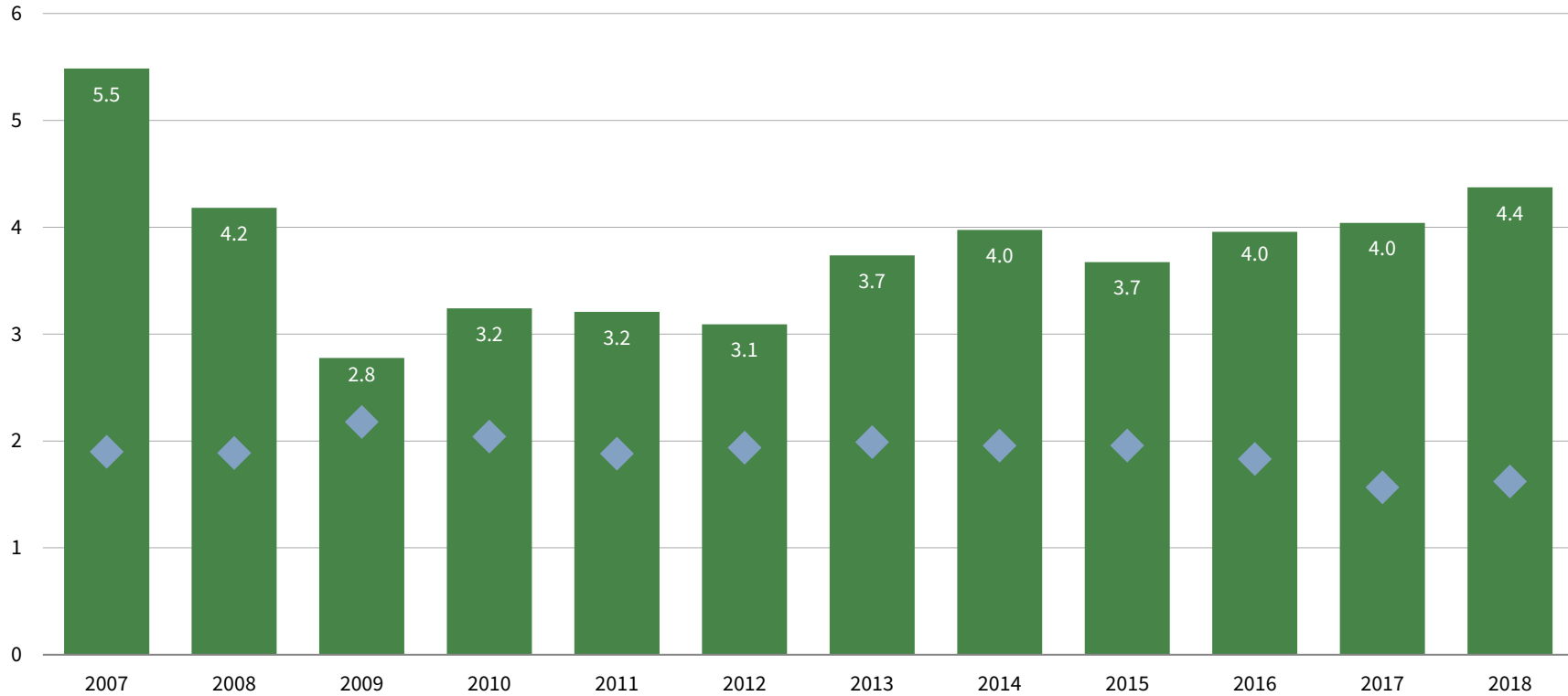
- Purchase Price Multiple
- **Leverage Multiple**
- Revenue Growth
- EBITDA Growth
- EBITDA Margin
- Exit Metrics

Since 2013, amid a friendly credit environment, leverage for European deals has trended in opposite directions ...

... higher in PE and lower in publics

AVERAGE EBITDA LEVERAGE MULTIPLES AT ACQUISITION OF PRIVATE EQUITY-OWNED COMPANIES VS PUBLIC COMPANIES

As of December 31, 2018 • Net Debt/EBITDA



Number of Companies

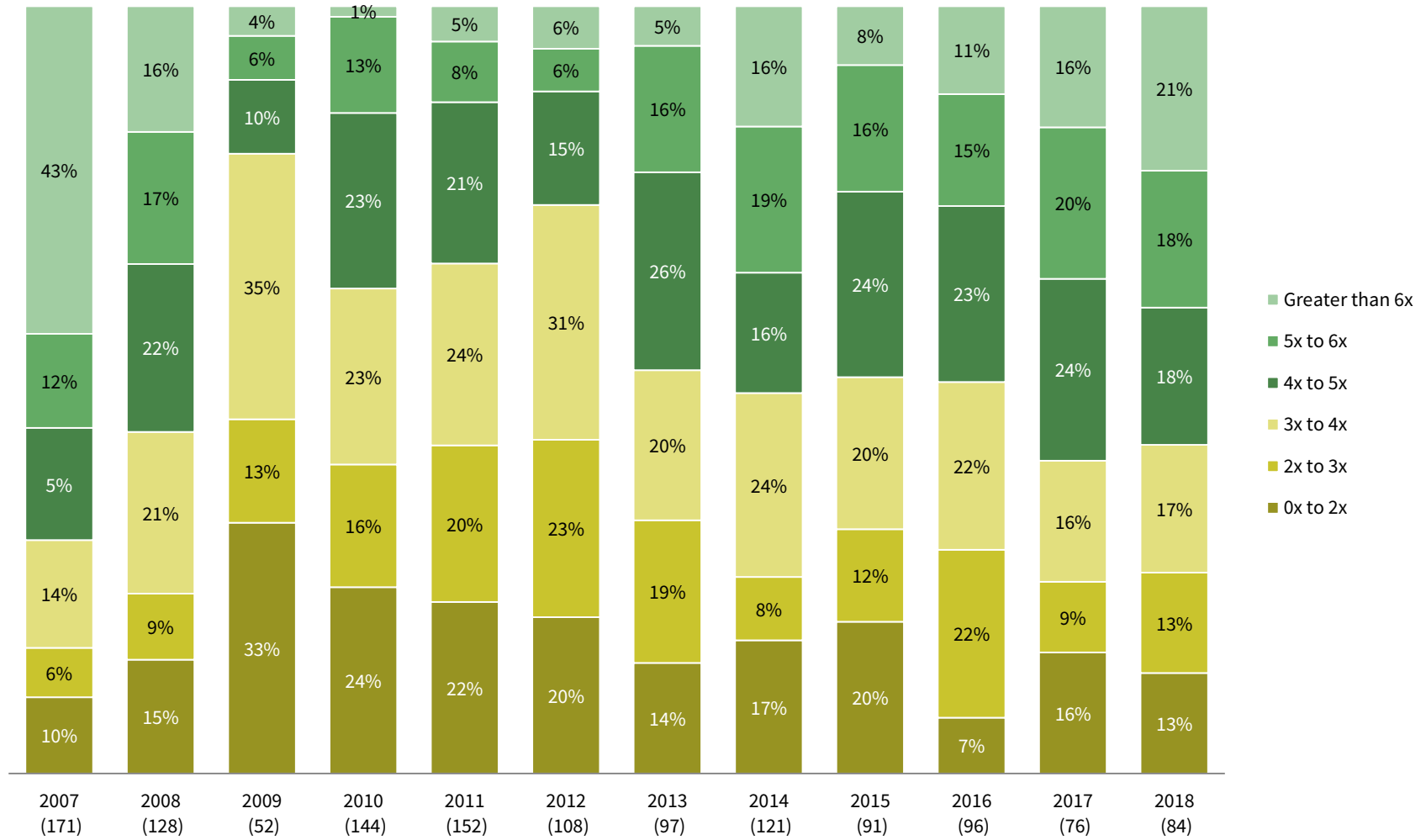
	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
Private Equity-Owned Companies	171	128	52	144	152	108	97	121	91	96	76	84
MSCI All Country Europe Index	258	204	186	181	195	192	185	195	188	184	182	176

European leverage has increased with the availability of cheap credit, particularly since 2013

But leverage multiples still trail those of 2007

AVERAGE LEVERAGE MULTIPLE BREAKDOWN OF PRIVATE EQUITY-OWNED COMPANIES

As of December 31, 2018 • Net Debt/EBITDA

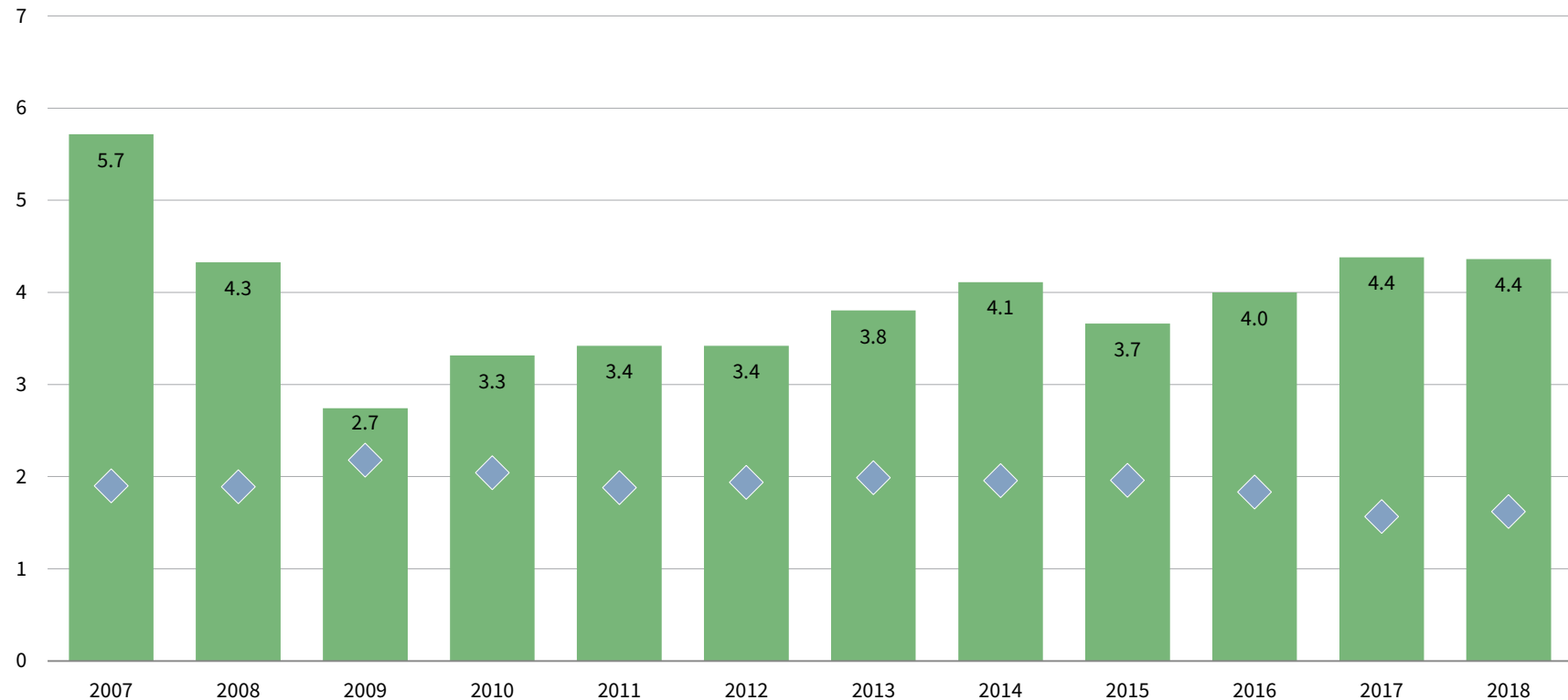


Since 2010, average leverage multiples have been twice as high for buyout companies than for public peers in Europe

The only year where multiples converged was 2009

AVERAGE EBITDA LEVERAGE MULTIPLES AT ACQUISITION OF BUYOUT COMPANIES VS PUBLIC COMPANIES

As of December 31, 2018 • Net Debt/EBITDA



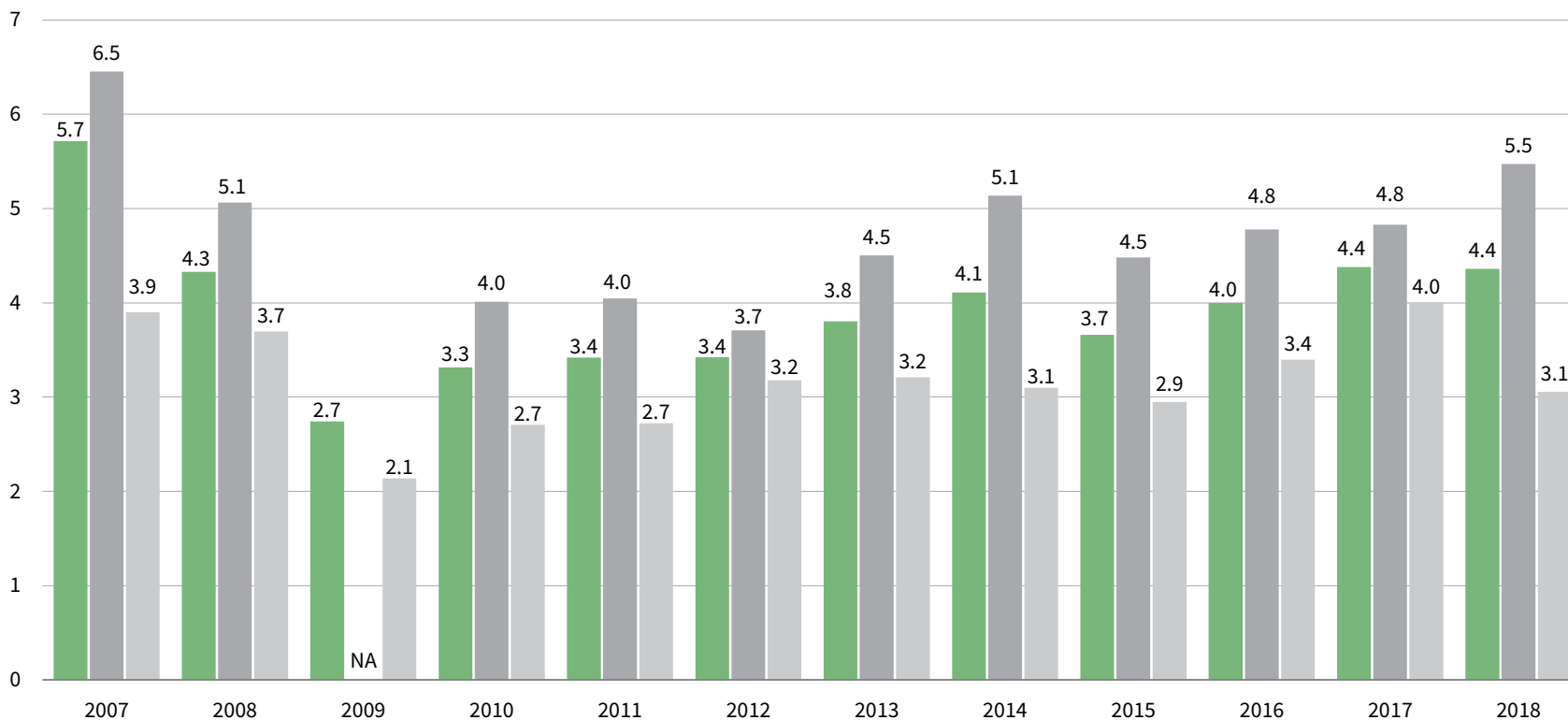
Number of Companies

	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
Buyout Companies	151	105	41	114	130	78	83	103	78	85	64	72
MSCI All Country Europe Index	258	204	186	181	195	192	185	195	188	184	182	176

Small buyouts have been consistently less levered than larger peers in Europe

AVERAGE EBITDA LEVERAGE MULTIPLES AT ACQUISITION OF PRIVATE EQUITY BUYOUT COMPANIES BY ENTERPRISE VALUE SEGMENT

As of December 31, 2018 • Net Debt/EBITDA



Number of Companies

	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
Buyout Companies	151	105	41	114	130	78	83	103	78	85	64	72
EV €250M – €1B	56	42	NA	36	44	27	22	35	28	38	20	24
EV < €250M	58	47	24	66	74	40	50	55	41	42	32	35

EUROPEAN ANALYSIS

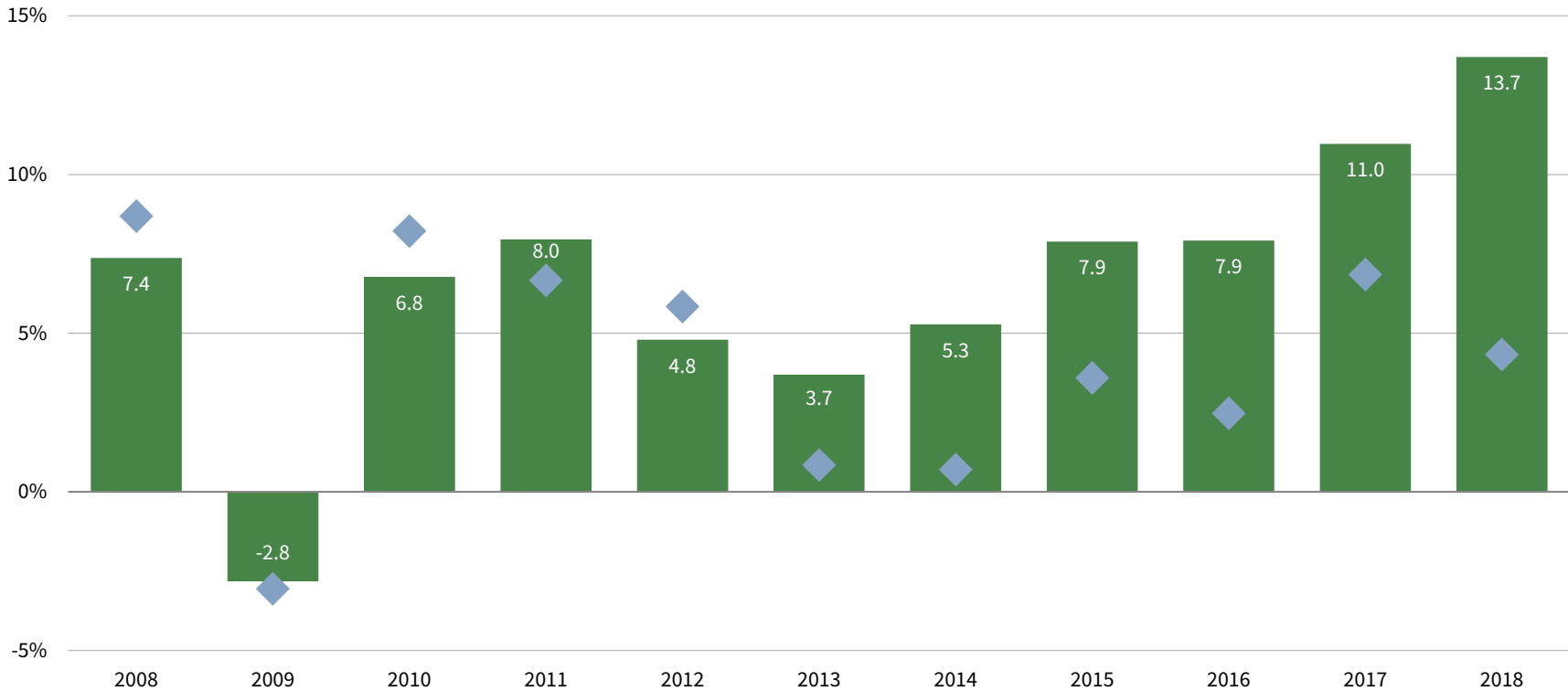
- Purchase Price Multiple
- Leverage Multiple
- **Revenue Growth**
- EBITDA Growth
- EBITDA Margin
- Exit Metrics

Revenue growth for PE companies hit a new height in 2018, and it outpaced that of public companies every year since 2013

Public company growth rates have been more volatile than those of PE companies

AVERAGE ANNUAL REVENUE GROWTH OF PRIVATE EQUITY-OWNED COMPANIES VS PUBLIC COMPANIES

As of December 31, 2018 • Annual Growth Rate (%)



Number of Companies

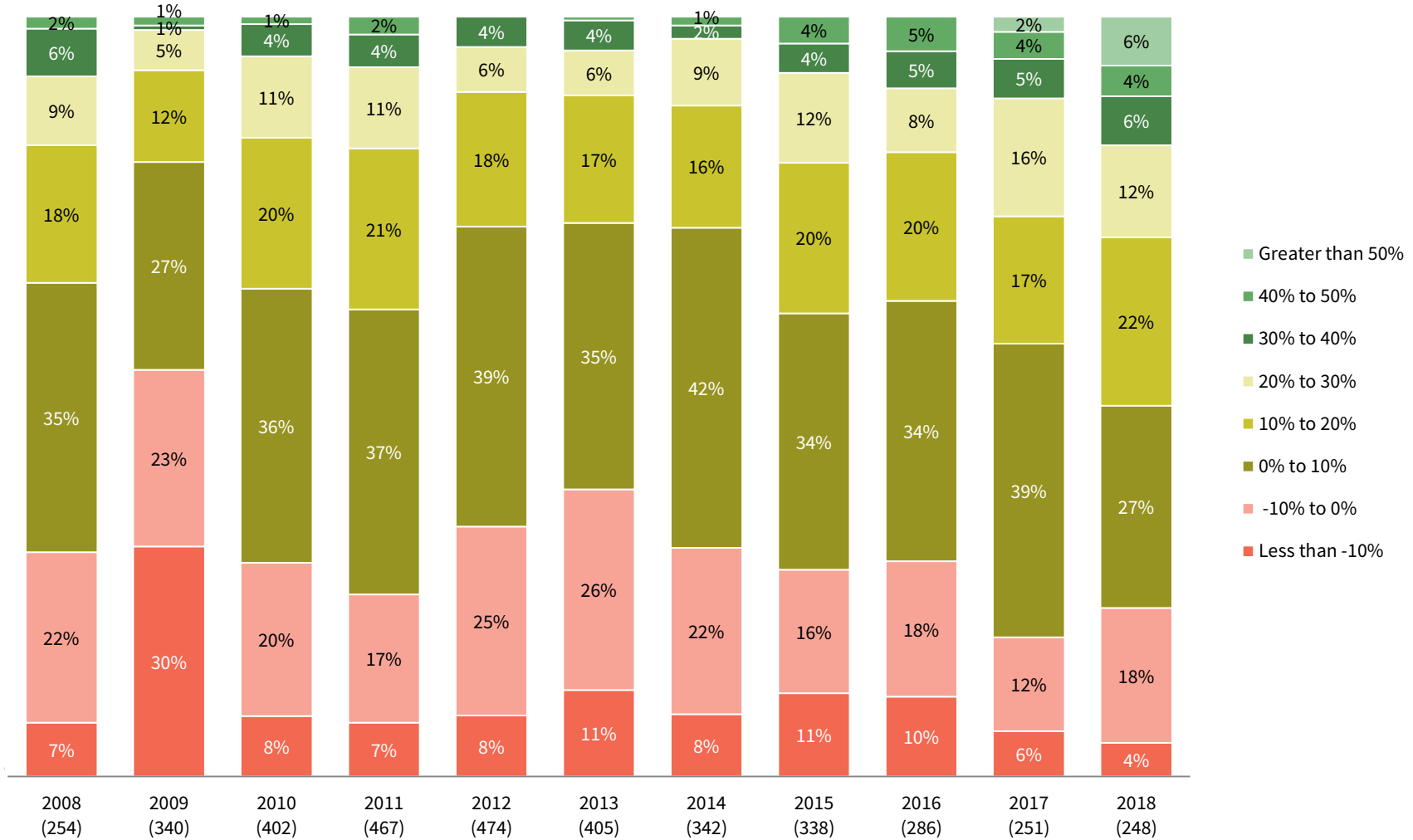
	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
Private Equity-Owned Companies	254	340	402	467	474	405	342	338	286	251	248
MSCI All Country Europe Index	457	428	444	434	435	423	451	460	450	452	410

On average, 35% of European PE companies grew revenue by at least 10% per annum ...

... and about 30% saw revenue decline

AVERAGE ANNUAL REVENUE GROWTH BREAKDOWN OF PRIVATE EQUITY-OWNED COMPANIES

As of December 31, 2018 • Annual Growth Rate (%)

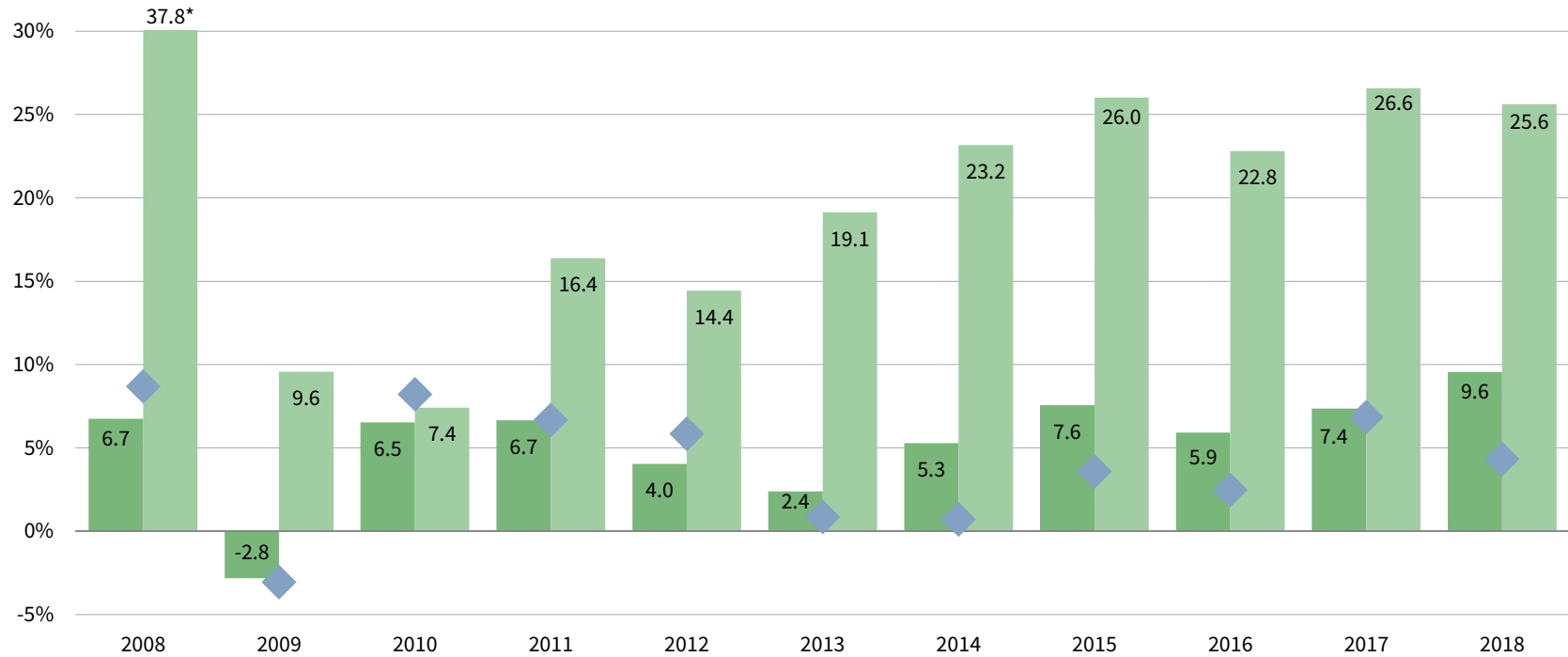


Revenue growth for buyouts and growth equity has outpaced publics in every year since 2013

Since 2008, growth equity averaged 20.8% annual growth; buyouts averaged 5.4% in Europe.

AVERAGE ANNUAL REVENUE GROWTH OF BUYOUT AND GROWTH EQUITY COMPANIES VS PUBLIC COMPANIES

As of December 31, 2018 • Annual Growth Rate (%)



Number of Companies

	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
Buyout Companies	225	291	322	369	368	319	252	246	202	170	167
Growth Equity Companies	21	27	46	60	73	60	77	75	63	59	64
MSCI All Country Europe Index	457	428	444	434	435	423	451	460	450	452	410

* Chart capped for scaling purposes.

Sources: Cambridge Associates LLC Private Investments Database (as reported by investment managers), FactSet Research Systems, and MSCI Inc. MSCI data provided "as is" without any express or implied warranties.

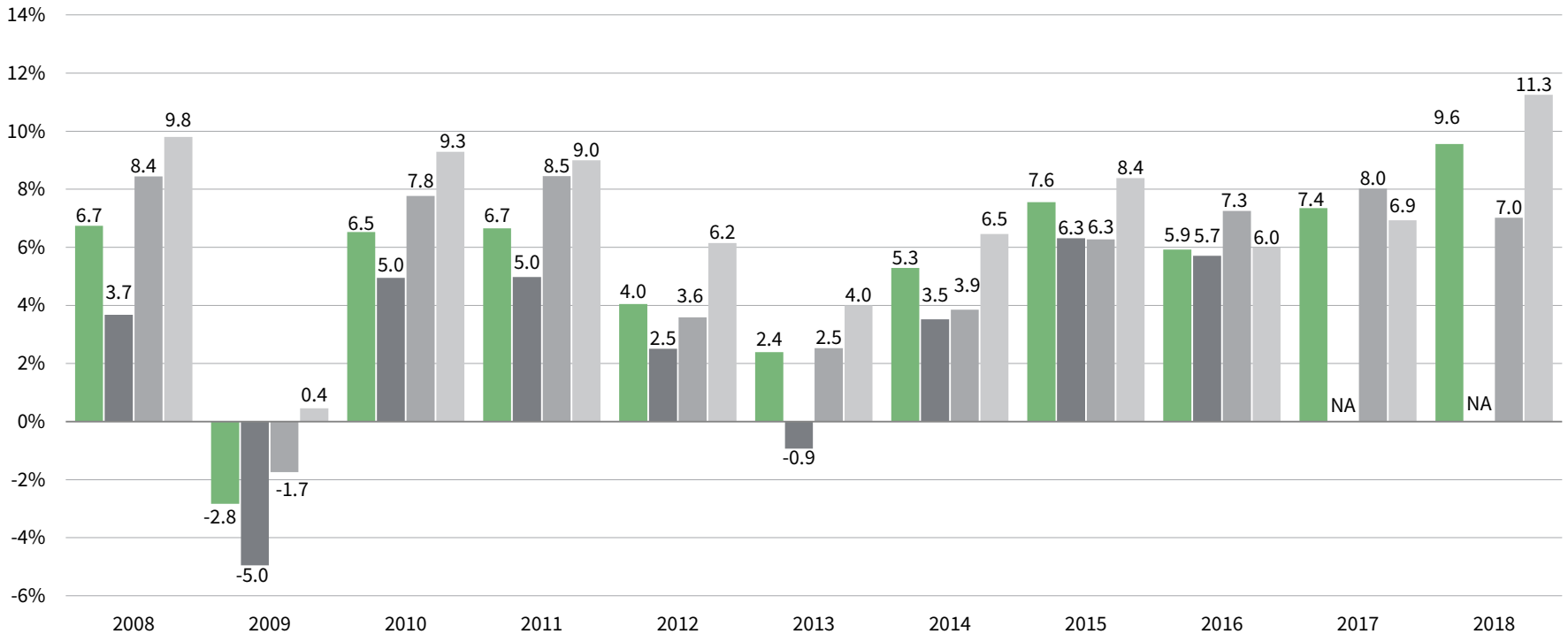
Notes: Outliers were identified and excluded, and the same methodology was applied to the private equity and public company universes. Private equity-owned companies were identified by the manager's strategy.

In Europe, small buyouts bested their larger counterparts in all years but two

Medium-sized companies grew revenue faster in 2016 and 2017

AVERAGE ANNUAL REVENUE GROWTH OF PRIVATE EQUITY BUYOUT COMPANIES BY ENTERPRISE VALUE SEGMENT

As of December 31, 2018 • Annual Growth Rate (%)



Number of Companies

	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
Buyout Companies	225	291	322	369	368	319	252	246	202	170	167
EV > €1B	77	92	96	100	73	57	36	26	23	NA	NA
EV €250M - €1B	71	98	119	140	125	99	76	79	74	70	62
EV < €250M	78	102	113	137	169	162	139	144	105	85	93

EUROPEAN ANALYSIS

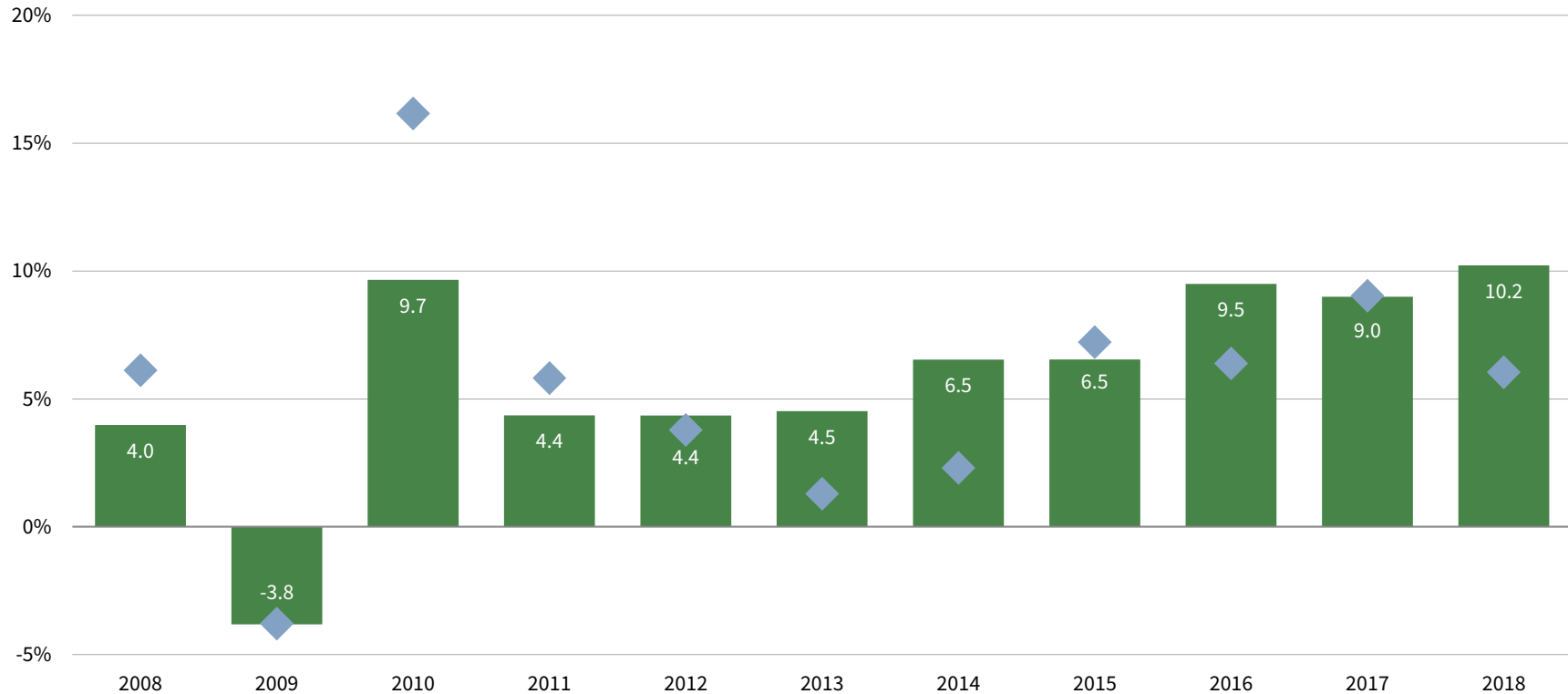
- Purchase Price Multiple
- Leverage Multiple
- Revenue Growth
- **EBITDA Growth**
- EBITDA Margin
- Exit Metrics

Despite annual variability, private and public company EBITDA growth in Europe was about the same over the time period

Public EBITDA growth was more volatile

AVERAGE ANNUAL EBITDA GROWTH OF PRIVATE EQUITY-OWNED COMPANIES VS PUBLIC COMPANIES

As of December 31, 2018 • Annual Growth Rate (%)



Number of Companies

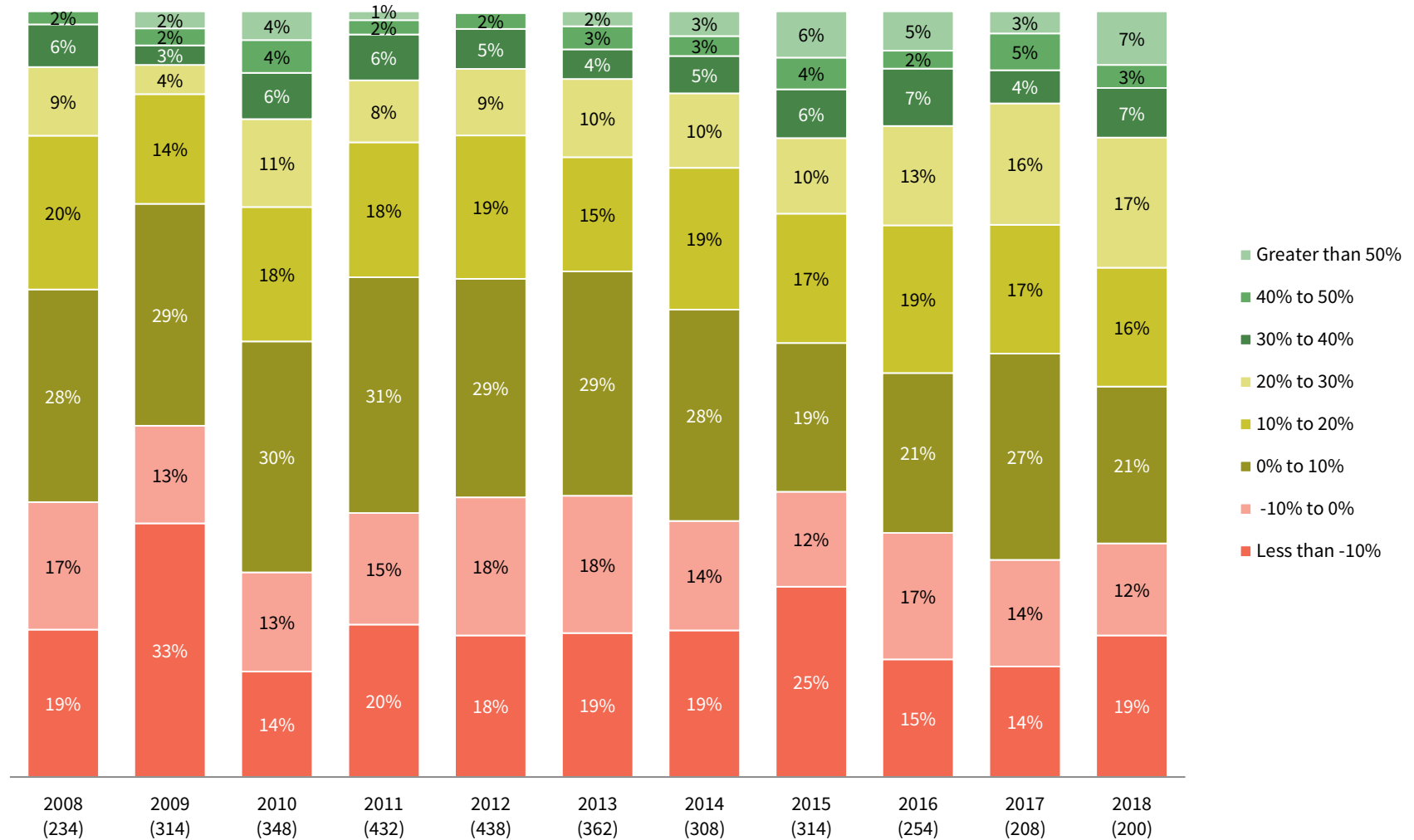
	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
Private Equity-Owned Companies	234	314	348	432	438	362	308	314	254	208	200
MSCI All Country Europe Index	340	303	328	341	344	336	348	354	354	359	353

In any given year, EBITDA declined for almost 35% or more of PE-owned companies throughout Europe

Conversely, EBITDA grew by at least 10% for roughly 40% or more of the universe

AVERAGE ANNUAL EBITDA GROWTH BREAKDOWN OF PRIVATE EQUITY-OWNED COMPANIES

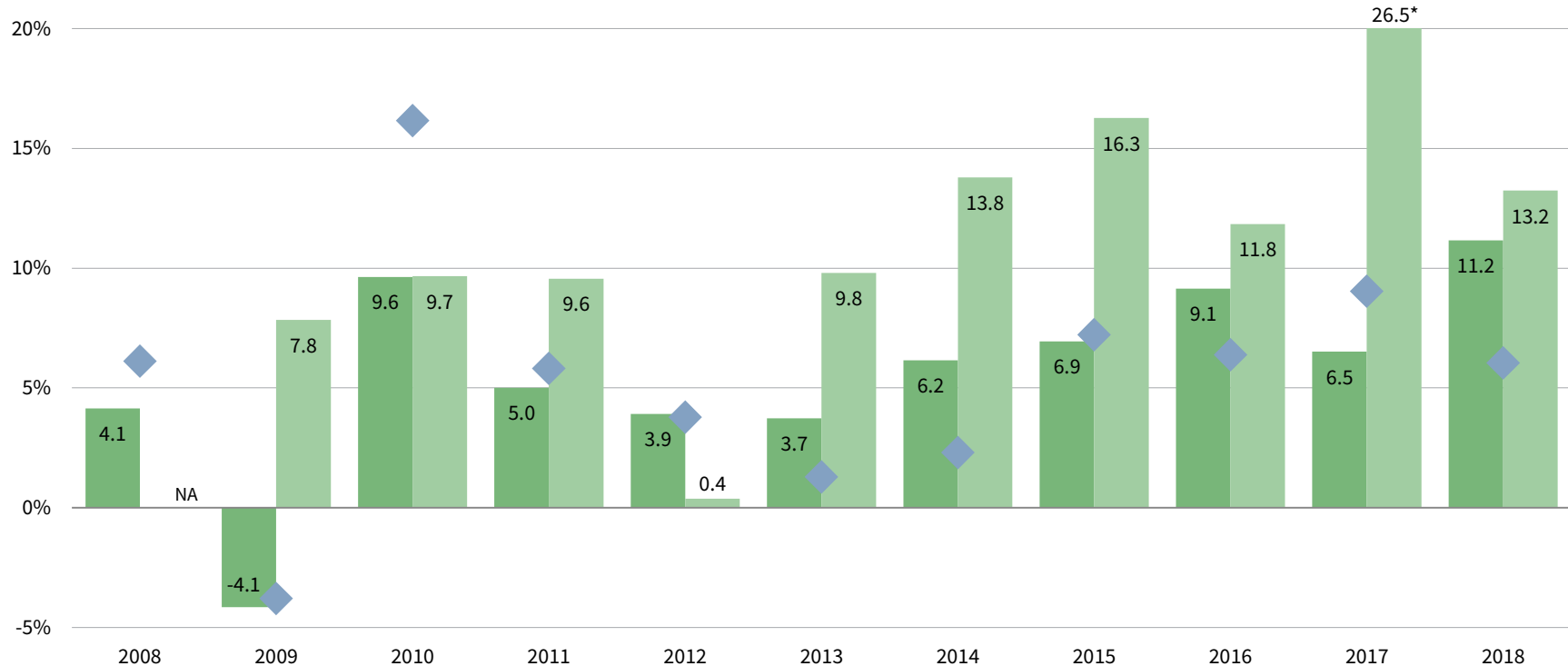
As of December 31, 2018 • Annual Growth Rate (%)



Since 2010, European growth equity averaged double the EBITDA growth of buyouts

AVERAGE ANNUAL EBITDA GROWTH OF BUYOUT AND GROWTH EQUITY COMPANIES VS PUBLIC COMPANIES

As of December 31, 2018 • Annual Growth Rate (%)



Number of Companies

	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
Buyout Companies	214	275	288	353	359	294	240	241	200	165	159
Growth Equity Companies	NA	18	35	49	57	40	51	47	33	33	34
MSCI All Country Europe Index	340	303	328	341	344	336	348	354	354	359	353

* Chart capped for scaling purposes.

Sources: Cambridge Associates LLC Private Investments Database (as reported by investment managers), FactSet Research Systems, and MSCI Inc. MSCI data provided "as is" without any express or implied warranties.

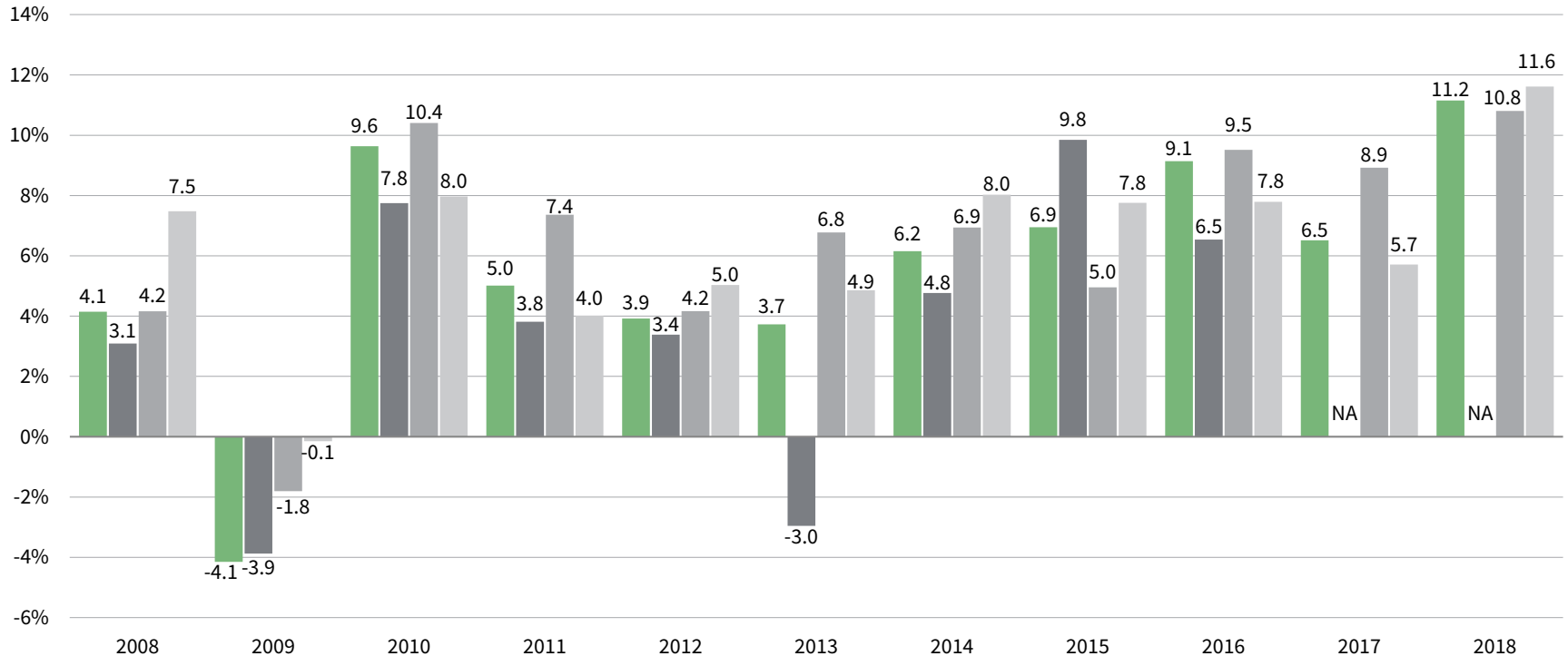
Notes: Outliers were identified and excluded, and the same methodology was applied to the private equity and public company universes. Private equity-owned companies were identified by the manager's stated strategy.

EBITDA growth for small and mid-sized companies in Europe was nearly equal over the full period (6.4% vs 6.6%, respectively)

Large companies grew EBITDA at a much slower pace

AVERAGE ANNUAL EBITDA GROWTH OF PRIVATE EQUITY BUYOUT COMPANIES BY ENTERPRISE VALUE SEGMENT

As of December 31, 2018 • Annual Growth Rate (%)



Number of Companies

	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
Buyout Companies	214	275	288	353	359	294	240	241	200	165	159
EV > €1B	78	86	89	93	71	56	36	27	22	NA	NA
EV €250M - €1B	70	95	108	136	130	100	77	76	67	73	66
EV < €250M	70	94	92	126	155	143	128	136	108	79	83

EUROPEAN ANALYSIS

- Purchase Price Multiple
- Leverage Multiple
- Revenue Growth
- EBITDA Growth
- **EBITDA Margin**
- Exit Metrics

In Europe, public companies consistently operated at higher margins than PE-backed ones

AVERAGE ANNUAL EBITDA MARGIN OF PRIVATE EQUITY–OWNED COMPANIES VS PUBLIC COMPANIES

As of December 31, 2018 • EBITDA/Revenue (%)



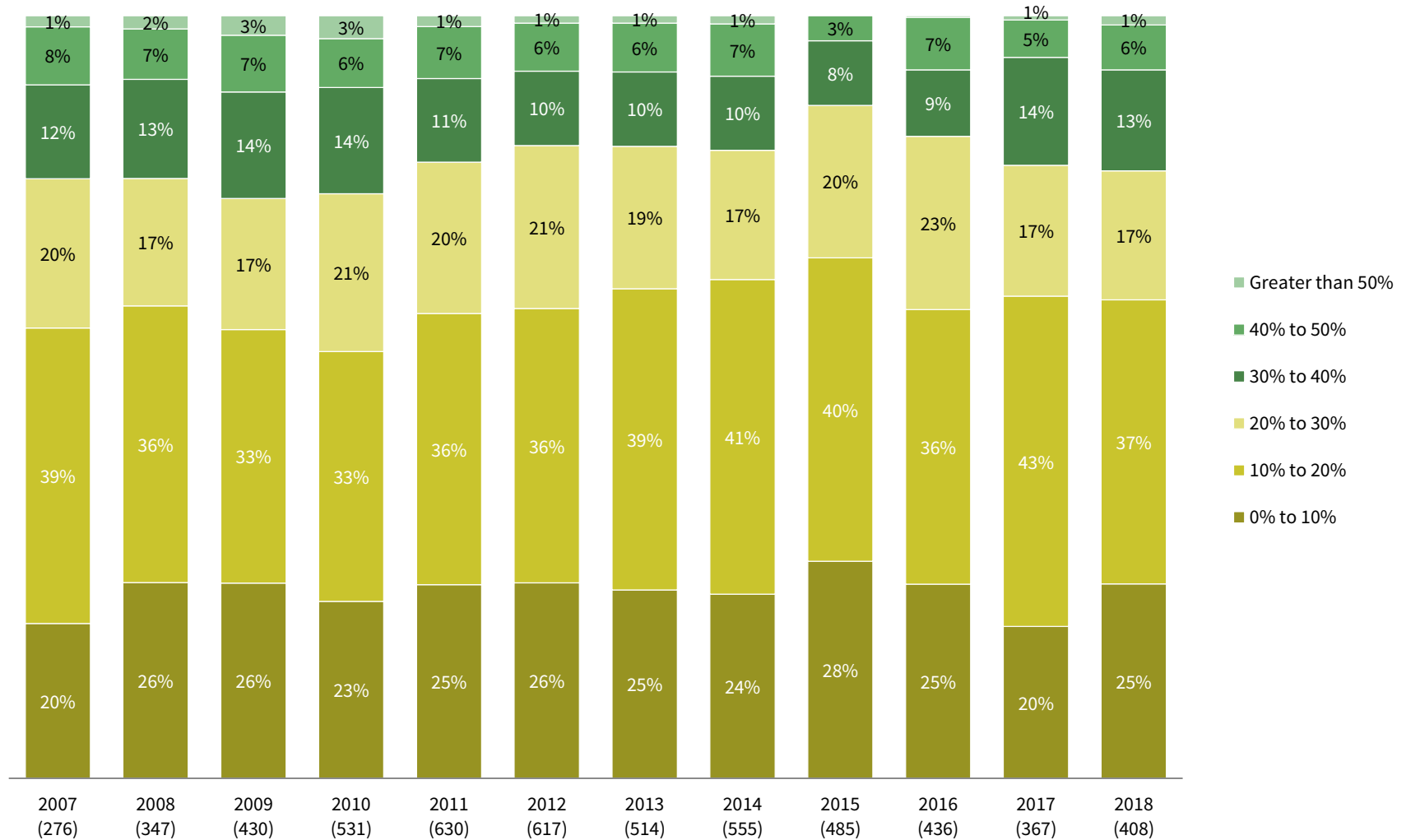
Number of Companies

	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
Private Equity–Owned Companies	276	347	430	531	630	617	514	558	482	436	367	408
MSCI All Country Europe Index	519	402	379	399	389	388	396	402	408	406	410	395

Over the time period, there has been little variability in European EBITDA margins

AVERAGE ANNUAL EBITDA MARGIN BREAKDOWN OF PRIVATE EQUITY-OWNED COMPANIES

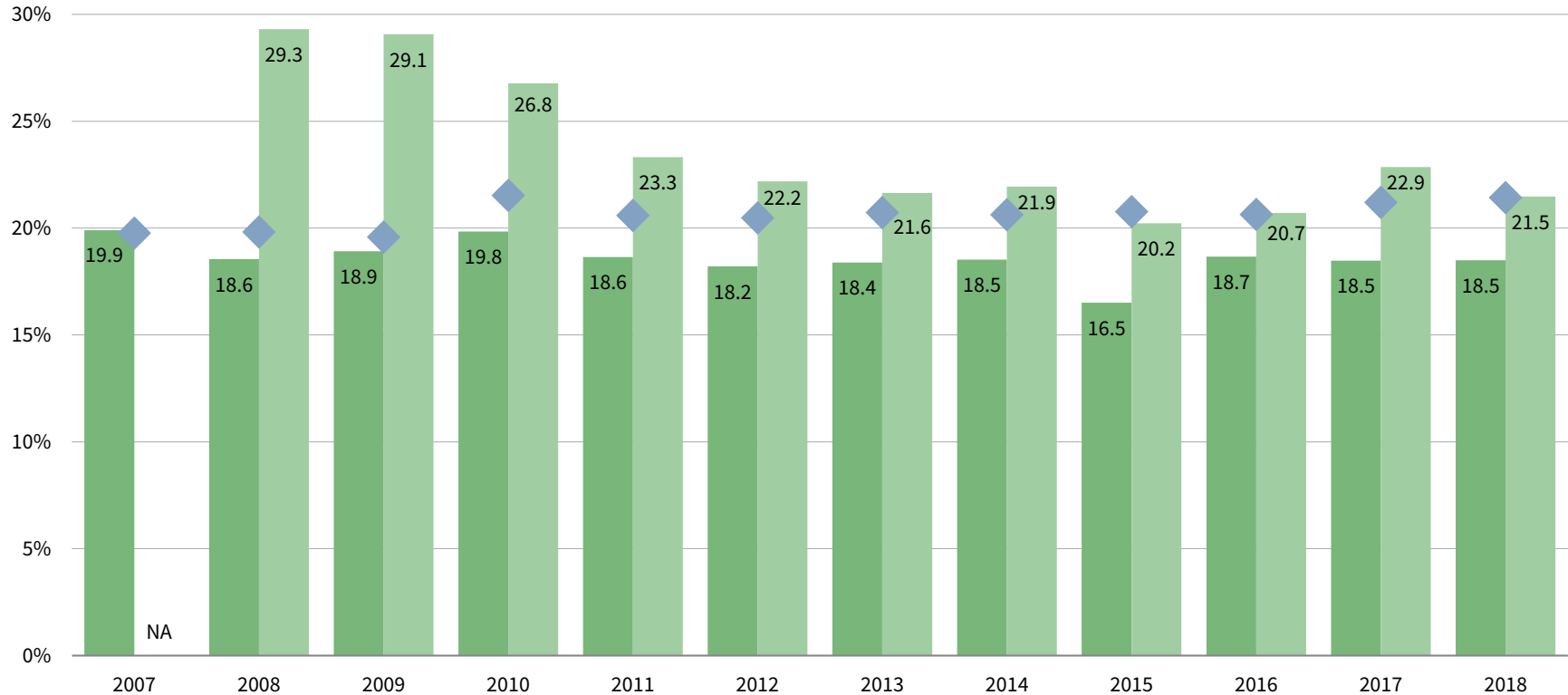
As of December 31, 2018 • EBITDA/Revenue (%)



European buyout company margins meaningfully trailed those of growth equity and public peers in every year since 2010

AVERAGE ANNUAL EBITDA MARGIN OF BUYOUT AND GROWTH EQUITY COMPANIES VS PUBLIC COMPANIES

As of December 31, 2018 • EBITDA/Revenue (%)



Number of Companies

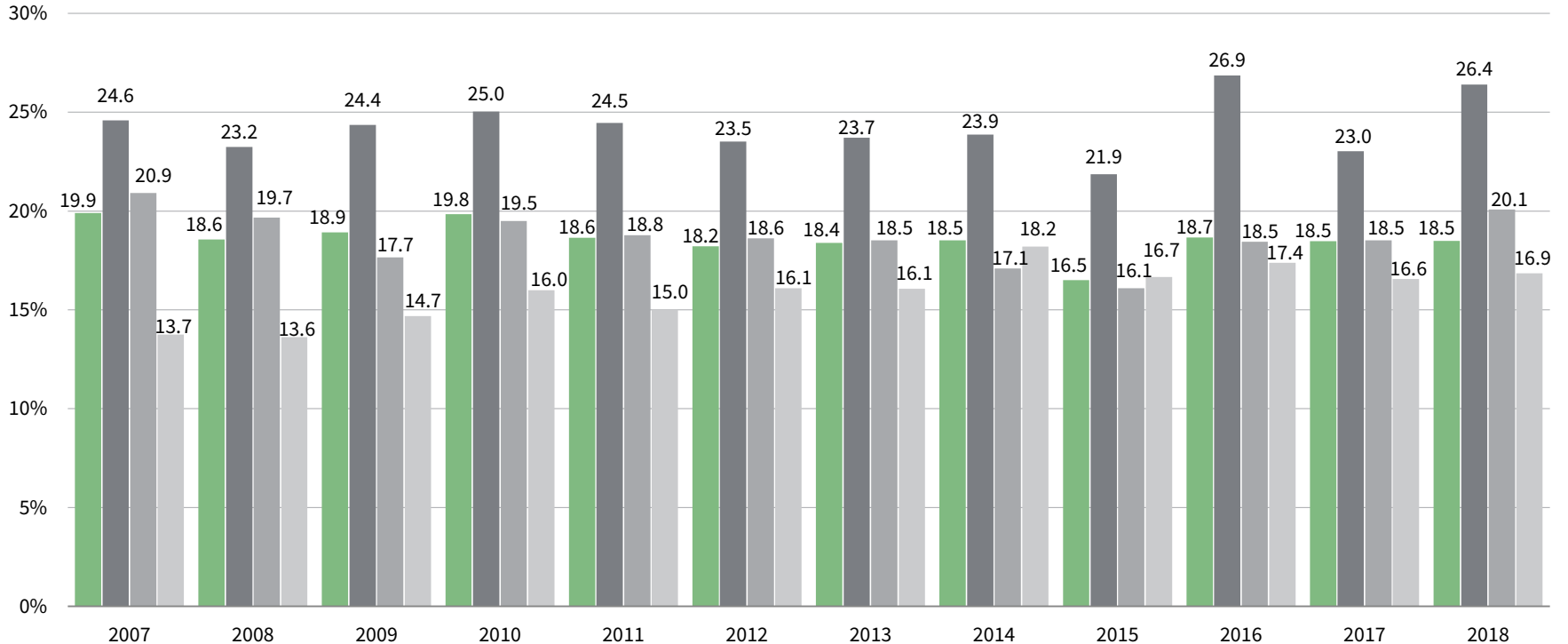
	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
Buyout Companies	248	299	353	433	508	479	417	438	364	350	277	329
Growth Equity Companies	NA	22	41	59	76	98	66	83	76	50	62	57
MSCI All Country Europe Index	519	402	379	399	389	388	396	402	408	406	410	395

Among European buyouts, large companies had by far the highest margins

From 2007 to 2015, margins for mid-sized companies fell as those from small companies rose. In 2015, the trend reversed

AVERAGE ANNUAL EBITDA MARGIN OF PRIVATE EQUITY BUYOUT COMPANIES BY ENTERPRISE VALUE SEGMENT

As of December 31, 2018 • EBITDA/Revenue (%)



Number of Companies

	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
Buyout Companies	248	299	353	433	508	479	417	438	364	350	277	329
EV > €1B	82	95	105	108	109	80	83	54	39	38	31	30
EV €250M - €1B	78	103	121	165	179	168	142	132	116	133	109	105
EV < €250M	87	102	121	154	213	226	190	247	207	176	130	187

EUROPEAN ANALYSIS

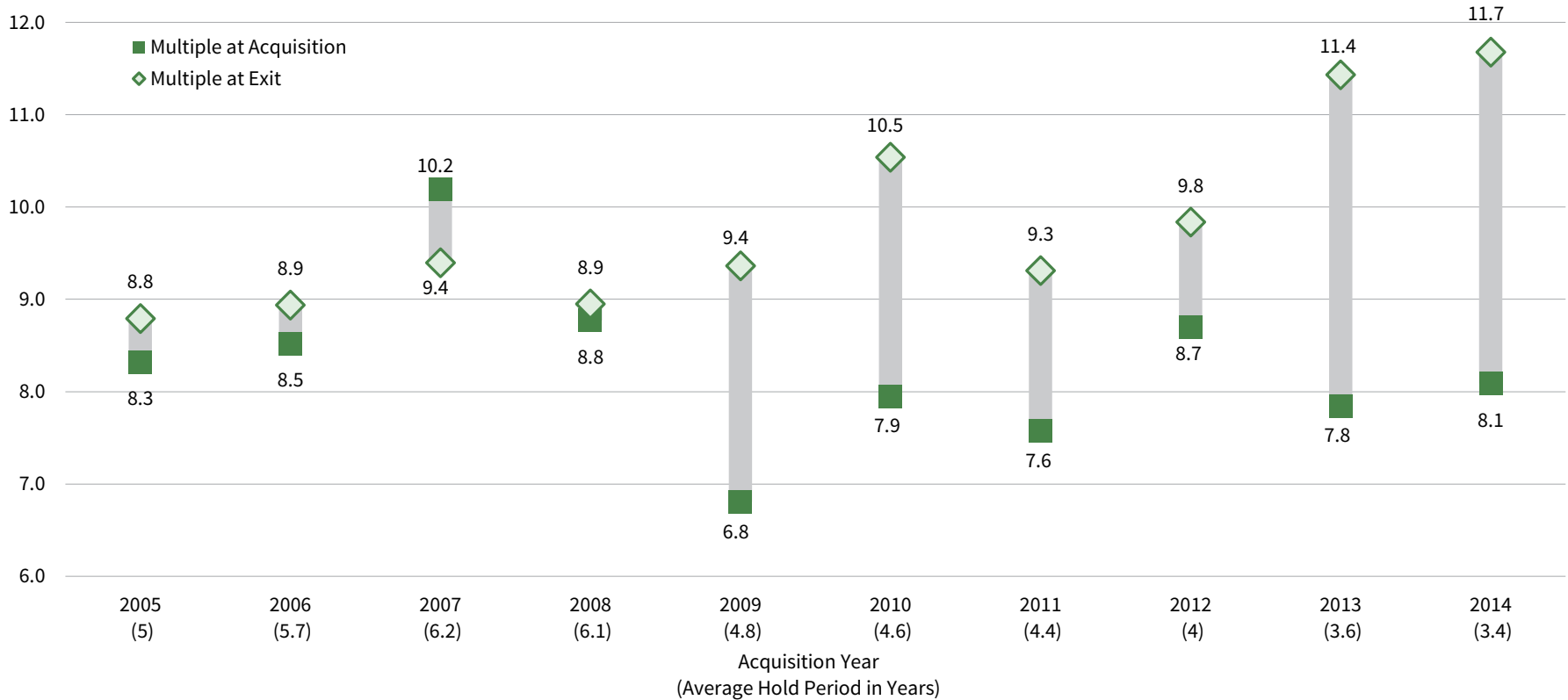
- Purchase Price Multiple
- Leverage Multiple
- Revenue Growth
- EBITDA Growth
- EBITDA Margin
- **Exit Metrics**

European private equity managers achieved significant multiple expansion during the six most recent acquisition years

Only companies acquired in 2007 were exited at lower multiples

MEDIAN EBITDA MULTIPLE EXPANSION OF EXITED PRIVATE EQUITY-OWNED COMPANIES BY ACQUISITION YEAR

As of December 31, 2018 • Enterprise Value/EBITDA



Number of Companies

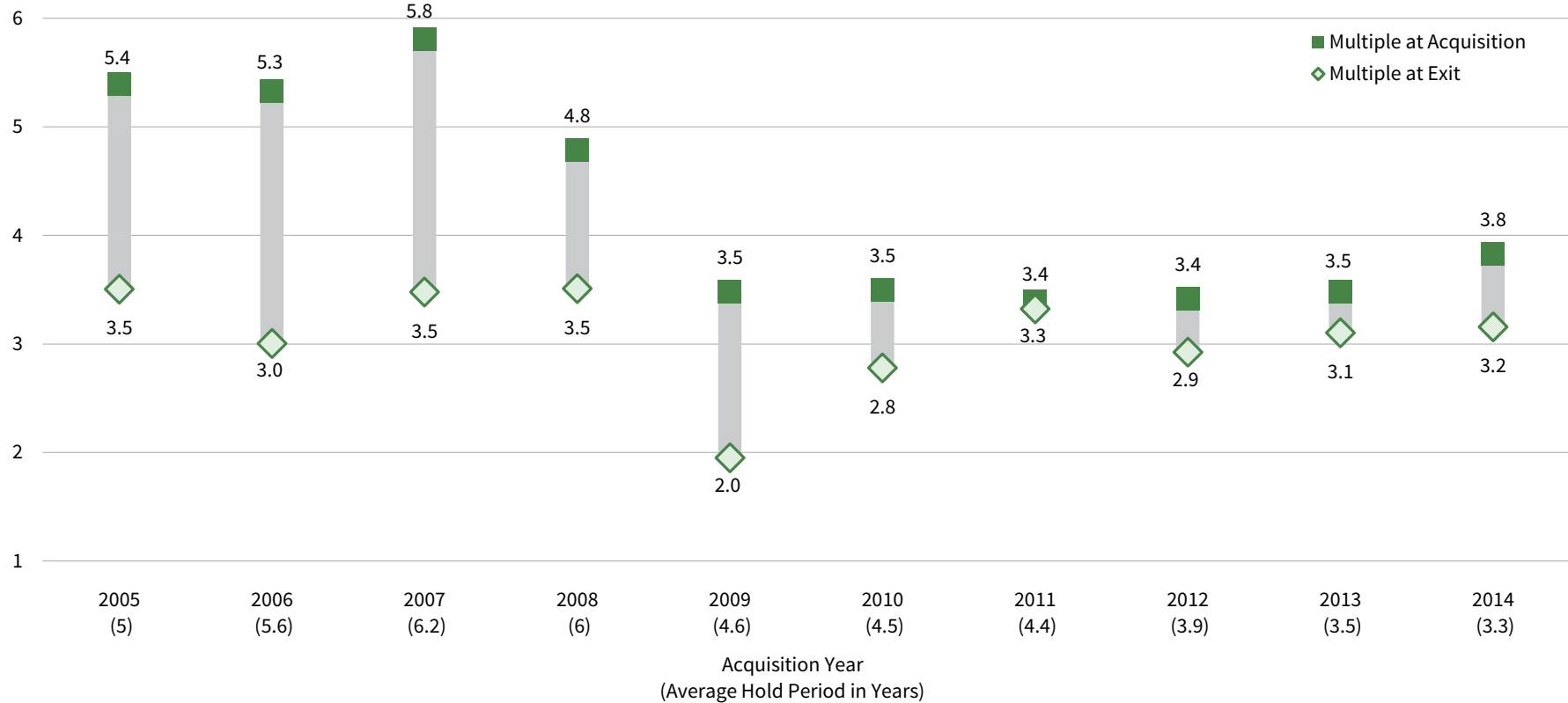
	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
Private Equity-Owned Companies	94	132	109	81	47	90	70	46	34	30

At exit across all years, leverage hovered around 3x EBITDA in Europe

Companies acquired from 2005 to 2009 significantly delevered during PE ownership

MEDIAN EBITDA LEVERAGE MULTIPLE COMPRESSION OF PRIVATE EQUITY-OWNED COMPANIES BY ACQUISITION YEAR

As of December 31, 2018 • Net Debt/EBITDA



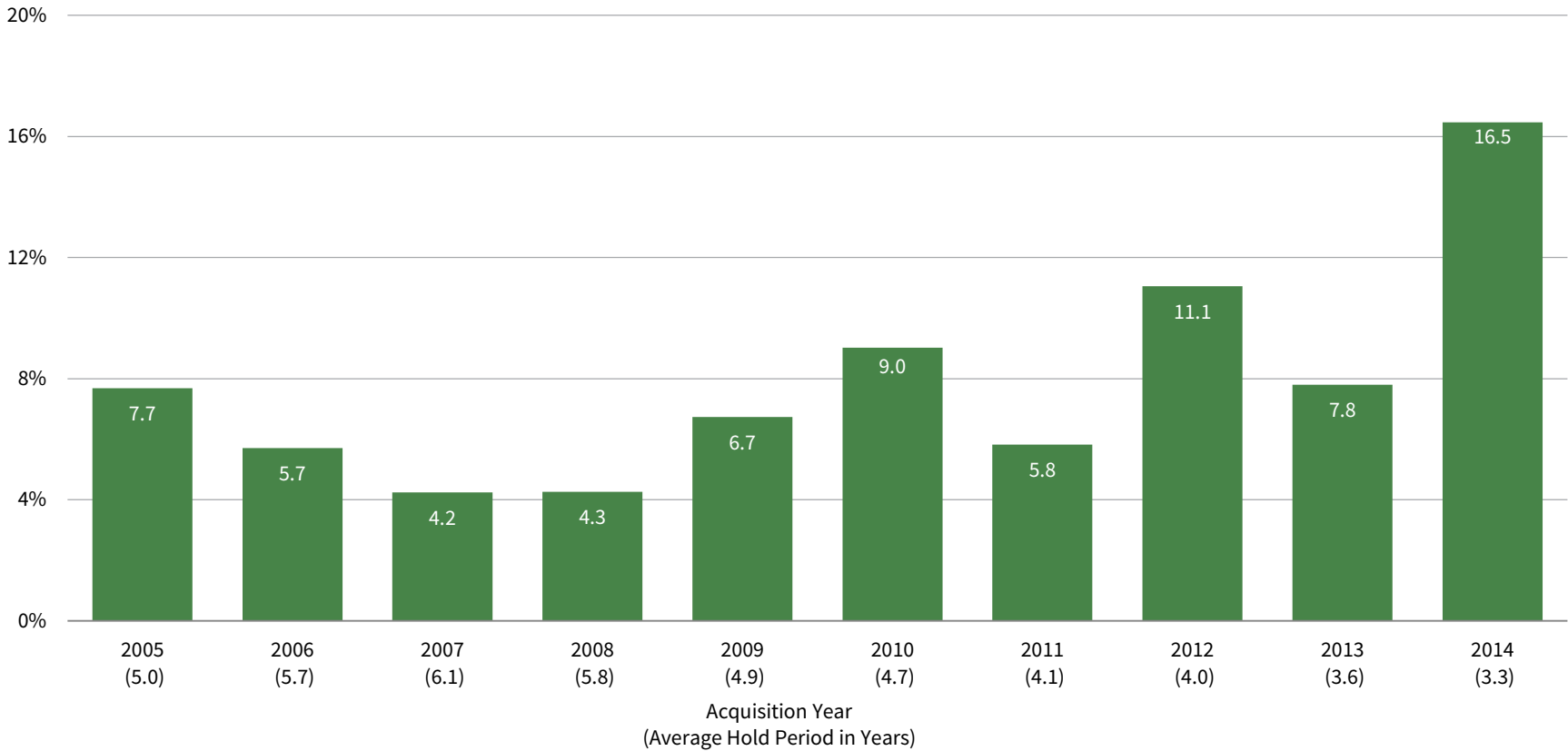
Number of Companies

	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
Private Equity-Owned Companies	91	127	104	73	31	74	59	42	30	26

In Europe, revenue growth for exited companies acquired post-GFC has been nearly double that of companies acquired pre-GFC

MEDIAN REVENUE CAGR OF EXITED PRIVATE EQUITY-OWNED COMPANIES BY ACQUISITION YEAR

As of December 31, 2018 • Compound Annual Growth Rate (%)



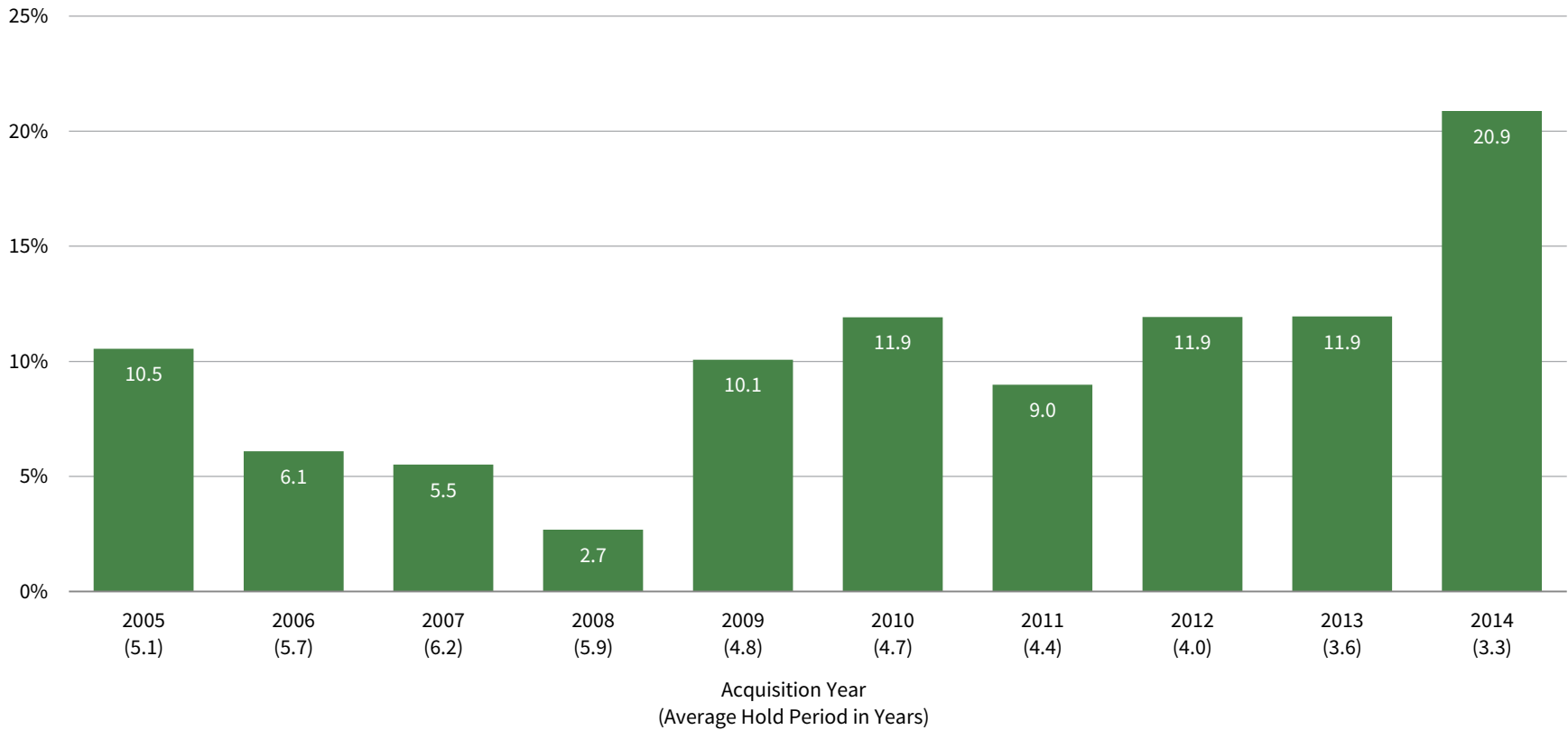
Number of Companies

	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
Private Equity-Owned Companies	104	136	126	86	47	96	73	48	36	35

European EBITDA CAGRs were north of 10% for exited companies acquired in six of the ten years analyzed

MEDIAN EBITDA CAGR OF EXITED PRIVATE EQUITY-OWNED COMPANIES BY ACQUISITION YEAR

As of December 31, 2018 • Compound Annual Growth Rate (%)



Number of Companies

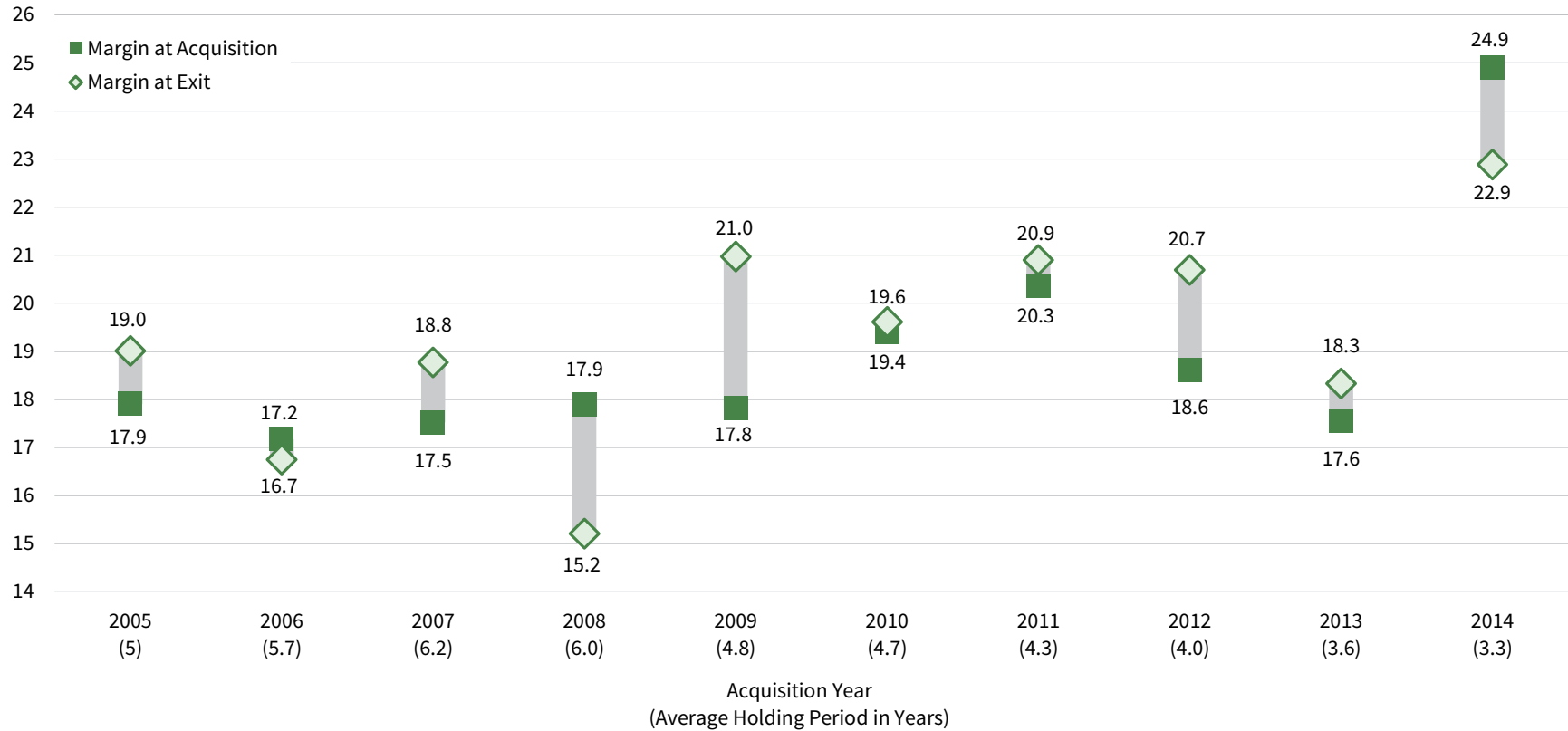
	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
Private Equity-Owned Companies	102	135	118	86	47	92	71	48	35	33

Margins were improved or maintained in five of the six acquisition years since 2009

Exited companies purchased in 2014 had the highest EBITDA margins at acquisition and exit in Europe

MEDIAN EBITDA MARGIN EXPANSION OF EXITED PRIVATE EQUITY-OWNED COMPANIES BY ACQUISITION YEAR

As of December 31, 2018 • EBITDA/Revenue (%)



Number of Companies

	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
Private Equity-Owned Companies	98	129	112	76	45	89	68	46	34	29



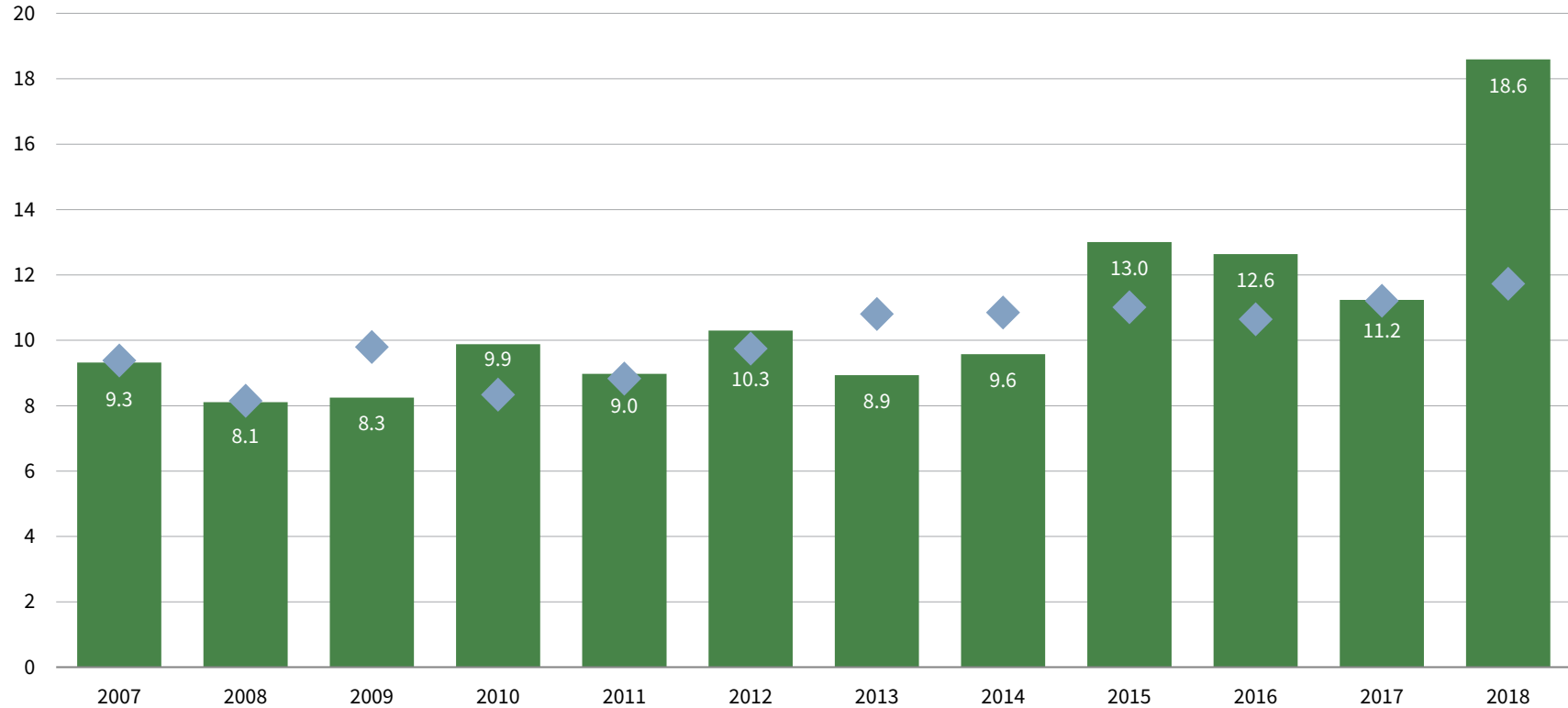
ASIAN ANALYSIS

On average, Asian private equity PPMs have been almost three turns of EBITDA higher than those of public peers since 2015

Prior to 2015, private and public PPMs were more in line, with PE trading at a slight discount

AVERAGE EBITDA PURCHASE PRICE MULTIPLES AT ACQUISITION OF PRIVATE EQUITY-OWNED COMPANIES VS PUBLIC COMPANIES

As of December 31, 2018 • Enterprise Value/EBITDA



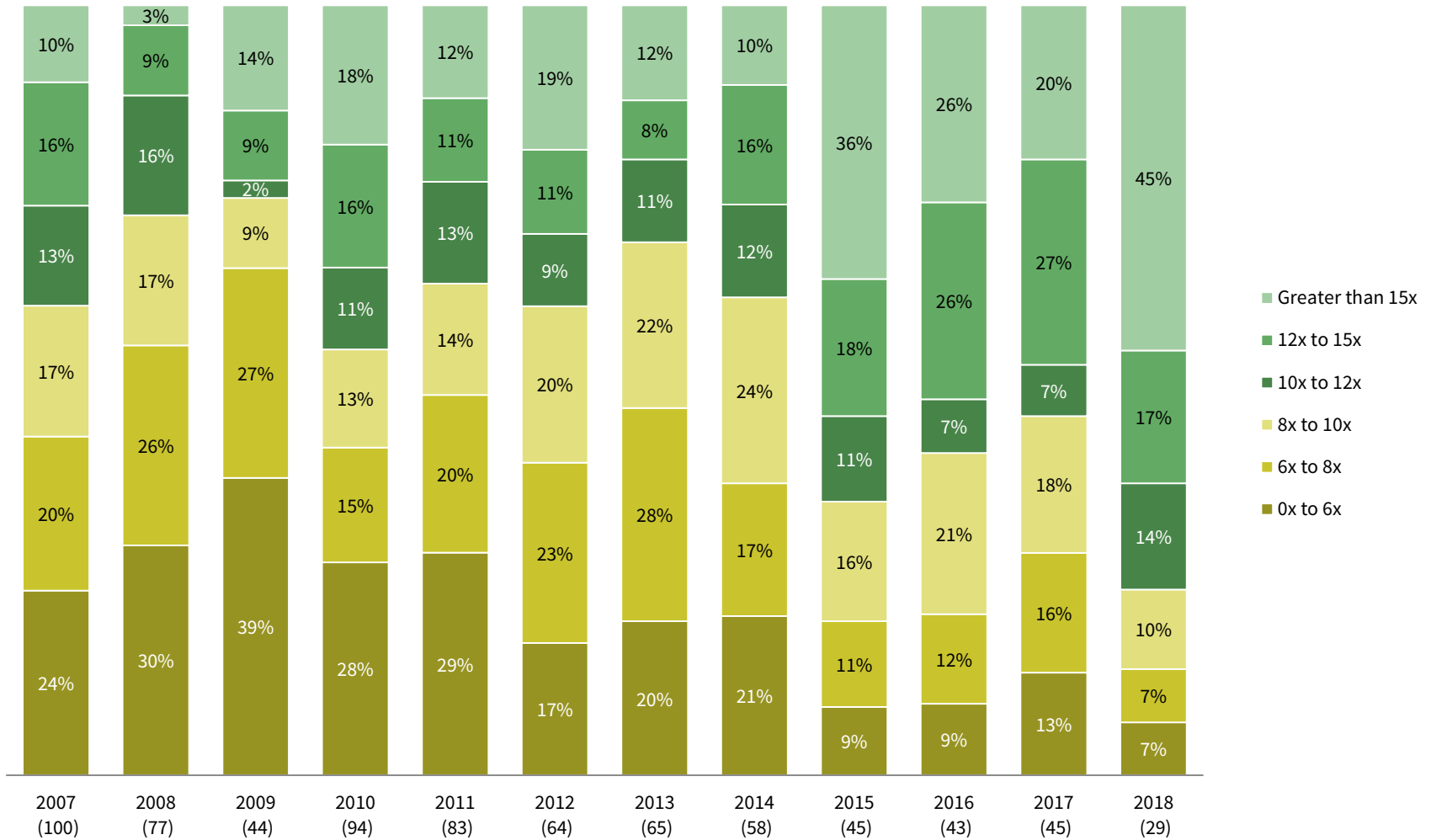
Number of Companies

	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
Private Equity-Owned Companies	100	77	44	94	83	64	65	58	45	43	45	29
MSCI All Country Asia Pacific Index	339	357	458	552	561	581	598	594	598	605	618	803

The trend toward higher valuations in Asia began in 2015

AVERAGE EBITDA PURCHASE PRICE MULTIPLE BREAKDOWN OF PRIVATE EQUITY-OWNED COMPANIES

As of December 31, 2018 • Enterprise Value/EBITDA

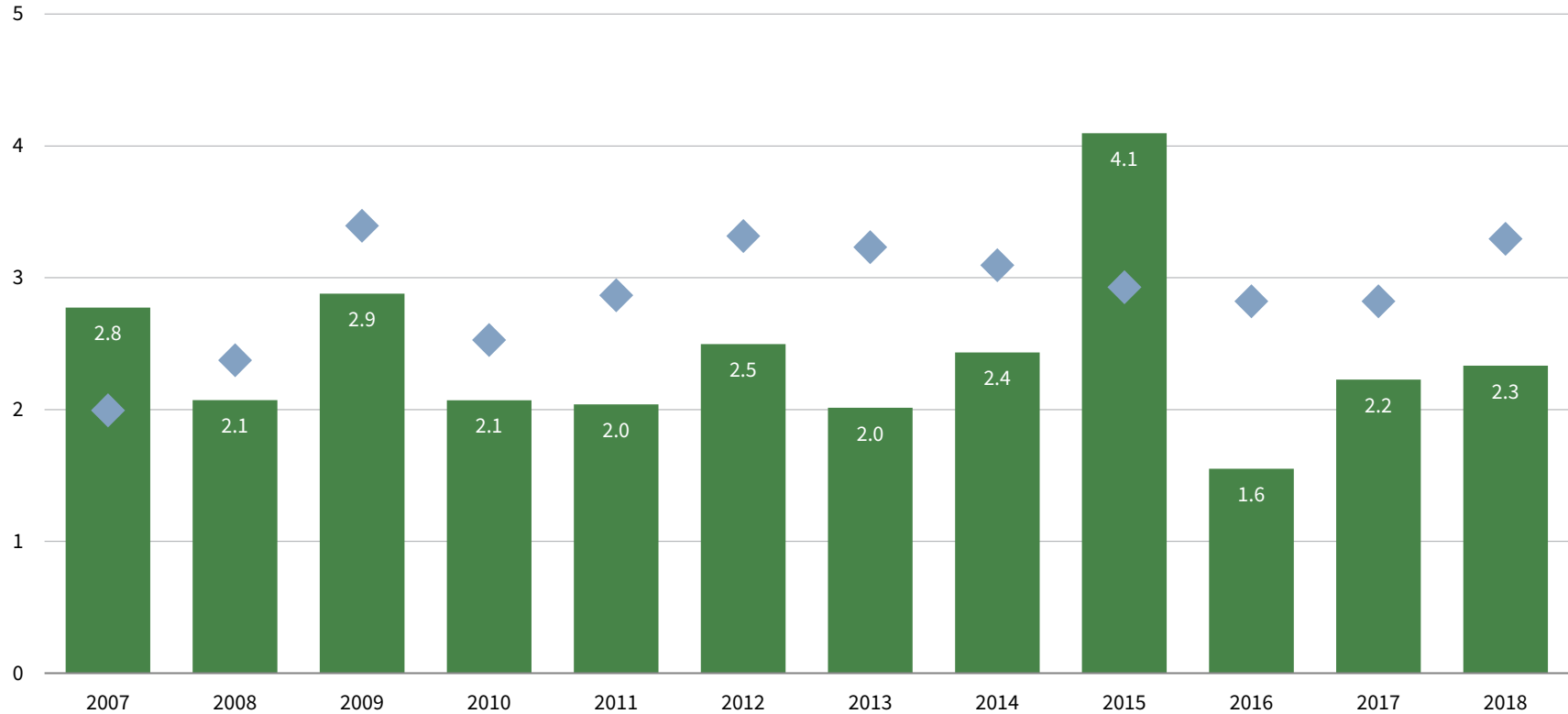


Asian PE companies generally employed less leverage than public peers

The two exceptions were 2007 and 2015

AVERAGE EBITDA LEVERAGE MULTIPLES AT ACQUISITION OF PRIVATE EQUITY-OWNED COMPANIES VS PUBLIC COMPANIES

As of December 31, 2018 • Net Debt/EBITDA



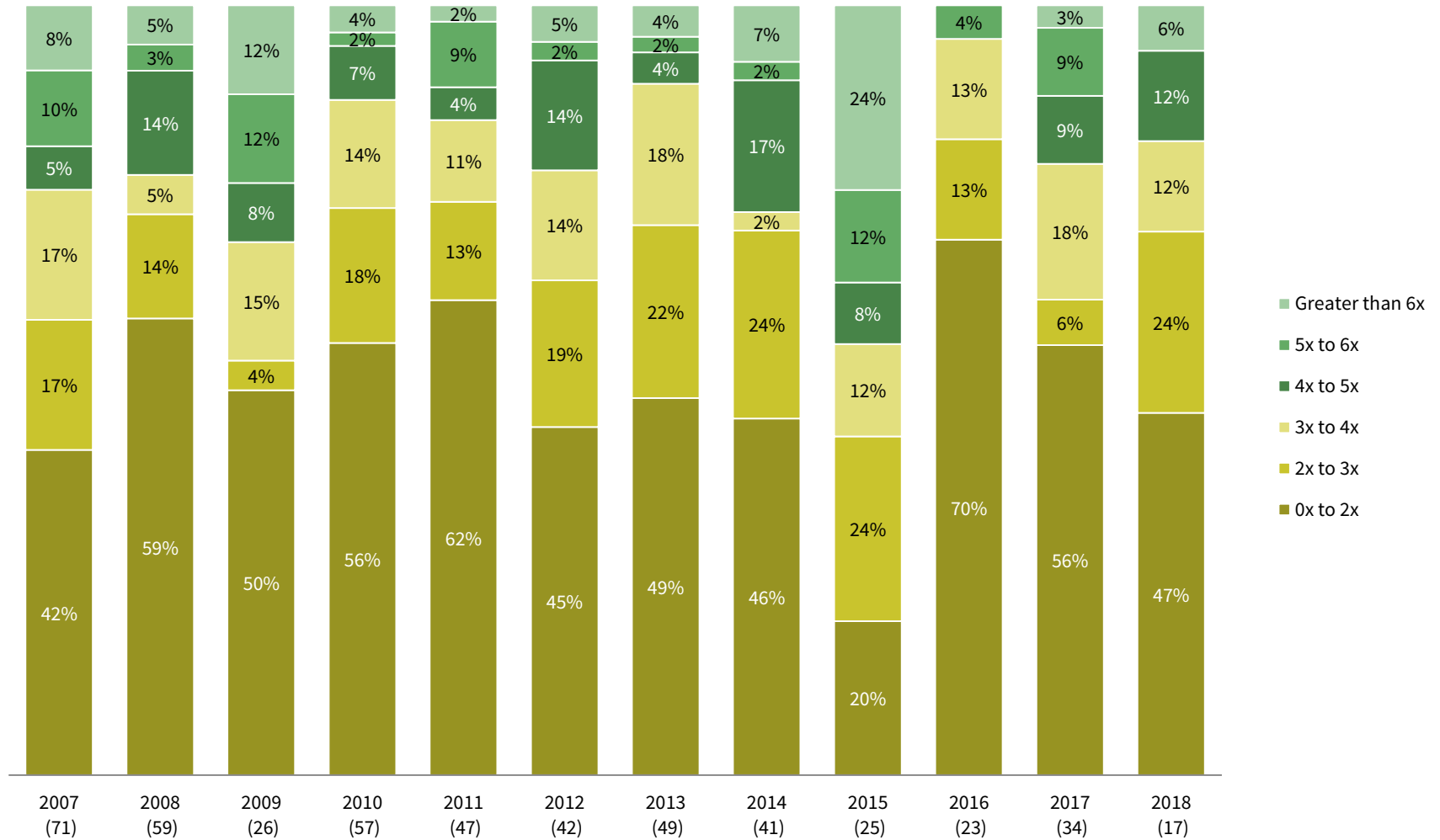
Number of Companies

	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
Private Equity-Owned Companies	71	59	26	57	47	42	49	41	25	23	34	17
MSCI All Country Asia Pacific Index	223	230	301	358	363	378	373	372	371	379	378	505

Leverage multiple breakdown reflects the growth equity bias in the Asian PE sample

AVERAGE LEVERAGE MULTIPLE BREAKDOWN OF PRIVATE EQUITY-OWNED COMPANIES

As of December 31, 2018 • Net Debt/EBITDA

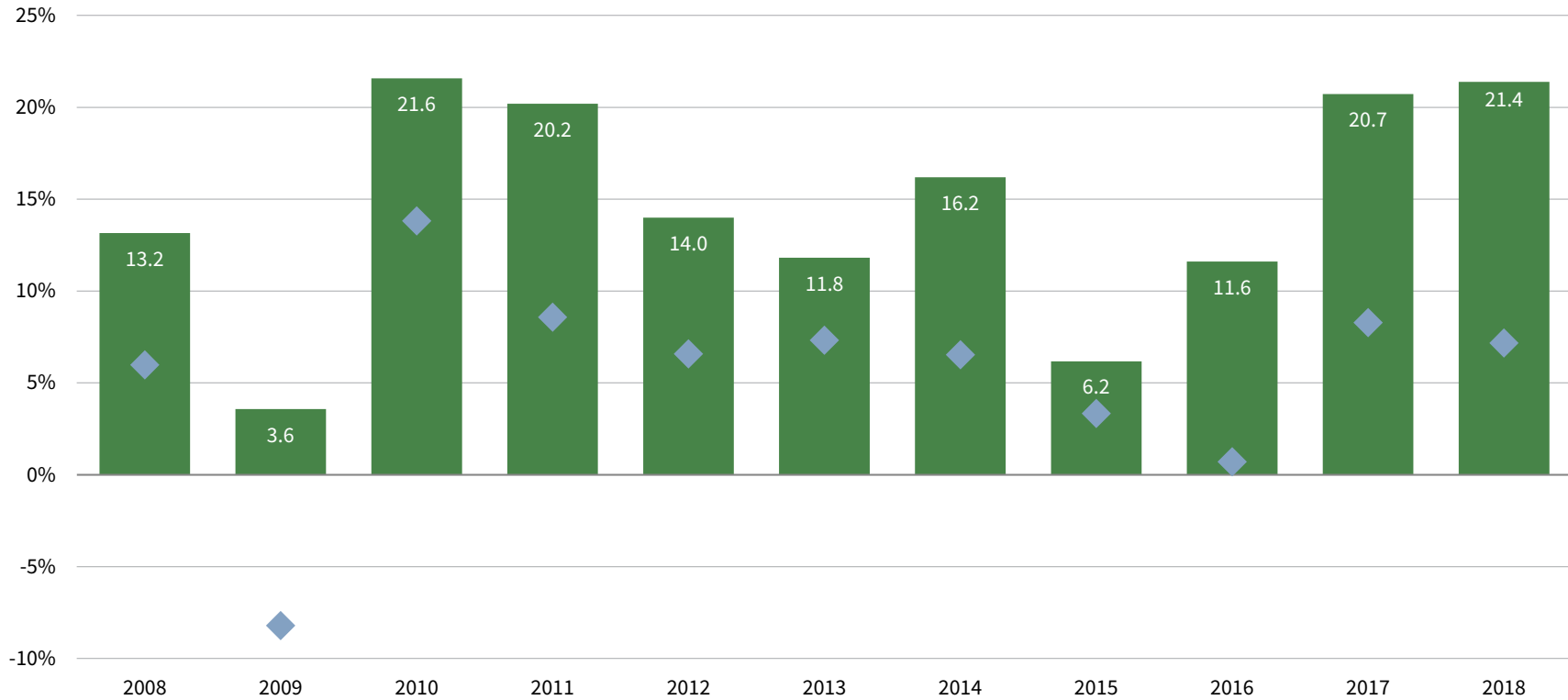


Average revenue growth for Asian PE-backed companies was 910 bps higher than that of public companies

Revenue growth was strongest in the period immediately following the GFC and in 2017–18

AVERAGE ANNUAL REVENUE GROWTH OF PRIVATE EQUITY-OWNED COMPANIES VS PUBLIC COMPANIES

As of December 31, 2018 • Annual Growth Rate (%)



Number of Companies

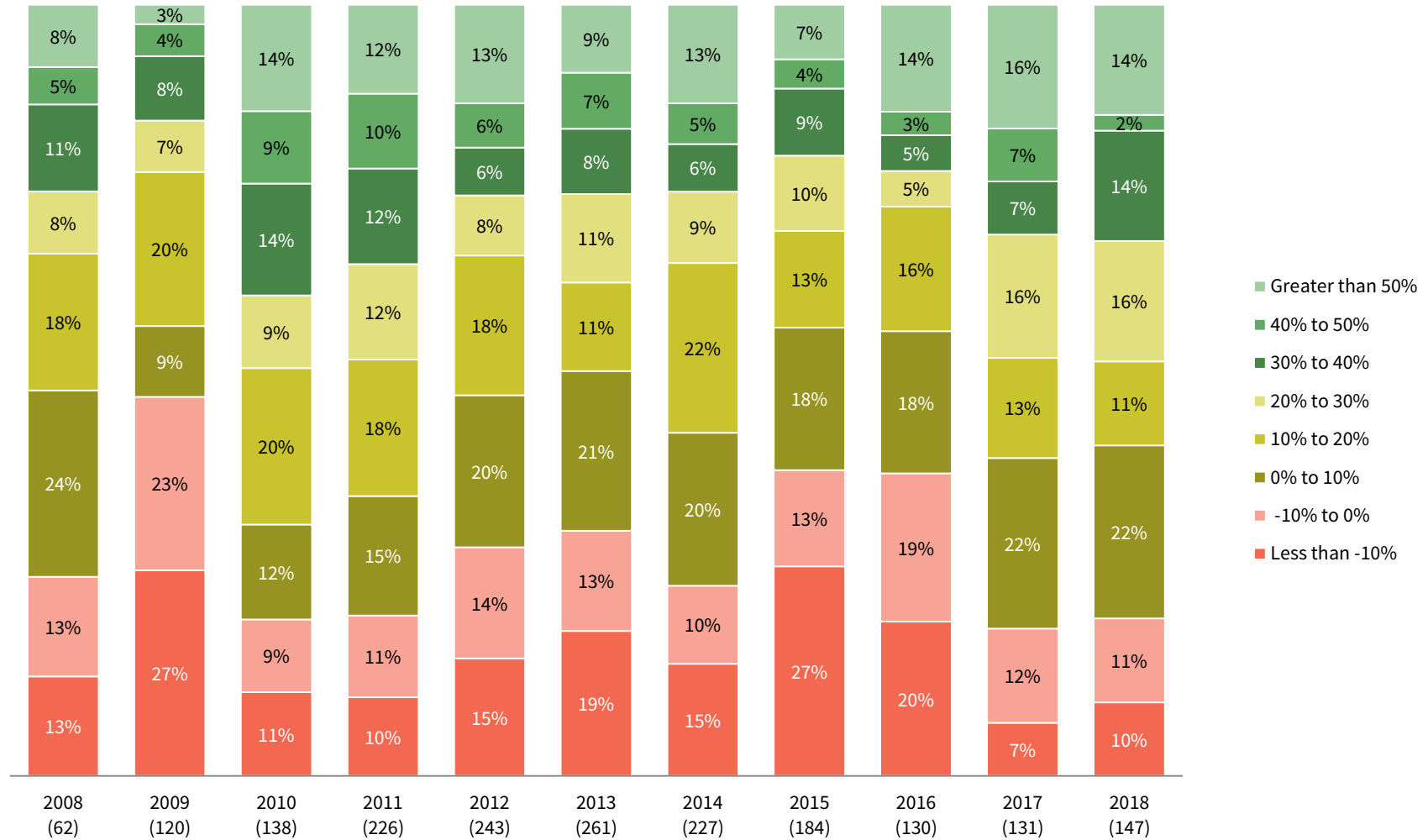
	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
Private Equity-Owned Companies	62	120	138	226	243	261	227	184	130	131	147
MSCI All Country Asia Pacific Index	684	742	755	774	831	817	833	803	863	856	843

On average, 52% of PE companies in Asia grew revenue by at least 10% per annum ...

... and about 30% of companies experienced revenue declines

AVERAGE ANNUAL REVENUE GROWTH BREAKDOWN OF PRIVATE EQUITY-OWNED COMPANIES

As of December 31, 2018 • Annual Growth Rate (%)

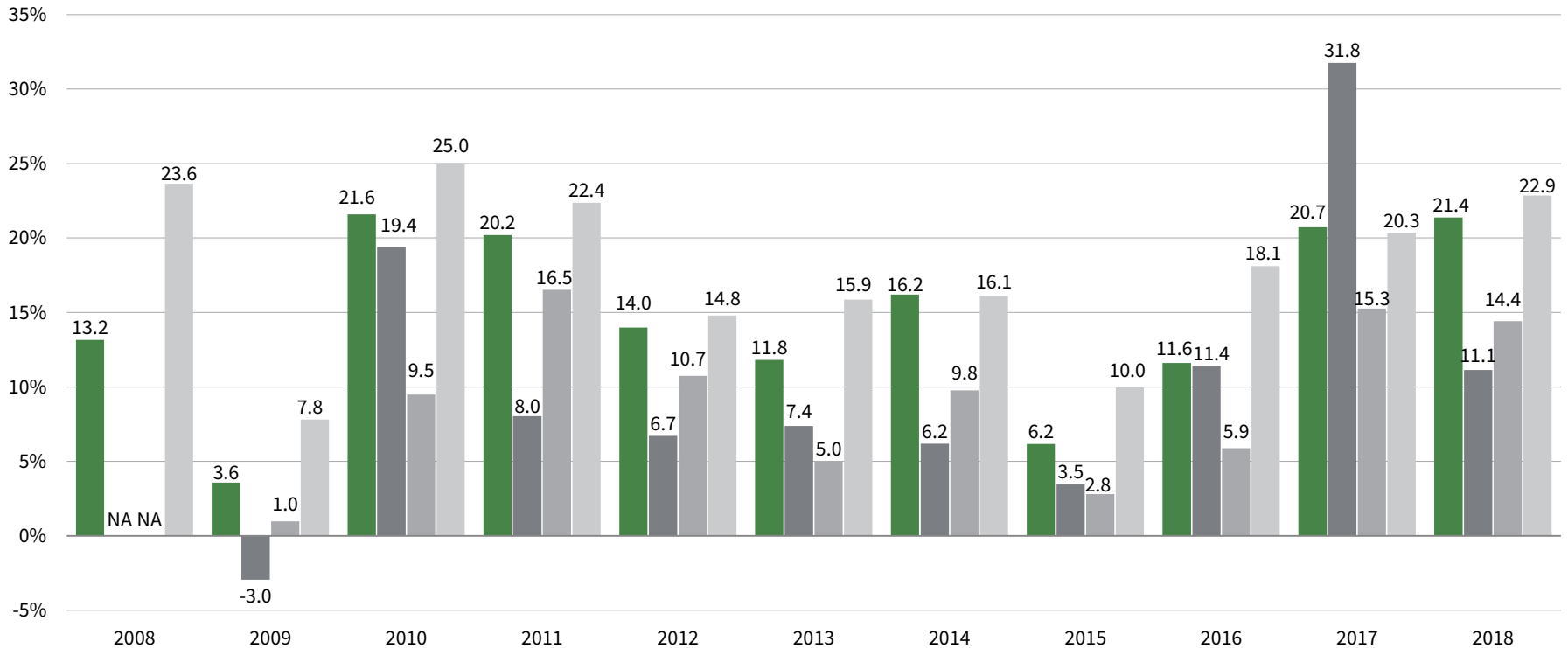


Small companies average by far the highest annual revenue growth (18%) in Asia

Excepting 2017, large-sized companies averaged less than 8% annual revenue growth

AVERAGE ANNUAL REVENUE GROWTH OF PRIVATE EQUITY-OWNED COMPANIES BY ENTERPRISE VALUE SEGMENT

As of December 31, 2018 • Annual Growth Rate (%)



Number of Companies

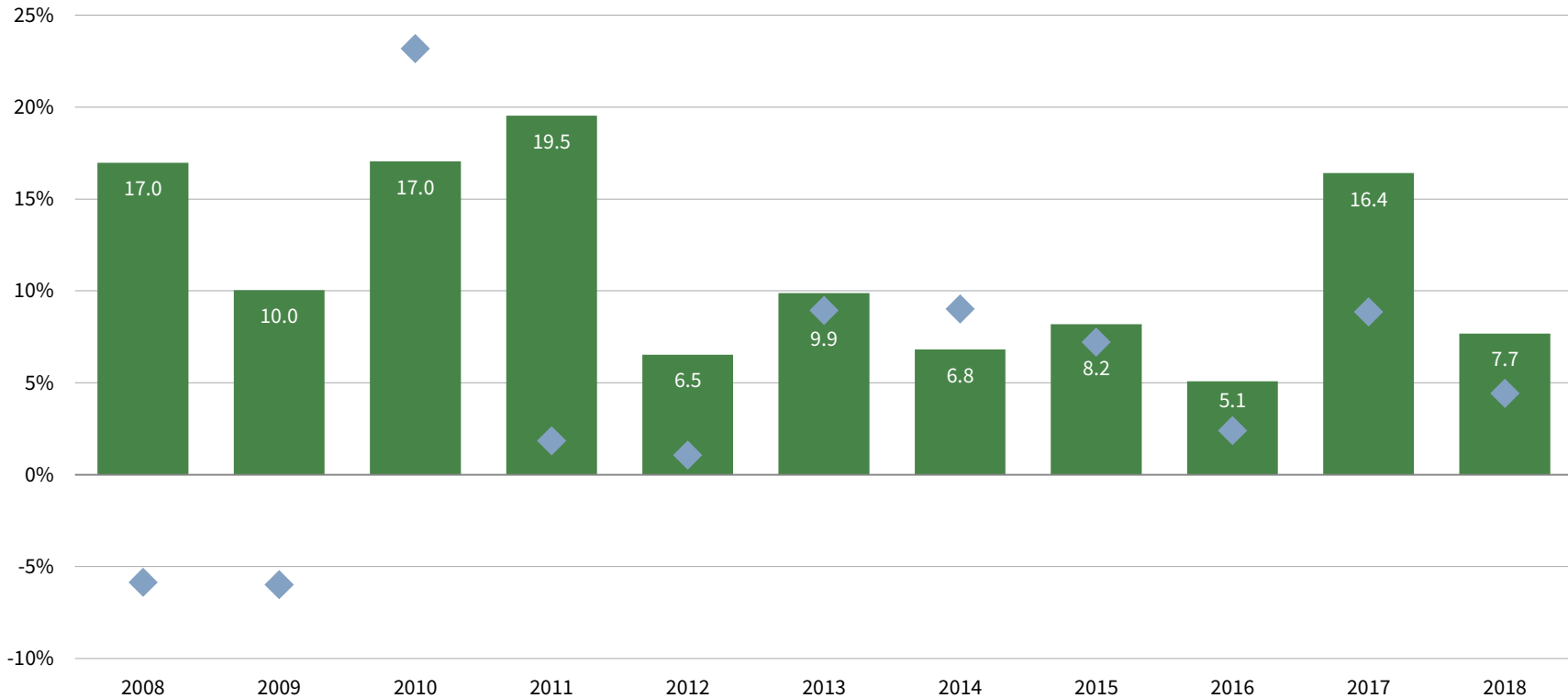
	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
Private Equity-Owned Companies	62	120	138	226	243	261	227	184	130	131	147
EV > \$1B	NA	19	20	25	33	30	20	22	23	18	21
EV \$250M - \$1B	NA	26	29	50	51	61	37	46	36	35	44
EV < \$250M	35	70	87	134	147	164	164	122	61	67	62

EBITDA growth for PE-backed companies consistently outpaced that of publics

Asian PE companies averaged much faster EBITDA growth from 2008 to 2011 (15.9%) than from 2012 to 2018 (8.7%)

AVERAGE ANNUAL EBITDA GROWTH OF PRIVATE EQUITY-OWNED COMPANIES VS PUBLIC COMPANIES

As of December 31, 2018 • Annual Growth Rate (%)



Number of Companies

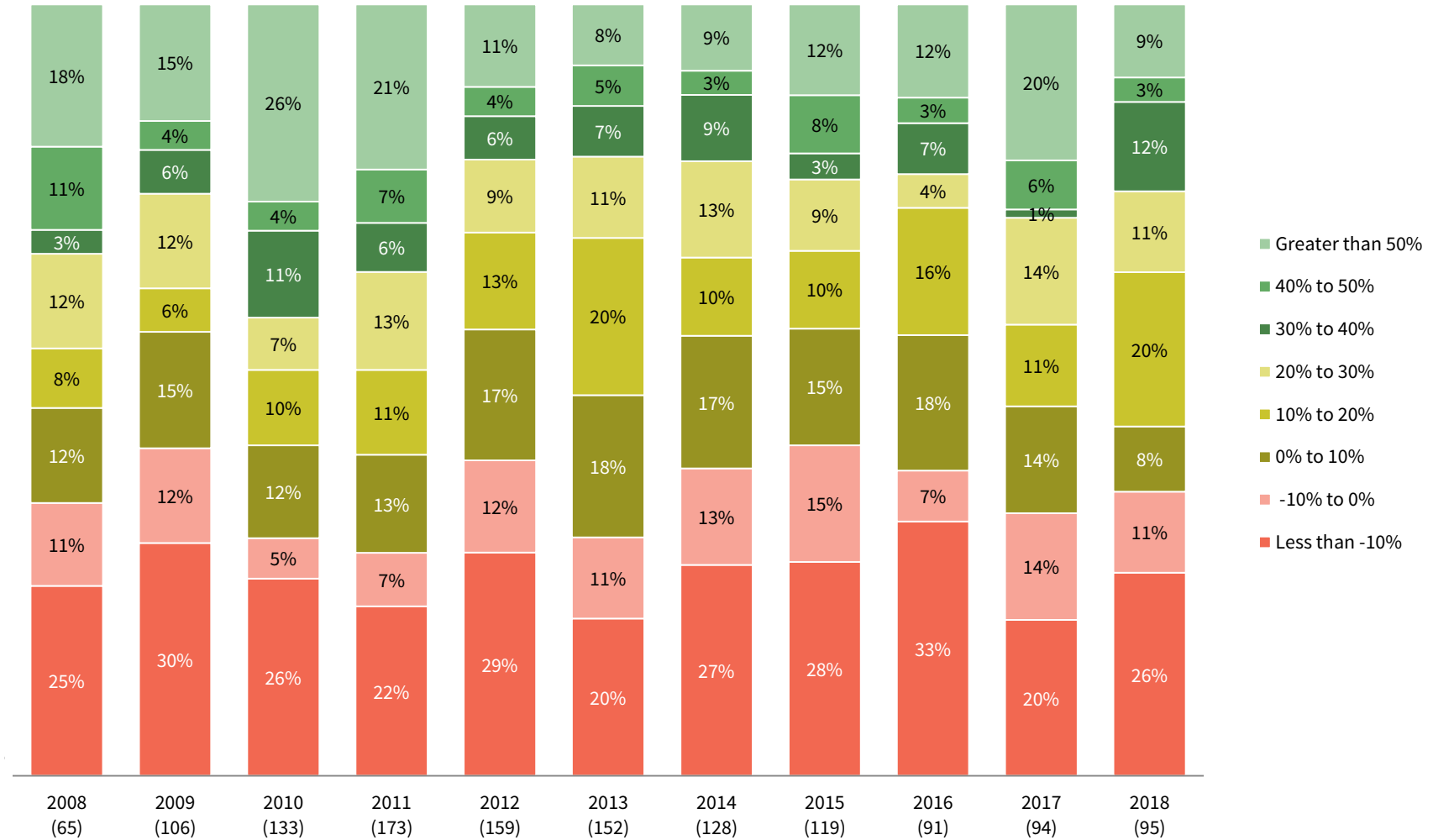
	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
Private Equity-Owned Companies	65	106	133	173	159	152	128	119	91	94	95
MSCI All Country Asia Pacific Index	428	441	538	597	638	656	654	661	704	707	718

Every year, an average of nearly 40% of PE-owned companies experienced EBITDA declines

On average, EBITDA grew by at least 10% for almost half of PE companies in Asia

AVERAGE ANNUAL EBITDA GROWTH BREAKDOWN OF PRIVATE EQUITY-OWNED COMPANIES

As of December 31, 2018 • Annual Growth Rate (%)

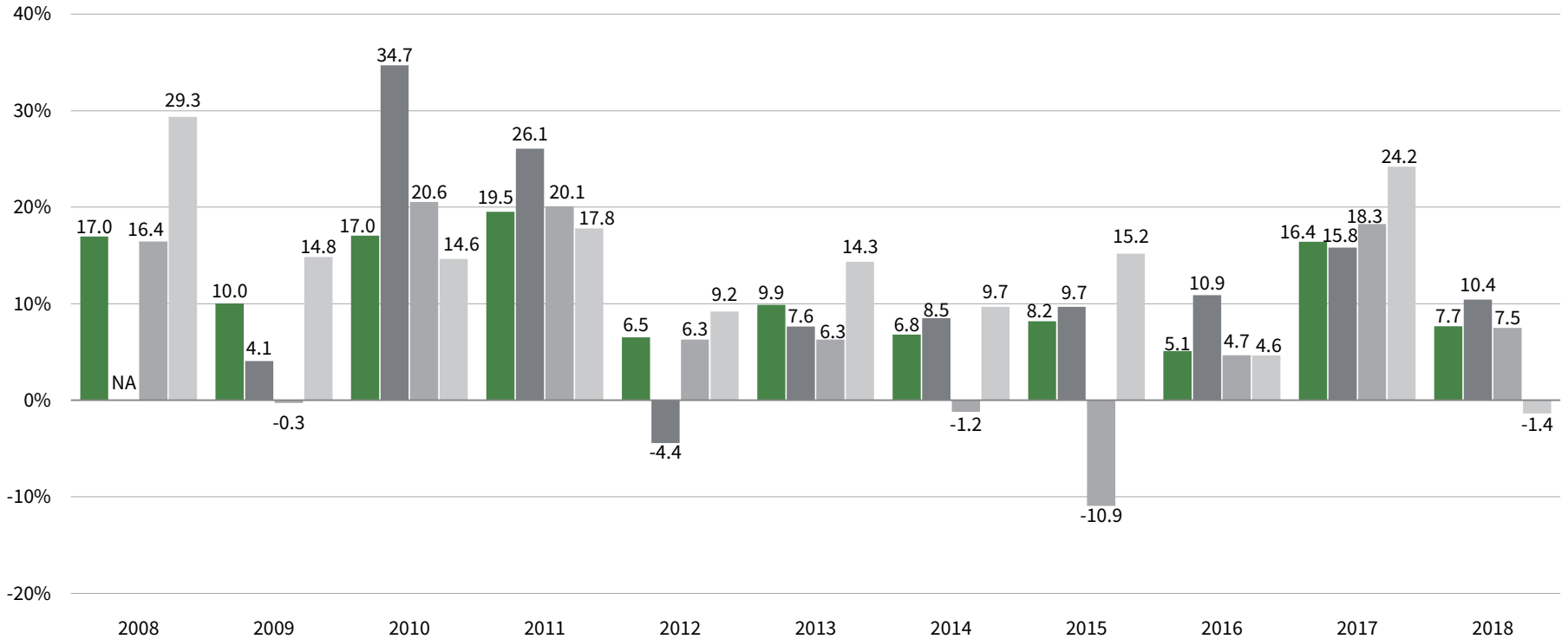


Over the full time period, small and large Asian PE-backed companies averaged double-digit annual EBITDA growth

Average annual growth for mid-sized companies, due in part to a weak 2015, trailed the other size segments by at least 400 bps

AVERAGE ANNUAL EBITDA GROWTH OF PRIVATE EQUITY-OWNED COMPANIES BY ENTERPRISE VALUE SEGMENT

As of December 31, 2018 • Annual Growth Rate (%)



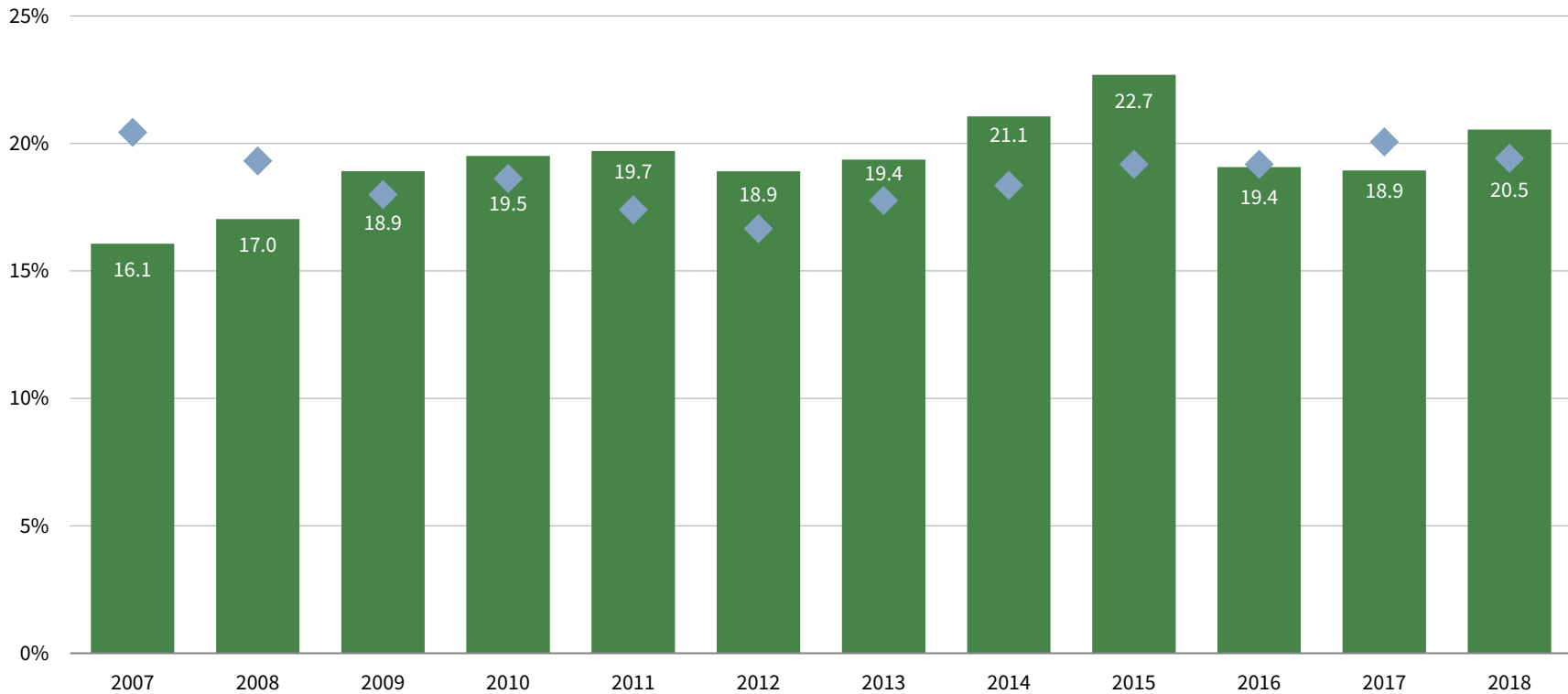
Number of Companies

	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
Private Equity-Owned Companies	65	106	133	173	159	152	128	119	91	94	95
EV > \$1B	NA	20	19	24	34	28	21	20	21	15	22
EV \$250M - \$1B	19	23	29	45	45	50	35	44	31	27	36
EV < \$250M	33	63	79	95	73	67	70	53	38	45	41

Despite year-over-year differences, Asian PE and public company EBITDA margins approximated one another over the full time period

AVERAGE ANNUAL EBITDA MARGIN OF PRIVATE EQUITY-OWNED COMPANIES VS PUBLIC COMPANIES

As of December 31, 2018 • EBITDA/Revenue (%)



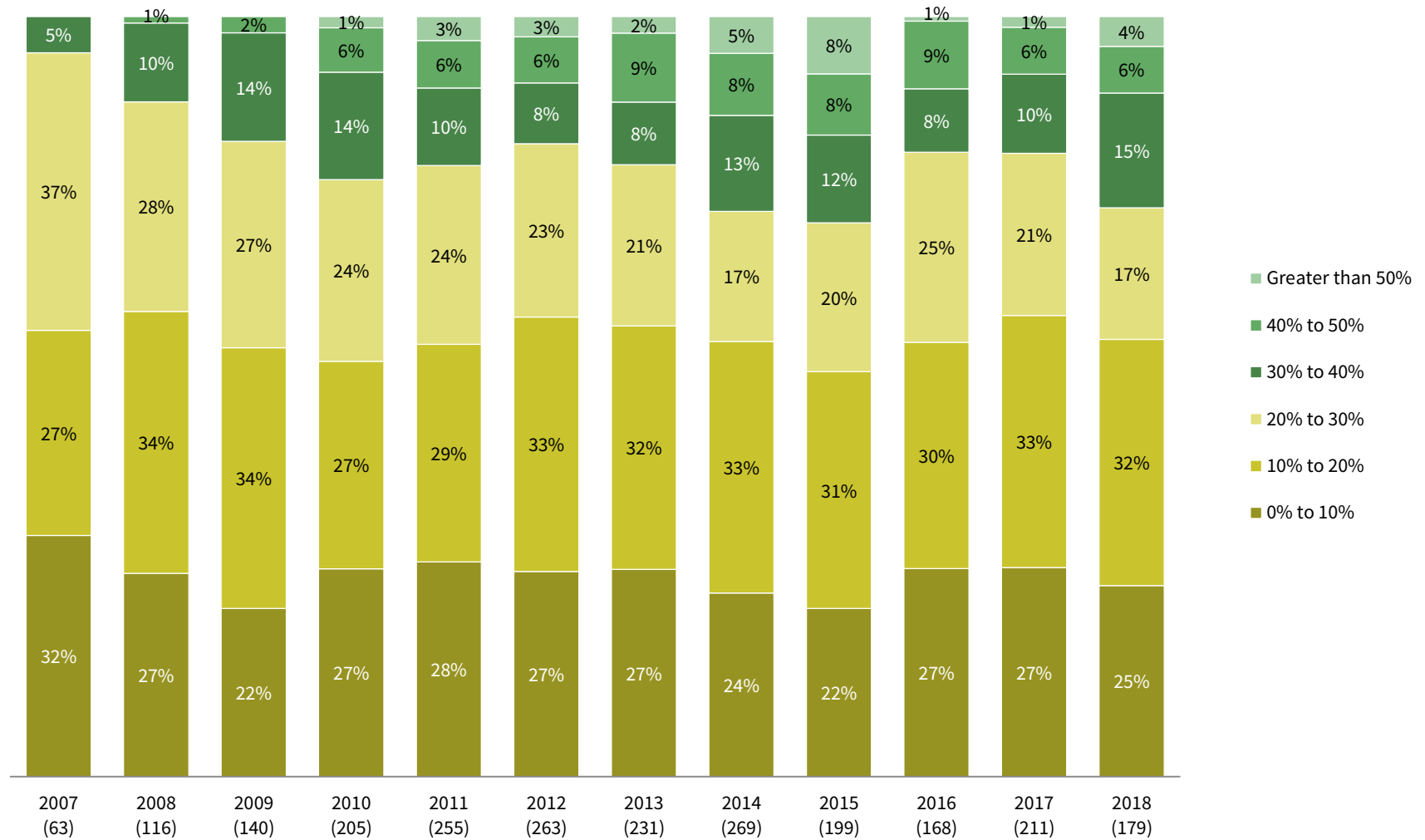
Number of Companies

	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
Private Equity-Owned Companies	63	116	140	205	255	263	231	269	199	168	211	179
MSCI All Country Asia Pacific Index	620	515	617	712	731	747	762	769	781	780	796	1,059

On average, more than half of Asian PE-backed companies operated with EBITDA margins between 10% and 30%

AVERAGE ANNUAL EBITDA MARGIN BREAKDOWN OF PRIVATE EQUITY-OWNED COMPANIES

As of December 31, 2018 • EBITDA/Revenue (%)

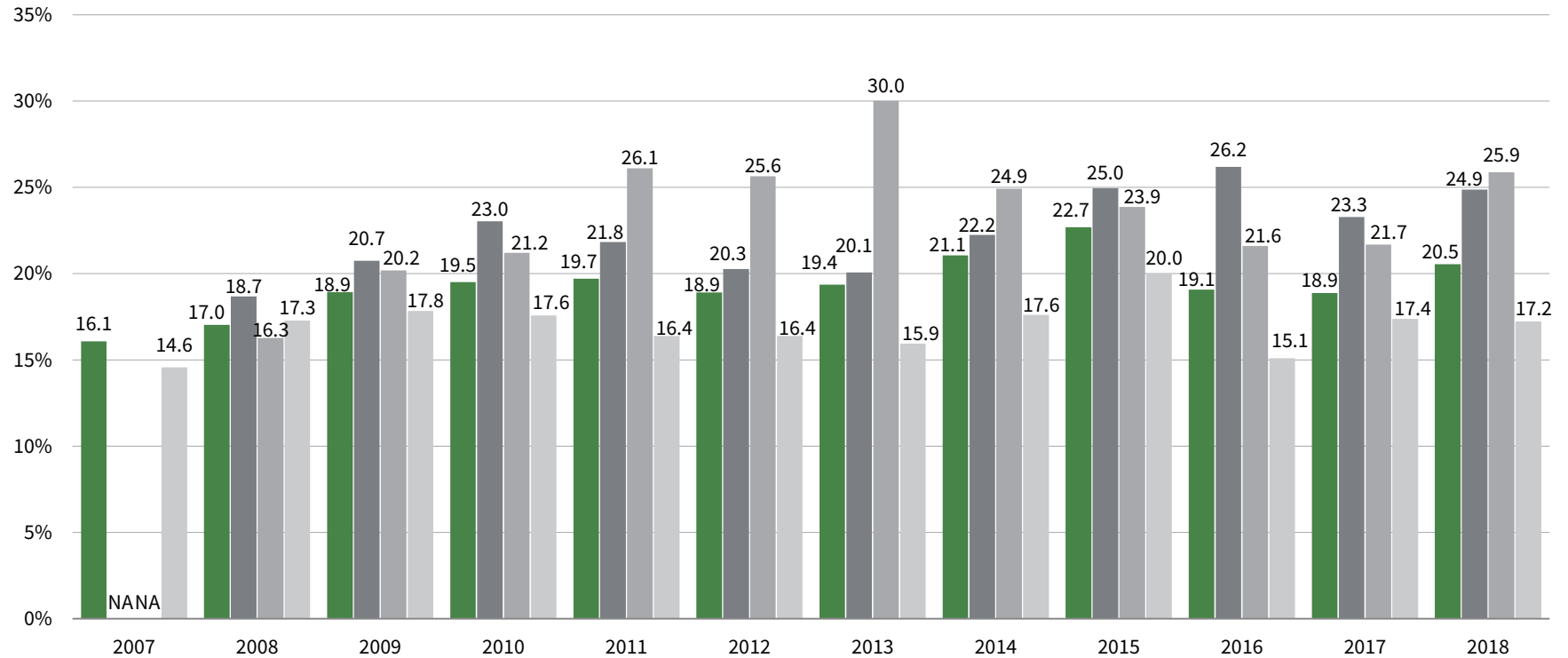


Larger companies had better margins than their smallest peers in Asia

All size segments averaged at least 17% annual EBITDA margins over the full time period

AVERAGE ANNUAL EBITDA MARGIN OF PRIVATE EQUITY-OWNED COMPANIES BY ENTERPRISE VALUE SEGMENT

As of December 31, 2018 • EBITDA/Revenue (%)



Number of Companies

	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
Private Equity-Owned Compa	63	116	140	205	255	263	231	269	199	168	211	179
EV > \$1B	NA	19	22	34	43	44	35	39	44	27	37	30
EV \$250M - \$1B	NA	26	31	52	70	85	71	78	67	46	75	52
EV < \$250M	36	71	85	111	134	135	123	138	80	85	98	94



**CAMBRIDGE
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