

PRIVATE COMPANY OPERATING METRICS: GLOBAL ANALYSIS

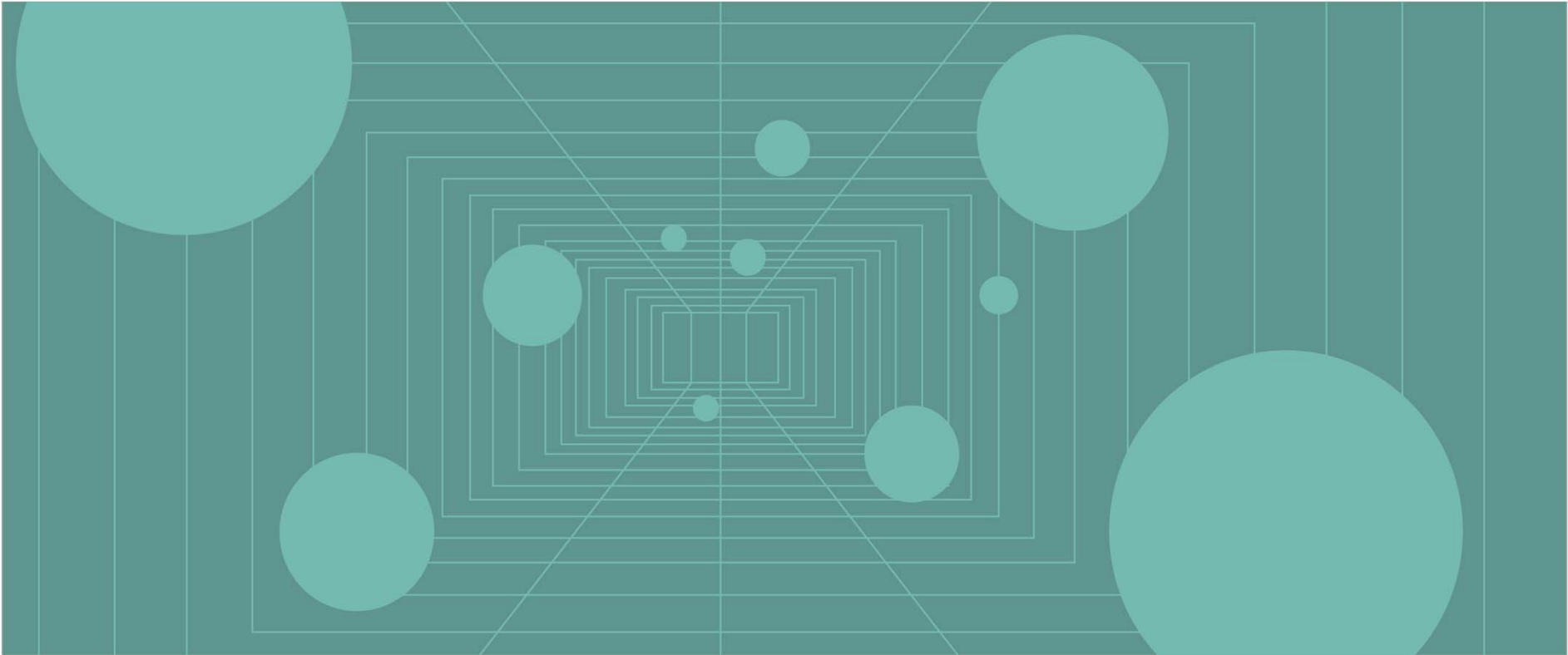


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Introduction to Operating Metrics

- 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 nine consecutive years. This year’s report includes data through the period ended December 31, 2019.
- 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 9,600 companies worldwide, of which about 5,000 are based in the United States, more than 2,400 in Europe, and nearly 1,600 in Asia; they were acquired by PE firms from 2000 through 2019 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 and country exposures 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.
- 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. We 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 PRIVATE EQUITY ANALYSIS

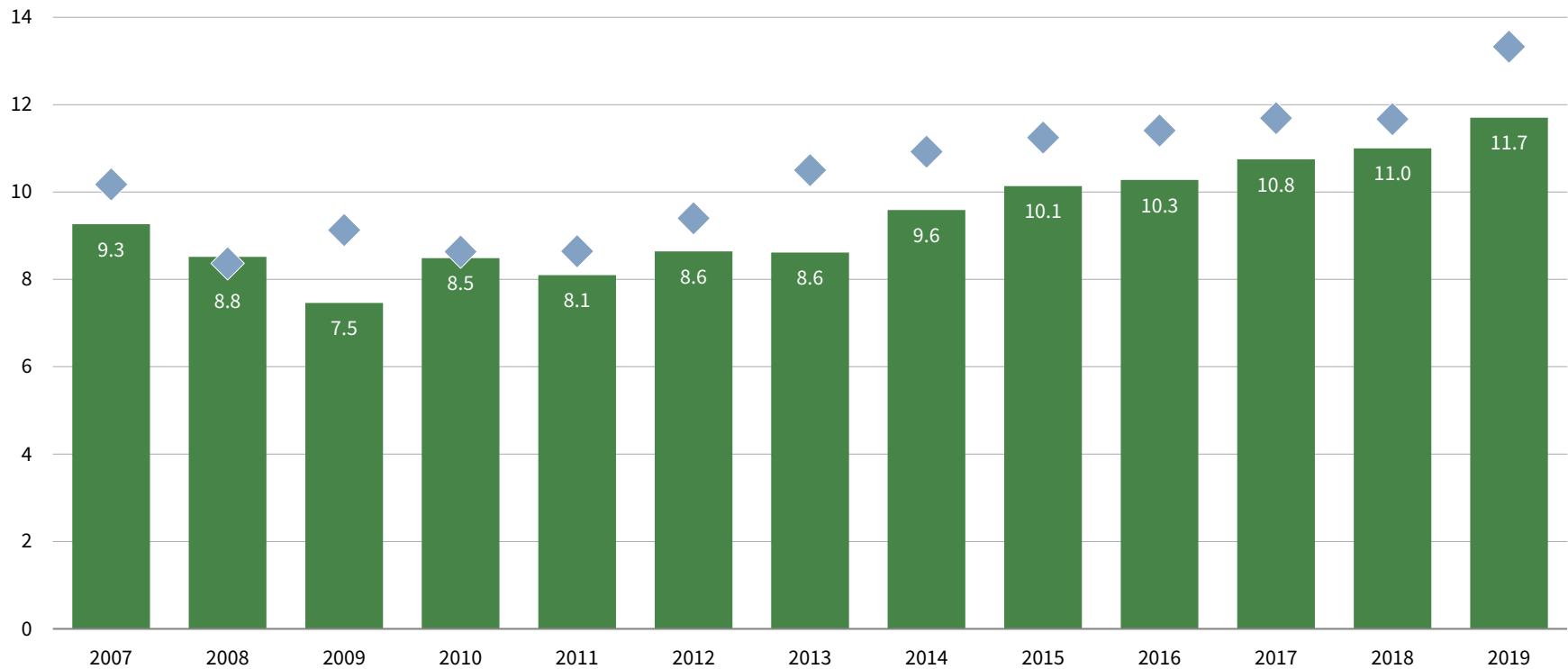
- **EBITDA Purchase Price Multiple**
- Leverage Multiple
- Revenue Growth
- EBITDA Growth
- EBITDA Margin
- Exit Metrics

PE's valuation discount to public counterparts expanded in 2019 to its largest since 2013

Since 2007, the United States represented about half of the PE sample and a third of the public

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

As of December 31, 2019 • Enterprise Value



Number of Companies

	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Private Equity-Owned Companies	639	455	252	534	530	516	374	463	392	382	398	362	262
MSCI All Country World Index	1,345	1,247	1,346	1,451	1,456	1,497	1,506	1,521	1,523	1,541	1,541	1,678	1,905

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.

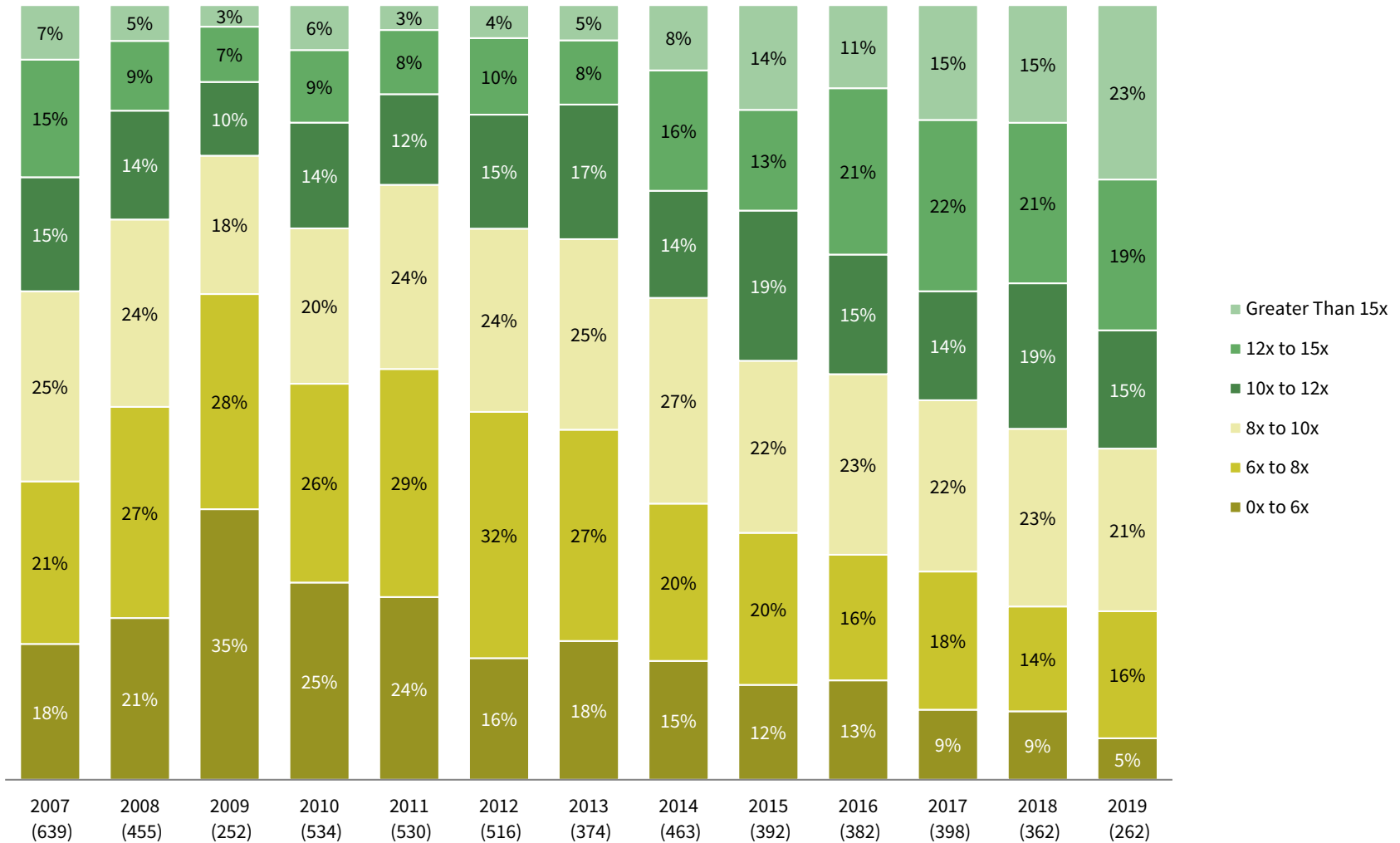
Note: Outliers were identified and excluded, and the same methodology was applied to the private equity and public company universes.

In 2019, more PE transactions were completed at >15x multiples than in any other valuation bucket

Over the last three years, more than 50% of deals were transacted at 10x or higher

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

As of December 31, 2019 • Enterprise Value/EBITDA

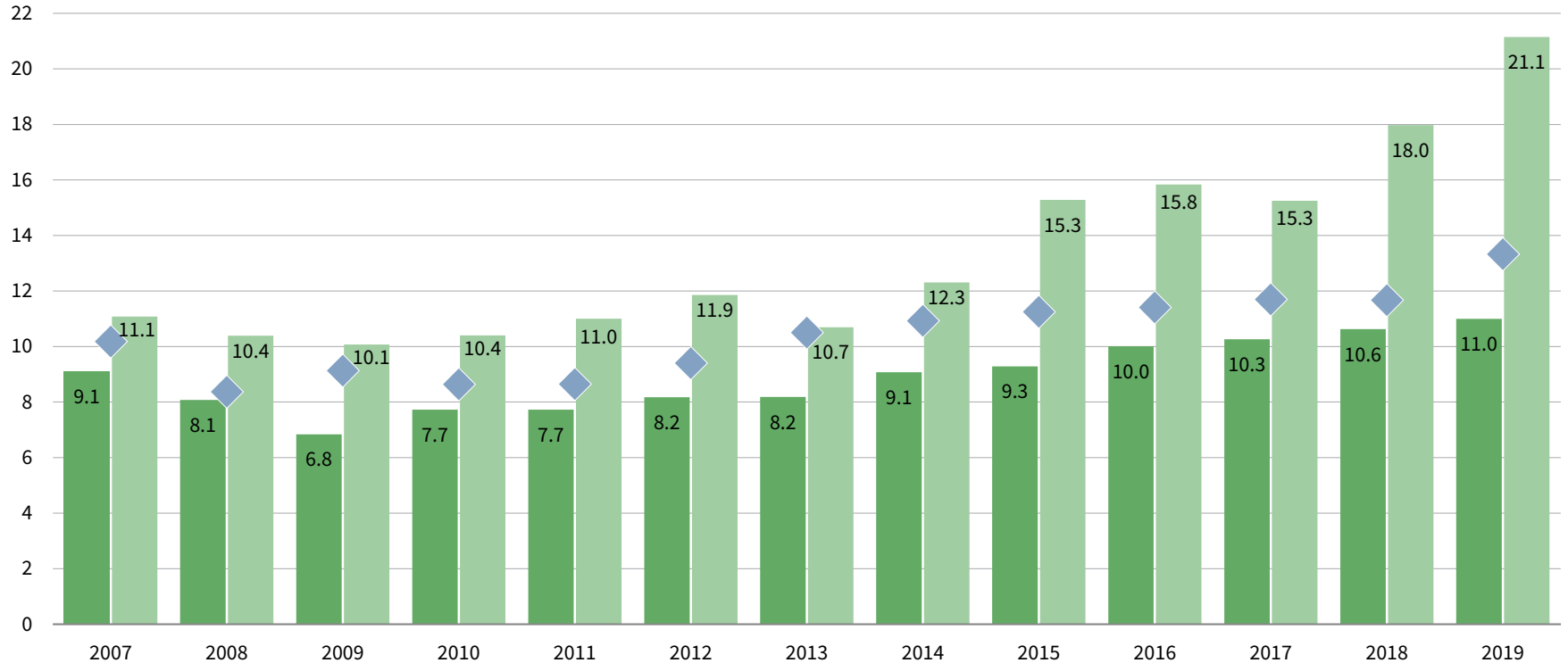


All equity valuations hit new highs in 2019; buyouts continued to trade at a significant discount to counterparts

The growth equity sample remained concentrated in the United States and Asia with a bias toward IT companies (see page 43 for further detail)

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

As of December 31, 2019 • Enterprise Value/EBITDA



Number of Companies

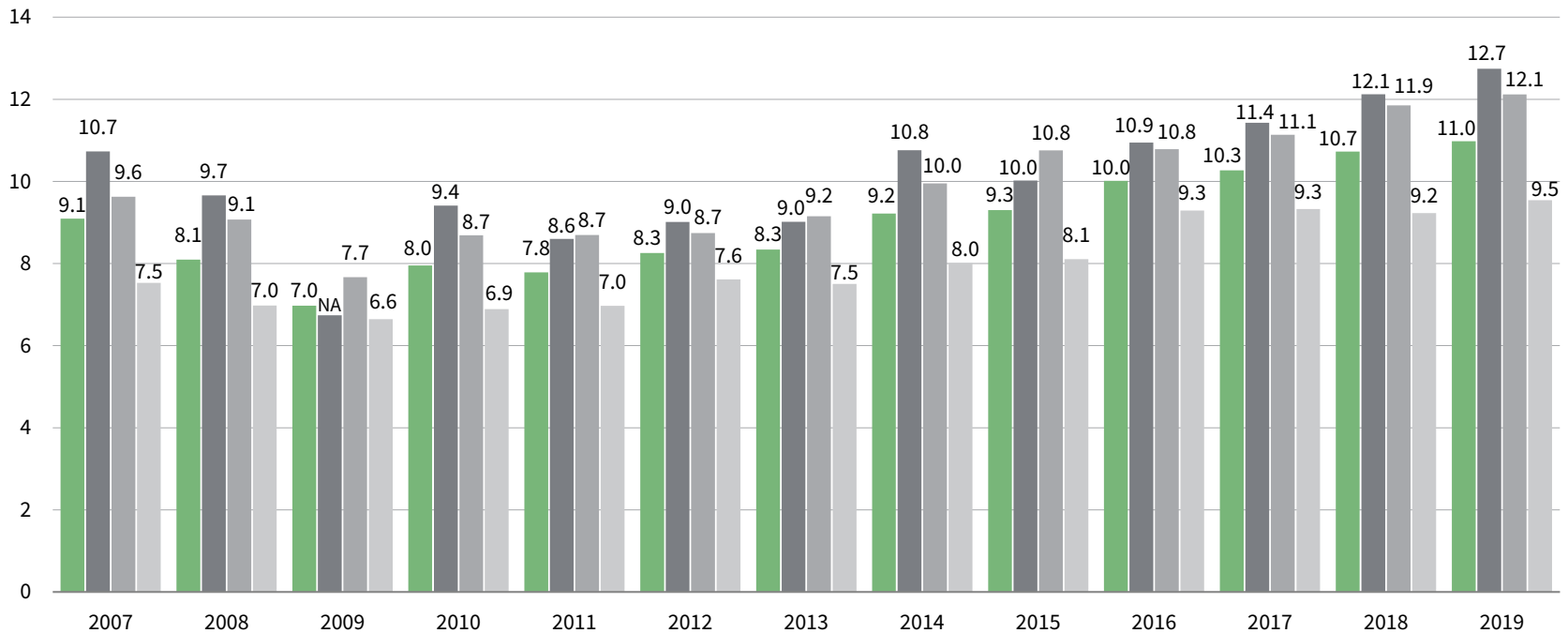
	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Buyout Companies	450	297	161	345	366	352	253	341	279	287	299	276	181
Growth Equity Companies	128	113	56	140	112	121	88	104	89	82	78	71	67
MSCI All Country World Index	1,345	1,247	1,346	1,451	1,456	1,497	1,506	1,521	1,523	1,541	1,541	1,678	1,905

Across the size spectrum, buyout prices reached new peaks in 2019

Since 2015, PPMs for large companies have increased by nearly three turns of EBITDA

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

As of December 31, 2019 • Enterprise Value/EBITDA



Number of Companies

	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Buyout Companies	503	326	185	396	411	387	274	360	294	301	306	290	183
EV > \$1B	145	72	19	68	64	66	45	57	38	51	68	65	38
EV \$250M - \$1B	132	79	52	121	110	126	79	122	103	99	100	95	65
EV < \$250M	219	173	111	202	231	191	144	170	140	151	132	128	80

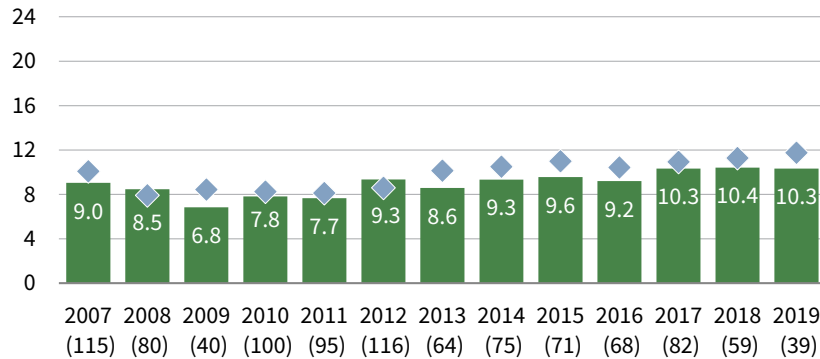
PE-backed IT company PPMs eclipsed all others in 2019, including public IT; growth equity comprised about half the PE sample

PE healthcare companies have transacted at lower multiples than public peers (2019 being the most extreme example), in part due to PE's focus on healthcare services and equipment rather than biotech

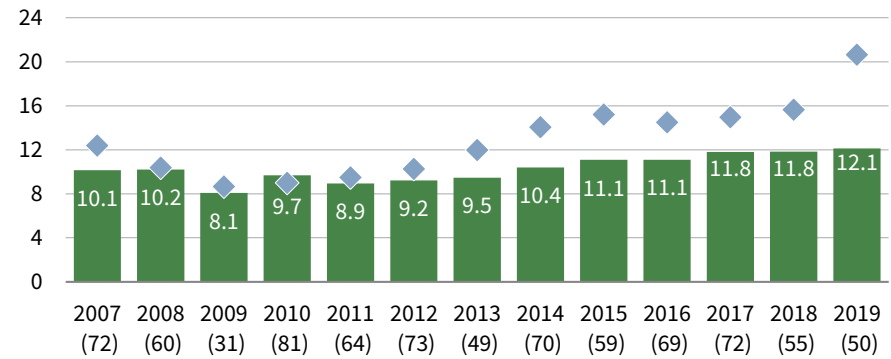
AVERAGE EBITDA PURCHASE PRICE MULTIPLES AT ACQUISITION OF GLOBAL PRIVATE EQUITY-OWNED COMPANIES VS PUBLIC COMPANIES BY SECTOR

As of December 31, 2019 • Enterprise Value/EBITDA

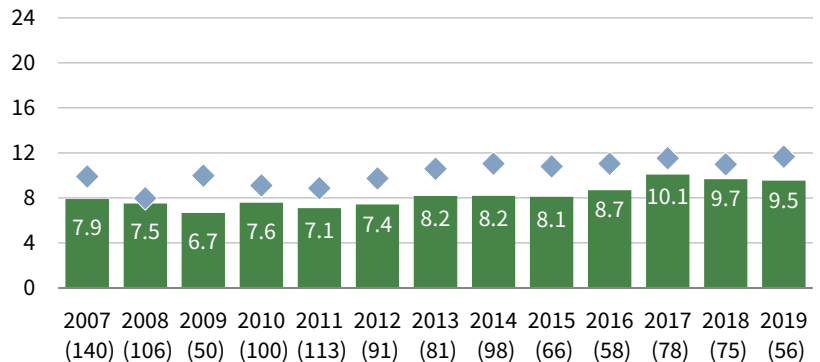
Consumer Discretionary



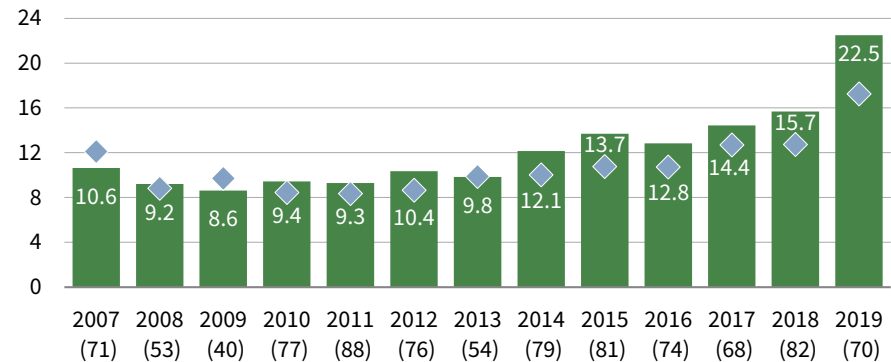
Healthcare



Industrials



Information Technology



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

GLOBAL PRIVATE EQUITY ANALYSIS

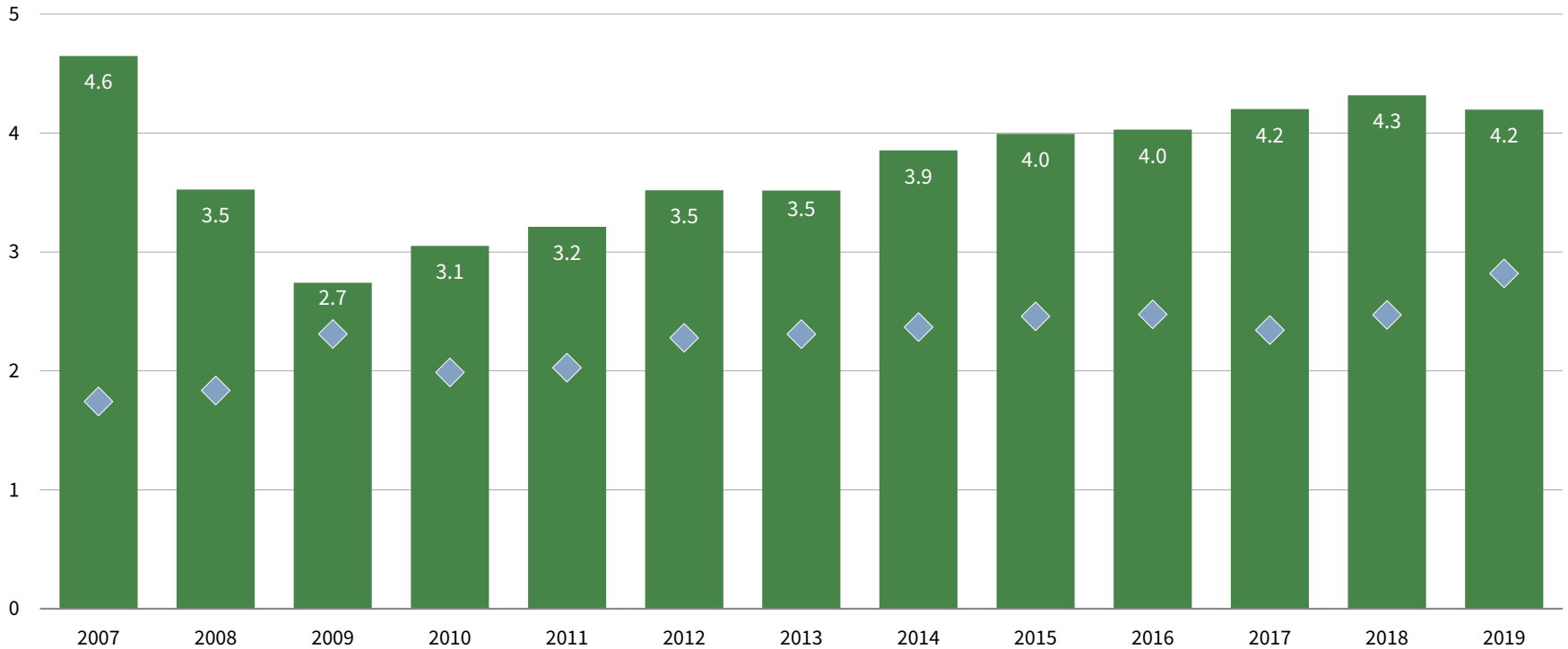
- Purchase Price Multiple
- **Leverage Multiple**
- Revenue Growth
- EBITDA Growth
- EBITDA Margin
- Exit Metrics

PE leverage levels have been largely unchanged since 2014, public company leverage recorded a new high in 2019

PE and public company leverage multiples have been generally lower outside of the United States (see page 45 for more detail)

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

As of December 31, 2019 • Net Debt/EBITDA



Number of Companies

	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Private Equity-Owned Companies	579	403	200	462	473	461	326	417	339	344	356	365	251
MSCI All Country World Index	999	942	992	1,041	1,048	1,091	1,092	1,141	1,150	1,168	1,143	1,238	1,429

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.

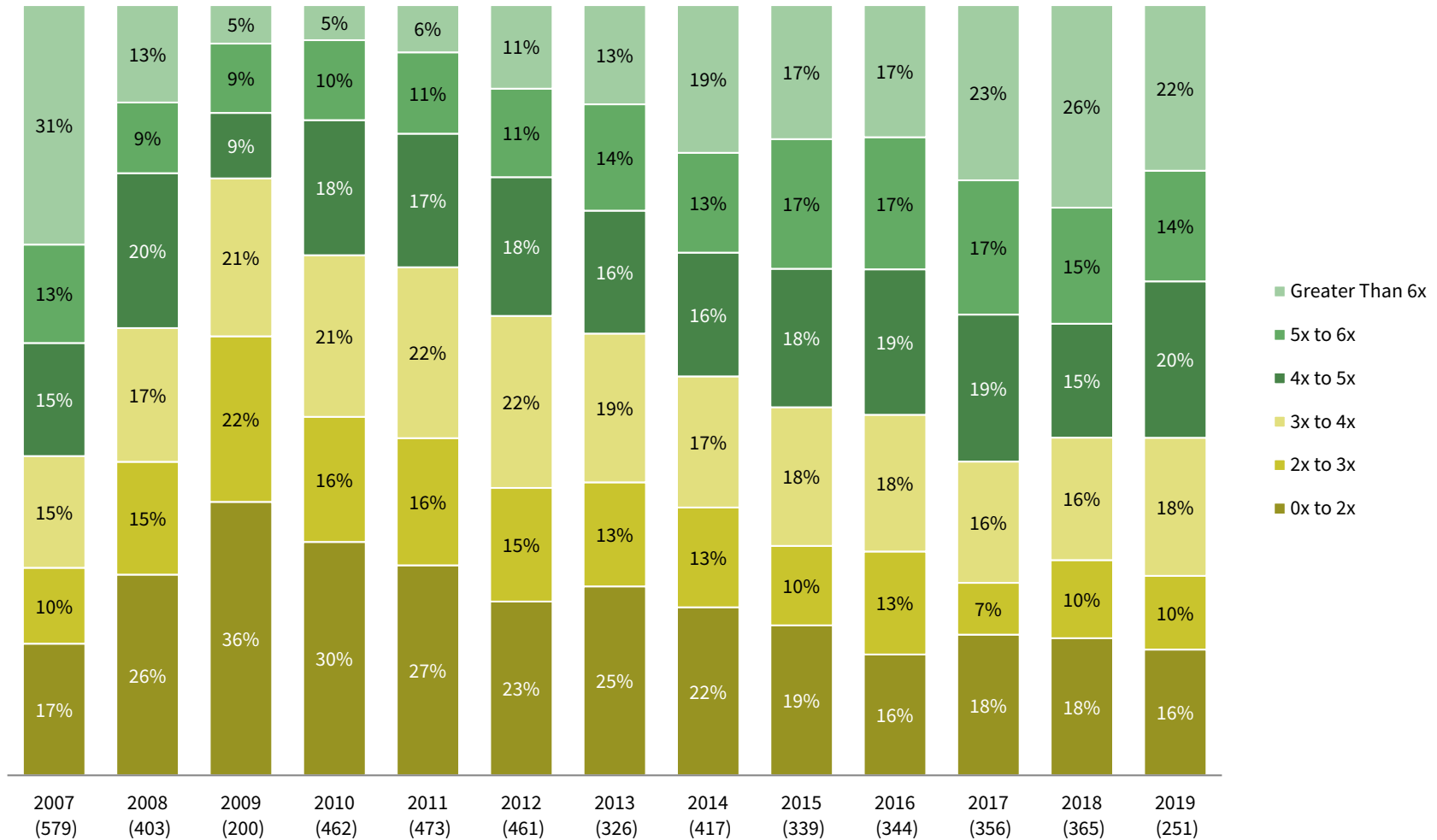
Note: Outliers were identified and excluded, and the same methodology was applied to the private equity and public company universes.

In every year since 2014, more than 30% of PE deals were levered at least 5x EBITDA

Compared to 2018, PE buyers stepped back from the highest level of leverage (6x EBITDA or greater) in 2019

AVERAGE LEVERAGE MULTIPLE BREAKDOWN OF GLOBAL PRIVATE EQUITY-OWNED COMPANIES

As of December 31, 2019 • Net Debt/EBITDA



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

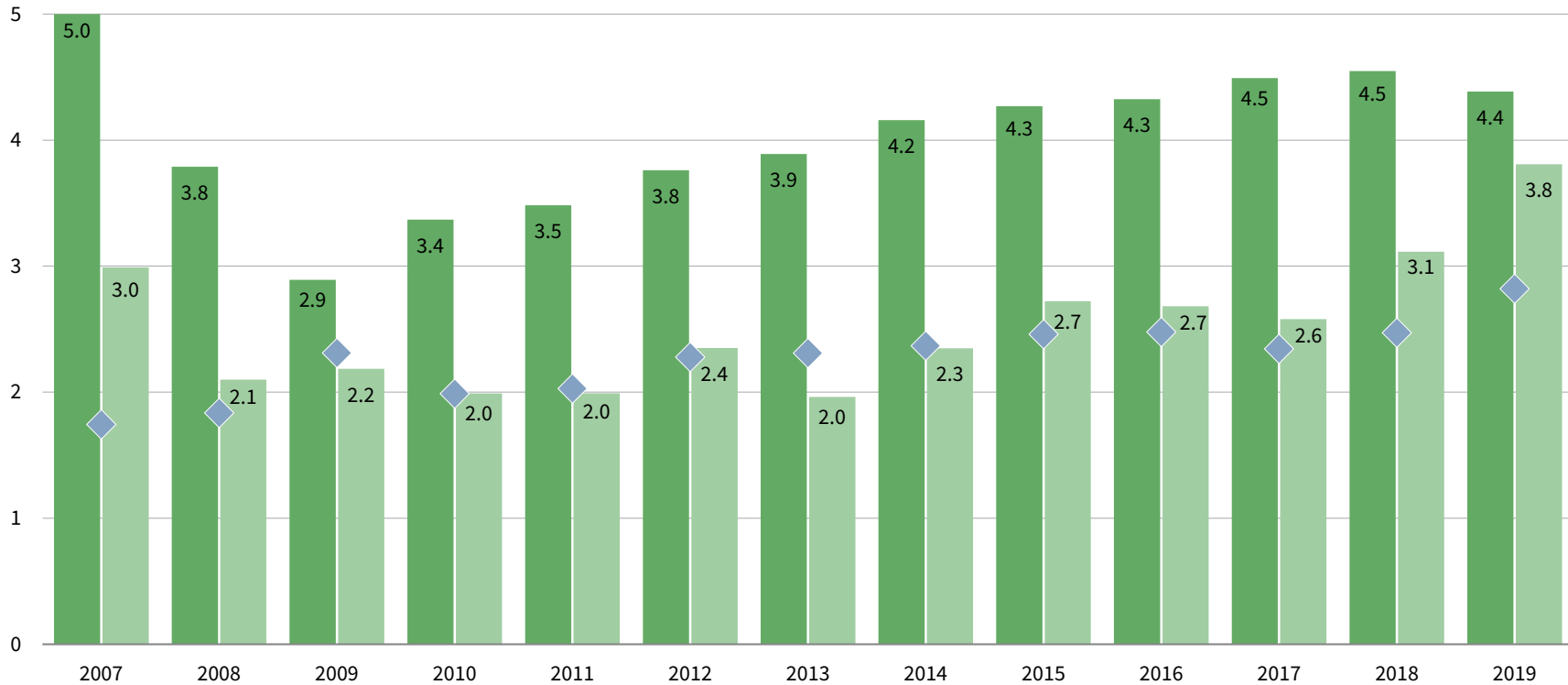
Notes: Outliers were identified and excluded. Numbers in parentheses represent total private companies in a year. Each range includes the lower bound value. For example, the 4x to 5x range includes companies with reported leverage multiples of exactly 4x. Due to rounding, totals may not sum to 100%.

While both hit new heights in 2019, growth equity leverage outpaced that of public companies to highest degree since 2007

Buyout company leverage has been fairly consistent since 2014, continuing to trail the peak of 2007

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

As of December 31, 2019 • Net Debt/EBITDA



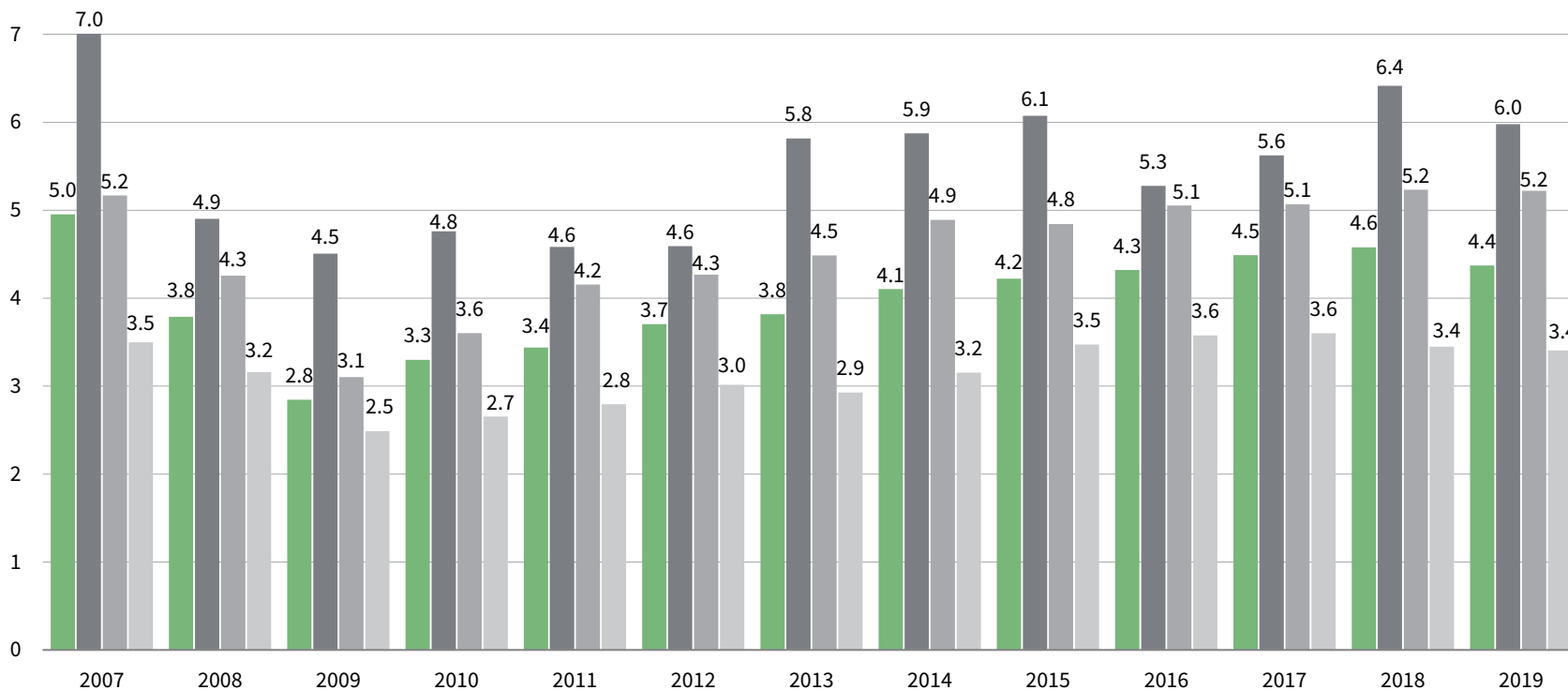
Number of Companies

	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Buyout Companies	434	283	135	325	352	345	243	325	259	268	279	271	178
Growth Equity Companies	86	76	39	95	77	73	55	63	54	52	57	59	47
MSCI All Country World Index	999	942	992	1,041	1,048	1,091	1,092	1,141	1,150	1,168	1,143	1,238	1,429

Leverage multiples increased with size

Since 2013, large buyout leverage averaged 5.9x EBITDA and small buyout leverage averaged 3.3x

AVERAGE EBITDA LEVERAGE MULTIPLES AT ACQUISITION OF GLOBAL PRIVATE EQUITY BUYOUT COMPANIES BY ENTERPRISE VALUE SEGMENT
As of December 31, 2019 • Net Debt/EBITDA



Number of Companies

	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Buyout Companies	484	307	150	362	386	374	256	340	271	277	284	288	181
EV > \$1B	137	71	17	61	63	67	42	55	37	50	63	61	35
EV \$250M - \$1B	131	76	46	116	99	115	74	117	98	94	96	91	59
EV < \$250M	205	159	84	184	222	185	136	156	127	129	113	121	74

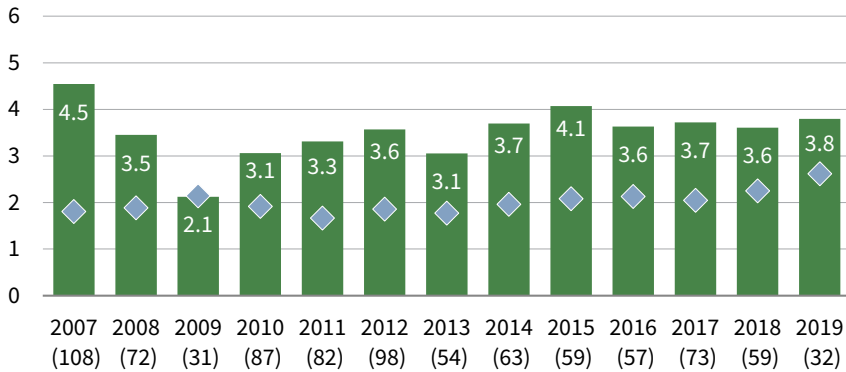
In all sectors, public company leverage has increased since 2017

During that period, the difference in leverage between PE and public companies was smallest in the consumer discretionary sector (1.4x)

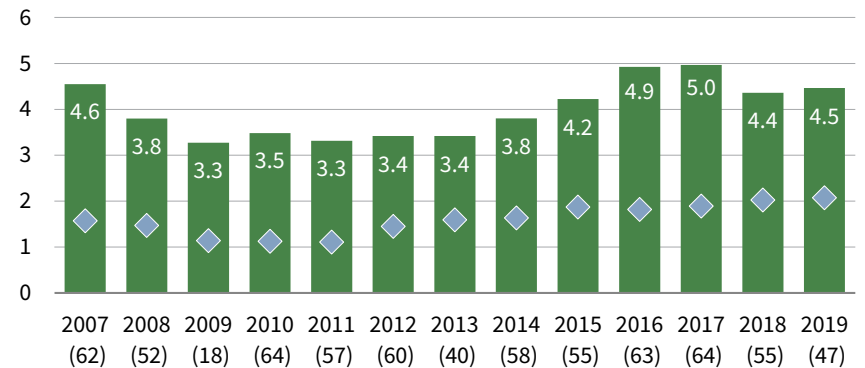
AVERAGE EBITDA LEVERAGE MULTIPLES AT ACQUISITION OF GLOBAL PRIVATE EQUITY-OWNED COMPANIES VS PUBLIC COMPANIES BY SECTOR

As of December 31, 2019 • Net Debt/EBITDA

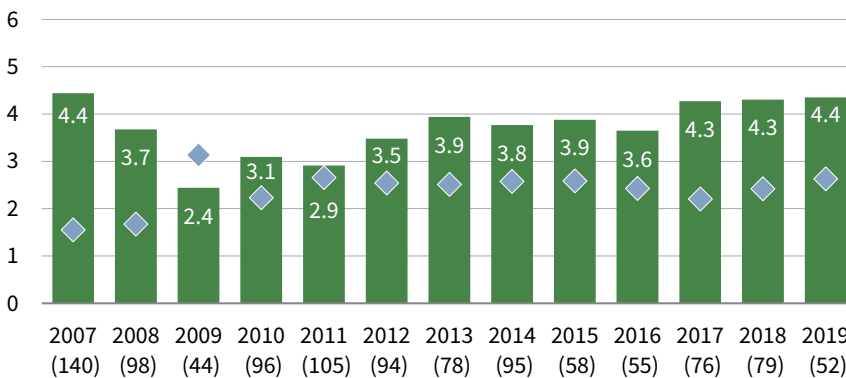
Consumer Discretionary



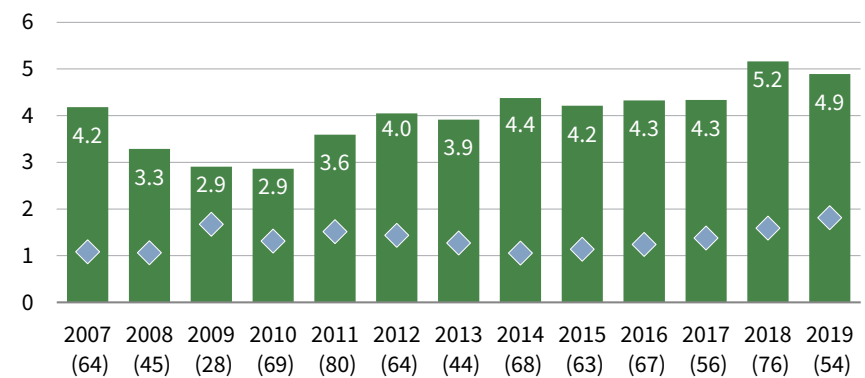
Healthcare



Industrials



Information Technology



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

GLOBAL PRIVATE EQUITY ANALYSIS

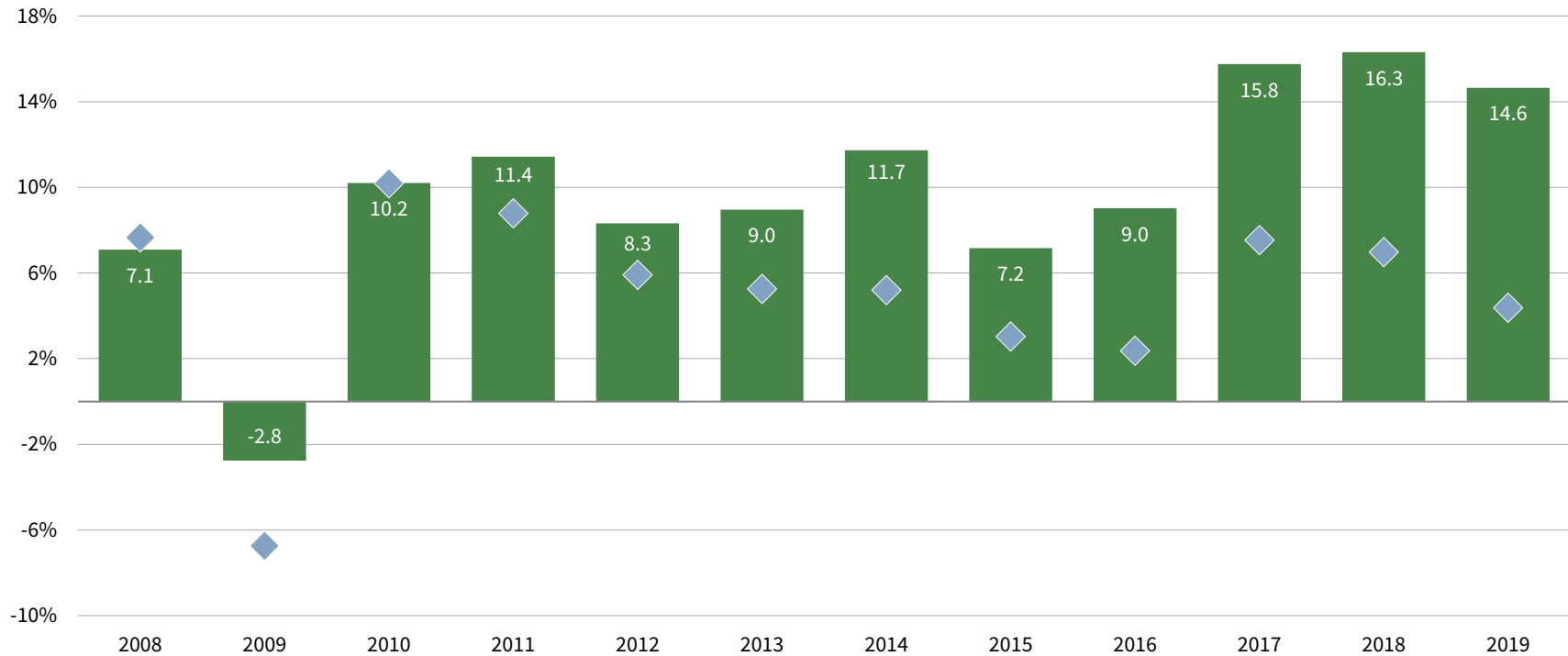
- Purchase Price Multiple
- Leverage Multiple
- **Revenue Growth**
- EBITDA Growth
- EBITDA Margin
- Exit Metrics

With strong revenue growth, PE companies widened their lead over publics in the last three years

PE annual revenue growth has averaged more than 11% since 2010

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

As of December 31, 2019 • Annual Growth Rate (%)



Number of Companies

	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Private Equity-Owned Companies	623	1,015	1,231	1,539	1,589	1,482	1,394	1,264	1,200	1,127	1,224	1,277
MSCI All Country World Index	1,838	1,949	1,906	1,999	2,045	2,037	2,086	2,038	2,124	2,111	2,075	2,300

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.

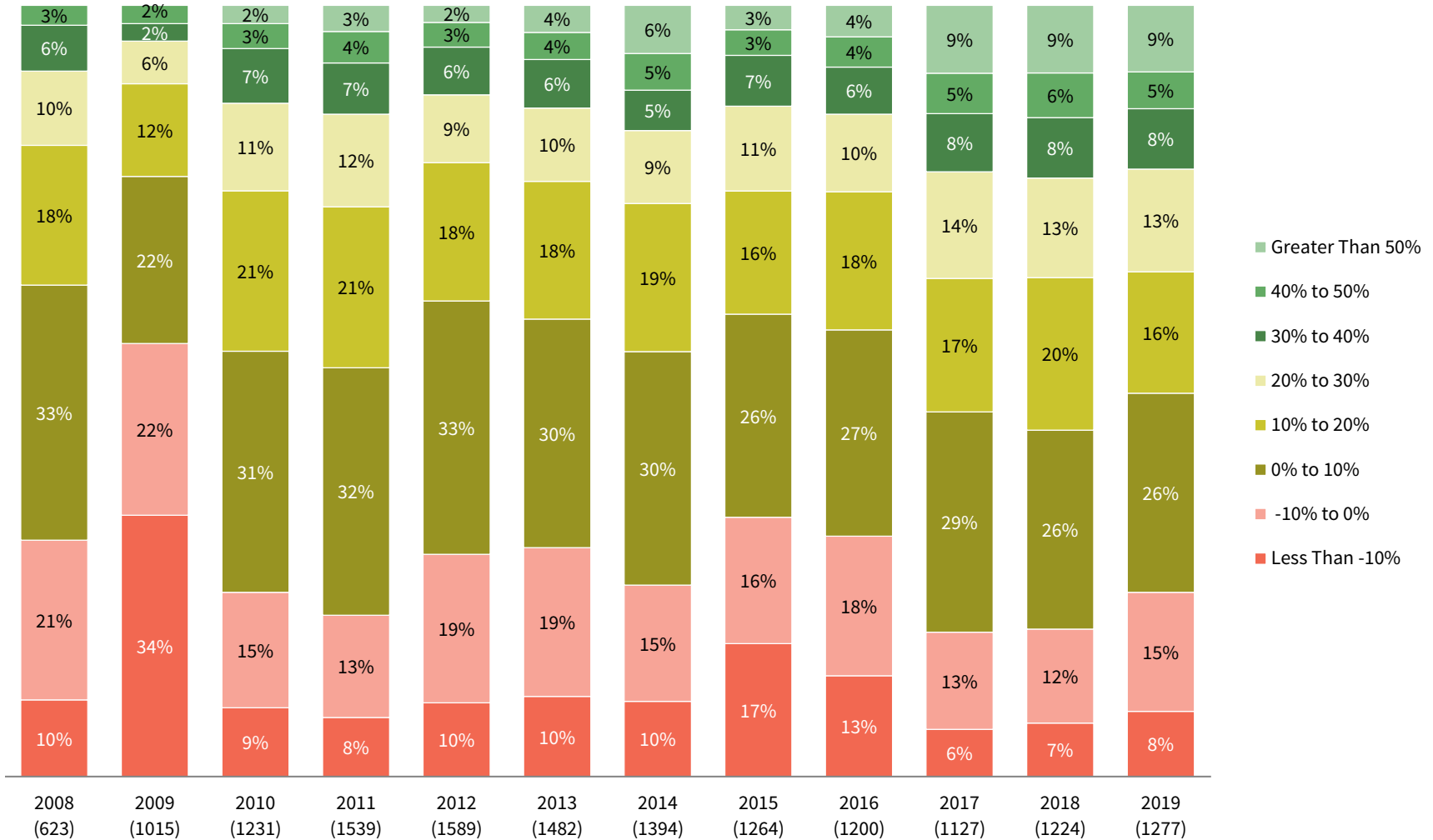
Note: Outliers were identified and excluded, and the same methodology was applied to the private equity and public company universes.

Since 2014, almost a quarter of PE companies grew revenue by at least 20% per annum

At the same time, about 20% of companies experienced revenue declines

AVERAGE ANNUAL REVENUE GROWTH BREAKDOWN OF GLOBAL PRIVATE EQUITY-OWNED COMPANIES

As of December 31, 2019 • Annual Growth Rate (%)



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

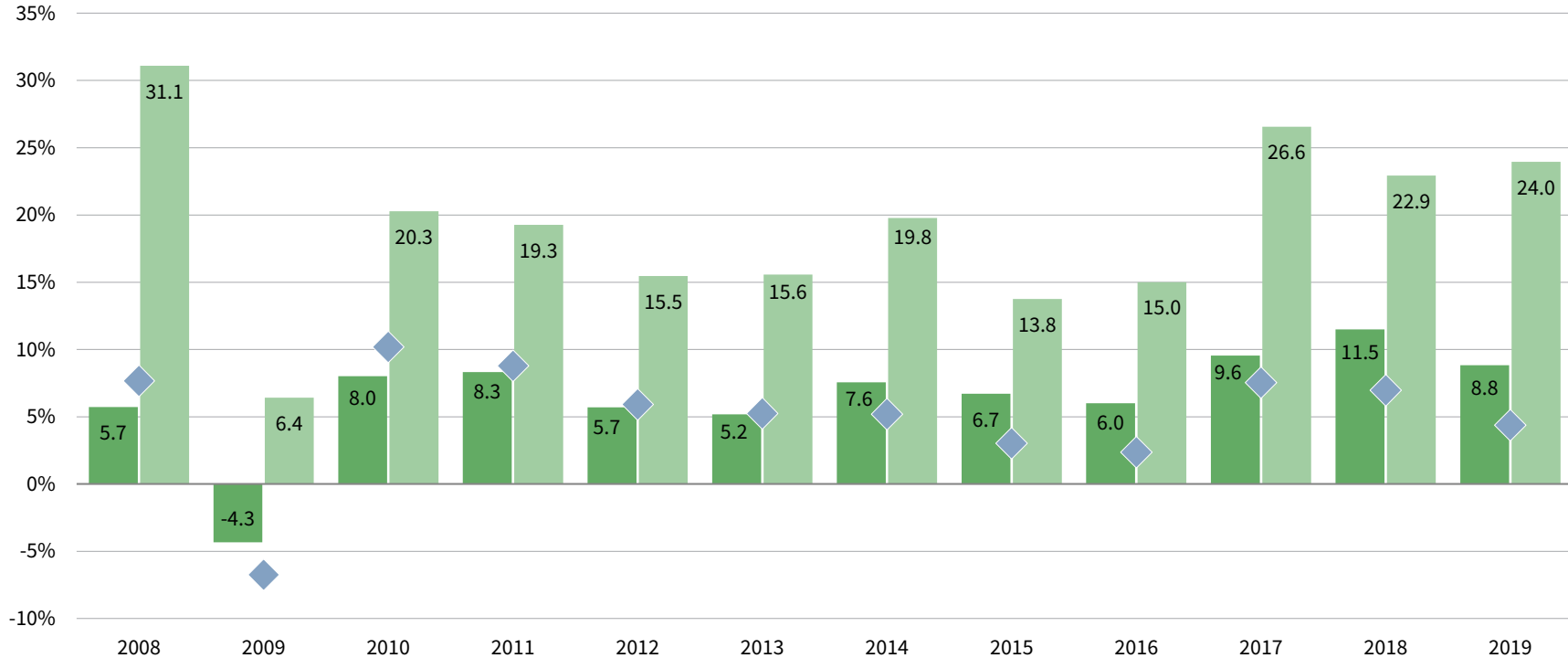
Notes: Outliers were identified and excluded. Numbers in parentheses represent total private companies in a year. Each range includes the lower bound value. For example, the 0% to 10% range includes companies with reported growth of exactly 0%.

Growth equity and buyouts had their best three-year period of revenue growth from 2017 to 2019

They averaged 24.5% and 10%, respectively

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

As of December 31, 2019 • Annual Growth Rate (%)



Number of Companies

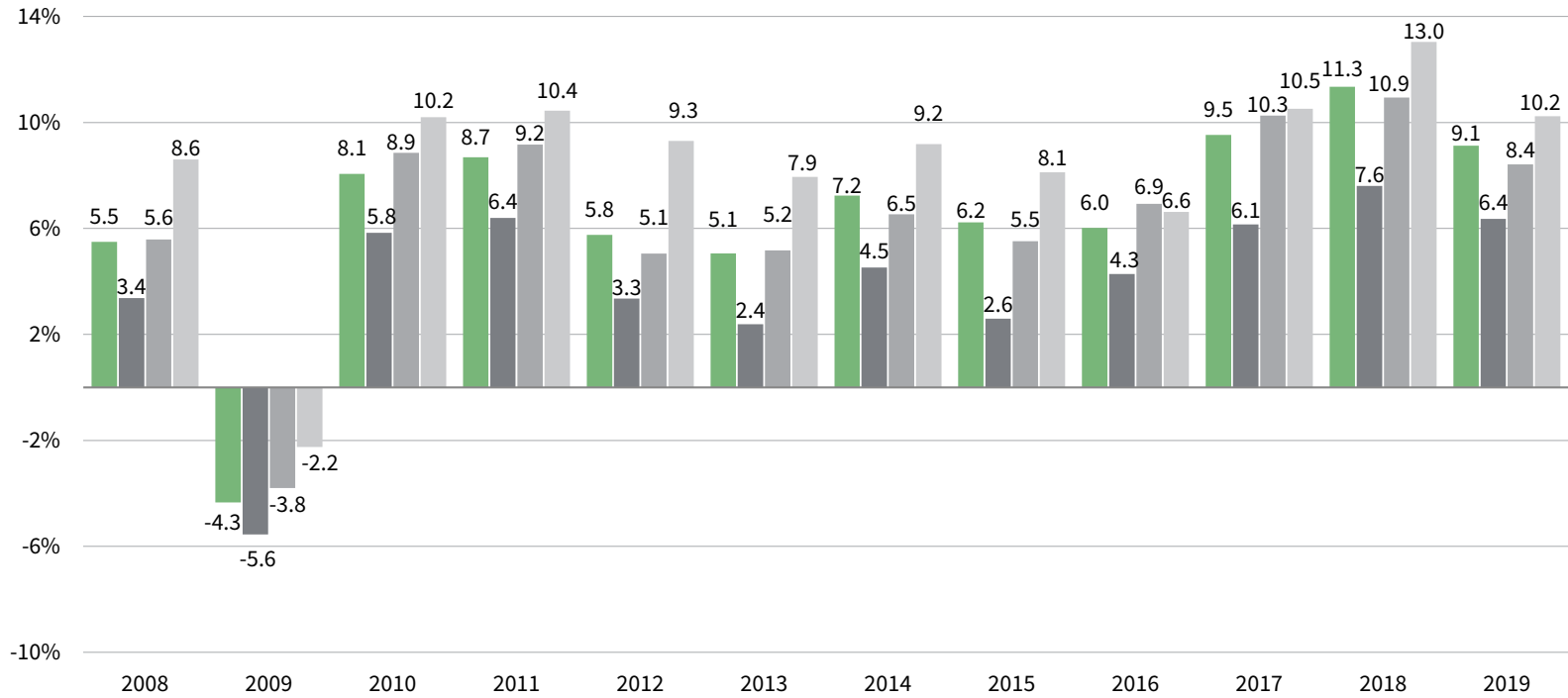
	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Buyout Companies	510	763	886	1020	954	819	750	661	651	596	661	641
Growth Equity Companies	100	170	244	344	416	451	472	447	422	397	461	507
MSCI All Country World Index	1,838	1,949	1,906	1,999	2,045	2,037	2,086	2,038	2,124	2,111	2,075	2,300

Company size and revenue growth have had an inverse relationship, as small companies grew fastest (8.7% per year since 2008)

Over the same time period, mid-size and large buyout companies averaged 6.9% and 3.8% annual revenue growth, respectively

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

As of December 31, 2019 • Annual Growth Rate (%)



Number of Companies

	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Buyout Companies	541	831	950	1119	1065	923	826	723	724	649	698	704
EV > \$1B	199	276	273	314	271	215	166	143	156	120	105	145
EV \$250M - \$1B	119	205	260	301	287	250	215	217	214	224	249	225
EV < \$250M	227	354	417	498	508	459	432	347	341	287	345	322

Source: Cambridge Associates LLC Private Investments Database (as reported by investment managers).
 Note: Outliers were identified and excluded from the private equity company universes.

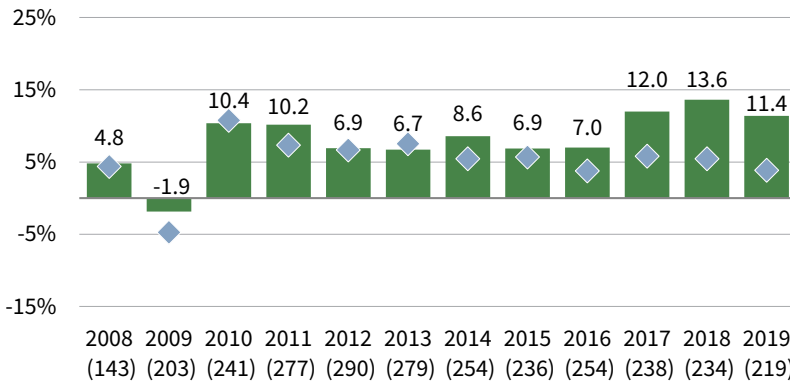
When measured over the full time period, PE company revenue growth met or exceeded that of publics across all sectors

PE-backed IT companies have grown revenue by at least 22% for three straight years

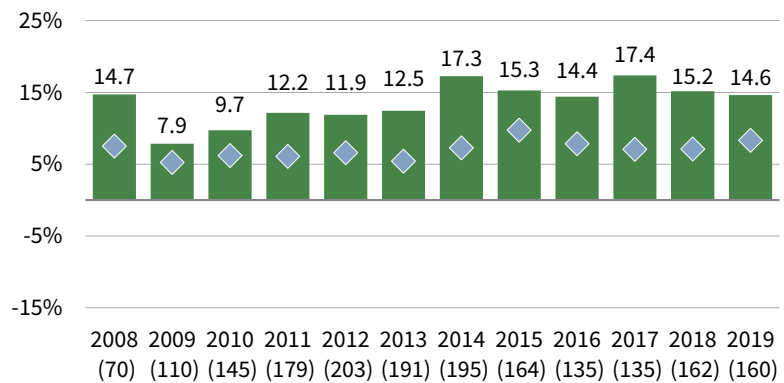
AVERAGE ANNUAL REVENUE GROWTH OF GLOBAL PRIVATE EQUITY-OWNED COMPANIES VS PUBLIC COMPANIES BY SECTOR

As of December 31, 2019 • Annual Growth Rate (%)

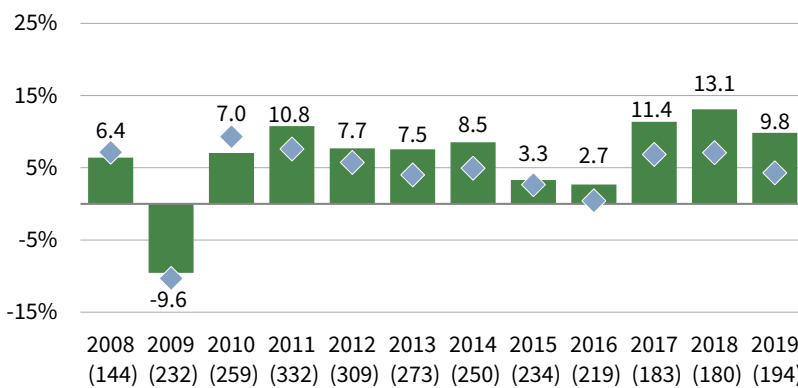
Consumer Discretionary



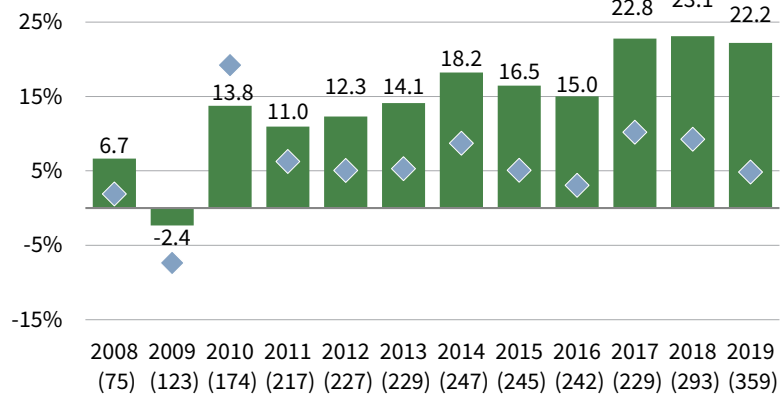
Healthcare



Industrials



Information Technology



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

GLOBAL PRIVATE EQUITY ANALYSIS

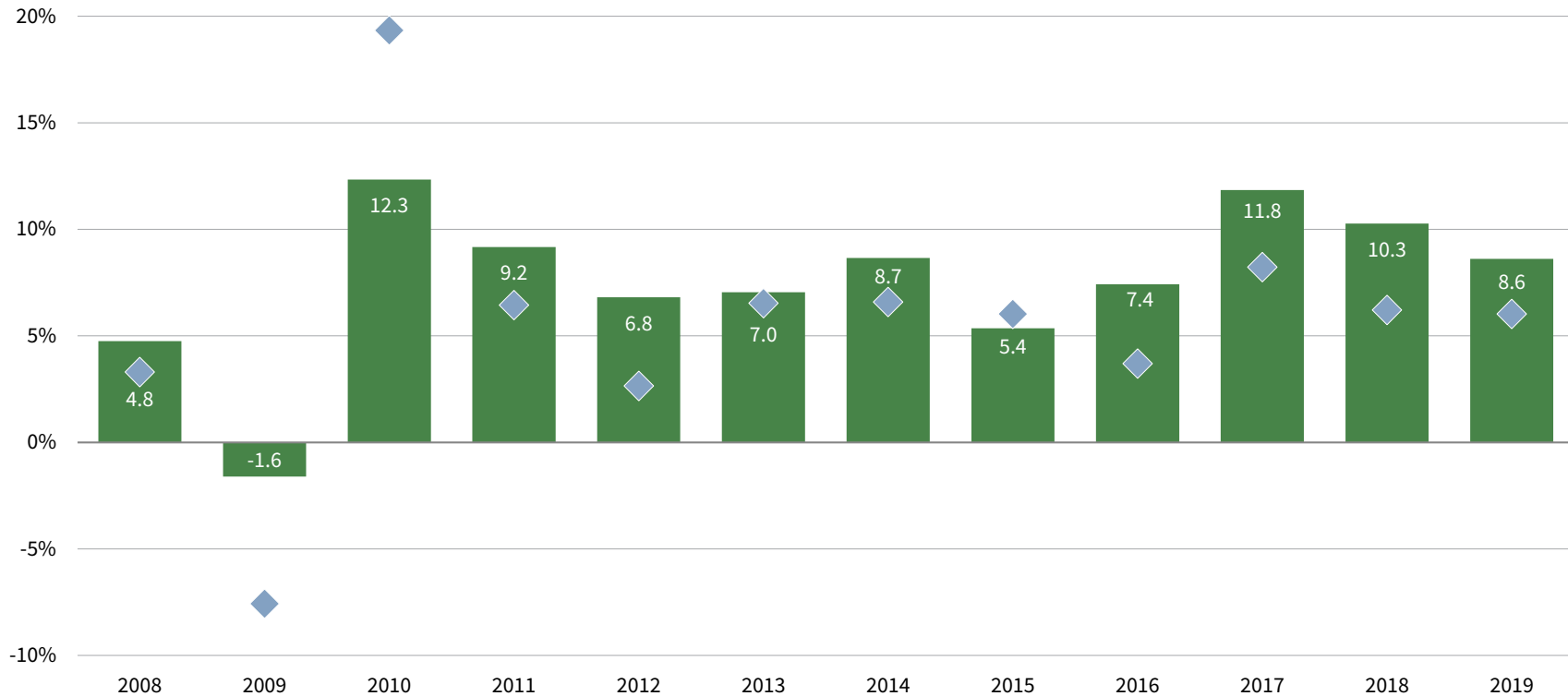
- Purchase Price Multiple
- Leverage Multiple
- Revenue Growth
- **EBITDA Growth**
- EBITDA Margin
- Exit Metrics

In the last four years, PE companies averaged 9.4% annual EBITDA growth, outpacing public companies by more than 3% per year

EBITDA growth declined in PE and public company universes the past two years

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

As of December 31, 2019 • Annual Growth Rate (%)



Number of Companies

	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Private Equity-Owned Companies	584	889	1068	1335	1338	1177	1114	1013	935	844	894	907
MSCI All Country World Index	1,320	1,408	1,465	1,586	1,662	1,650	1,674	1,670	1,732	1,720	1,726	1,942



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.

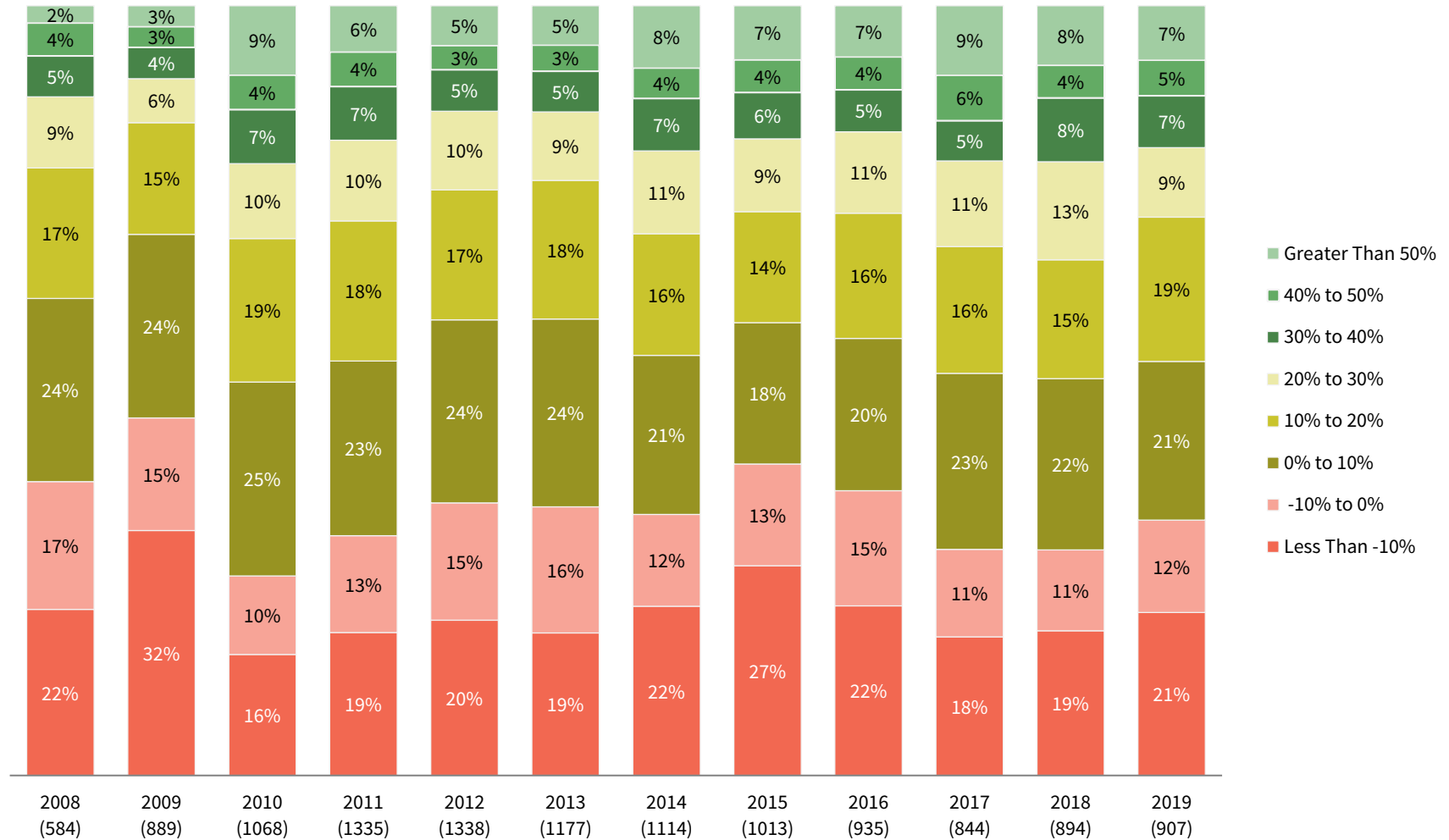
Note: Outliers were identified and excluded, and the same methodology was applied to the private equity and public company universes.

Even in years when PE companies averaged double-digit growth, EBITDA declined for at least 26% of the universe

Over the past three years, about 20% of companies grew EBITDA by more than 30%

AVERAGE ANNUAL EBITDA GROWTH BREAKDOWN OF GLOBAL PRIVATE EQUITY-OWNED COMPANIES

As of December 31, 2019 • Annual Growth Rate (%)

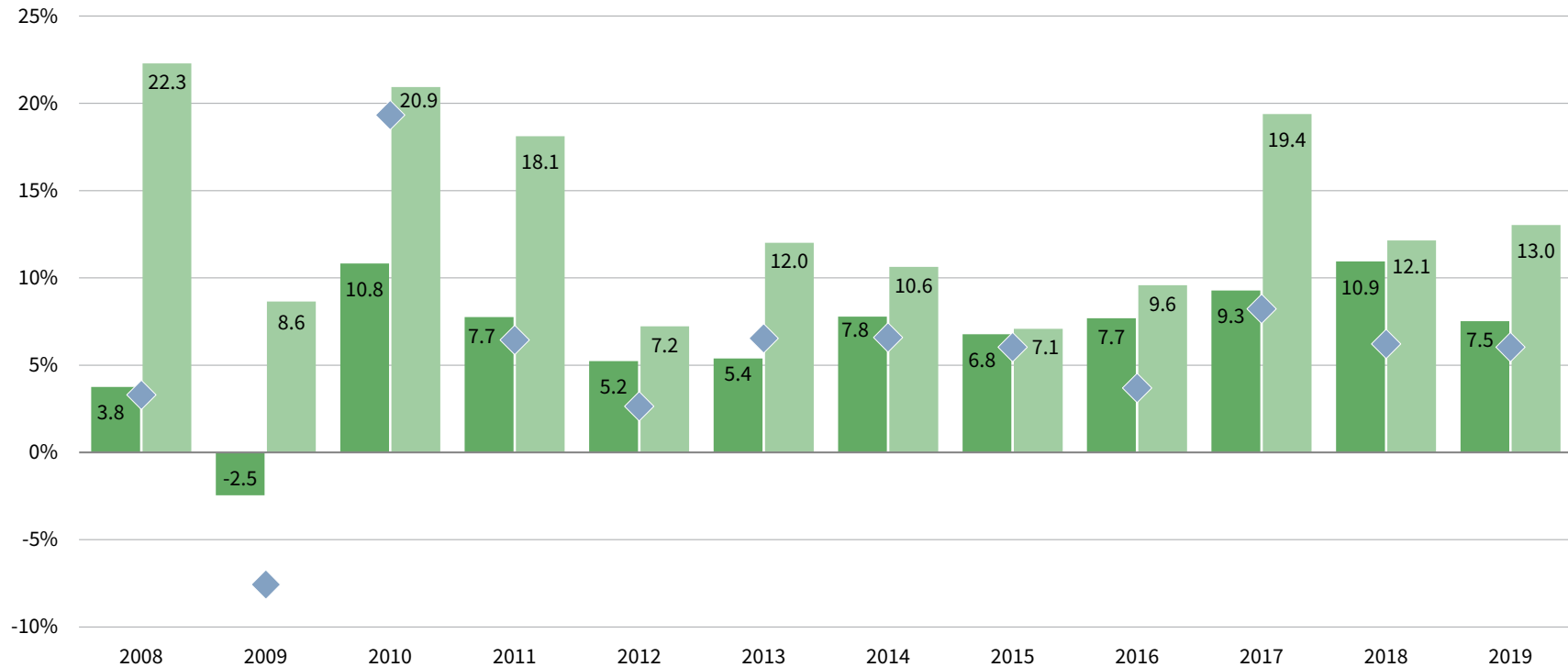


In every year but 2010, buyout and growth equity EBITDA growth approximated or exceeded that of public companies

Over the full period, growth equity companies grew EBITDA annually by 12.2%, more than double the average for publics (5.7%)

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

As of December 31, 2019 • Annual Growth Rate (%)



Number of Companies

	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Buyout Companies	488	698	804	962	902	768	714	636	605	547	605	583
Growth Equity Companies	69	127	194	257	282	273	285	262	231	205	226	238
MSCI All Country World Index	1,320	1,408	1,465	1,586	1,662	1,650	1,674	1,670	1,732	1,720	1,726	1,942

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.

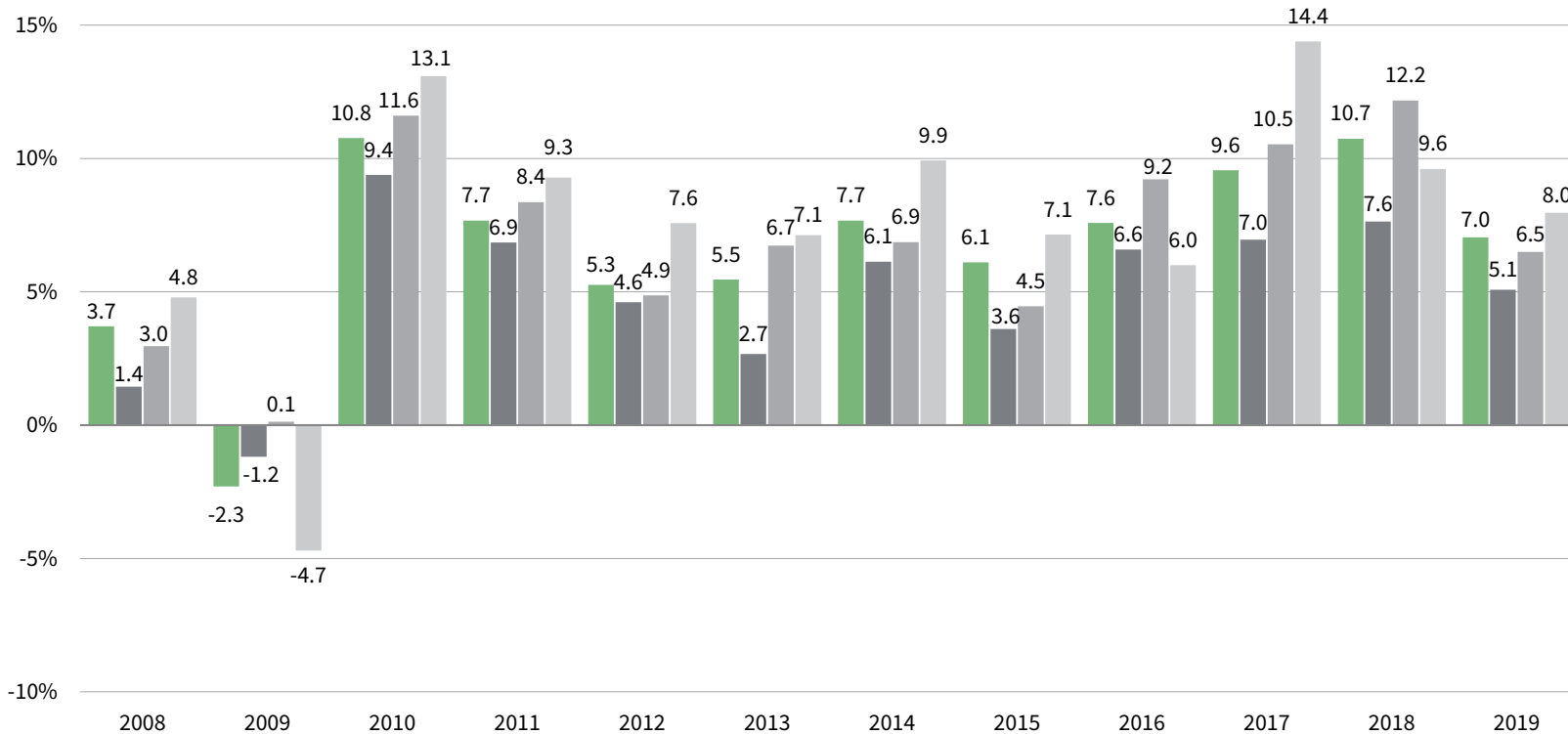
Note: Outliers were identified and excluded, and the same methodology was applied to the private equity and public company universes.

Small buyouts outperformed other size segments in all but three years

Compared to 2018, average EBITDA growth declined for all size segments in 2019

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

As of December 31, 2019 • Annual Growth Rate (%)



Number of Companies

	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Buyout Companies	524	758	865	1051	1009	867	791	694	664	586	637	629
EV > \$1B	206	255	277	317	270	217	171	143	157	119	101	140
EV \$250M - \$1B	123	192	234	295	286	245	216	213	207	213	237	207
EV < \$250M	212	317	347	443	459	418	412	323	305	262	306	289

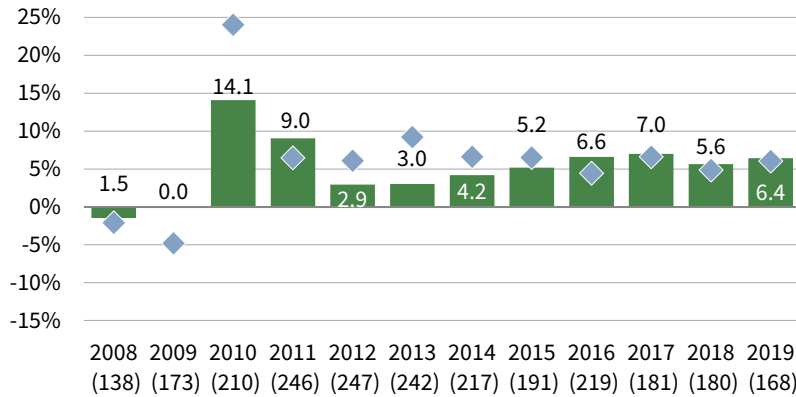
PE-backed healthcare has averaged double-digit EBITDA growth over the full time period

Consumer discretionary EBITDA growth has continued to trail that of other sectors

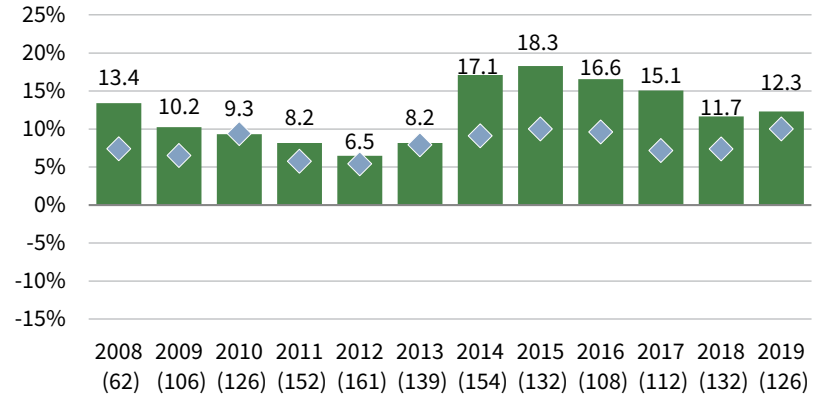
AVERAGE ANNUAL EBITDA GROWTH OF GLOBAL PRIVATE EQUITY-OWNED COMPANIES VS PUBLIC COMPANIES BY SECTOR

As of December 31, 2019 • Annual Growth Rate (%)

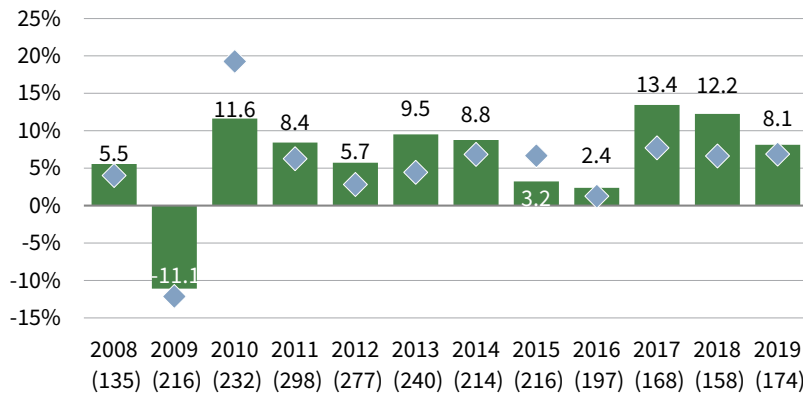
Consumer Discretionary



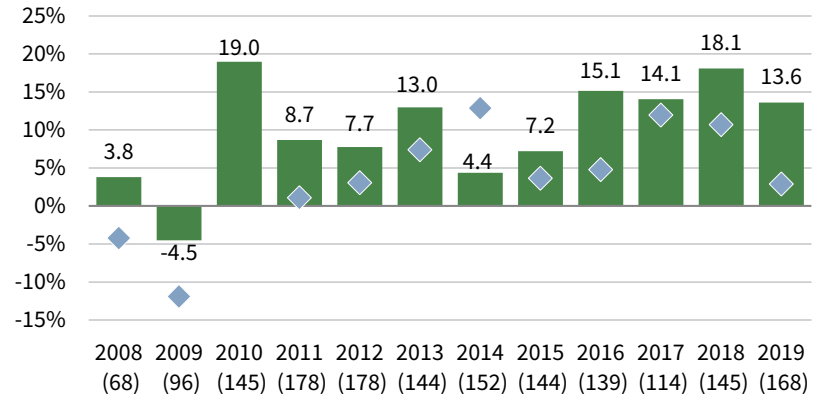
Healthcare



Industrials



Information Technology



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

GLOBAL PRIVATE EQUITY ANALYSIS

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

Despite hovering around 20%, PE margins have lagged those of public companies

While PE in the US averaged similar margins, the relationship between PE and publics globally was the reverse

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

As of December 31, 2019 • EBITDA/Revenue (%)



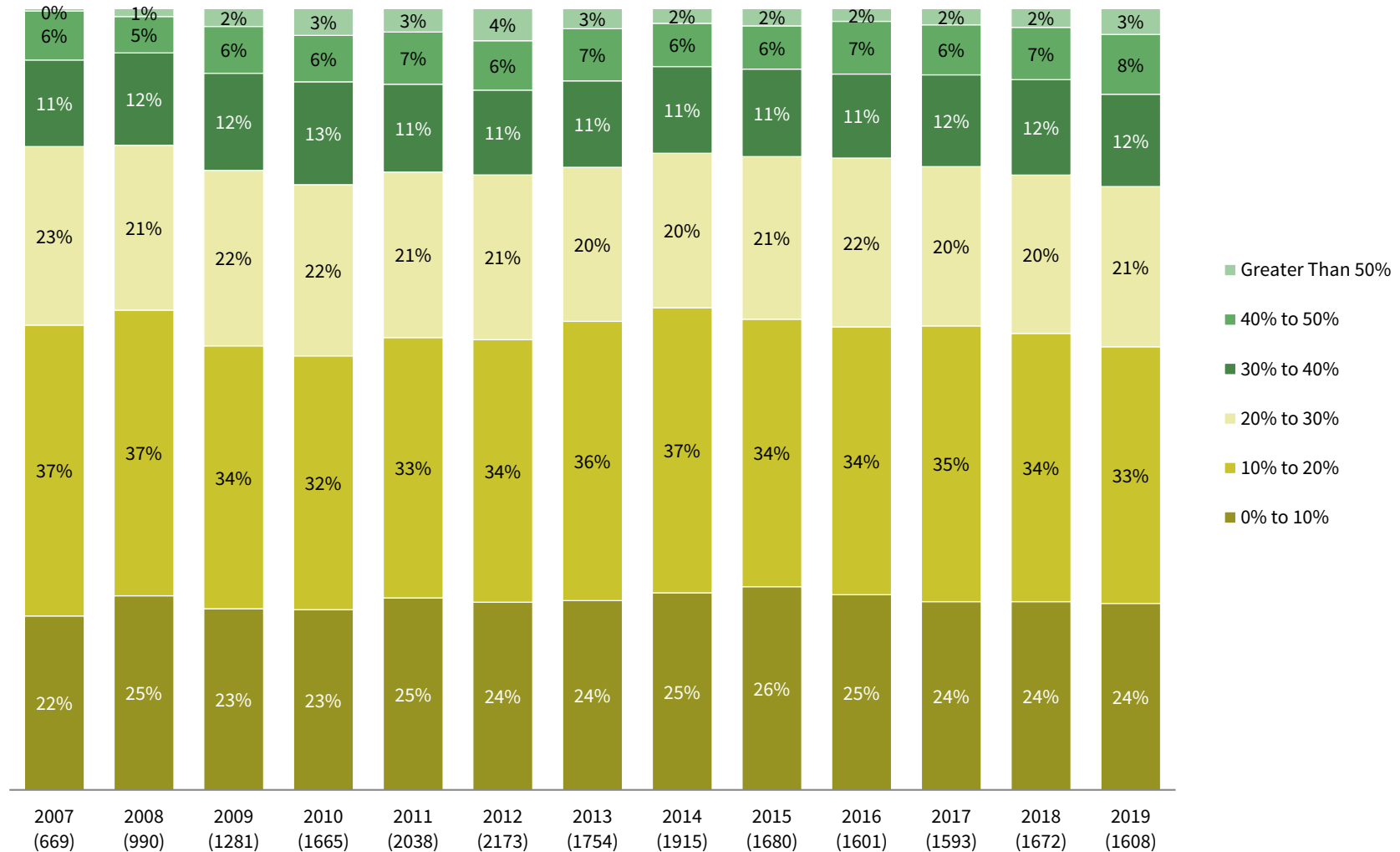
Number of Companies

	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Private Equity-Owned Companies	669	990	1,281	1,665	2,039	2,172	1,754	1,925	1,671	1,600	1,593	1,672	1,608
MSCI All Country World Index	1,885	1,616	1,723	1,867	1,901	1,918	1,921	1,949	1,951	1,974	1,994	2,197	2,457

Across the time period, EBITDA margins have been consistent

AVERAGE ANNUAL EBITDA MARGIN BREAKDOWN OF GLOBAL PRIVATE EQUITY-OWNED COMPANIES

As of December 31, 2019 • EBITDA/Revenue (%)

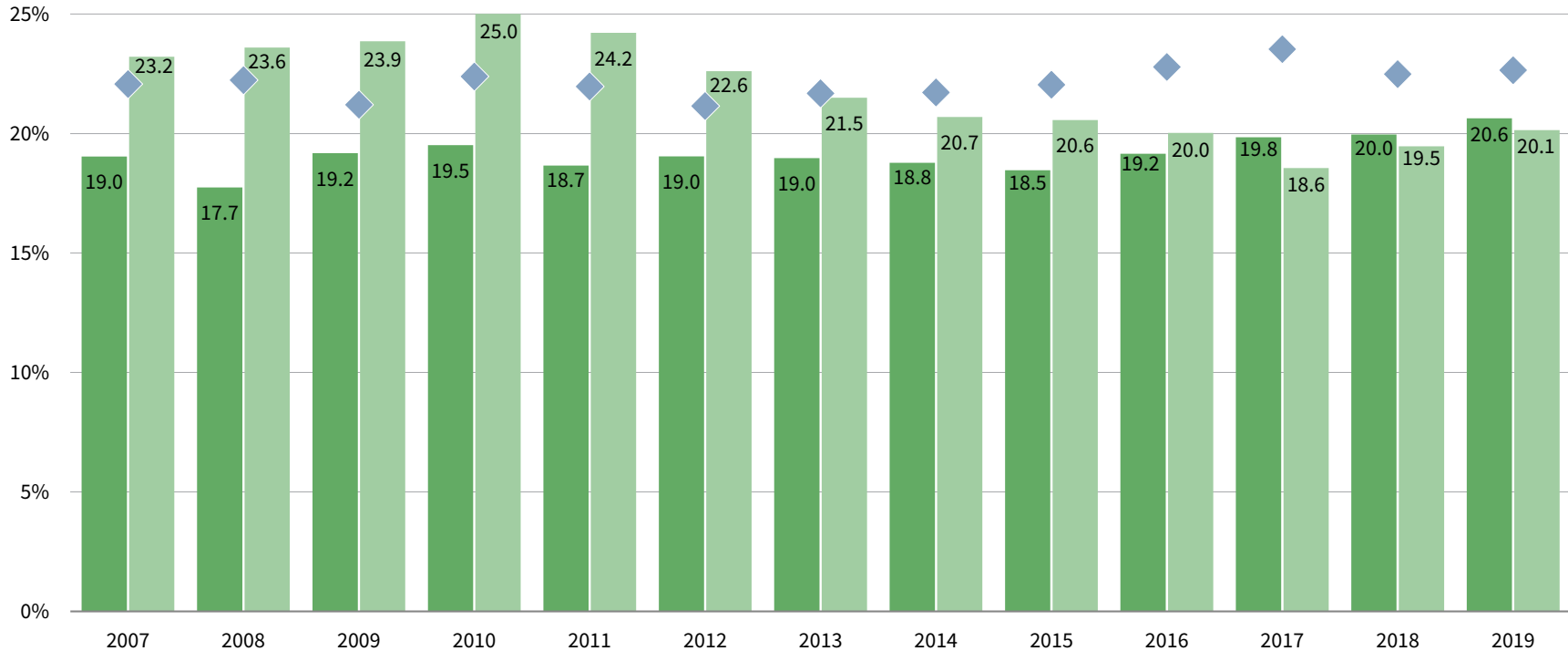


Buyout margins increased every year since 2015

Growth equity margins have trailed those of buyouts and public companies for three straight years

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

As of December 31, 2019 • EBITDA/Revenue (%)



Number of Companies

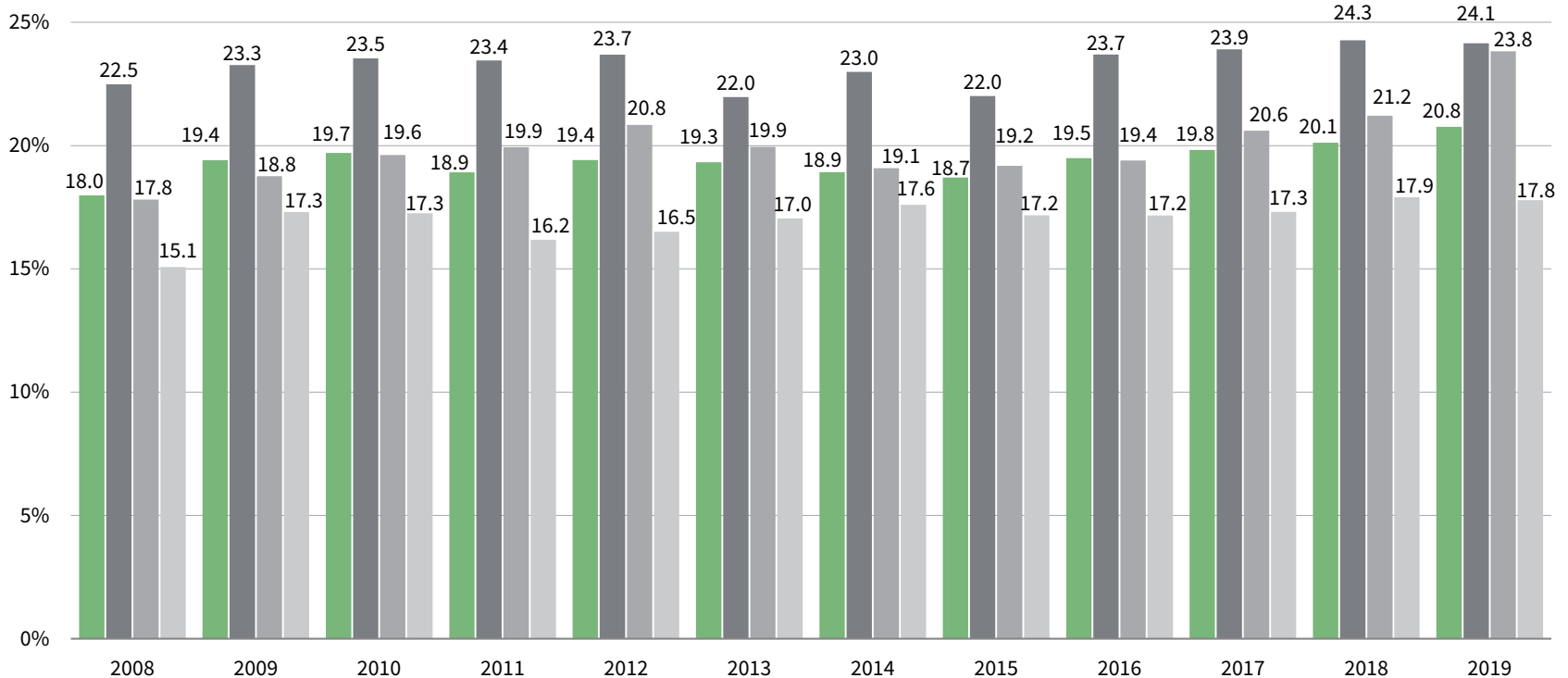
	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Buyout Companies	550	763	951	1,184	1,398	1,397	1,153	1,248	1,042	1,052	1,059	1,111	1,046
Growth Equity Companies	86	149	230	352	396	499	436	491	425	396	376	415	429
MSCI All Country World Index	1,885	1,616	1,723	1,867	1,901	1,918	1,921	1,949	1,951	1,974	1,994	2,197	2,457

Similar to valuations and leverage, EBITDA margins go up with company size

The difference between large- and mid-sized companies virtually disappeared in 2019

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

As of December 31, 2019 • EBITDA/Revenue (%)



Number of Companies

	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Buyout Companies	587	828	1,023	1,281	1,543	1,570	1,275	1,367	1,146	1,148	1,128	1,187	1,099
EV > \$1B	211	277	308	353	395	365	295	254	239	246	240	216	240
EV \$250M - \$1B	131	207	267	357	423	440	364	379	356	383	377	385	352
EV < \$250M	247	343	440	561	717	729	596	714	532	490	494	578	489

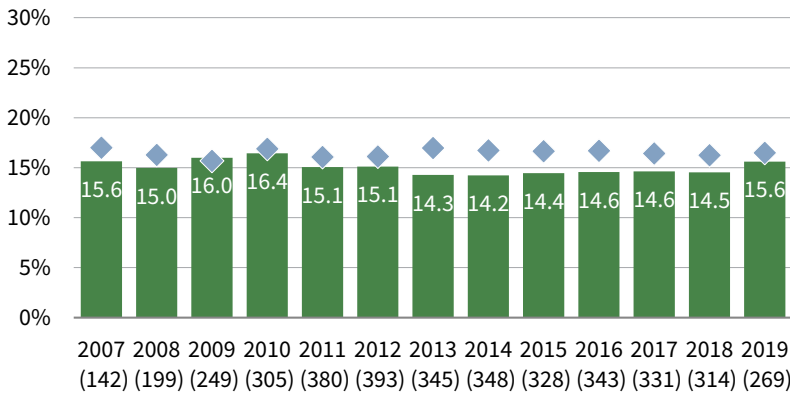
Across sectors and markets, private equity IT has continued to operate at the highest margins

Healthcare has remained the only sector where PE margins are consistently lower than those of public peers

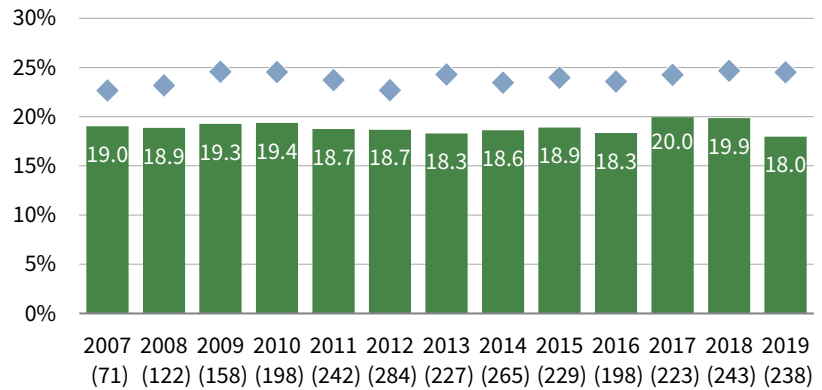
AVERAGE ANNUAL EBITDA MARGIN OF GLOBAL PRIVATE EQUITY-OWNED COMPANIES VS PUBLIC COMPANIES BY SECTOR

As of December 31, 2019 • EBITDA/Revenue (%)

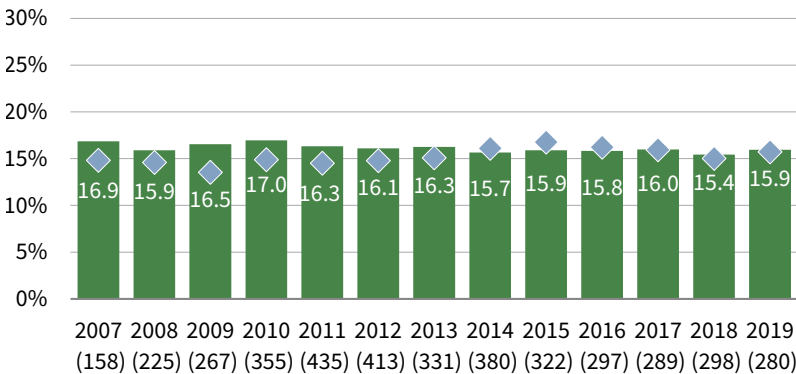
Consumer Discretionary



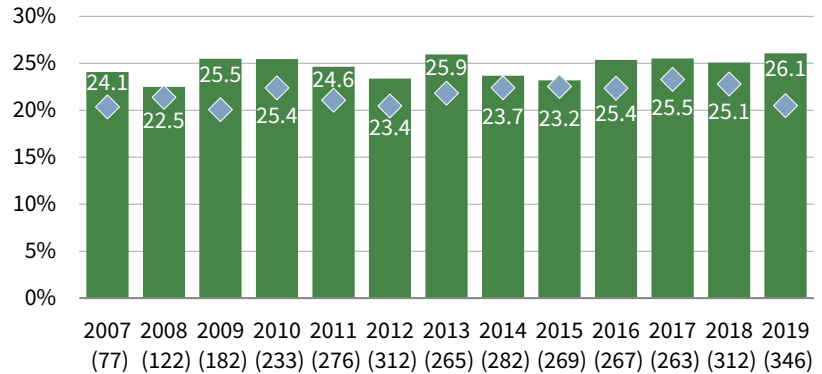
Healthcare



Industrials



Information Technology



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

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 PRIVATE EQUITY ANALYSIS

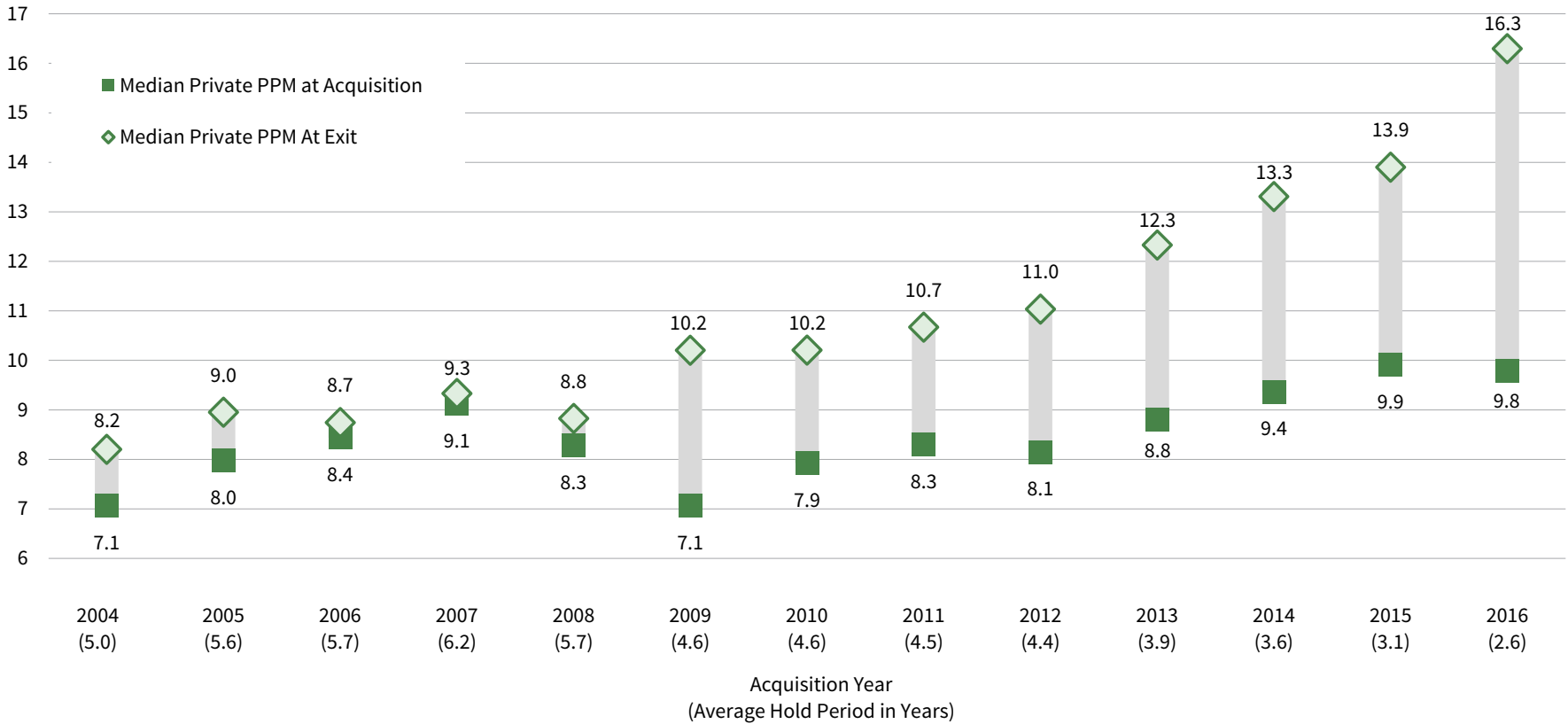
- Purchase Price Multiple
- Leverage Multiple
- Revenue Growth
- EBITDA Growth
- EBITDA Margin
- **Exit Metrics**

PPM expansion for exited companies has varied by time of acquisition

For 2004 to 2008 acquisitions, the median expansion was 0.7x; for those acquired from 2009 to 2016, the median was 2.7x

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

As of December 31, 2019 • Enterprise Value/EBITDA



Number of Companies

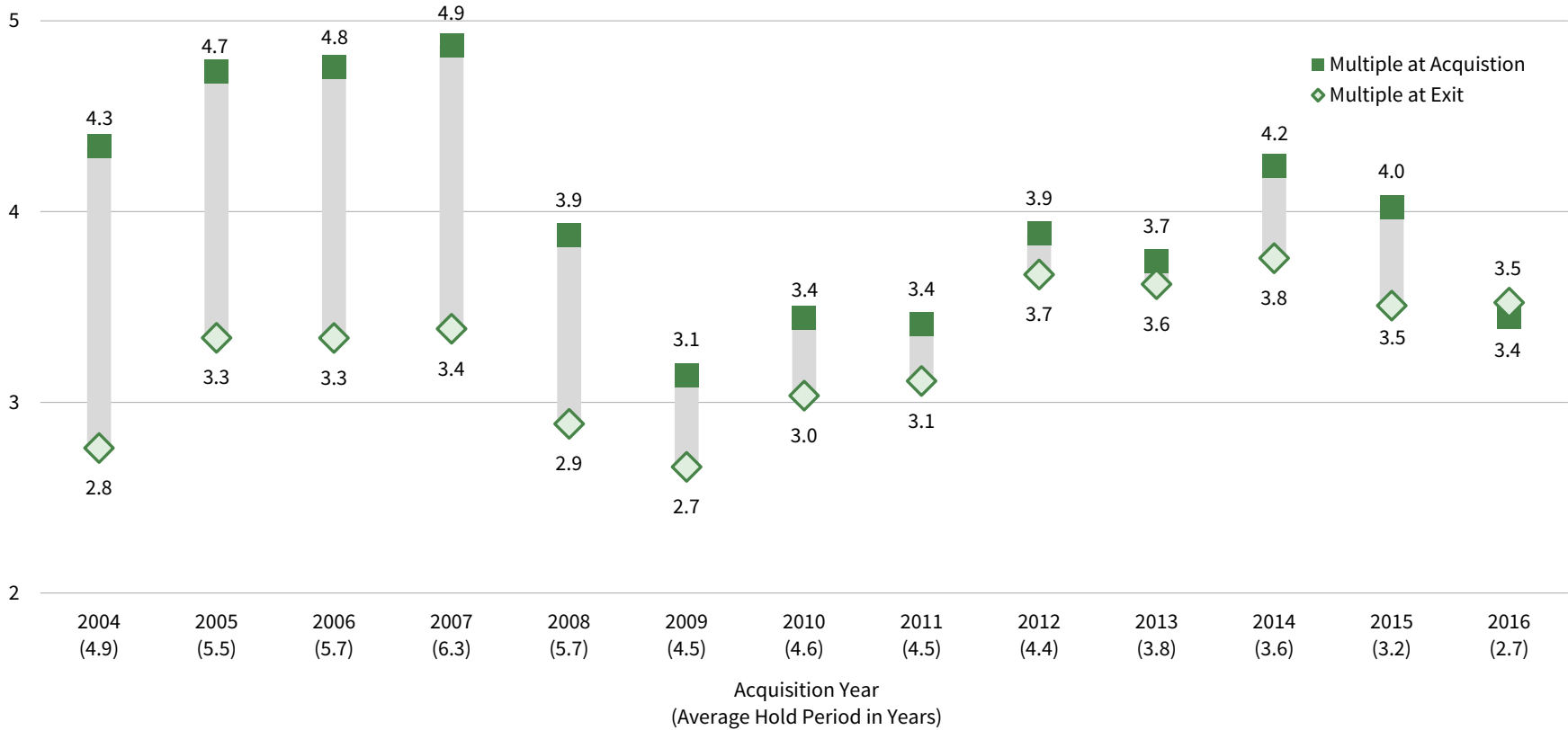
	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Private Equity-Owned Companies	171	243	372	391	290	159	315	235	220	134	128	87	41

Leverage multiples generally decreased during PE ownership

For more recent acquisitions, delevering was much less pronounced than for companies acquired before the GFC

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

As of December 31, 2019 • Net Debt/EBITDA



Number of Companies

	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Private Equity-Owned Companies	161	216	321	345	236	109	244	185	182	107	102	75	35

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

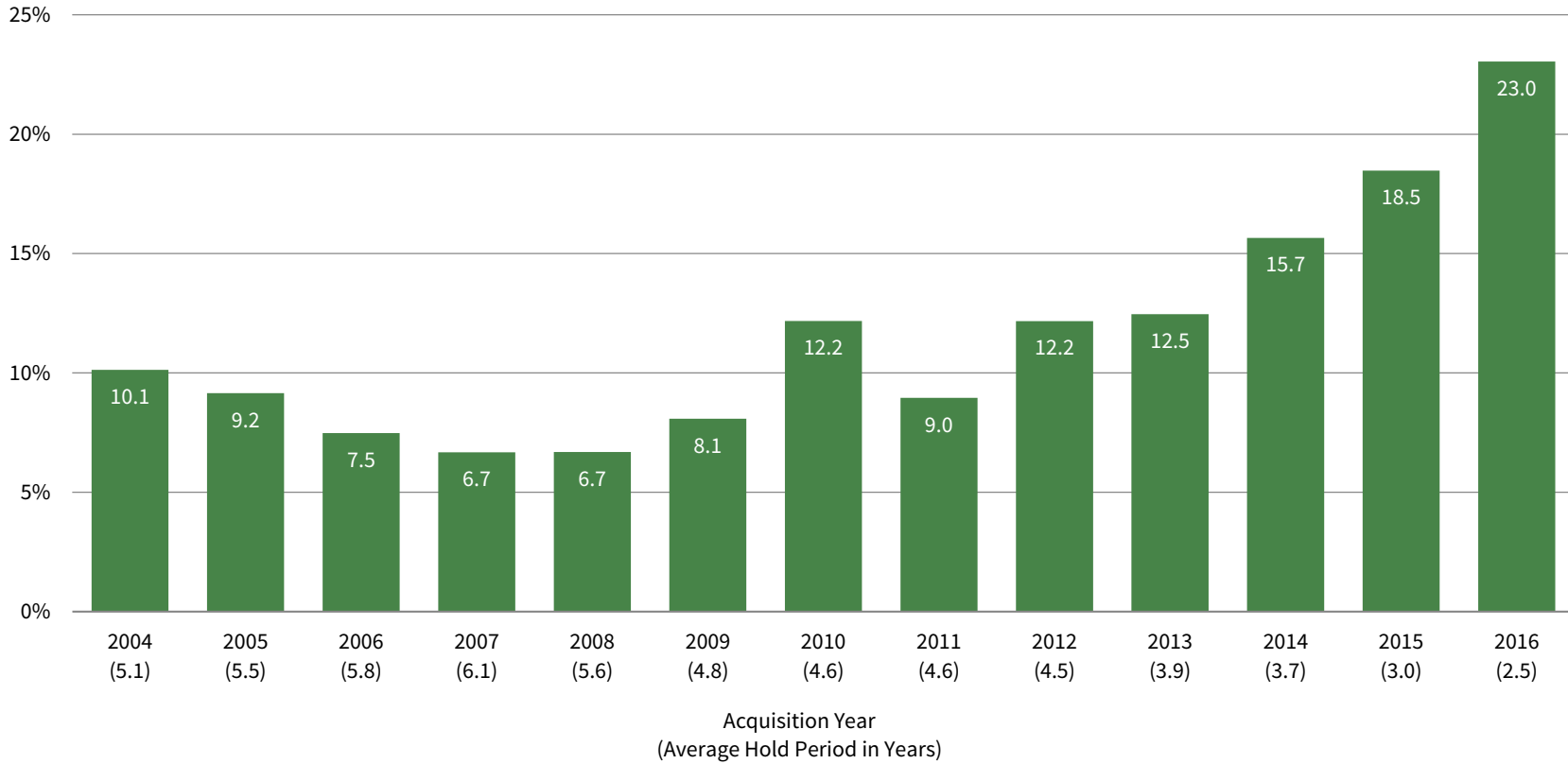
Note: Analysis only includes companies that have both acquisition and exit data.

Revenue growth during PE ownership has been especially strong for companies acquired since 2010 (12.8% median)

Exited companies acquired in 2016 had highest revenue CAGRs, showing PE managers' willingness to exit "winners"

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

As of December 31, 2019 • Compound Annual Growth Rate (%)



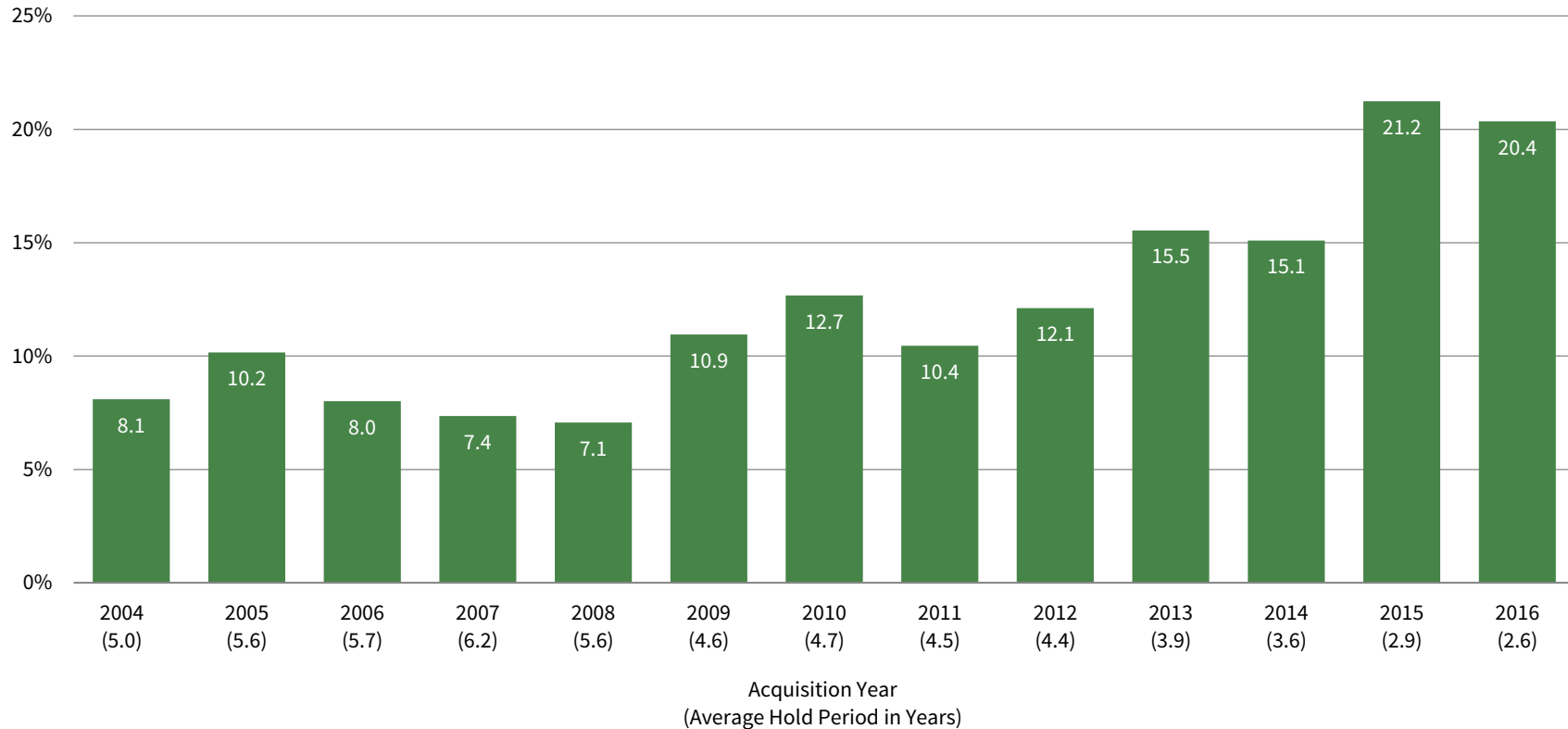
	Number of Companies												
	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Private Equity-Owned Companies	213	288	435	470	341	202	372	296	255	158	169	116	56

Median EBITDA CAGR for exited companies acquired since 2009 was 13.0%

For exited companies acquired between 2004 and 2008, the median EBITDA CAGR was 7.7%

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

As of December 31, 2019 • Compound Annual Growth Rate (%)



	Number of Companies												
	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Private Equity-Owned Companies	187	268	392	425	311	168	324	247	226	136	134	89	41

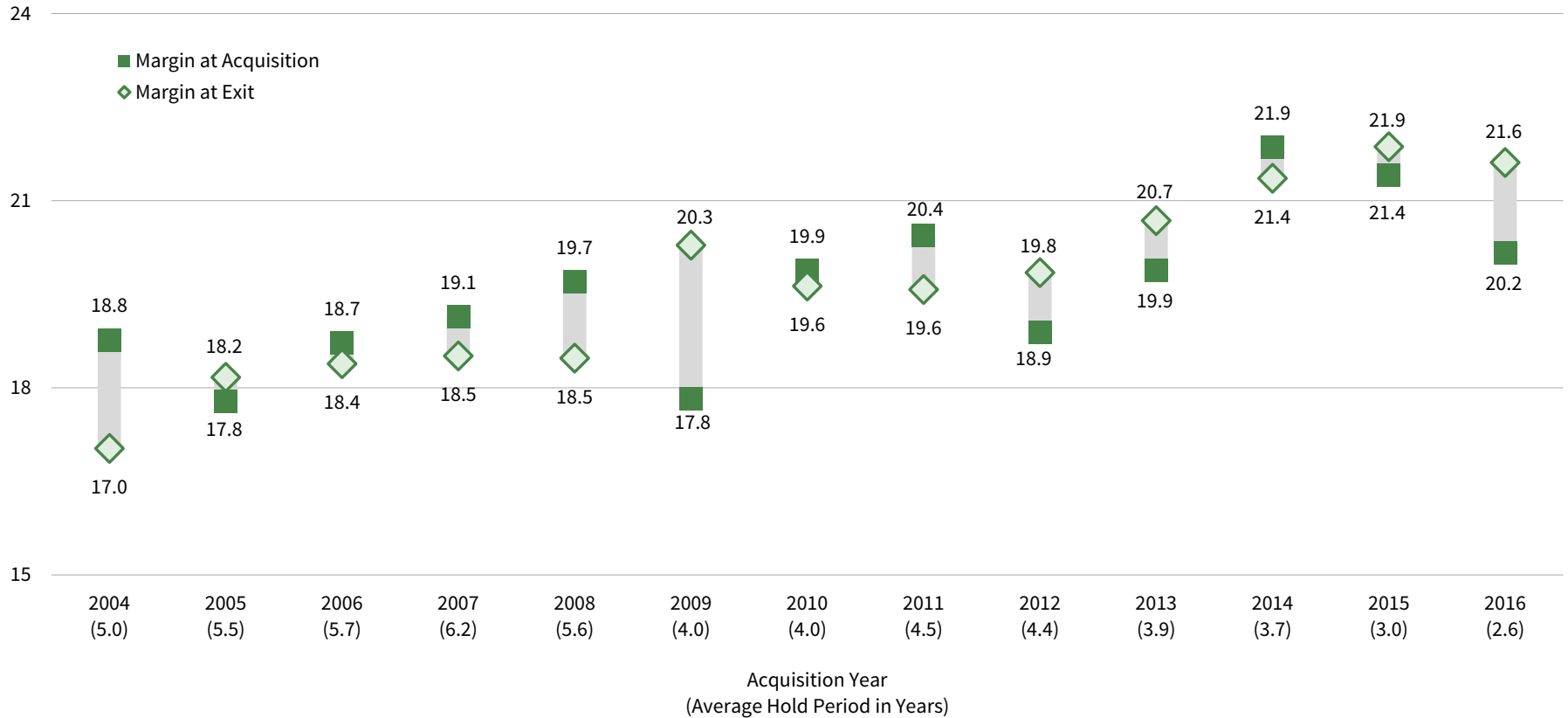
Source: Cambridge Associates LLC Private Investments Database (as reported by investment managers).

EBITDA margins remained the same or increased during PE ownership in eight of the 13 time periods analyzed

Margins increased most for 2009 acquisitions

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

As of December 31, 2019 • EBITDA/Revenue (%)



	Number of Companies												
	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Private Equity-Owned Companies	179	258	378	407	297	163	318	241	220	135	132	92	43

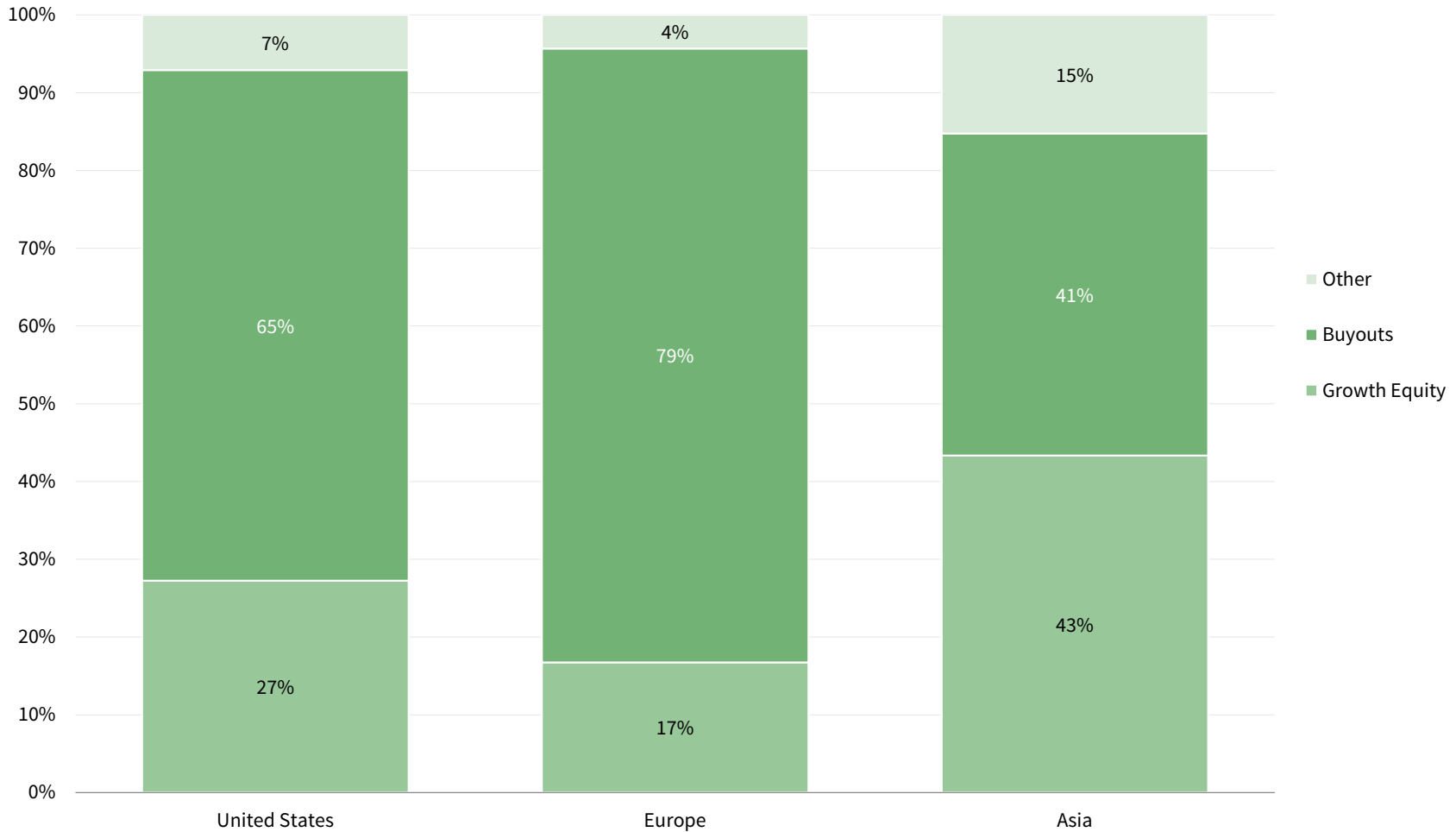


**REGIONAL COMPARISONS:
ASIA, EUROPE, AND THE UNITED STATES**

Overall, the United States and Europe samples are largely buyouts; the Asia universe has substantially more growth equity than the other two regions

BREAKDOWN OF INVESTMENT STRATEGIES BY REGION

As of December 31, 2019 • Percent (%)



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

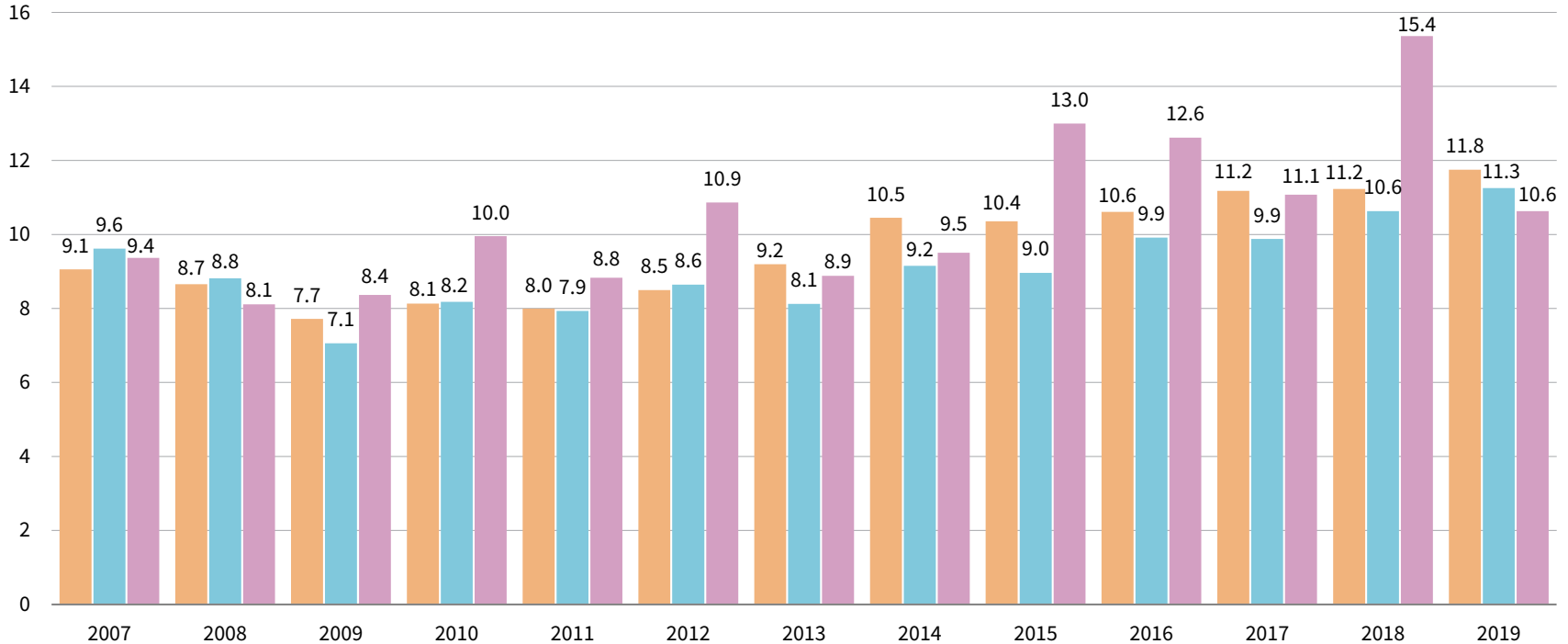
Notes: Other includes strategies reported as venture (including late stage), debt, and other strategies that do not fit into any of the categories. The breakdown of these regions includes investments for which we have one usable data point (e.g., enterprise value).

In 2019, valuations in the United States and Europe reached highest levels observed, moving closer to one another since 2017

Acquisition multiples in Asia have been largely driven by growth bias and sector breakdown

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

As of December 31, 2019 • Enterprise Value/EBITDA



Number of Companies

	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
United States	328	203	123	259	247	307	167	234	206	203	222	200	164
Europe	175	133	67	156	164	119	111	130	98	107	100	112	44
Asia	100	77	46	96	88	68	69	61	52	50	61	38	33

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

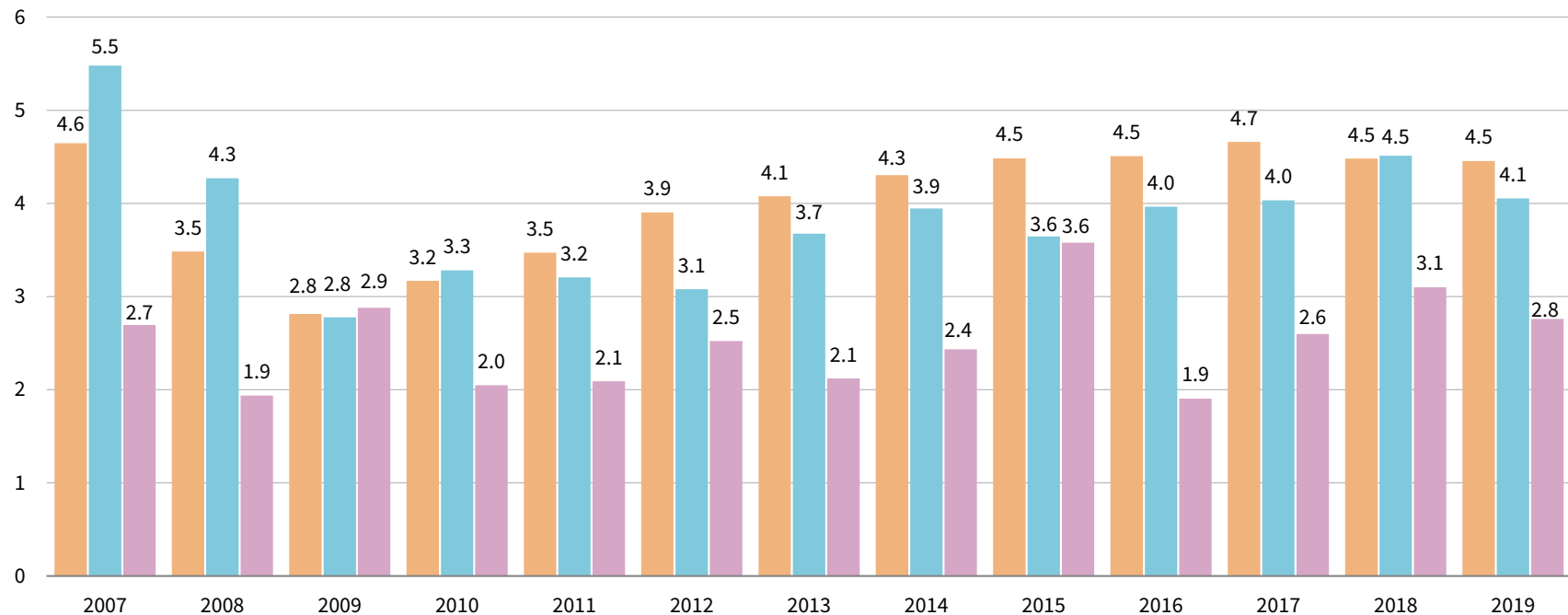
Note: Outliers were identified and excluded, and the same methodology was applied to the private equity and public company universes.

Leverage multiples for US companies acquired from 2013 to 2019 averaged 4.4x EBITDA, nearly double the leverage for deals based in Asia

During the same time period, European leverage multiples averaged almost half a turn less than US counterparts

AVERAGE EBITDA LEVERAGE MULTIPLES AT ACQUISITION OF PRIVATE COMPANIES BY REGION

As of December 31, 2019 • Net Debt/EBITDA



Number of Companies

	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
United States	302	179	108	237	238	279	152	220	189	198	213	214	161
Europe	171	130	52	145	152	111	99	122	92	97	91	105	43
Asia	69	57	26	58	50	43	52	42	31	27	42	26	24

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

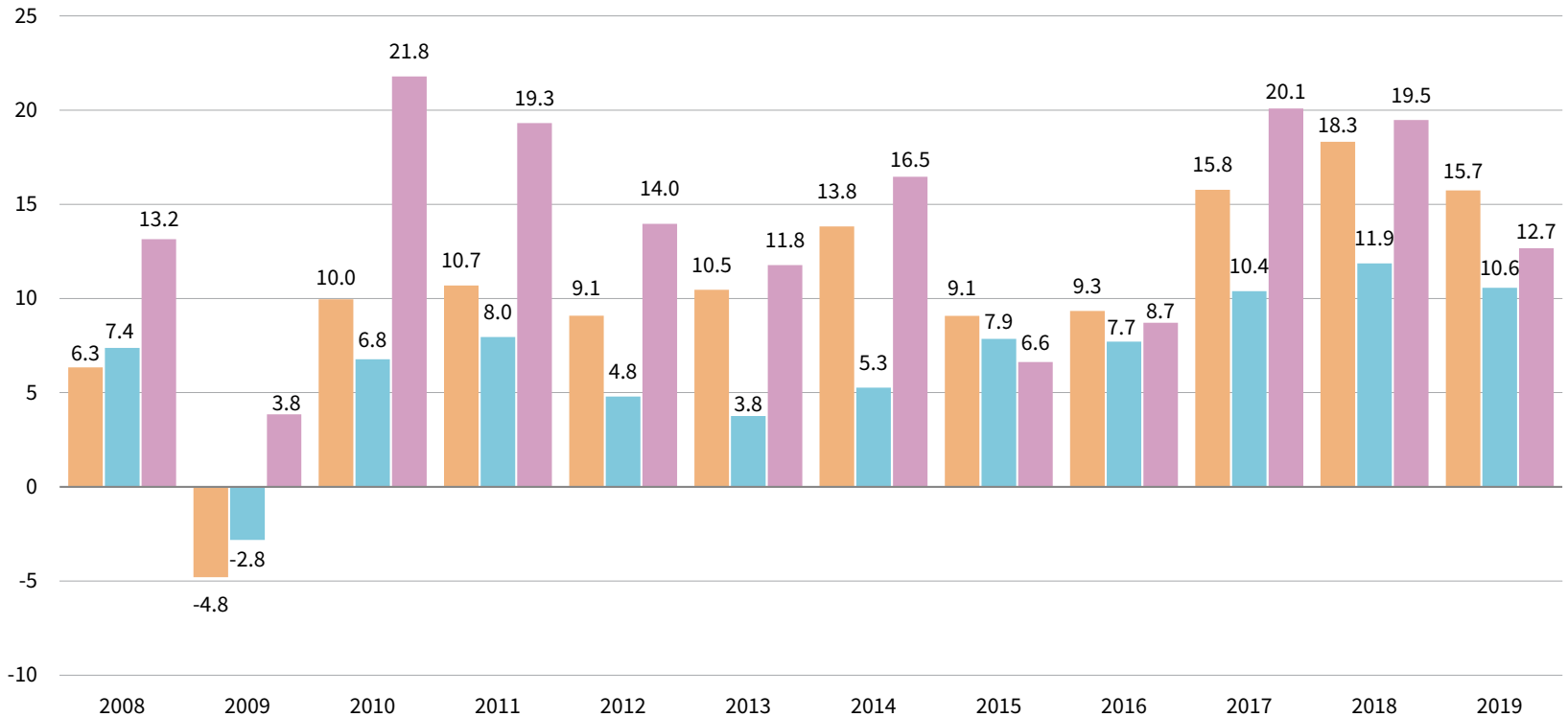
Note: Outliers were identified and excluded, and the same methodology was applied to the private equity and public company universes.

Despite trailing the United States in 2019, revenue growth in Asia still led other regions over the full time period

In 2019, revenue growth for all geographies declined from 2018 levels

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

As of December 31, 2019 • Annual Growth Rate (%)



Number of Companies

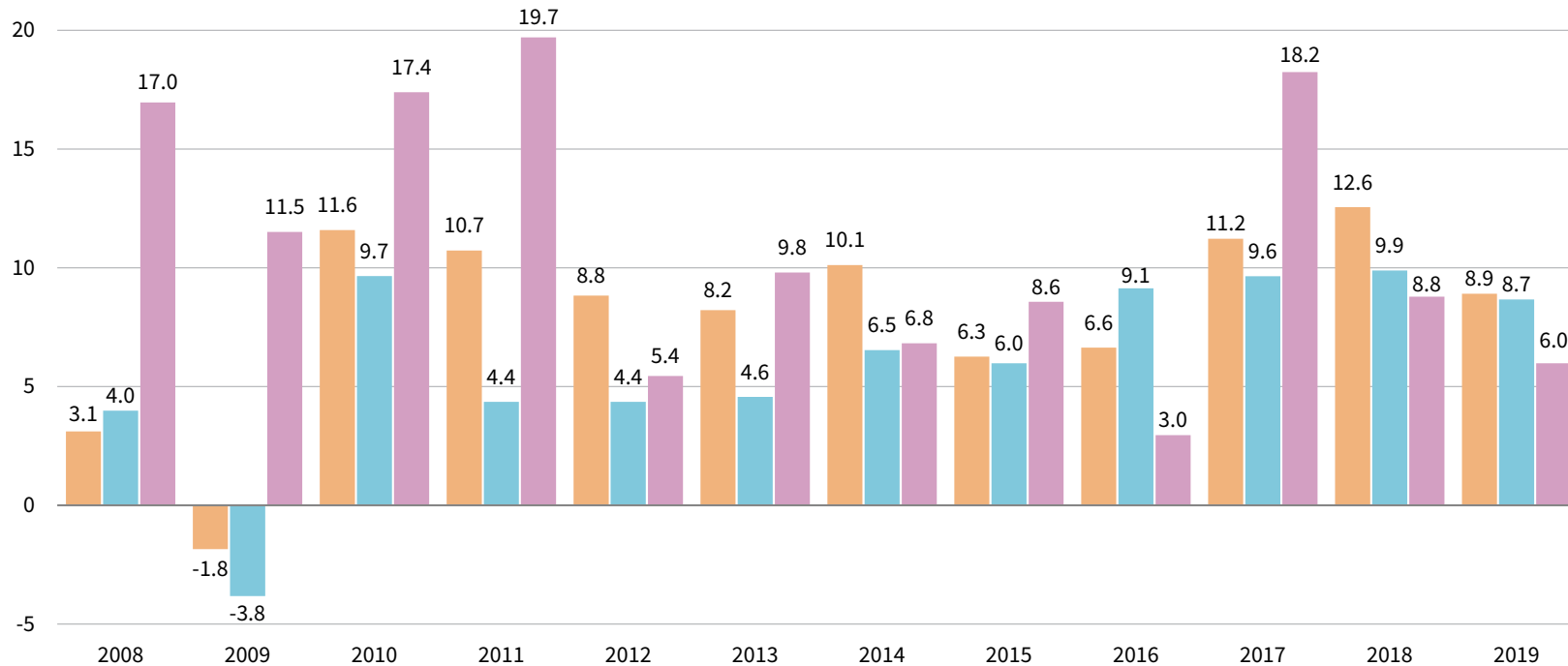
	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
United States	295	509	633	765	791	724	748	665	672	610	668	742
Europe	254	340	402	467	474	406	340	337	290	272	278	252
Asia	62	121	139	225	243	262	226	184	151	161	186	197

Driven by supercharged growth in five of the years analyzed, Asian companies grew EBITDA yearly at an average rate of 10.9% since 2008

The United States and Europe trailed Asia with 8.6% and 5.9% average annual growth, respectively

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

As of December 31, 2019 • Annual Growth Rate (%)



Number of Companies

	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
United States	276	448	542	677	688	602	611	513	500	448	465	511
Europe	234	314	348	432	438	363	308	311	258	224	233	206
Asia	65	108	134	173	156	153	128	120	109	112	120	133

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

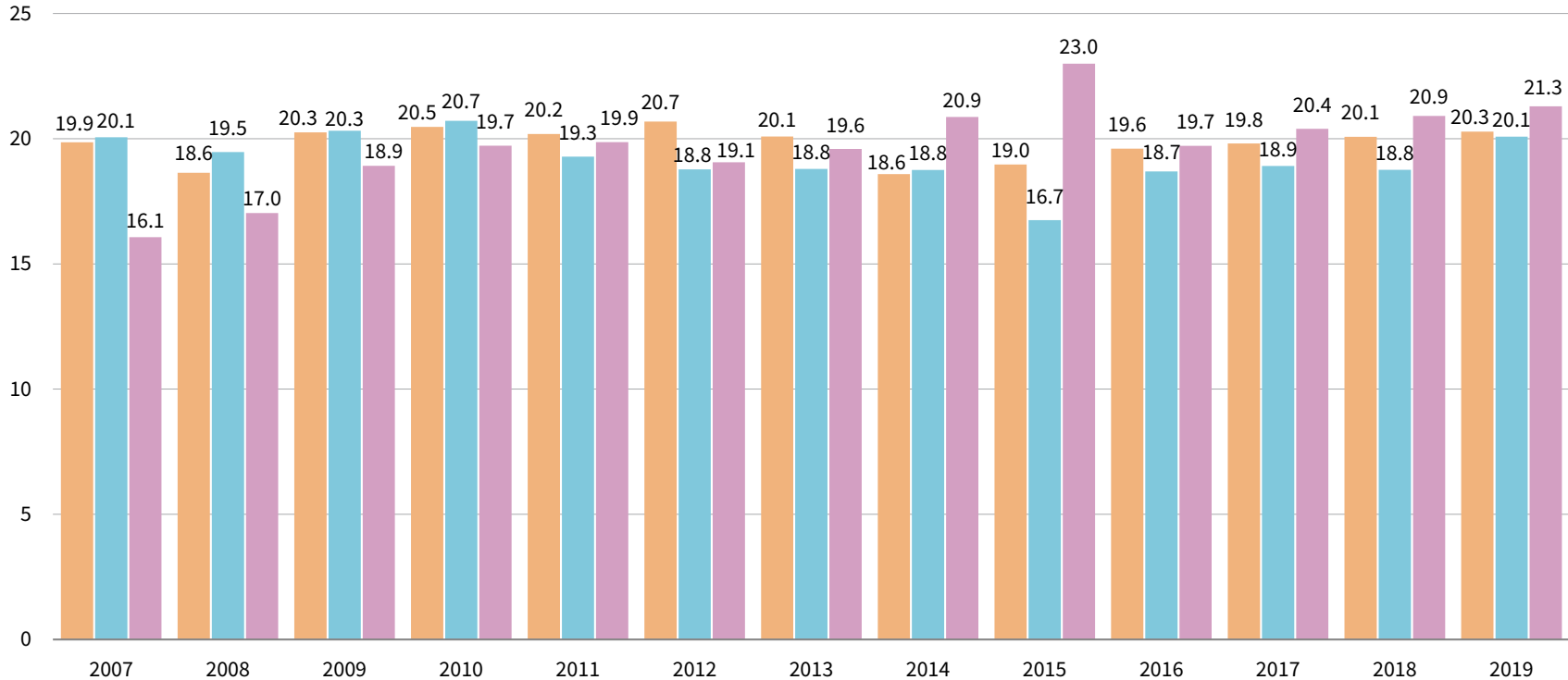
Note: Outliers were identified and excluded, and the same methodology was applied to the private equity and public company universes.

Asian companies operated at the highest margins in every year since 2014

Over the past four years, EBITDA margins have increased in the United States and Europe

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

As of December 31, 2019 • EBITDA/Revenue (%)



Number of Companies

	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
United States	320	489	654	848	1,046	1,161	886	975	834	849	831	883	909
Europe	276	347	430	531	630	618	516	556	486	442	400	451	325
Asia	63	116	140	206	256	263	231	269	220	193	244	208	257

EUROPEAN PRIVATE EQUITY ANALYSIS

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

Private valuations in Europe continued their upward trend since 2009

Since 2017, public and private valuations moved in opposite directions, with private company valuations shifting meaningfully higher than their public counterparts

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

As of December 31, 2019 • Enterprise Value/EBITDA



Number of Companies

	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Private Equity-Owned Companies	175	133	67	156	164	119	111	130	98	107	100	112	44
MSCI All Country Europe Index	321	239	221	229	231	229	227	227	229	221	221	205	197

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.

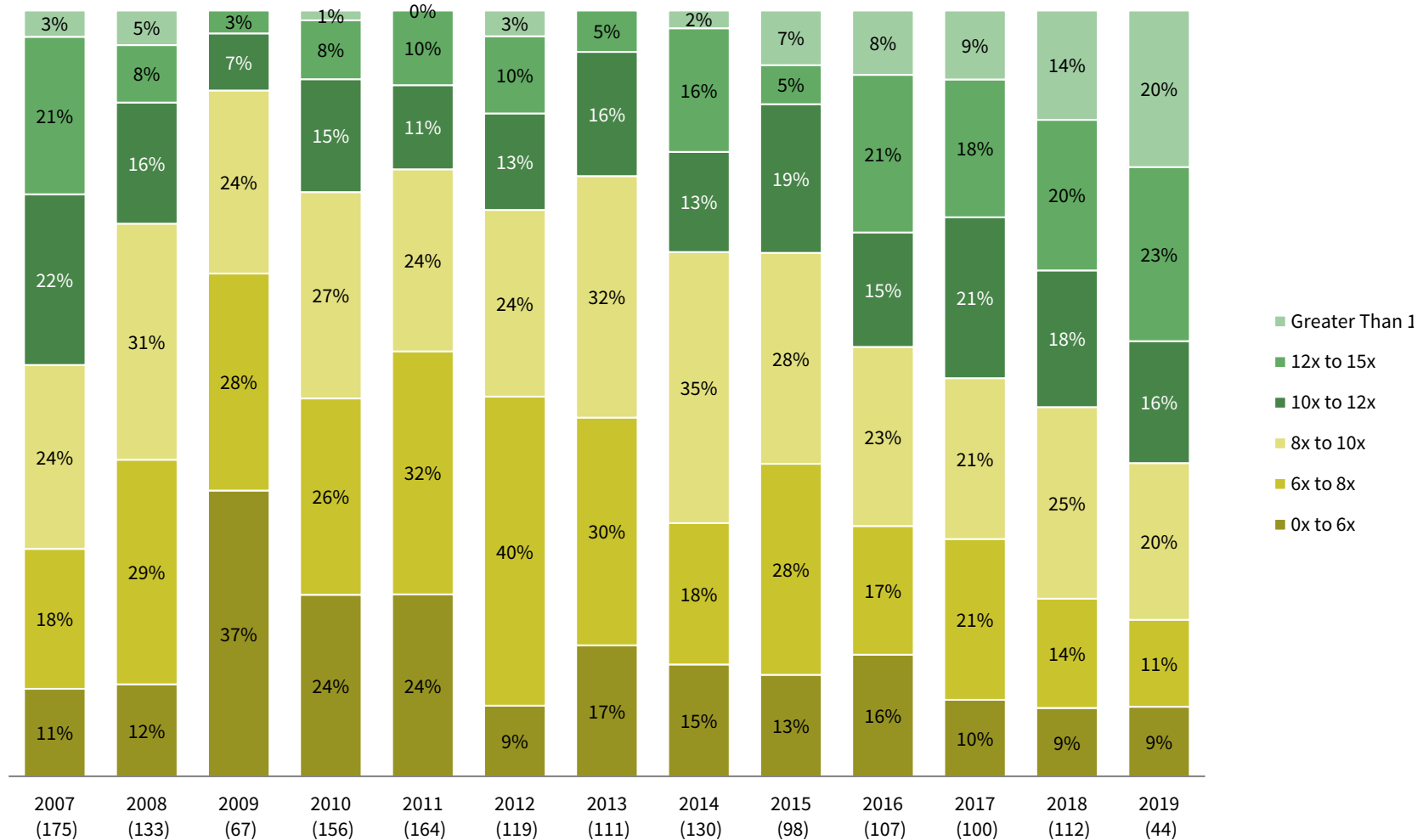
Note: Outliers were identified and excluded and the same methodology was applied to the private equity and public company universes.

On average, more than half of the PE deals recorded in Europe between 2016 and 2019 traded at 10x EBITDA or higher

Between 2007 and 2015, the percentage of deals recorded at greater than 10x was slightly more than 20%

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

As of December 31, 2019 • Enterprise Value/EBITDA

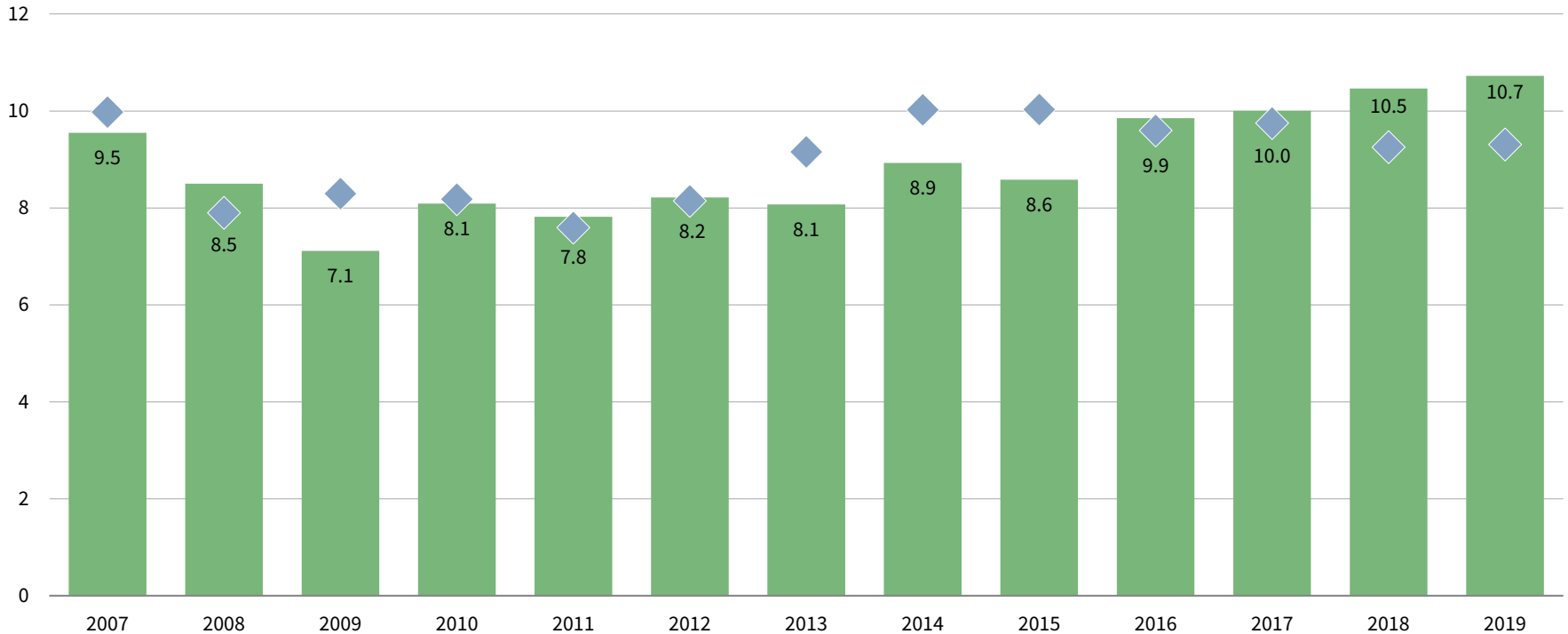


European buyouts transacted at valuations equal to or higher than publics in eight of the 13 years analyzed

Since 2016, European buyout valuations have averaged greater than 10x EBITDA; the average PPM from 2009 to 2015 was over two turns lower at just over 8x EBITDA

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

As of December 31, 2019 • Enterprise Value/EBITDA



Number of Companies

	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Buyout Companies	163	112	55	130	142	90	91	110	81	95	90	100	37
MSCI All Country Europe Index	321	239	221	229	231	229	227	227	229	221	221	205	197

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.

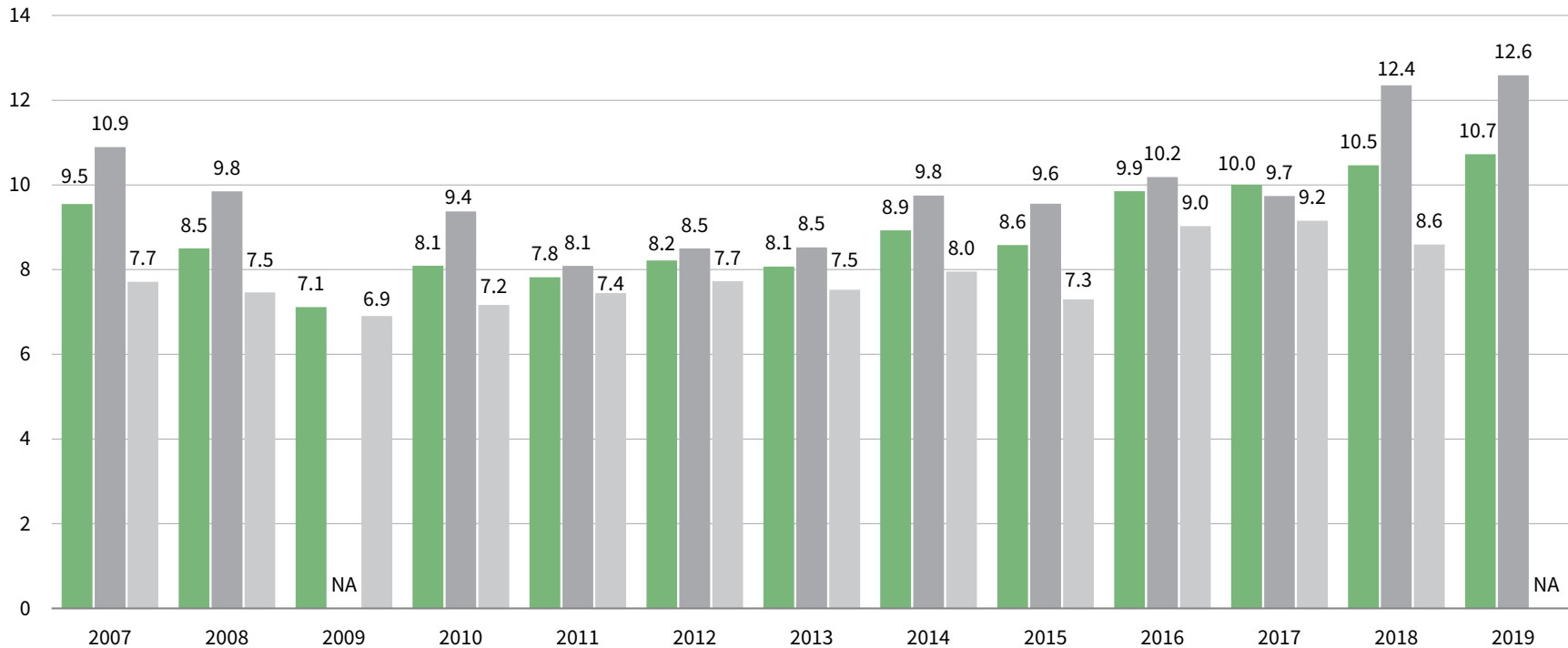
Note: Outliers were identified and excluded, and the same methodology was applied to the private equity and public company universes.

Across company size, average PPMs have increased since 2011, most notably in large buyouts

Historically, European PPMs have been lower in the smaller size segment

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

As of December 31, 2019 • Enterprise Value/EBITDA



Number of Companies

	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Buyout Companies	163	112	55	130	142	90	91	110	81	95	90	100	37
EV €250M - €1B	56	45	NA	40	45	30	22	36	34	38	30	36	16
EV < €250M	63	49	34	75	84	45	57	63	42	51	43	45	NA

EUROPEAN PRIVATE EQUITY ANALYSIS

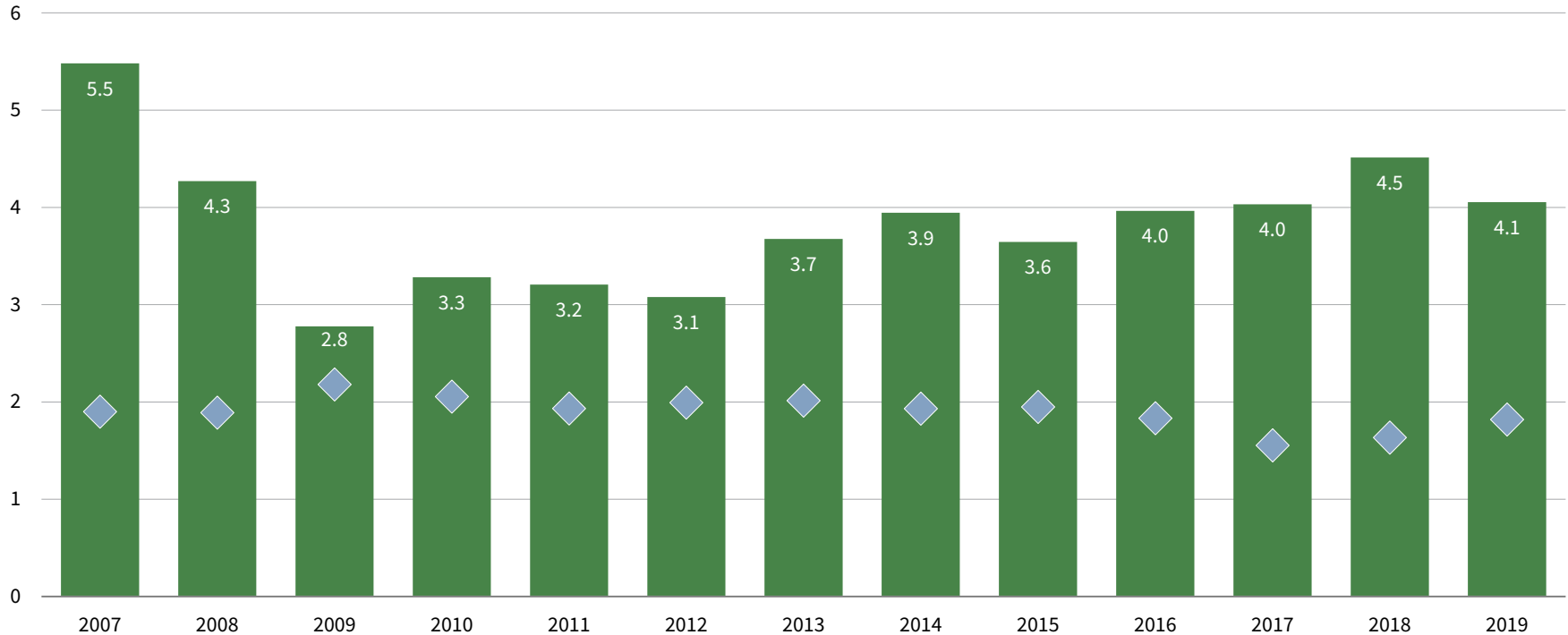
- Purchase Price Multiple
- **Leverage Multiple**
- Revenue Growth
- EBITDA Growth
- EBITDA Margin
- Exit Metrics

In keeping with recent trends, the difference between PE and public leverage multiples remained greater than 2x EBITDA

Leverage for European deals has trended higher for PE and lower for publics since 2013, with the peak differential occurring in 2018

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

As of December 31, 2019 • Net Debt/EBITDA



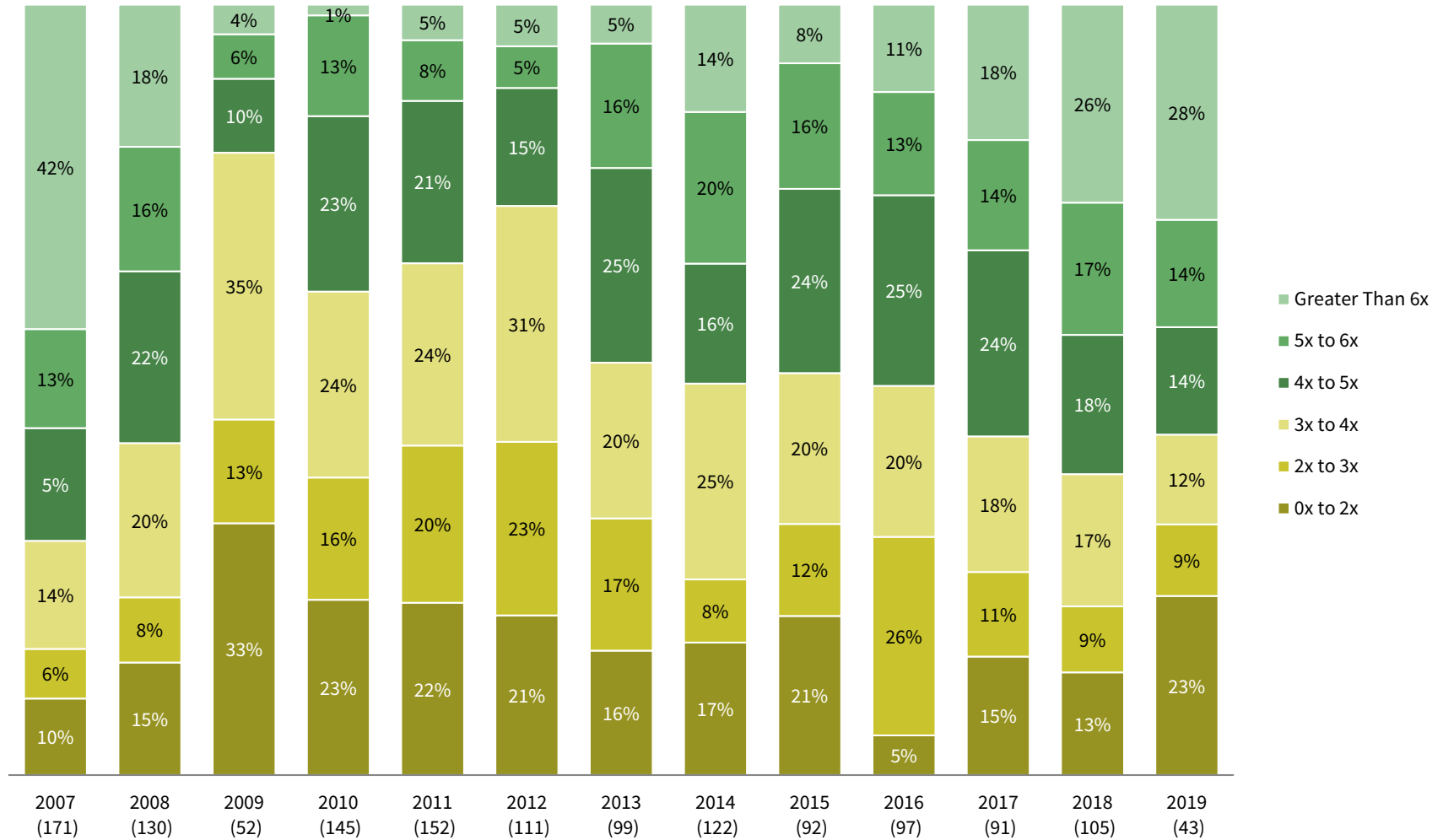
Number of Companies

	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Private Equity-Owned Companies	171	130	52	145	152	111	99	122	92	97	91	105	43
MSCI All Country Europe Index	258	204	186	181	196	192	185	193	186	184	183	175	175

While leverage multiples still trailed those of 2007, the percentage of deals completed at greater than 6x leverage has increased dramatically in the last five years

AVERAGE LEVERAGE MULTIPLE BREAKDOWN OF EUROPEAN PRIVATE EQUITY-OWNED COMPANIES

As of December 31, 2019 • Net Debt/EBITDA



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

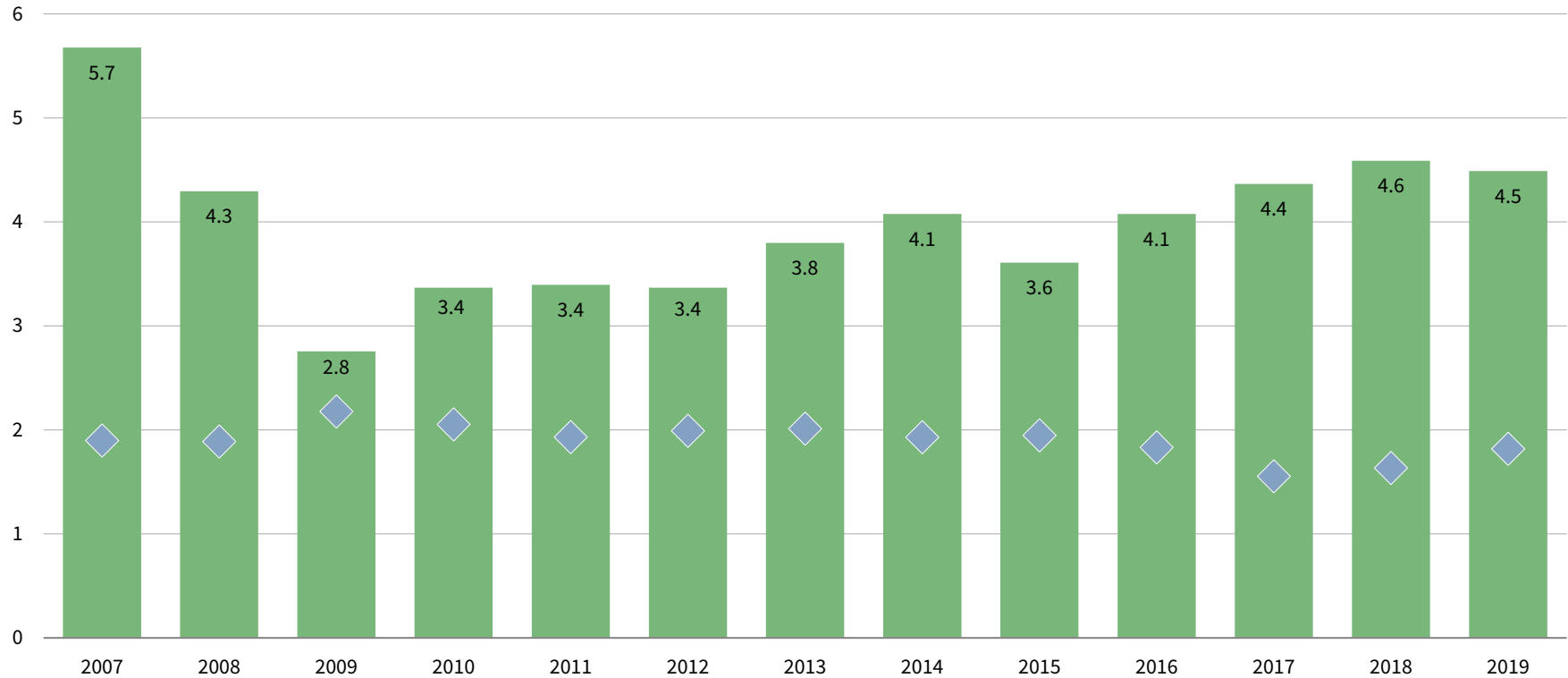
Notes: Outliers were identified and excluded. Numbers in parentheses represent total private companies in a year. Each range includes the lower bound value. For example, the 4x to 5x range includes companies with reported leverage multiples of exactly 4x.

The difference between private and public leverage multiples has consistently increased since 2015...

...while 2019 saw a slight reversal of this pattern, the difference between privates and publics is still greater than 2x

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

As of December 31, 2019 • Net Debt/EBITDA



Number of Companies

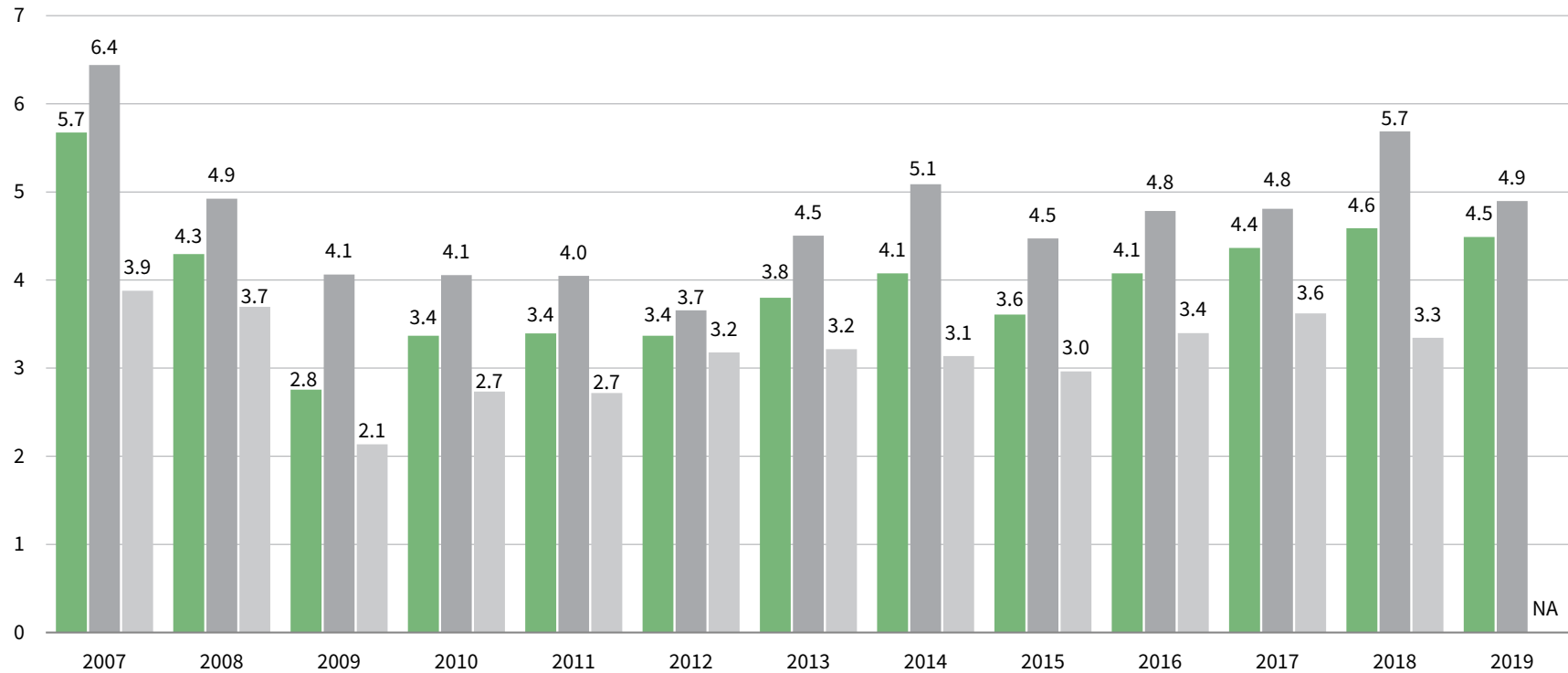
	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Buyout Companies	159	111	44	120	133	84	84	109	79	87	76	95	36
MSCI All Country Europe Index	258	204	186	181	196	192	185	193	186	184	183	175	175

After trending upward from 2015 to 2018, leverage multiples fell or stayed the same for large- and mid-sized buyouts in 2019

Small buyouts have been consistently less levered than their larger peers

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

As of December 31, 2019 • Net Debt/EBITDA



Number of Companies

	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Buyout Companies	159	111	44	120	133	84	84	109	79	87	76	95	36
EV €250M – €1B	57	44	16	42	44	28	22	36	29	38	28	33	15
EV < €250M	60	47	24	66	76	41	51	59	42	43	31	38	NA

EUROPEAN PRIVATE EQUITY ANALYSIS

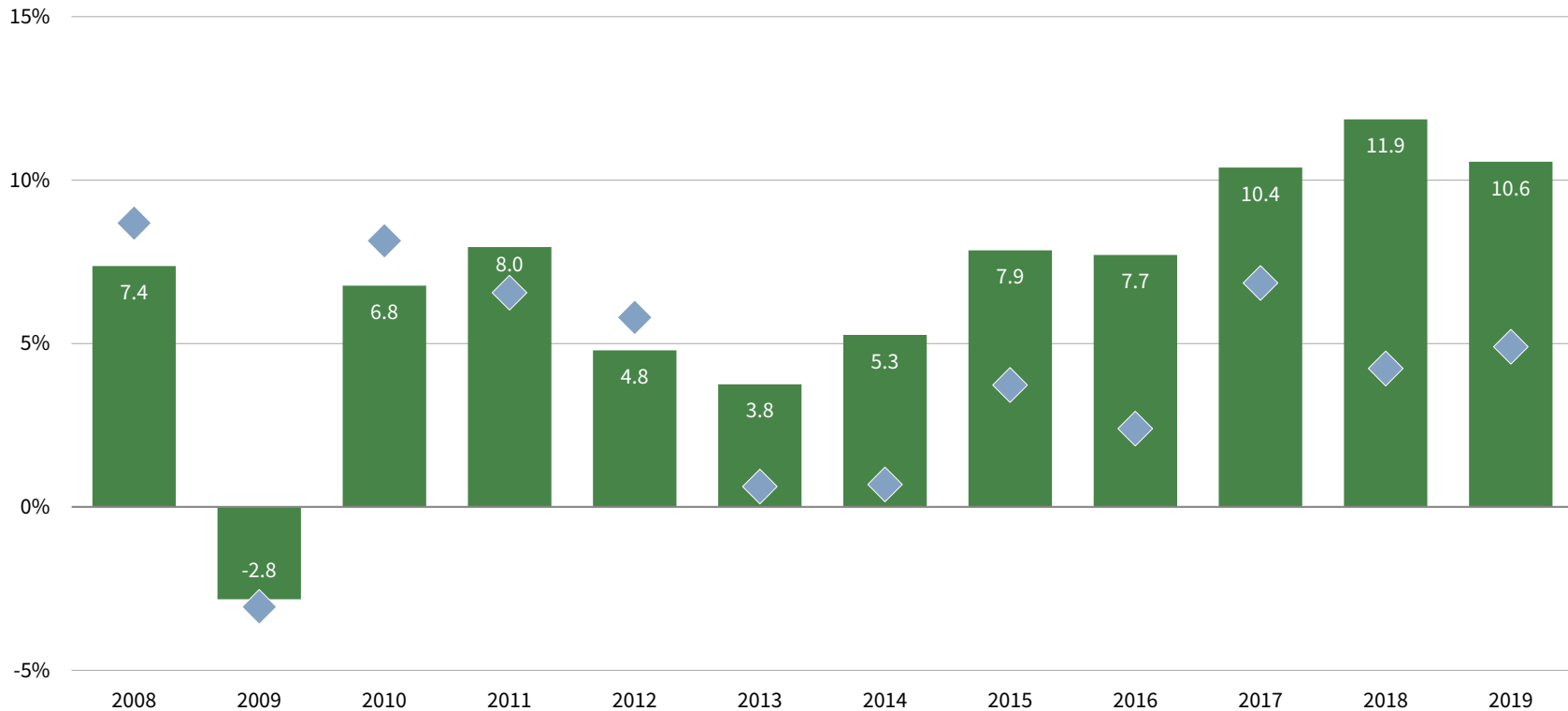
- Purchase Price Multiple
- Leverage Multiple
- **Revenue Growth**
- EBITDA Growth
- EBITDA Margin
- Exit Metrics

Revenue growth of European PE companies outpaced that of public companies in all but three of the 12 years analyzed

Since 2015, PE revenue growth has averaged 9.6%, nearly double the growth rate of the years prior to 2015

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

As of December 31, 2019 • Annual Growth Rate (%)



Number of Companies

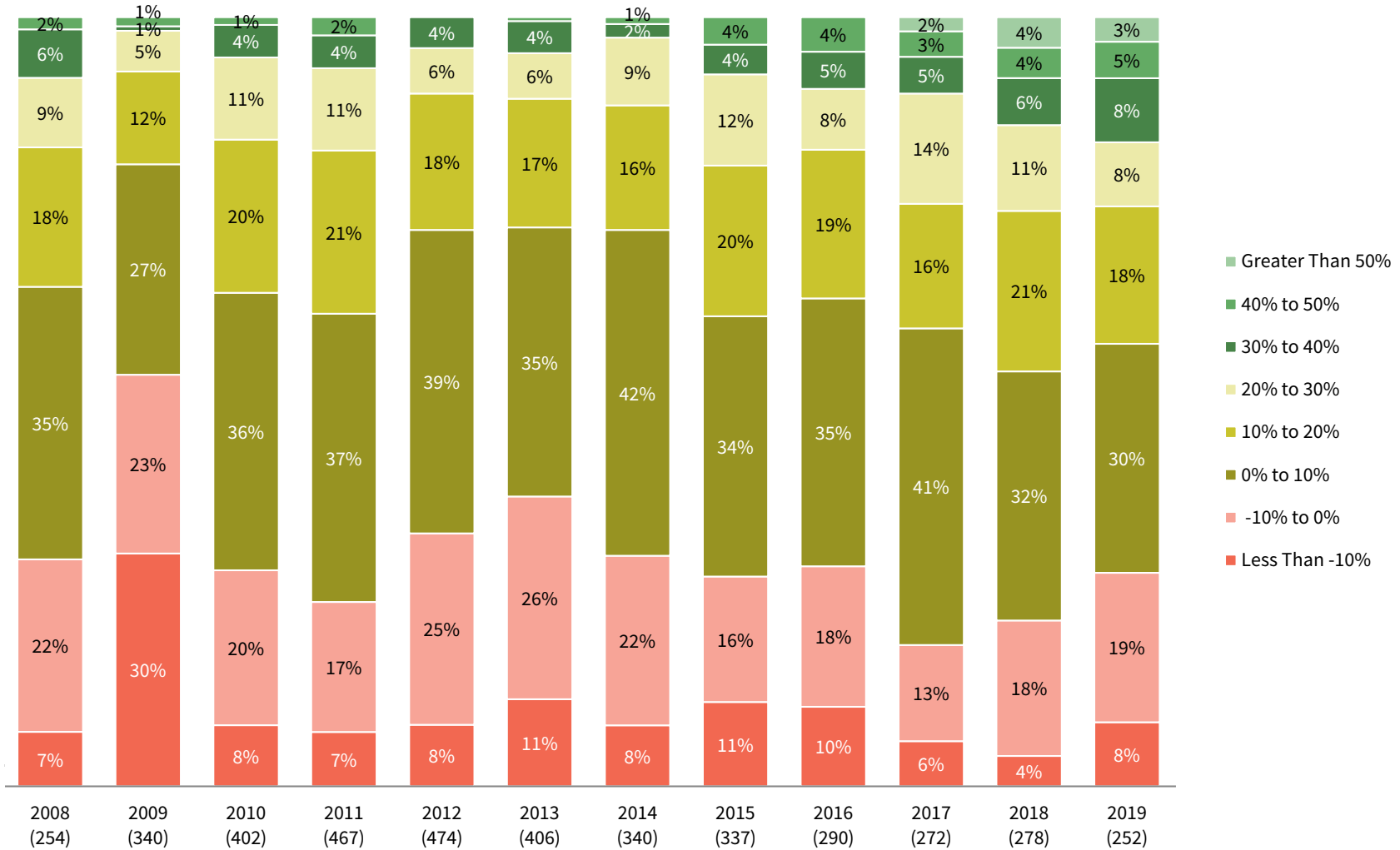
	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Private Equity-Owned Companies	254	340	402	467	474	406	340	337	290	272	278	252
MSCI All Country Europe Index	457	428	442	438	435	421	449	455	449	451	409	418

Since 2015, there has been a steady increase in companies growing at greater than 30% per year

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 EUROPEAN PRIVATE EQUITY-OWNED COMPANIES

As of December 31, 2019 • Annual Growth Rate (%)

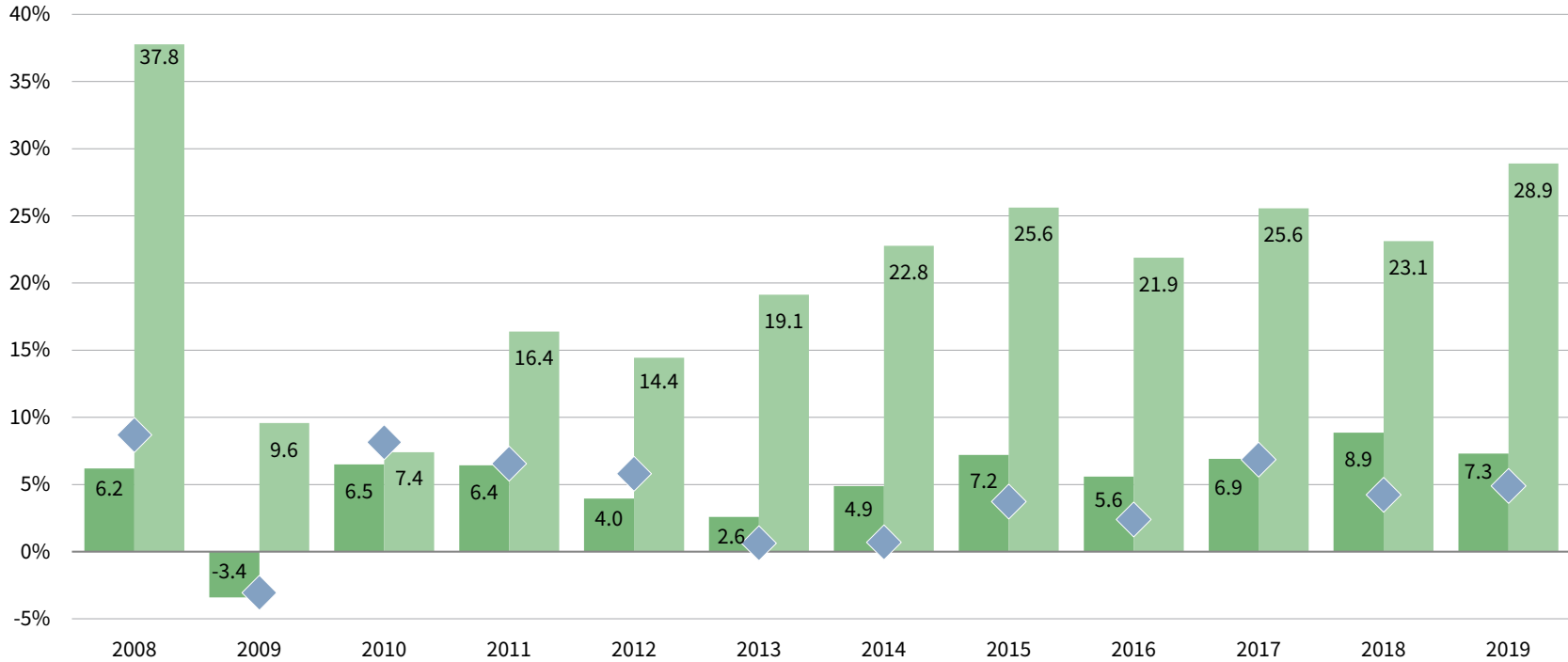


Since 2008, growth equity has increased revenue annually by 20.2%

Buyouts have outperformed publics for seven years running

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

As of December 31, 2019 • Annual Growth Rate (%)



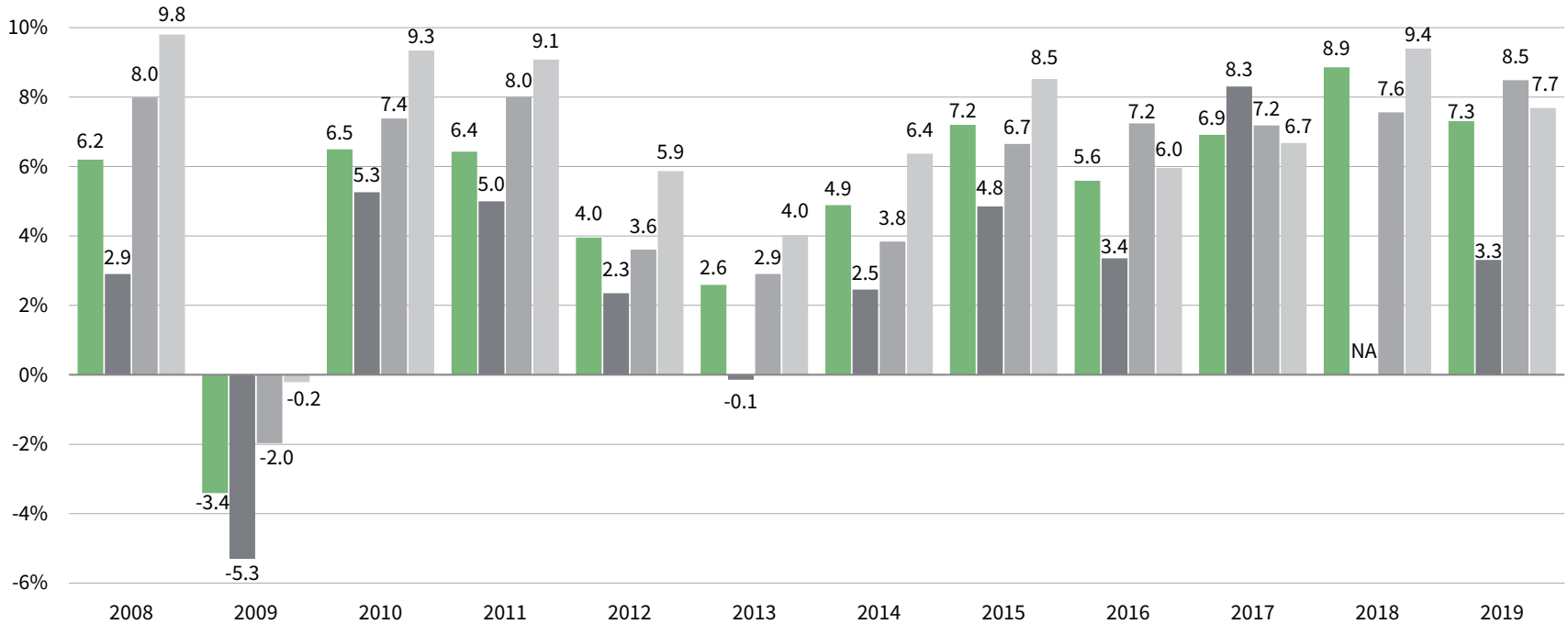
Number of Companies

	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Buyout Companies	239	312	342	392	391	338	266	259	218	194	200	178
Growth Equity Companies	21	27	46	60	73	60	76	72	62	61	66	67
MSCI All Country Europe Index	457	428	442	438	435	421	449	455	449	451	409	418

In Europe, small buyouts grew revenue nearly 3x faster than large buyouts

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

As of December 31, 2019 • Annual Growth Rate (%)



Number of Companies

	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Buyout Companies	239	312	342	392	391	338	266	259	218	194	200	178
EV > €1B	88	105	108	114	84	71	43	34	29	17	NA	22
EV €250M - €1B	74	101	123	144	127	103	77	79	75	80	76	63
EV < €250M	78	106	117	141	178	167	143	148	114	95	111	91

EUROPEAN PRIVATE EQUITY ANALYSIS

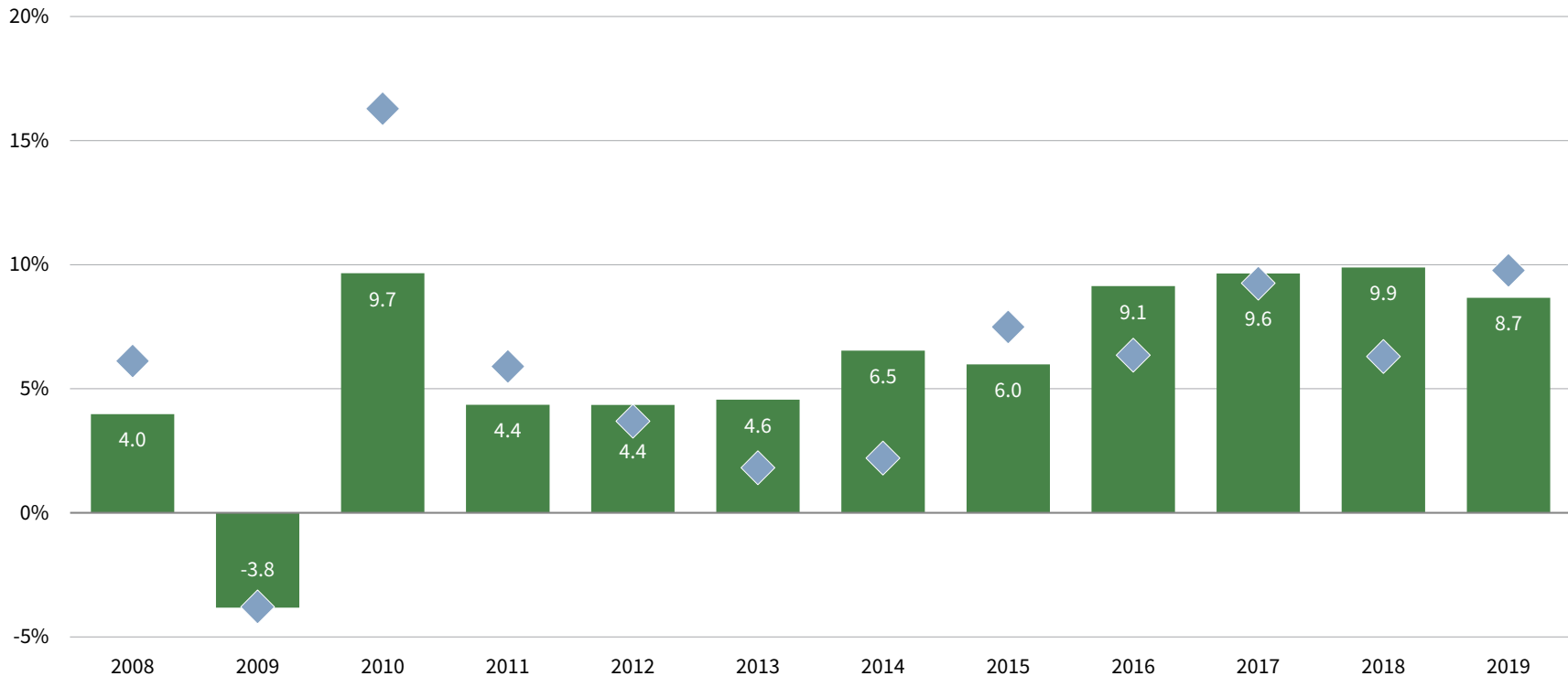
- Purchase Price Multiple
- Leverage Multiple
- Revenue Growth
- **EBITDA Growth**
- EBITDA Margin
- Exit Metrics

Private and public company EBITDA growth in Europe has seen an upward trend since 2011

While PE company EBITDA growth has been less volatile than that of public counterparts, growth rates were nearly equal over the full time period

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

As of December 31, 2019 • Annual Growth Rate (%)



Number of Companies

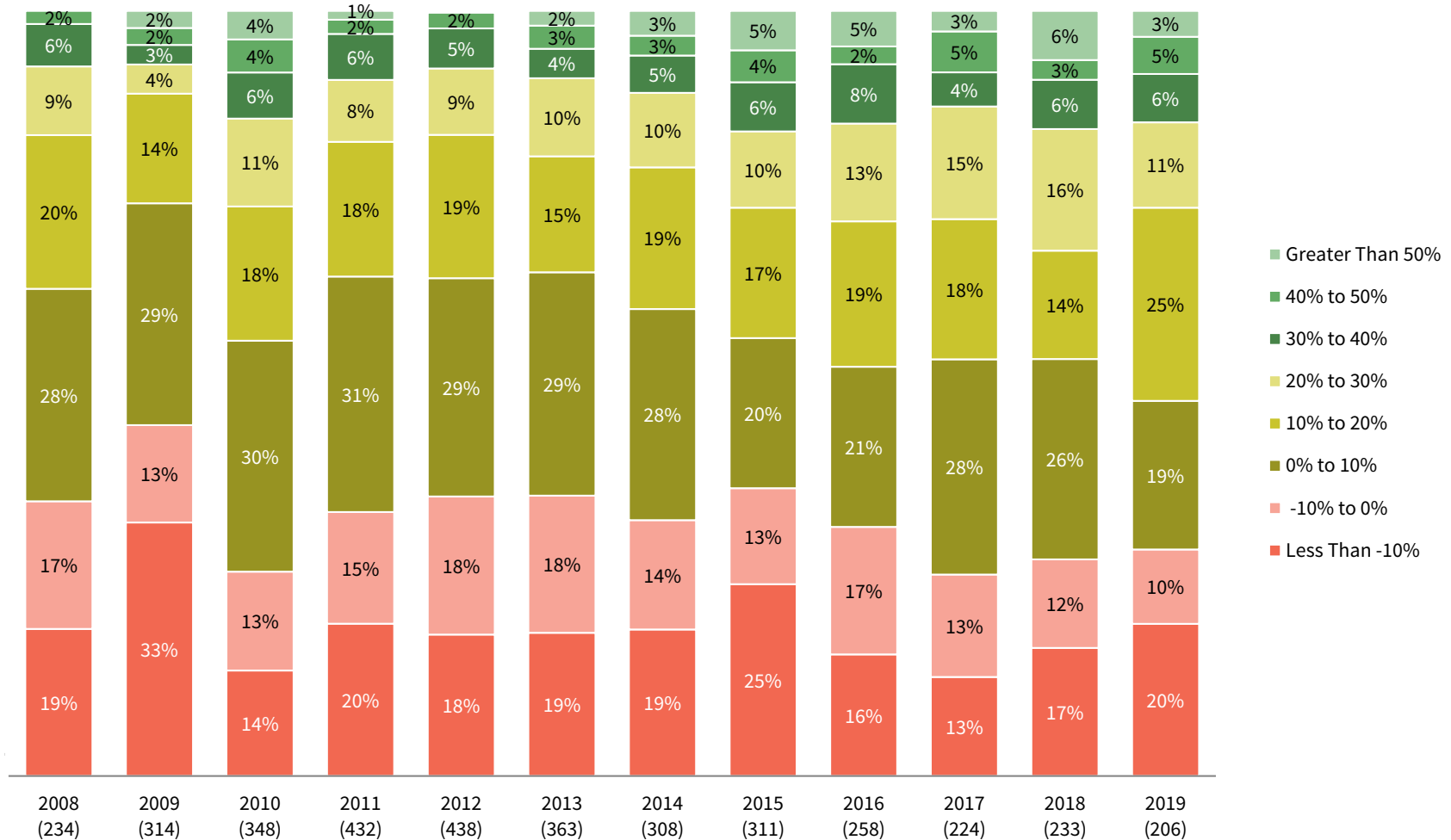
	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Private Equity-Owned Companies	234	314	348	432	438	363	308	311	258	224	233	206
MSCI All Country Europe Index	340	303	326	344	345	330	354	354	354	361	354	358

Among European PE companies, the distribution across EBITDA growth rate “buckets” has been relatively consistent

On average, 40% of the universe grew EBITDA by at least 10% and nearly 35% saw EBITDA decline in given year

AVERAGE ANNUAL EBITDA GROWTH BREAKDOWN OF EUROPEAN PRIVATE EQUITY-OWNED COMPANIES

As of December 31, 2019 • Annual Growth Rate (%)



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

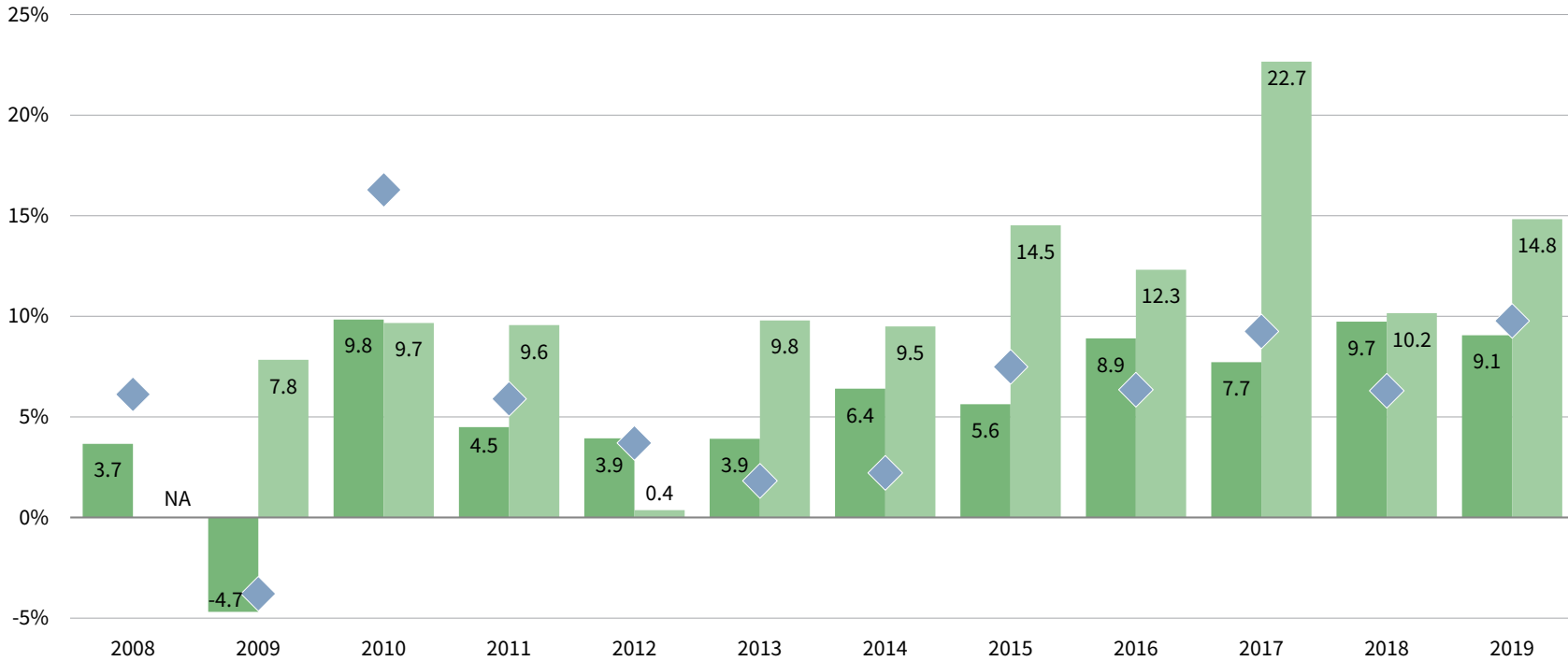
Notes: Outliers were identified and excluded. Numbers in parentheses represent total private companies in a year. Each range includes the lower bound value. For example, the 0% to 10% range includes companies with reported growth of exactly 0%.

Since 2013, EBITDA grew nearly twice as fast for European growth equity companies as it did for buyouts

Growth equity outpaced publics in nine of the years analyzed

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

As of December 31, 2019 • Annual Growth Rate (%)



Number of Companies

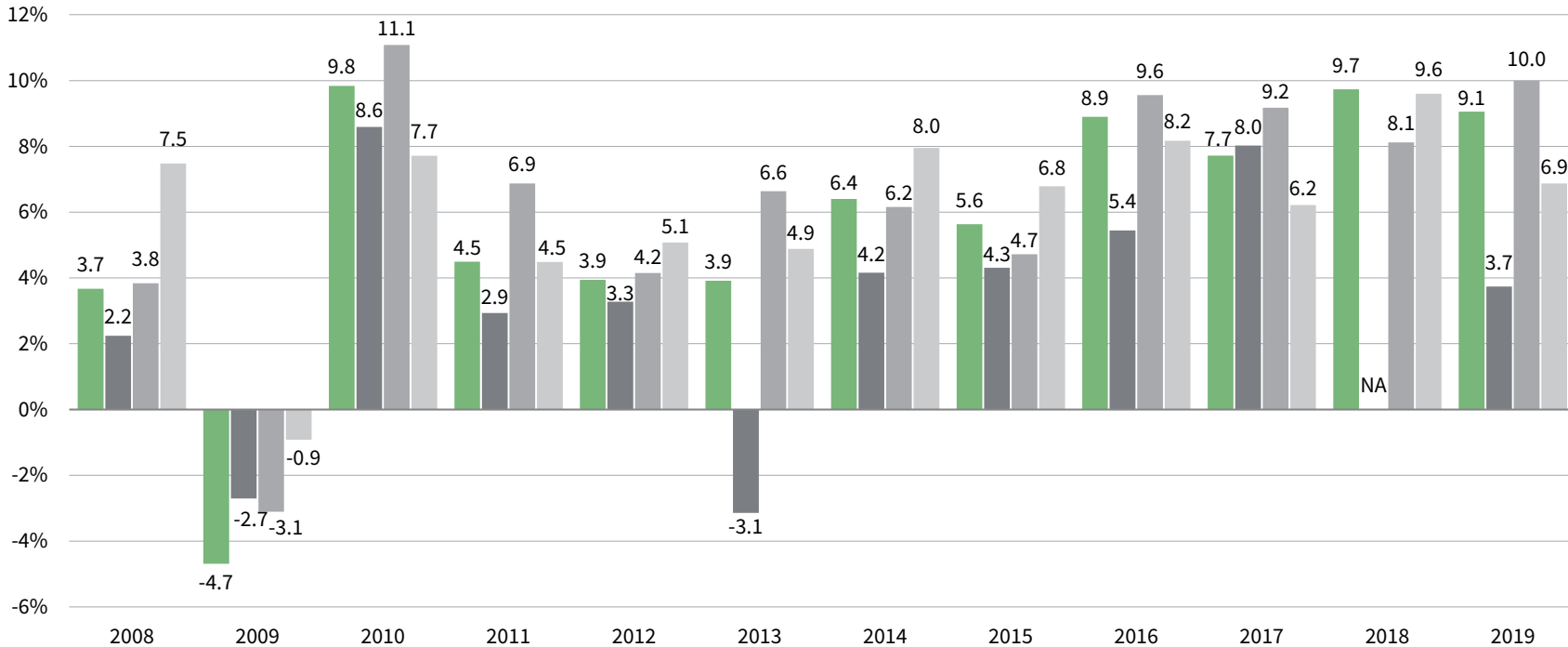
	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Buyout Companies	227	294	308	377	380	319	257	257	214	183	192	166
Growth Equity Companies	NA	18	35	49	57	40	48	44	31	34	37	26
MSCI All Country Europe Index	340	303	326	344	345	330	354	354	354	361	354	358

On average, European large buyouts grew EBITDA less than half as fast as small- and mid-sized counterparts

Small- and mid-sized companies averaged nearly the same rate of growth over the time period analyzed

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

As of December 31, 2019 • Annual Growth Rate (%)



Number of Companies

	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Buyout Companies	227	294	308	377	380	319	257	257	214	183	192	166
EV > €1B	88	97	101	108	79	69	44	36	28	17	NA	25
EV €250M - €1B	73	101	113	141	133	103	79	77	68	82	77	55
EV < €250M	70	98	96	129	162	147	131	139	116	87	100	85

EUROPEAN PRIVATE EQUITY ANALYSIS

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

In Europe, both public and private companies have seen EBITDA margins increase since 2015

Public companies consistently operated at higher margins than PE-backed ones

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

As of December 31, 2019 • EBITDA/Revenue (%)



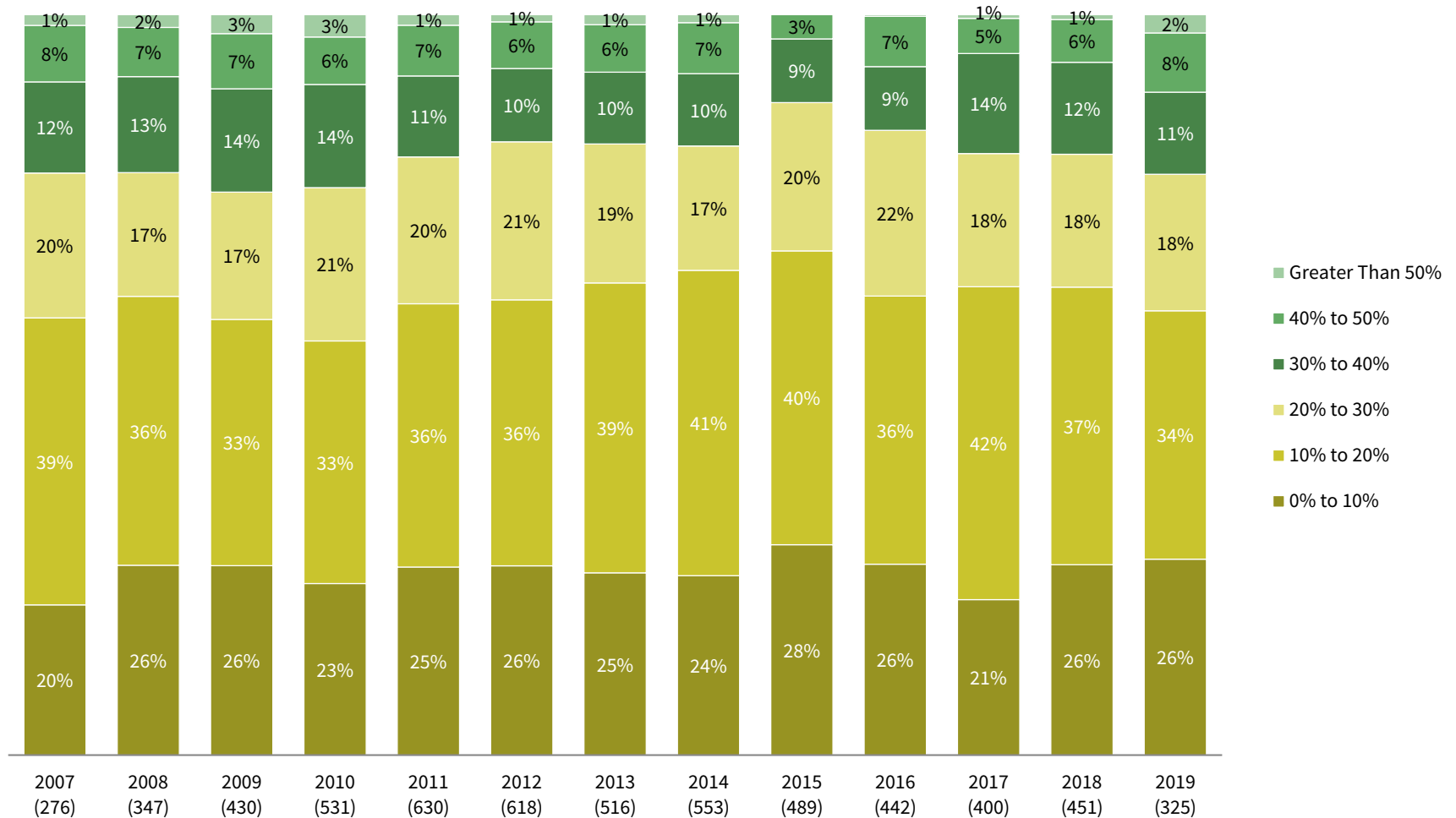
Number of Companies

	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Private Equity-Owned Companies	276	347	430	531	630	618	516	556	486	442	400	451	325
MSCI All Country Europe Index	519	402	379	402	394	391	397	403	407	405	408	397	392

Driving the increase in private company margins was the growing percentage of European PE operating at margins above 30%

AVERAGE ANNUAL EBITDA MARGIN BREAKDOWN OF EUROPEAN PRIVATE EQUITY-OWNED COMPANIES

As of December 31, 2019 • EBITDA/Revenue (%)



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

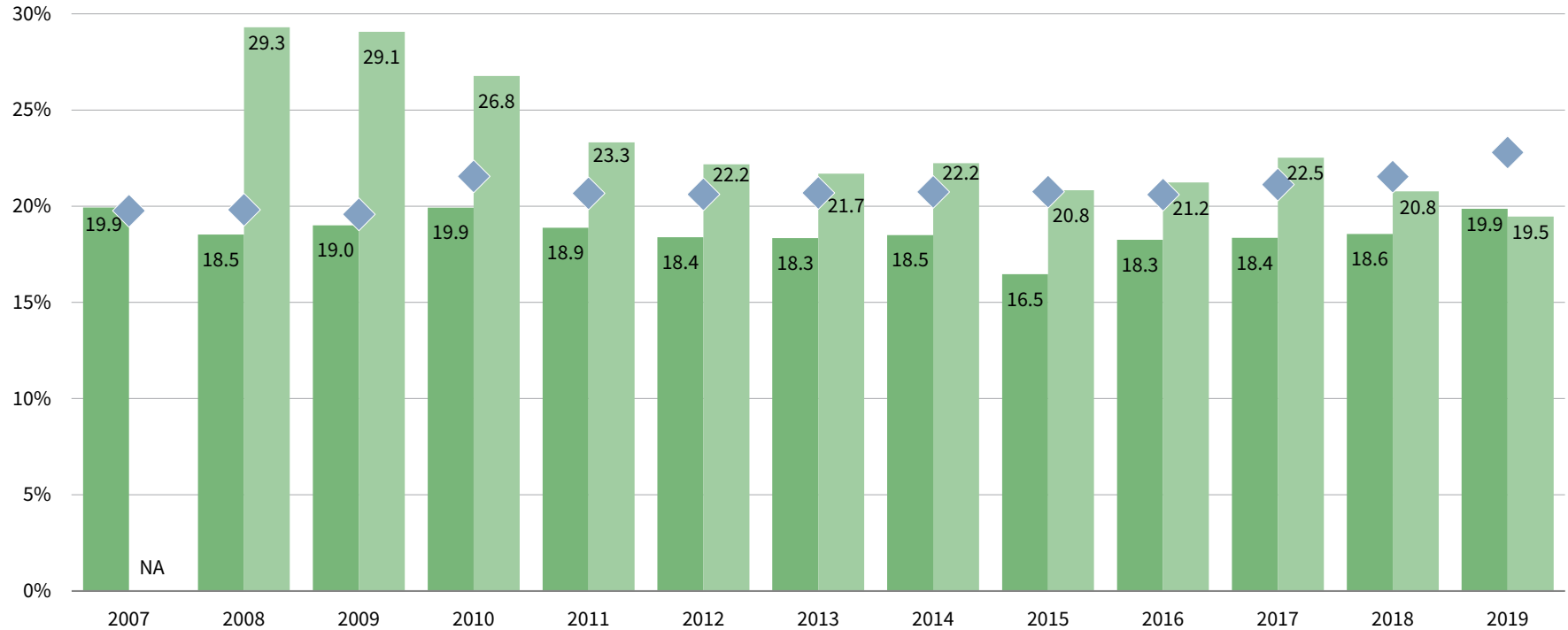
Notes: Outliers were identified and excluded. Numbers in parentheses represent total private companies in a year. Each range includes the lower bound value. For example, the 0% to 10% range includes companies with reported margins of exactly 0%.

In 2019, European buyout company margins surpassed those of growth equity peers for the first time since 2010

Margins for both buyout and growth equity companies have meaningfully trailed those of public peers

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

As of December 31, 2019 • EBITDA/Revenue (%)



Number of Companies

	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Buyout Companies	263	320	377	463	545	510	440	459	389	370	311	380	258
Growth Equity Companies	NA	22	41	59	76	98	65	80	74	49	66	57	51
MSCI All Country Europe Index	519	402	379	402	394	391	397	403	407	405	408	397	392

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.

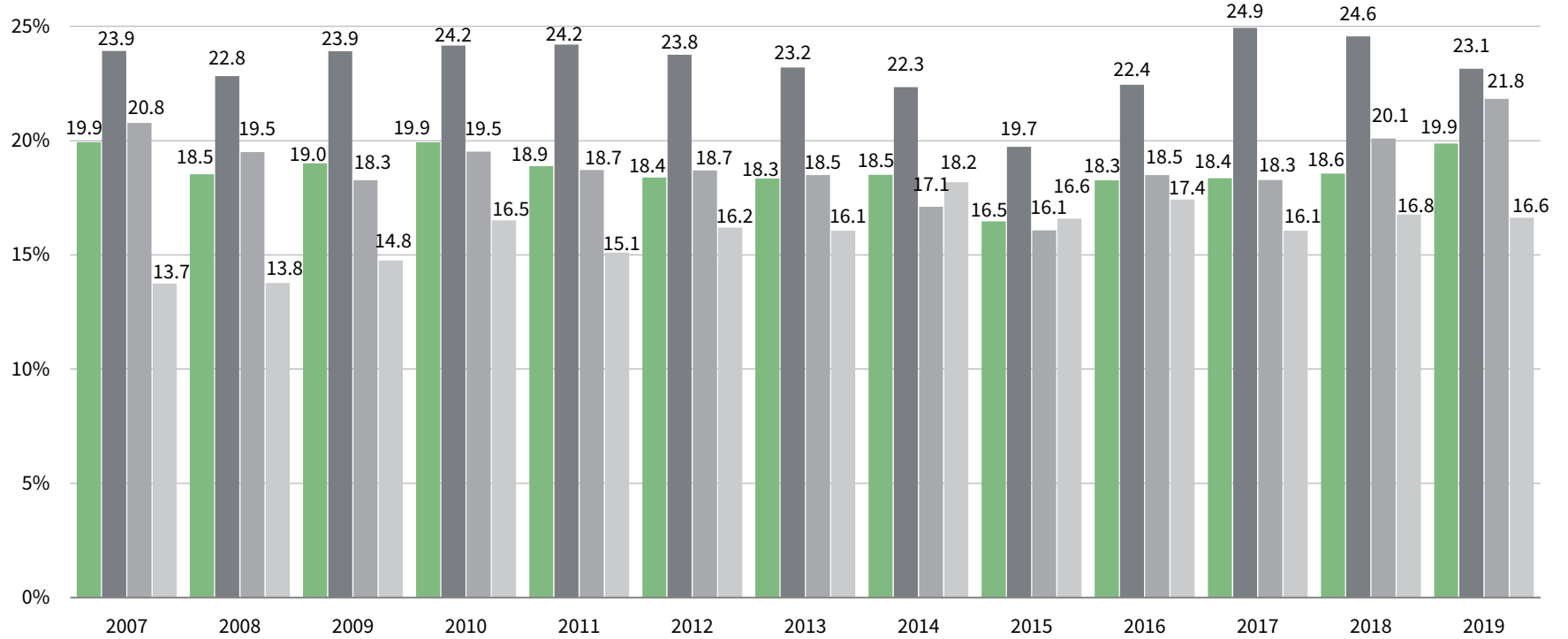
Note: Outliers were identified and excluded, and the same methodology was applied to the private equity and public company universes.

Large European buyout companies consistently operated at the highest margins of any size range

In 2019, the difference between large- and mid-size company margins reached its lowest level of any year in the sample

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

As of December 31, 2019 • EBITDA/Revenue (%)



Number of Companies

	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Buyout Companies	263	320	377	463	545	510	440	459	389	370	311	380	258
EV > €1B	92	109	119	122	126	97	97	66	51	45	36	39	44
EV €250M - €1B	82	107	130	174	187	173	145	133	117	138	120	128	98
EV < €250M	87	105	124	161	222	236	196	255	217	186	147	209	110

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

Note: Outliers were identified and excluded from the private equity company universes.

EUROPEAN PRIVATE EQUITY ANALYSIS

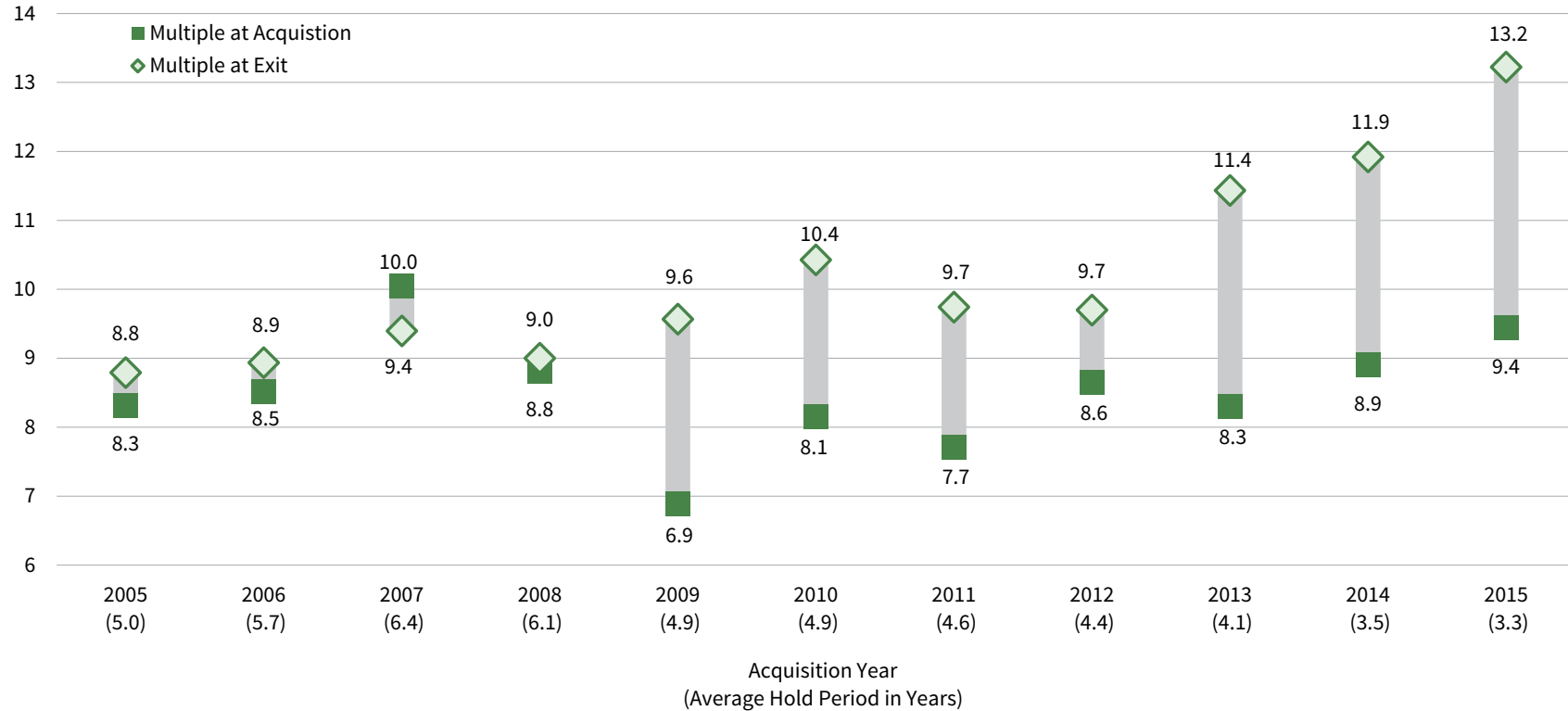
- Purchase Price Multiple
- Leverage Multiple
- Revenue Growth
- EBITDA Growth
- EBITDA Margin
- **Exit Metrics**

European private equity companies acquired from 2009 onward saw median EBITDA multiple expansion of nearly 2.5x...

...while the median multiple expansion for companies acquired before 2009 was almost zero

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

As of December 31, 2019 • Enterprise Value/EBITDA



Number of Companies

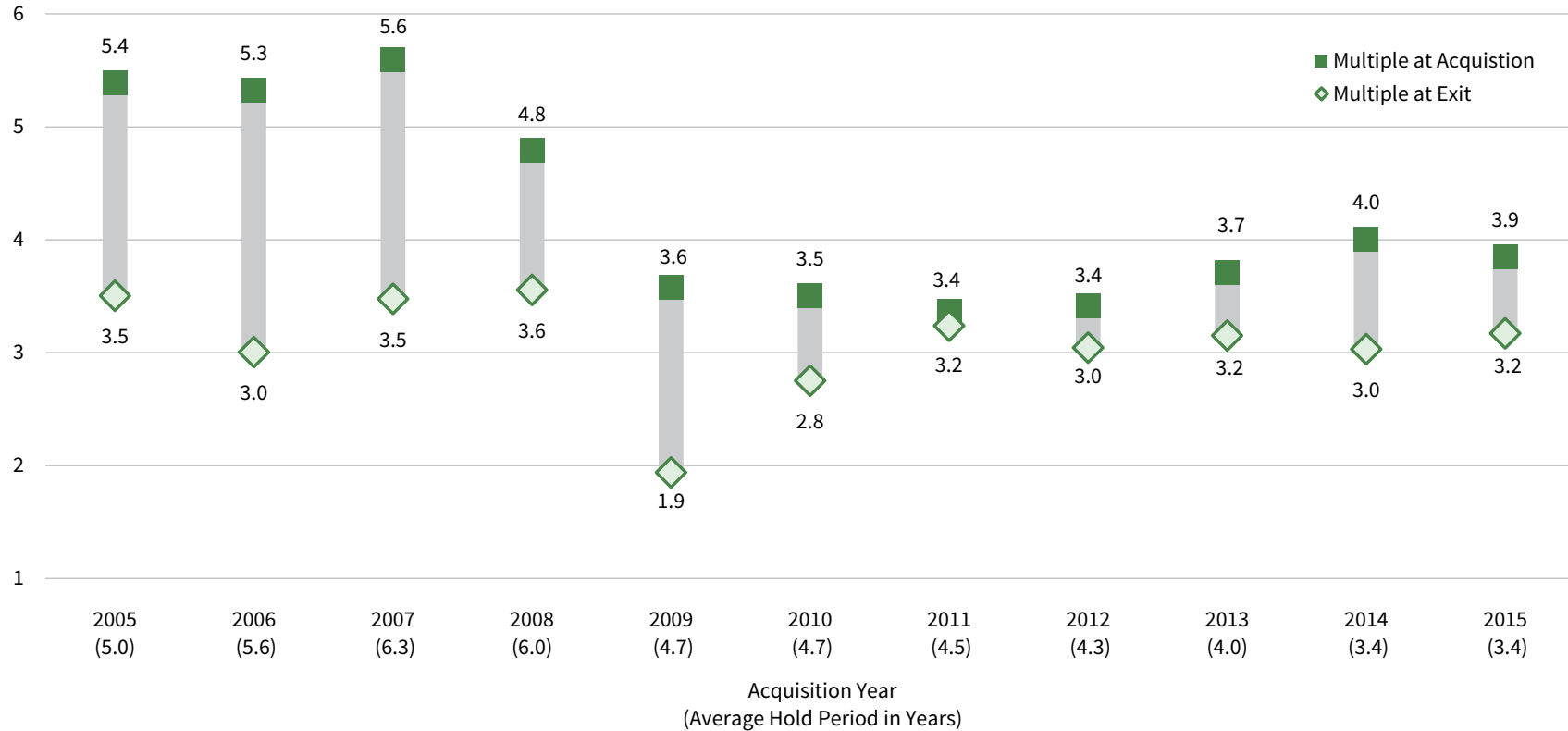
	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
Private Equity-Owned Companies	94	133	113	83	48	99	75	54	44	41	27

In Europe, leverage multiples have generally been lower at exit than at acquisition

However, median deleveraging for companies acquired from 2011 to 2015 was nearly a full turn less than for companies acquired earlier

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

As of December 31, 2019 • Net Debt/EBITDA



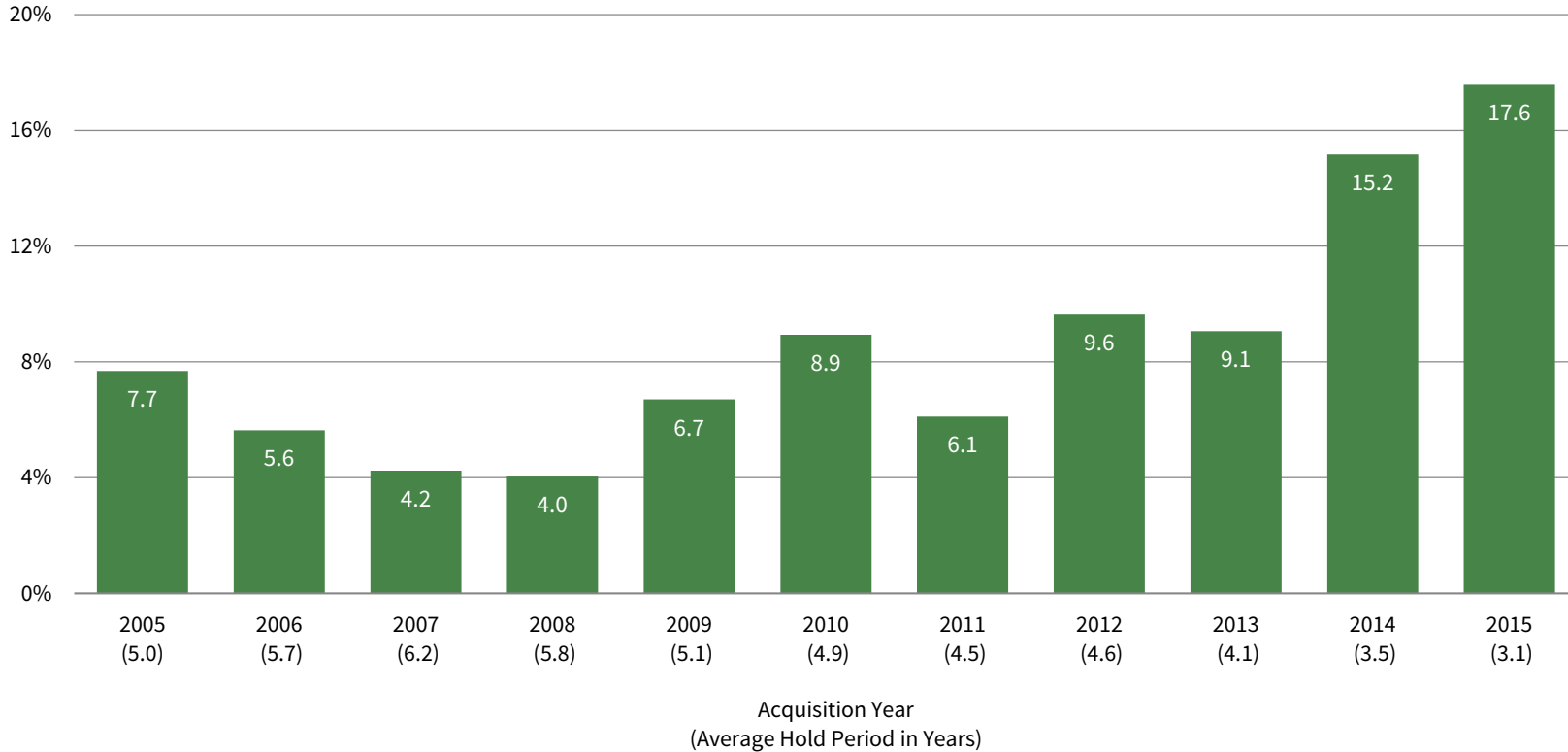
	Number of Companies										
	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
Private Equity-Owned Companies	91	127	108	76	32	80	62	47	38	35	26

Since the low hit for companies acquired in 2008, revenue CAGRs for exited European PE companies have increased

Companies acquired between 2009 and 2015 saw a median revenue CAGR of more than 9%

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

As of December 31, 2019 • Compound Annual Growth Rate (%)



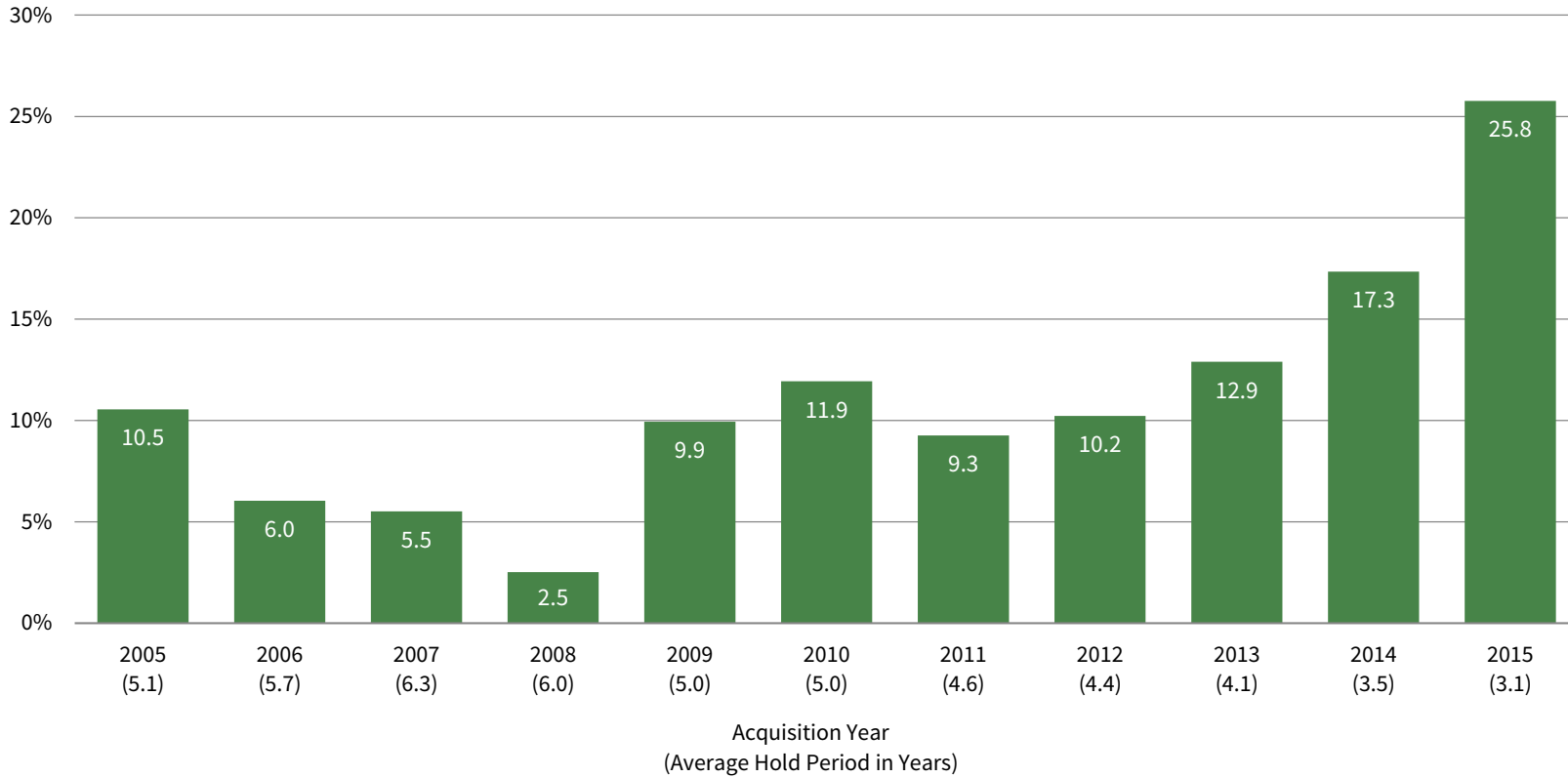
	Number of Companies										
	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
Private Equity-Owned Companies	104	137	130	89	51	105	77	61	47	47	25

European EBITDA CAGRs have followed a similar trend to revenue CAGRs: rising for companies acquired after 2008

The median EBITDA CAGR for companies acquired between 2009 and 2015 was nearly 12%

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

As of December 31, 2019 • Compound Annual Growth Rate (%)



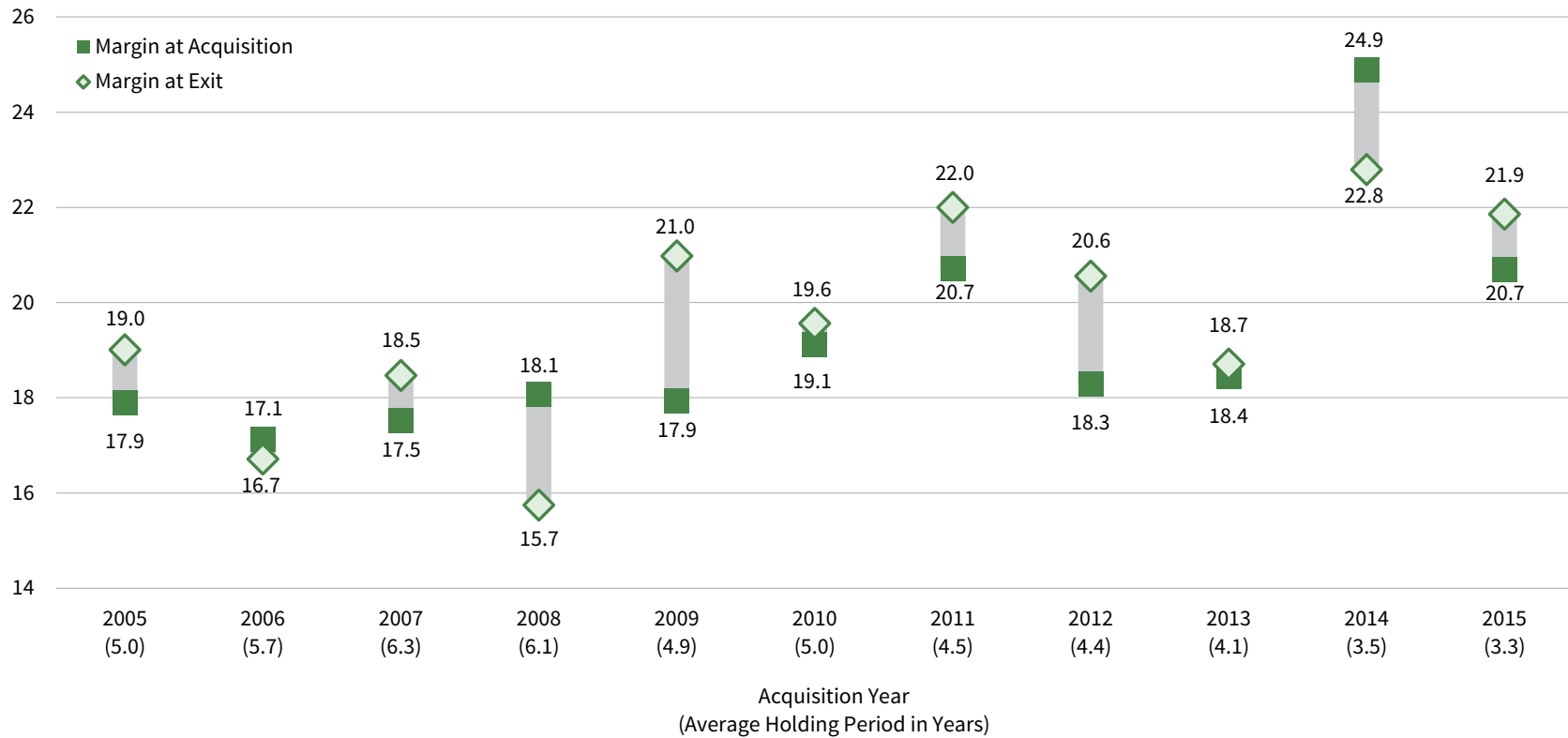
	Number of Companies											
	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	
Private Equity-Owned Companies	102	136	122	88	50	101	76	56	45	43	24	

European EBITDA margins have moved upward since 2006

Margin expansion has been inconsistent across the years of acquisition and limited when measured across the full time period

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

As of December 31, 2019 • EBITDA/Revenue (%)



	Number of Companies											
	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	
Private Equity-Owned Companies	98	130	116	78	46	98	72	54	44	41	27	

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

Note: All companies with negative EBITDA were excluded from the analysis.

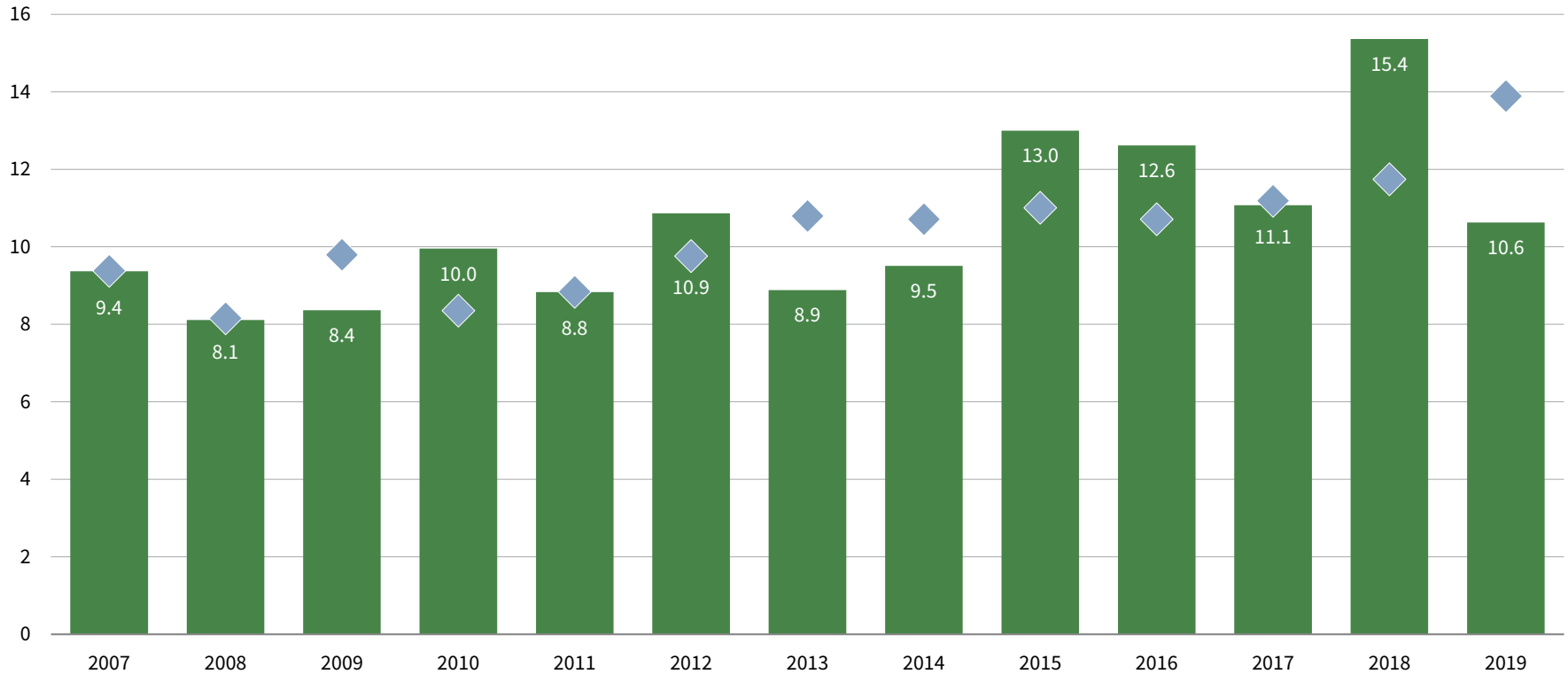
ASIAN PRIVATE EQUITY ANALYSIS

Public valuations in Asia reached a new height in 2019 and outpaced private peers by more than three turns of EBITDA, a reverse of 2018

Prior to 2018, the average difference between private and public PPMs was 1.4 turns

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

As of December 31, 2019 • Enterprise Value/EBITDA



Number of Companies

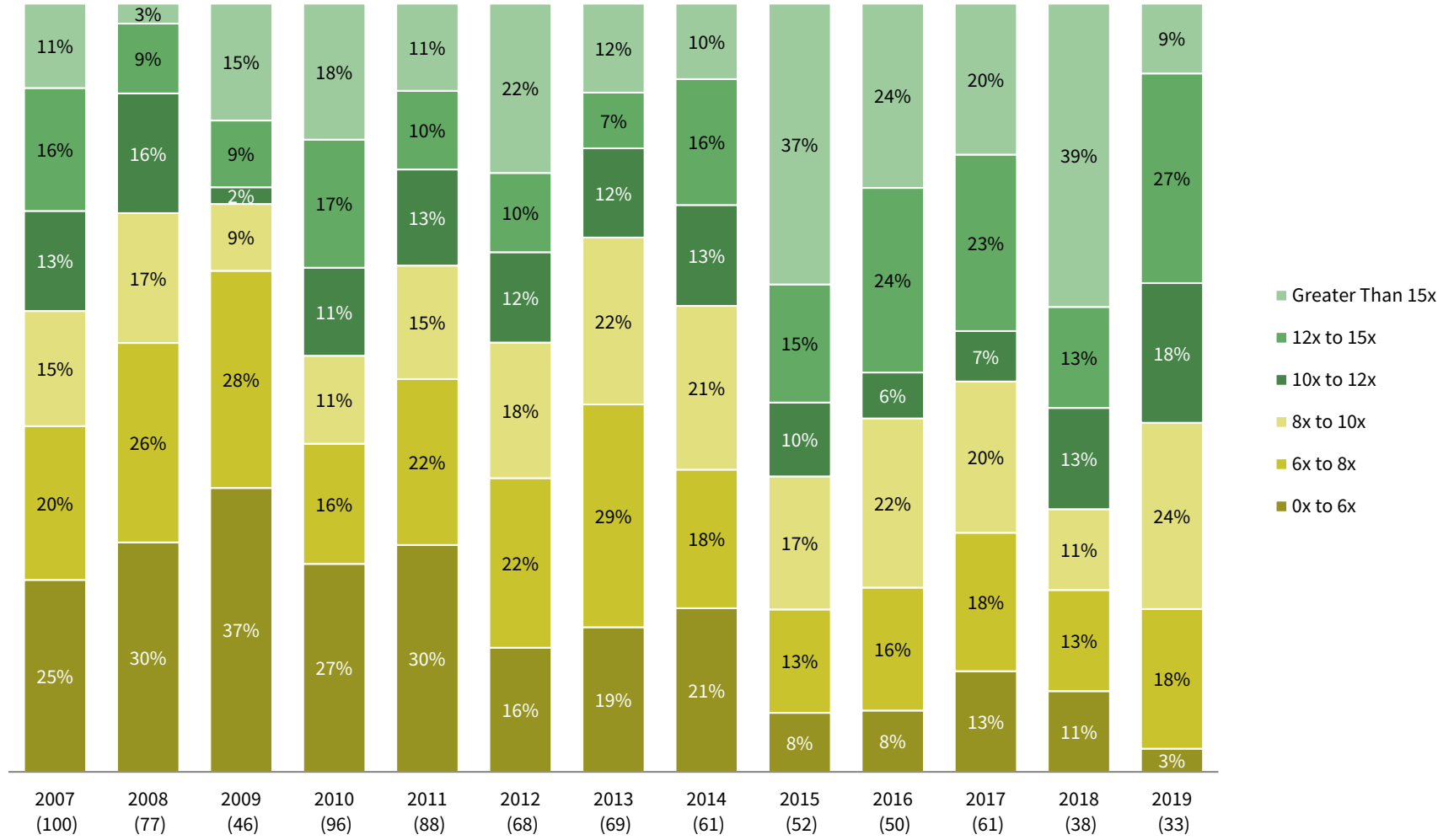
	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Private Equity-Owned Companies	100	77	46	96	88	68	69	61	52	50	61	38	33
MSCI All Country Asia Pacific Index	339	357	458	546	556	574	580	577	583	598	606	780	991

More than 16% fewer transactions were completed at 12x or higher in 2019 than in 2018

PPMs since 2015 averaged 2.7x higher than those in the years 2007-14

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

As of December 31, 2019 • Enterprise Value/EBITDA

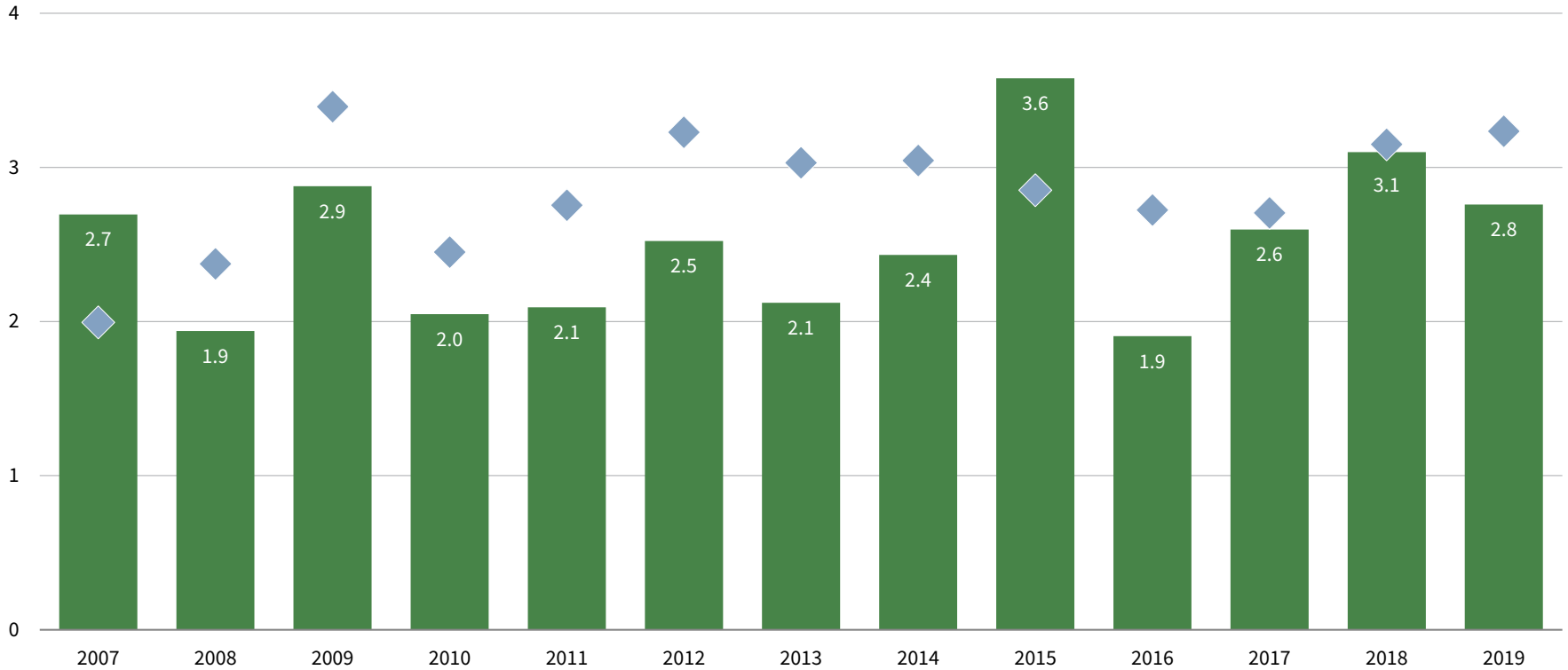


Private and public company leverage multiples were more closely aligned in 2017–19 than in the previous ten years

On average, public company multiples were 0.3x higher than private peers

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

As of December 31, 2019 • Net Debt/EBITDA



Number of Companies

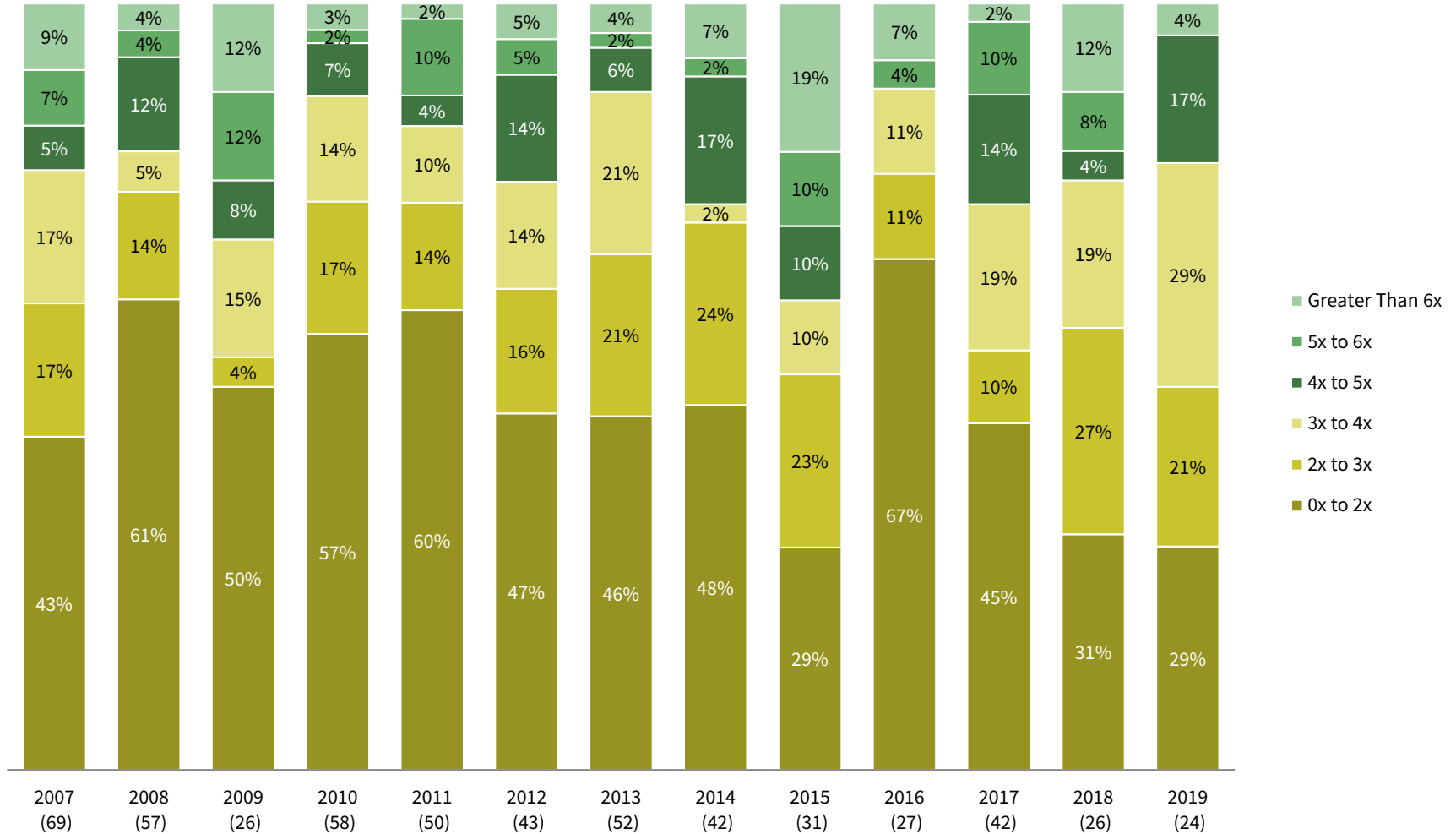
	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Private Equity-Owned Companies	69	57	26	58	50	43	52	42	31	27	42	26	24
MSCI All Country Asia Pacific Index	223	230	301	345	348	366	356	361	360	369	365	484	617

Growth equity bias in Asian PE sample reflected in leverage multiple breakdown

On average, close to 80% of Asia PE companies were levered below 4x since 2007

AVERAGE LEVERAGE MULTIPLE BREAKDOWN OF ASIAN PRIVATE EQUITY-OWNED COMPANIES

As of December 31, 2019 • Net Debt/EBITDA

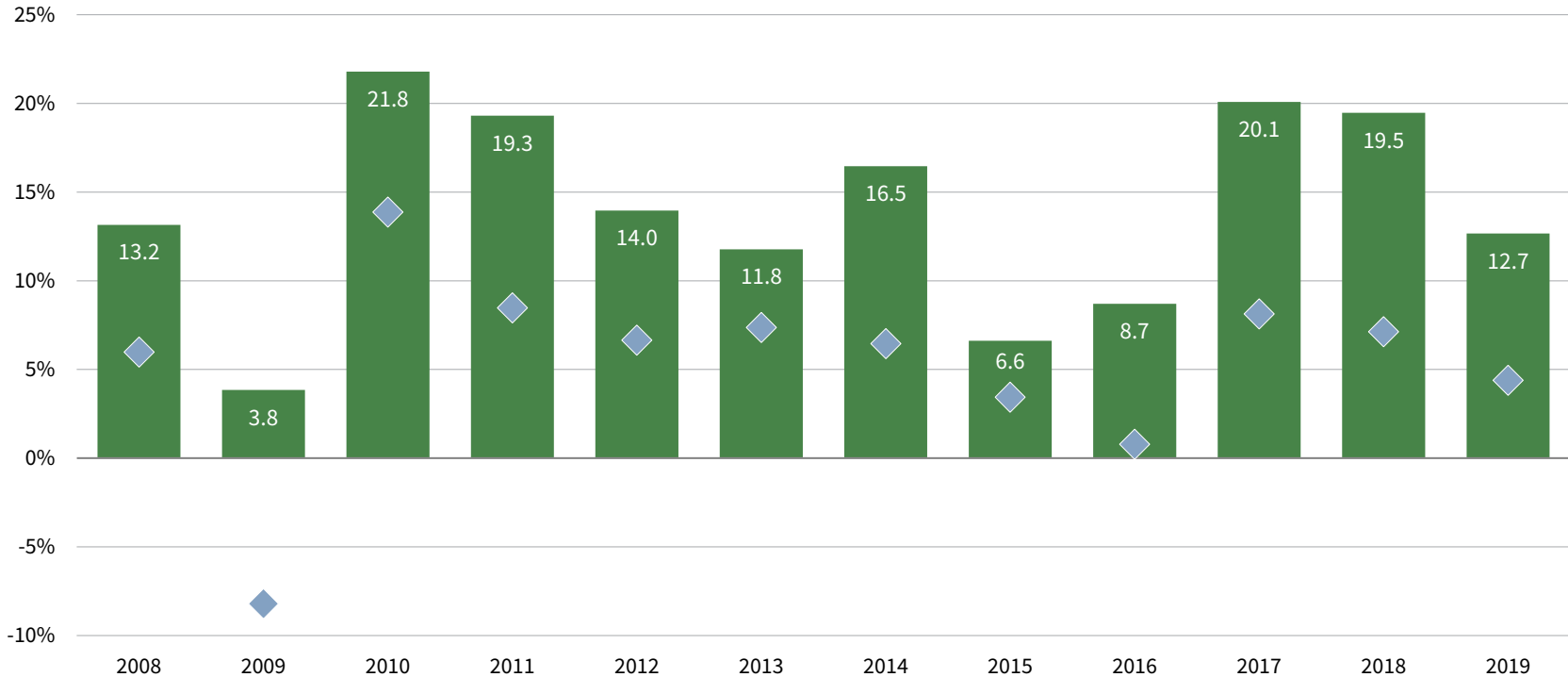


PE-backed companies in Asia grew revenue much faster than public counterparts

PE outperformed public peers by more than 3% every year since 2008 and averaged over 8% higher across the full time period

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

As of December 31, 2019 • Annual Growth Rate (%)



Number of Companies

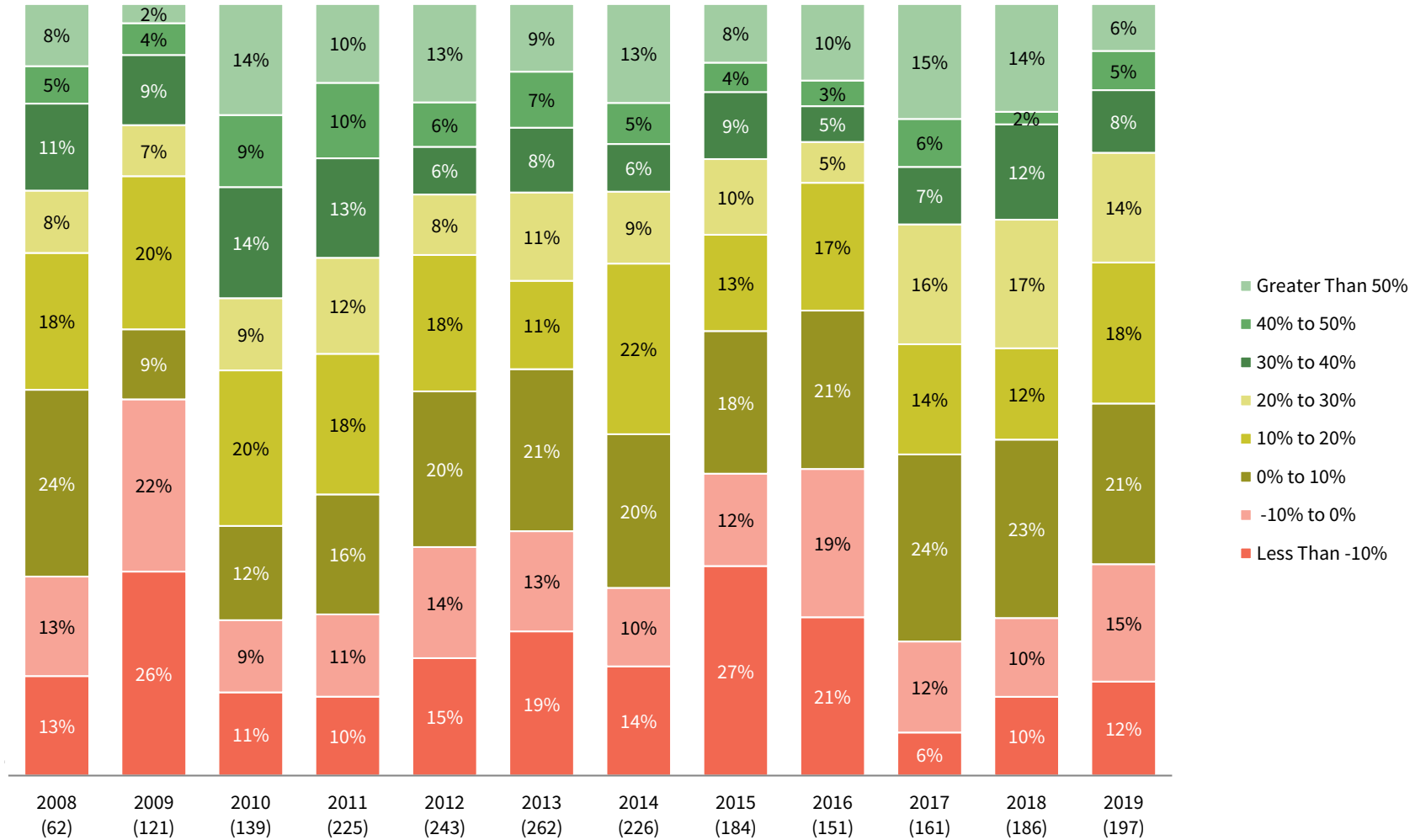
	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Private Equity-Owned Companies	13	4	22	19	14	12	16	7	9	20	19	13
MSCI All Country Asia Pacific Index	684	742	750	783	833	816	833	805	866	862	845	1,115

In every year analyzed, at least 40% of Asian PE-backed companies achieved annual revenue growth of 10% or higher...

...while at least 17% saw revenue decline

AVERAGE ANNUAL REVENUE GROWTH BREAKDOWN OF ASIAN PRIVATE EQUITY-OWNED COMPANIES

As of December 31, 2019 • Annual Growth Rate (%)

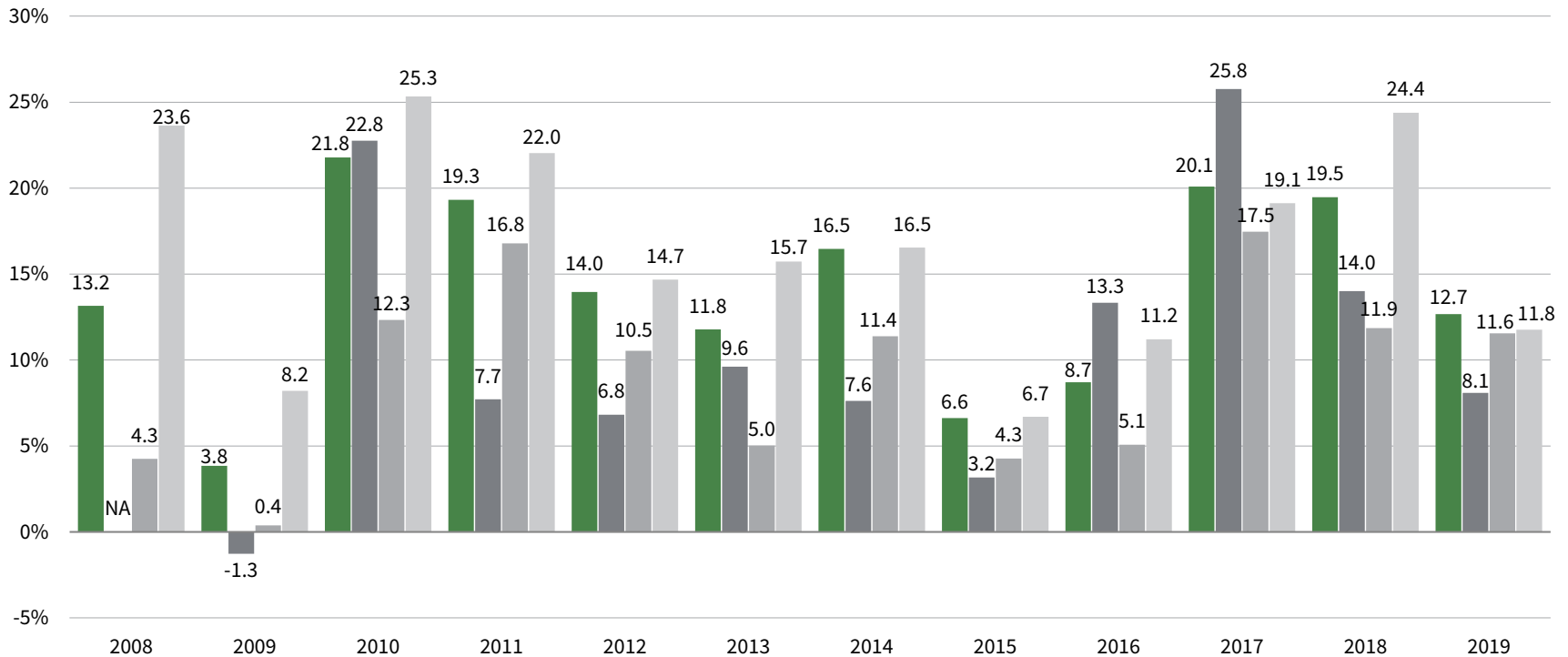


Company size had a less than average impact on revenue growth in 2019 than average

From 2008 to 2019, small companies grew revenue at an average annual pace about 6% faster than the rest

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

As of December 31, 2019 • Annual Growth Rate (%)



Number of Companies

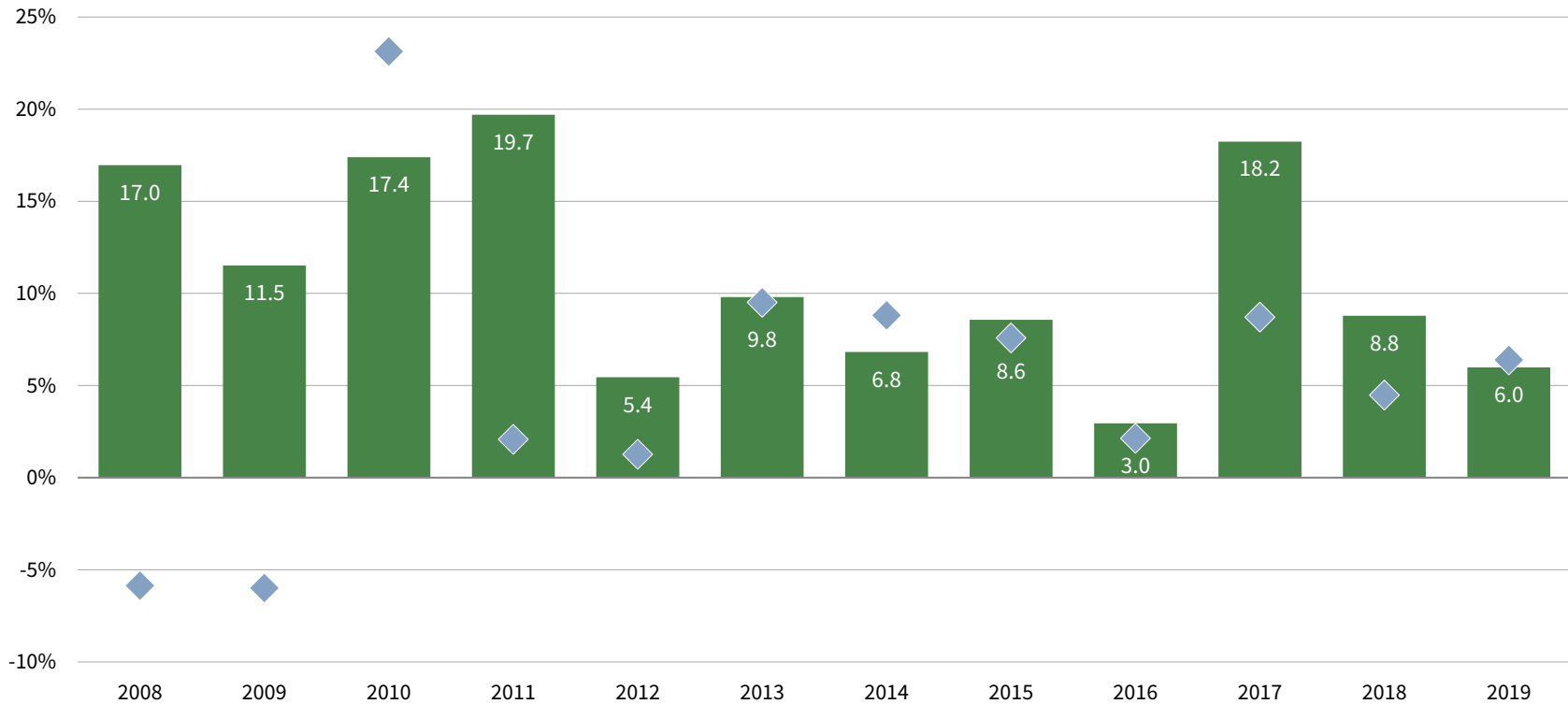
	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Private Equity-Owned Companies	62	121	139	225	243	262	226	184	151	161	186	197
EV > \$1B	NA	20	21	26	34	30	20	21	24	18	23	28
EV \$250M - \$1B	15	27	31	51	54	66	42	47	41	40	51	57
EV < \$250M	35	71	88	136	146	163	161	119	70	83	83	91

In 2019, public company EBITDA growth outpaced that of PE peers for the first time since 2014

On average, PE-backed companies grew EBITDA more than twice as fast as publics per annum, 11.0% versus 5.2%, respectively

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

As of December 31, 2019 • Annual Growth Rate (%)



Number of Companies

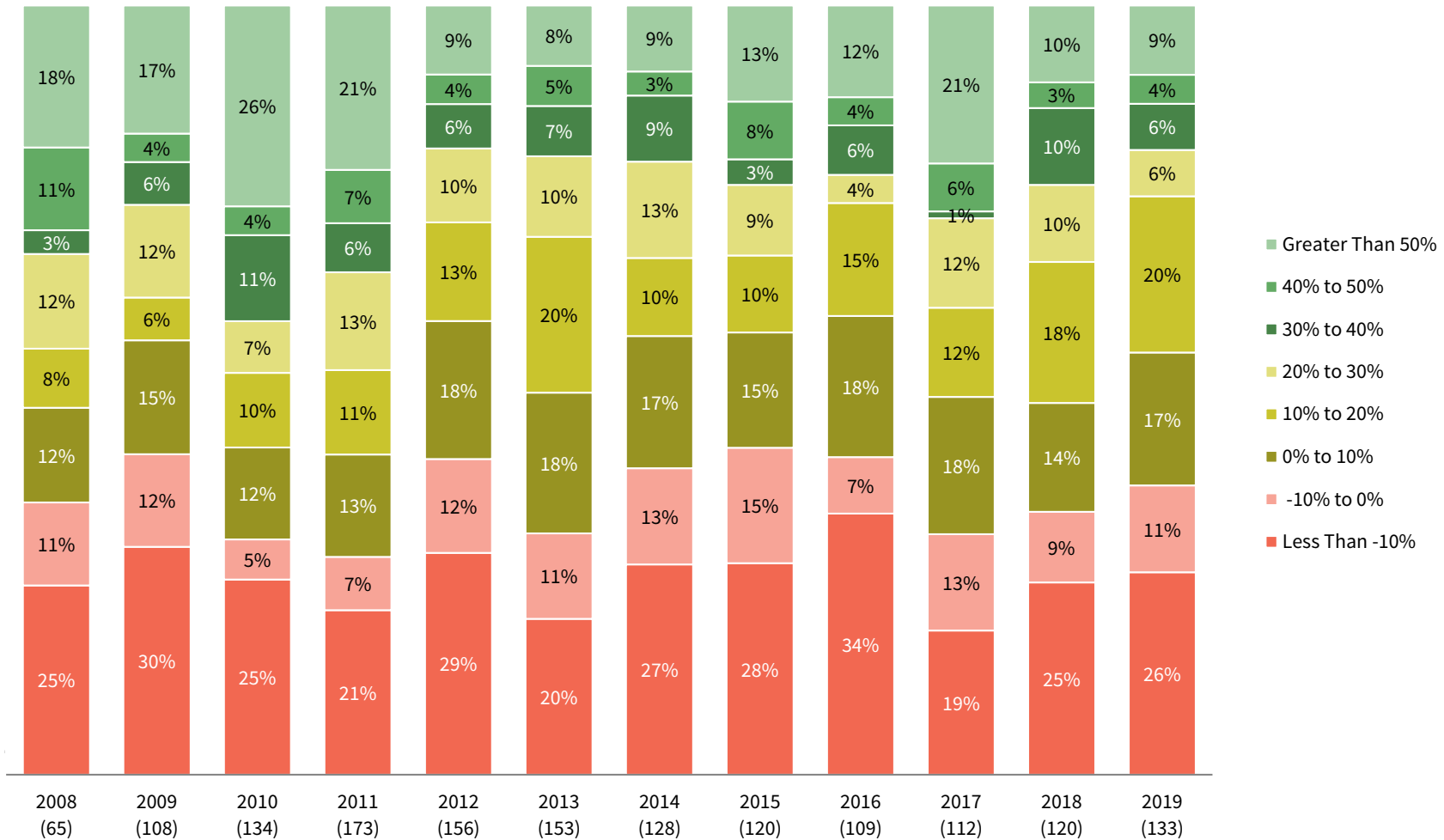
	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Private Equity-Owned Companies	65	108	134	173	156	153	128	120	109	112	120	133
MSCI All Country Asia Pacific Index	428	441	539	614	655	667	656	662	713	720	727	947

Close to a third of PE-owned companies were “in the red” each year since 2008...

...while only a fifth achieved EBITDA growth above 30%

AVERAGE ANNUAL EBITDA GROWTH BREAKDOWN OF ASIAN PRIVATE EQUITY-OWNED COMPANIES

As of December 31, 2019 • Annual Growth Rate (%)

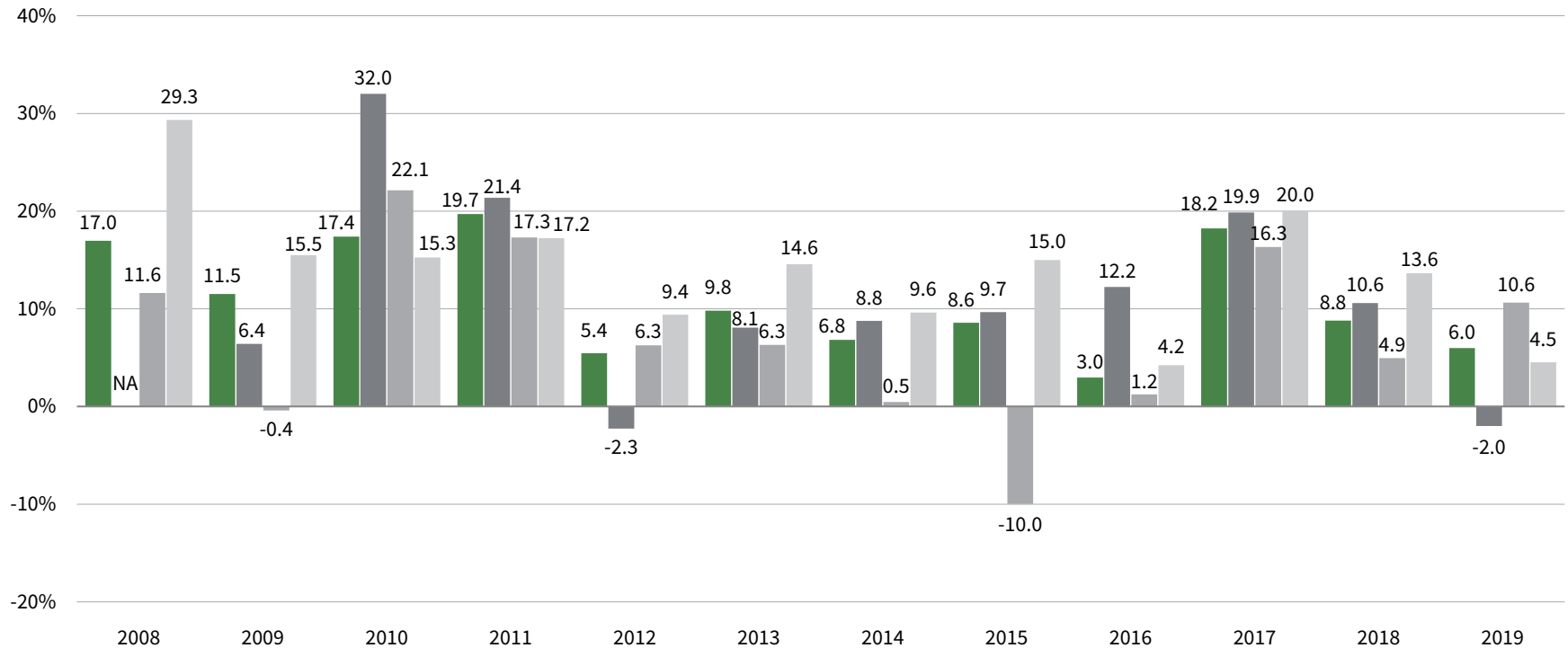


Since 2008, small PE-backed companies grew EBITDA annually nearly twice as fast as mid-sized counterparts, on average

In 2019, large companies experienced EBITDA decline for only the second time since 2009

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

As of December 31, 2019 • Annual Growth Rate (%)



Number of Companies

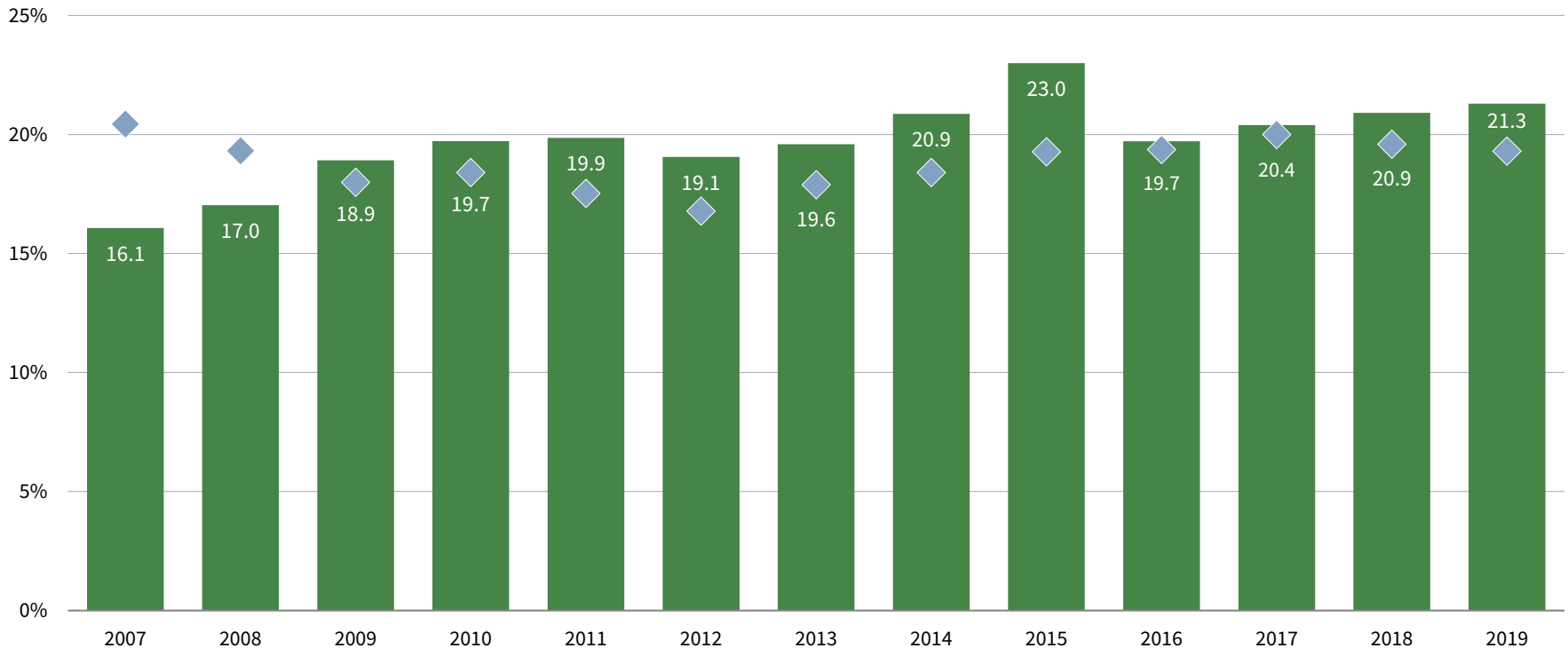
	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Private Equity-Owned Companies	65	108	134	173	156	153	128	120	109	112	120	133
EV > \$1B	NA	21	19	24	34	29	22	20	22	17	24	24
EV \$250M - \$1B	19	24	30	46	46	53	38	45	33	32	43	49
EV < \$250M	33	64	80	98	74	68	69	54	48	54	53	62

Year-over-year, EBITDA margins were relatively consistent for PE and public companies

The difference between margins for PE-backed and public companies averaged less than 1% over the full time period

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

As of December 31, 2019 • EBITDA/Revenue (%)



Number of Companies

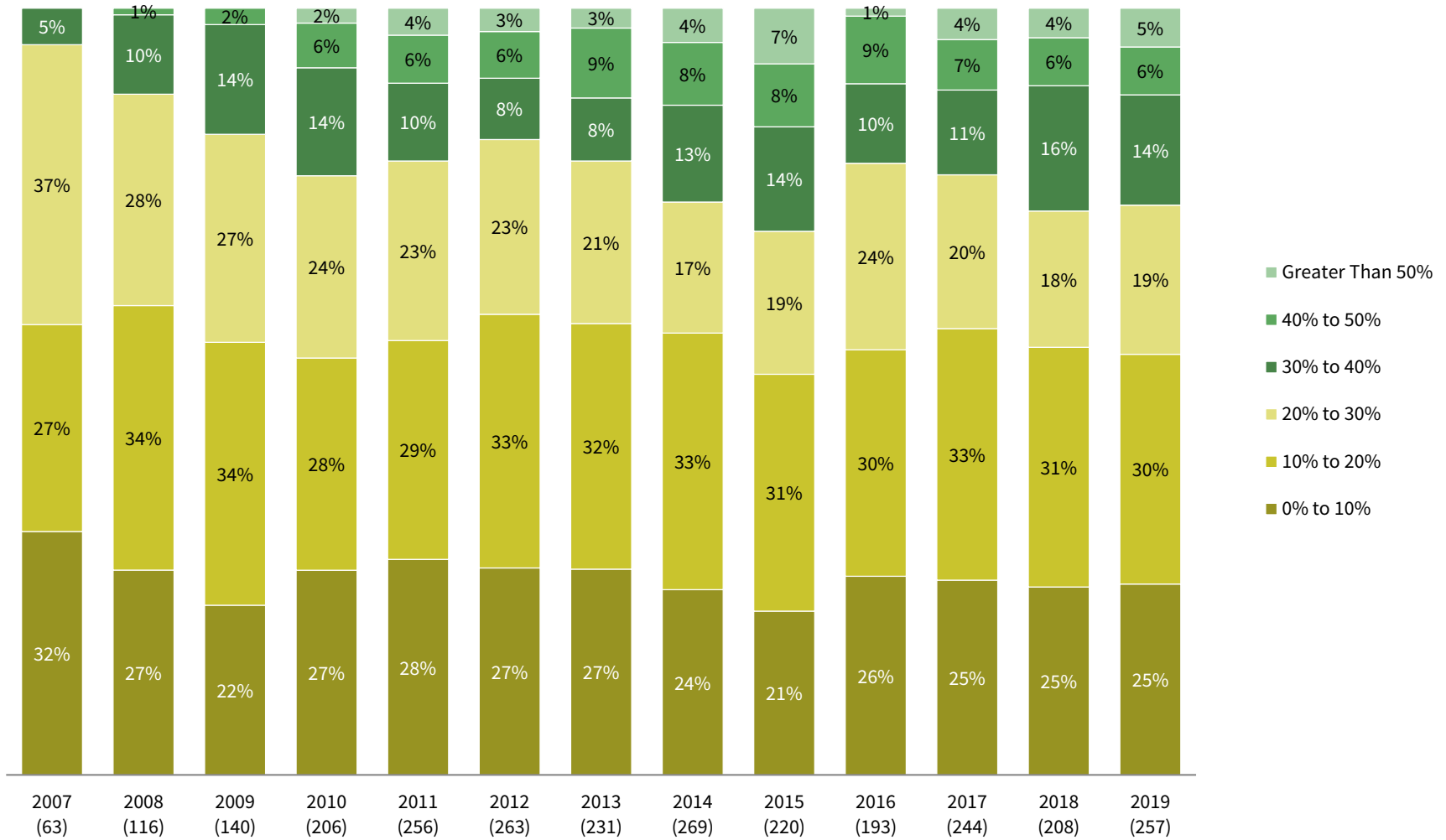
	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Private Equity-Owned Companies	63	116	140	206	256	263	231	269	220	193	244	208	257
MSCI All Country Asia Pacific Index	620	515	617	719	747	755	763	771	784	790	798	1,061	1,270

The breakdown of EBITDA margins has barely changed since the GFC

In every year since 2007, at least 37% of PE-backed companies operated at margins of 20% or higher

AVERAGE ANNUAL EBITDA MARGIN BREAKDOWN OF ASIAN PRIVATE EQUITY-OWNED COMPANIES

As of December 31, 2019 • EBITDA/Revenue (%)

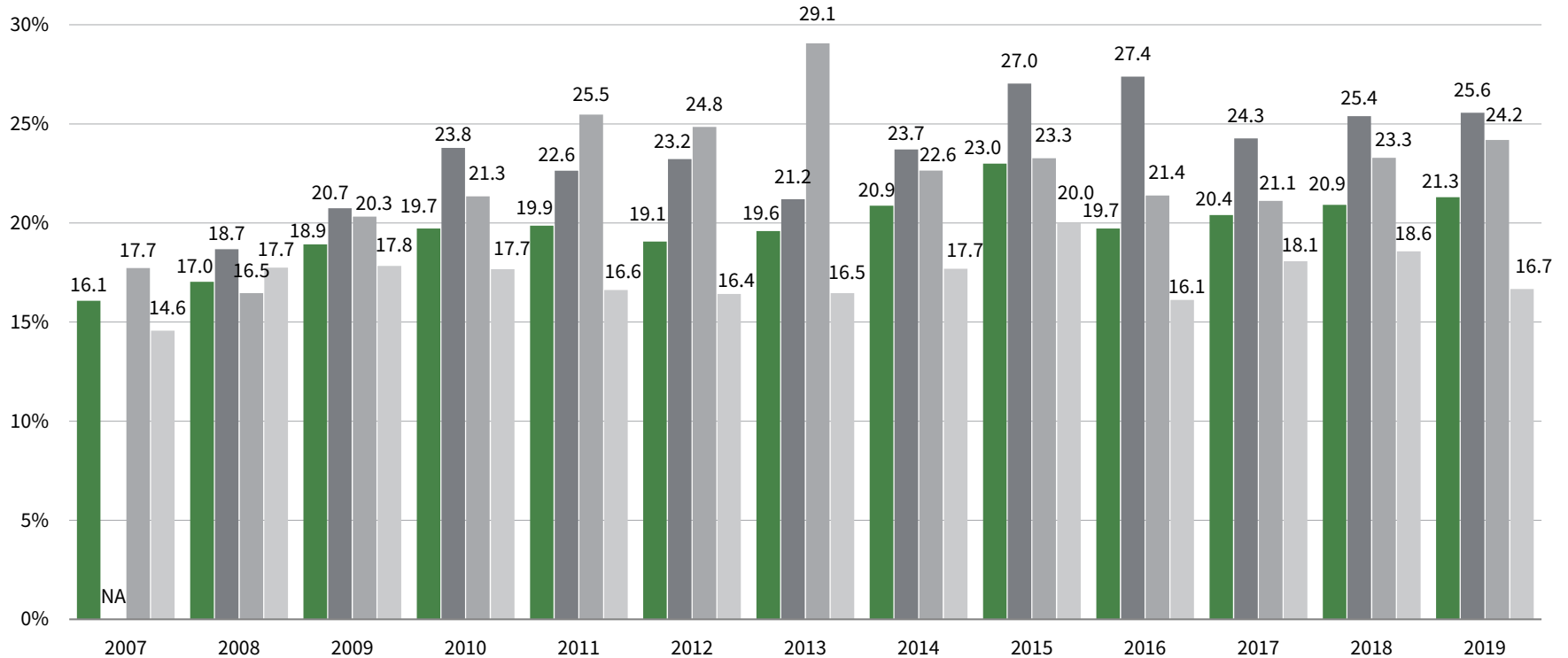


Large- and mid-sized companies in Asia have operated at similar margins since 2007

EBITDA margins for small companies were, on average, at least 5% lower than the rest of the sample

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

As of December 31, 2019 • EBITDA/Revenue (%)



Number of Companies

	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Private Equity-Owned Companies	63	116	140	206	256	263	231	269	220	193	244	208	257
EV > \$1B	NA	19	22	35	44	46	35	41	46	29	40	32	48
EV \$250M - \$1B	15	27	32	53	71	89	74	81	73	53	80	59	83
EV < \$250M	36	72	85	112	135	133	124	135	91	97	114	112	109



**CAMBRIDGE
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