

PRIVATE COMPANY OPERATING METRICS: GLOBAL ANALYSIS

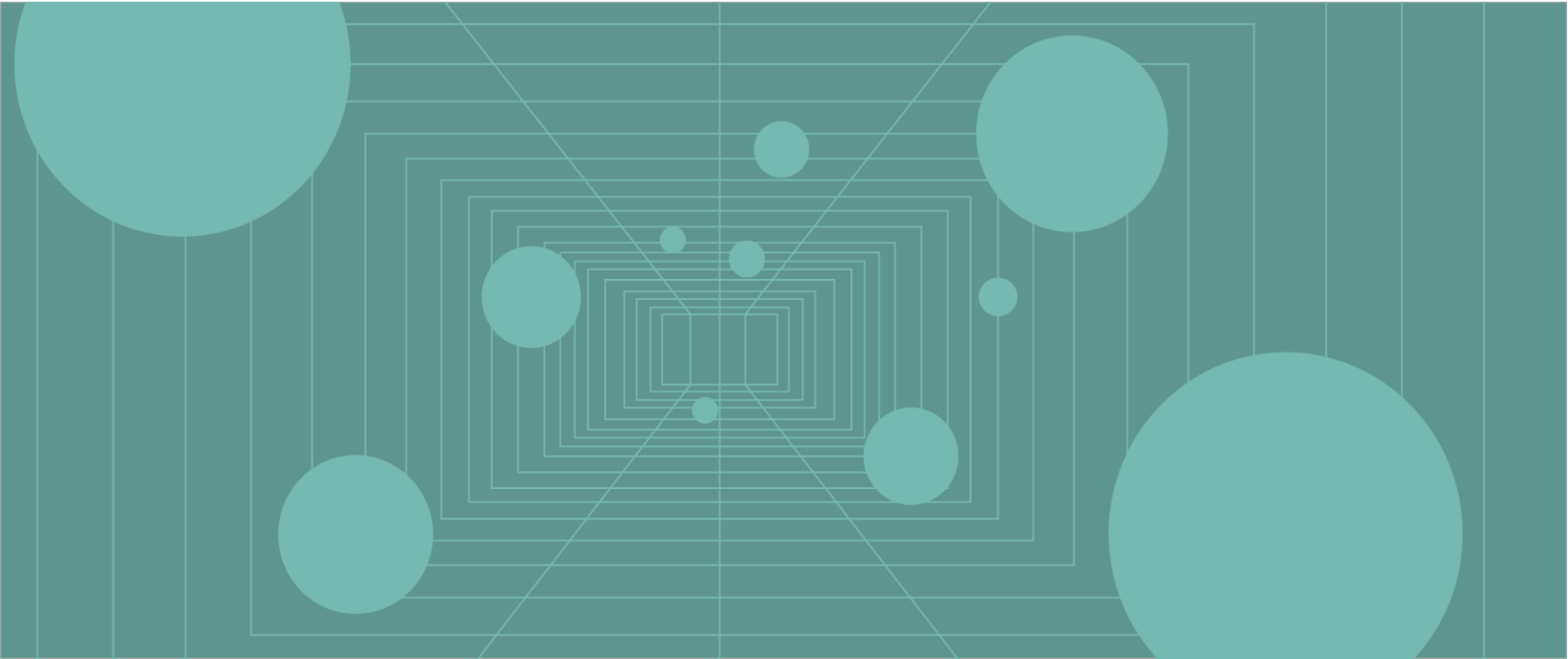


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Introduction to Operating Metrics

- 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 and optimize their capital structures, then—after 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 seven consecutive years. This year’s report includes data through the period ending December 31, 2017.
- 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 4,000 US-based companies, more than 2,000 European companies, and more than 1,200 Asian companies acquired by PE firms from 2000 through 2017 and is subject to change over time. Across the globe, the companies included in the analysis range in enterprise value from less than \$1 million to larger than \$130 billion.
- 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 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; however, these changes are not reflected in this report as the analyses are as of December 31, 2017. It should be noted that the GICS changes could have a meaningful impact on future sector analyses.
- 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 COMPARISONS: ASIA, EUROPE, AND THE UNITED STATES*

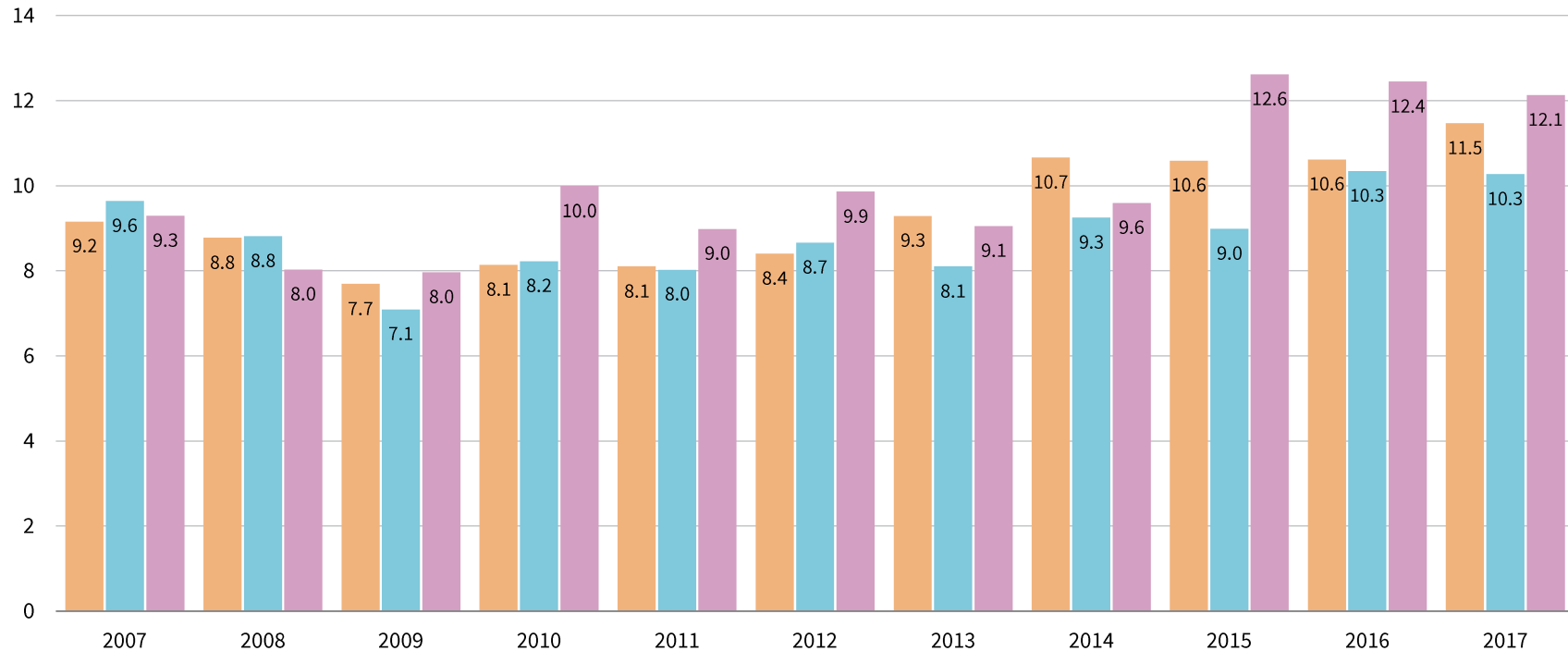
* Investments in Asia, Europe, and the United States represent different opportunities that will impact the metrics in this report. For a breakdown of buyout, growth equity, and others deals in each region, see Appendix A.

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

Asian acquisition multiples have been the highest among the regions, influenced by the high growth equity component of the sample

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

As of December 31, 2017 • Enterprise Value/EBITDA



Number of Companies

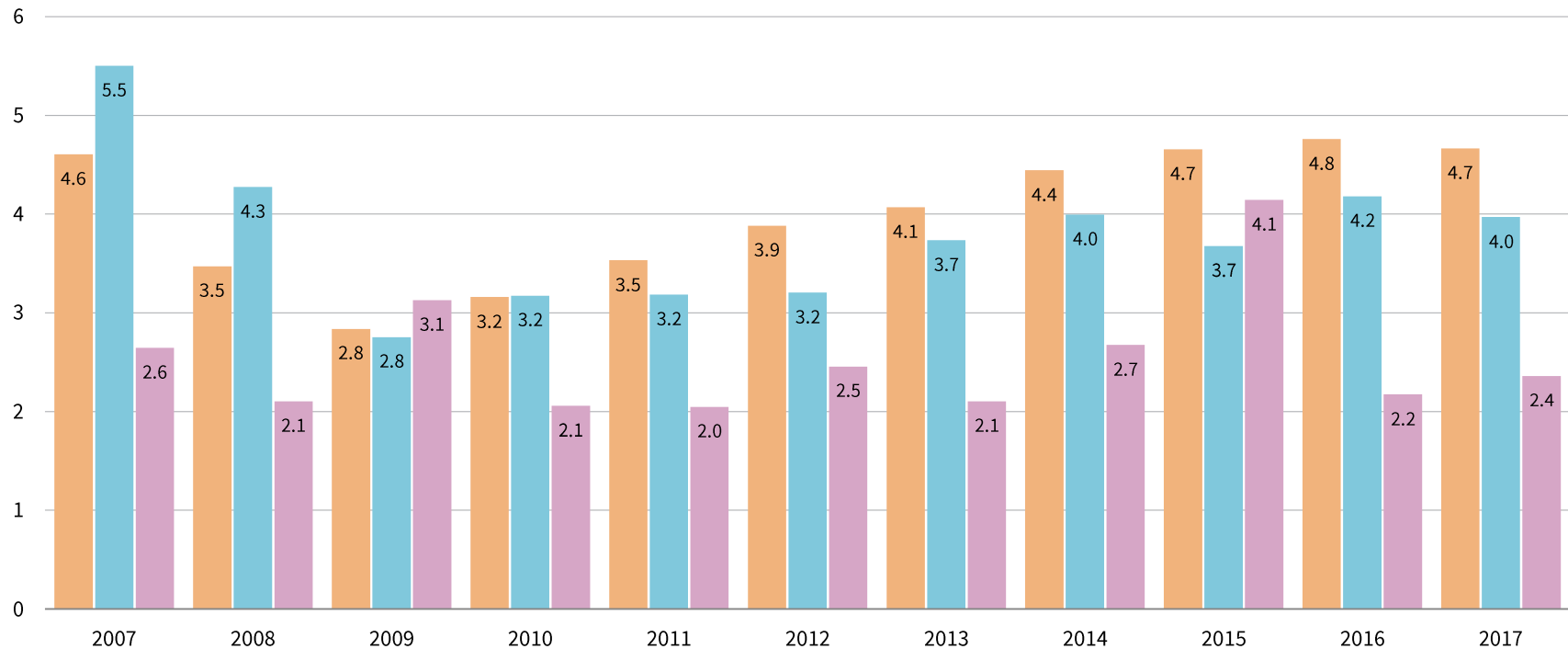
| | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 |
|---------------|------|------|------|------|------|------|------|------|------|------|------|
| United States | 317 | 194 | 117 | 245 | 225 | 283 | 157 | 208 | 185 | 166 | 146 |
| Europe | 171 | 123 | 66 | 151 | 156 | 113 | 104 | 123 | 91 | 91 | 61 |
| Asia | 97 | 75 | 42 | 93 | 82 | 61 | 61 | 54 | 37 | 39 | 35 |

Leverage generally rose in the United States and Europe from 2009 to 2016; it dropped slightly in 2017

Asian companies continued to be significantly less levered

AVERAGE EBITDA LEVERAGE MULTIPLES AT ACQUISITION OF PRIVATE COMPANIES BY REGION

As of December 31, 2017 • Net Debt/EBITDA



Number of Companies

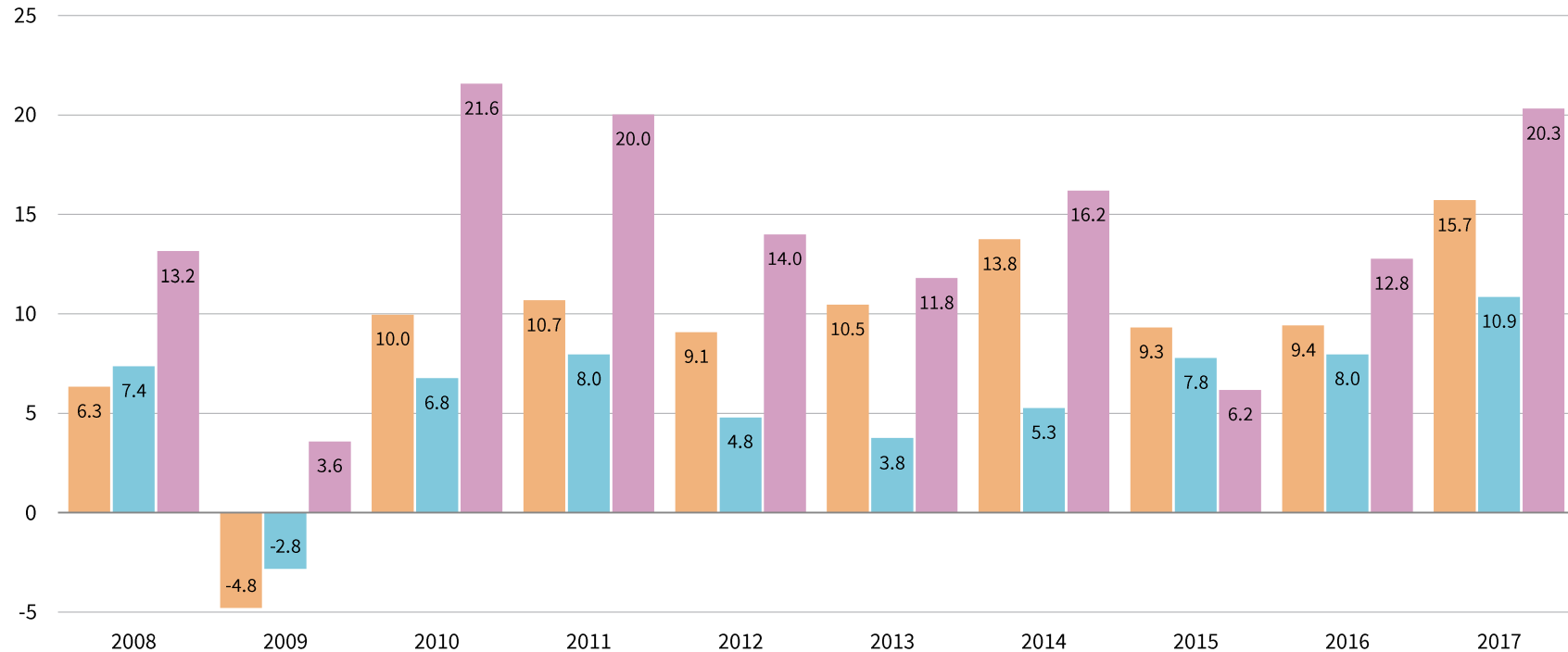
| | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 |
|---------------|------|------|------|------|------|------|------|------|------|------|------|
| United States | 295 | 171 | 103 | 230 | 214 | 259 | 149 | 195 | 170 | 154 | 145 |
| Europe | 167 | 120 | 51 | 141 | 143 | 107 | 94 | 116 | 84 | 82 | 55 |
| Asia | 66 | 56 | 26 | 56 | 47 | 40 | 44 | 37 | 21 | 21 | 23 |

Globally, private companies grew revenue strongly in 2017, with growth in all three regions meaningfully improving over 2015 and 2016

Asian companies have averaged more than double the growth of European companies and more than 1.5 times the growth of US companies

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

As of December 31, 2017 • Annual Growth Rate (%)



Number of Companies

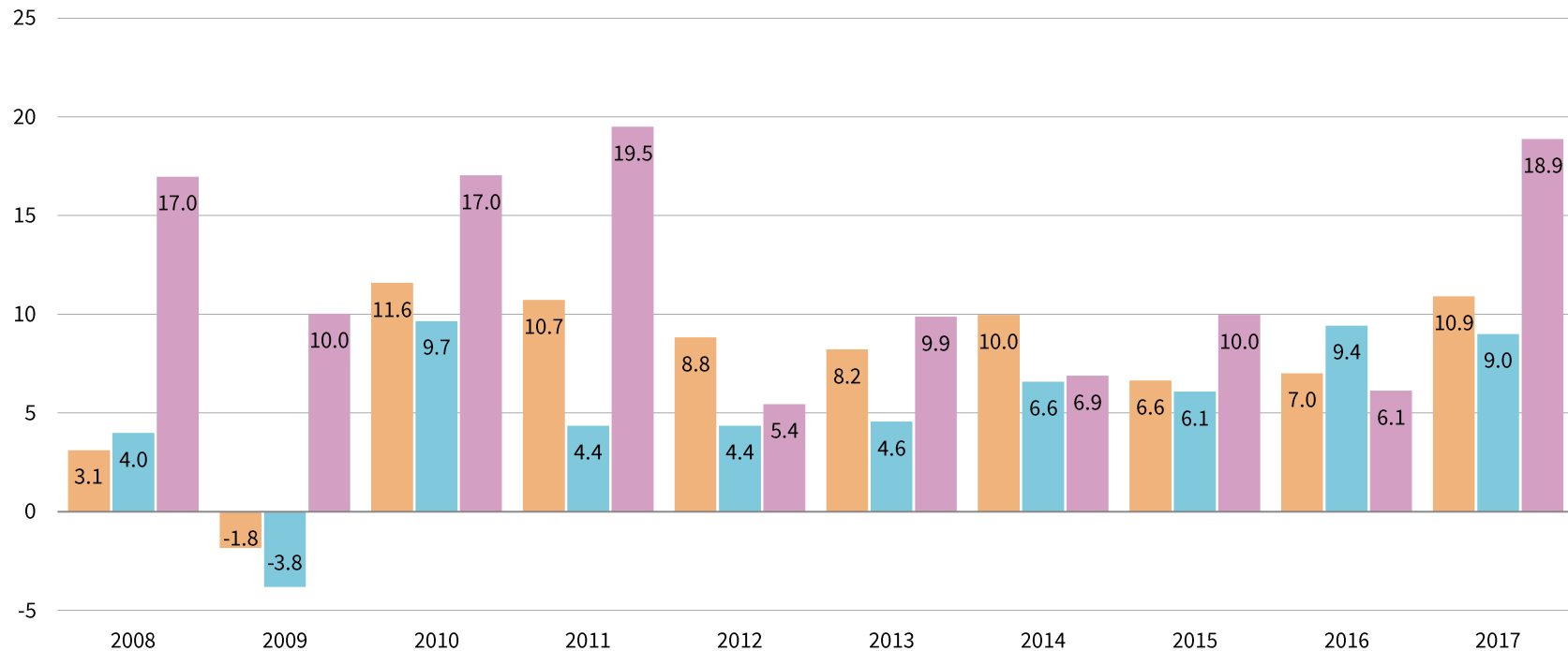
| | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 |
|---------------|------|------|------|------|------|------|------|------|------|------|
| United States | 295 | 509 | 633 | 765 | 791 | 724 | 747 | 658 | 624 | 552 |
| Europe | 254 | 340 | 402 | 467 | 474 | 406 | 341 | 335 | 284 | 248 |
| Asia | 62 | 120 | 138 | 225 | 242 | 261 | 228 | 187 | 127 | 125 |

Across regions, 2017 EBITDA growth eclipsed the prior five-year average

Europe trailed other regions over the period with average growth of 5.4%, versus Asia with 12.1% and the United States with 7.5%

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

As of December 31, 2017 • Annual Growth Rate (%)



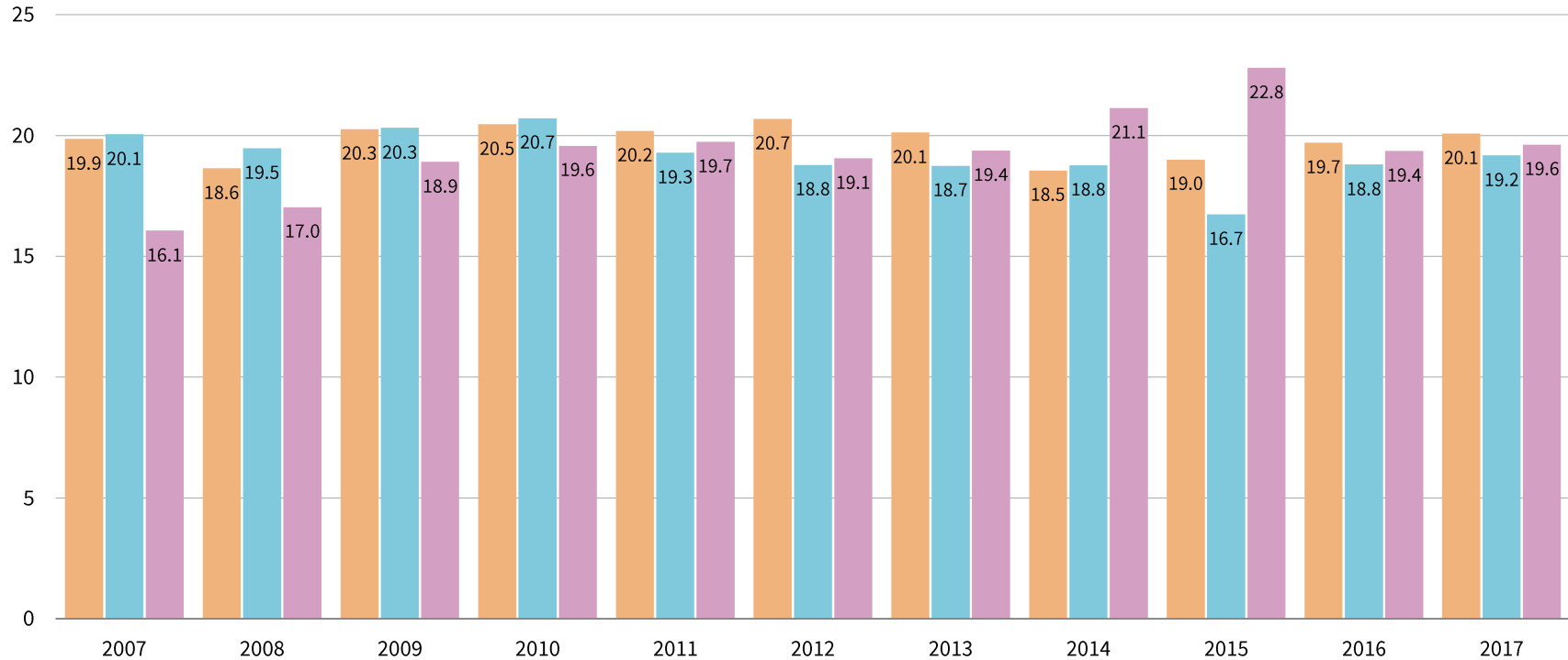
Number of Companies

| | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 |
|---------------|------|------|------|------|------|------|------|------|------|------|
| United States | 276 | 448 | 542 | 677 | 688 | 602 | 610 | 502 | 465 | 405 |
| Europe | 234 | 314 | 348 | 432 | 438 | 363 | 307 | 311 | 252 | 205 |
| Asia | 65 | 106 | 133 | 171 | 155 | 152 | 129 | 119 | 94 | 94 |

US companies generally operated with the highest margins

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

As of December 31, 2017 • EBITDA/Revenue (%)



Number of Companies

| | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 |
|---------------|------|------|------|------|-------|-------|------|------|------|------|------|
| United States | 320 | 489 | 654 | 848 | 1,046 | 1,161 | 886 | 965 | 792 | 798 | 762 |
| Europe | 276 | 347 | 430 | 531 | 630 | 618 | 515 | 556 | 480 | 433 | 363 |
| Asia | 63 | 116 | 140 | 204 | 254 | 263 | 232 | 271 | 201 | 170 | 216 |

EUROPEAN ANALYSIS

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

As public valuations decreased in 2016, private company valuations jumped; they both remained roughly the same in 2017

Private PPMs in 2016 and 2017 represented an increase of 1.3x over 2015, reflecting a premium to public company valuations

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

As of December 31, 2017 • Enterprise Value/EBITDA



Number of Companies

| | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 |
|--------------------------------|------|------|------|------|------|------|------|------|------|------|------|
| Private Equity-Owned Companies | 171 | 123 | 66 | 151 | 156 | 113 | 104 | 123 | 91 | 91 | 61 |
| MSCI All Country Europe Index | 318 | 241 | 216 | 230 | 229 | 227 | 231 | 236 | 239 | 221 | 218 |

Before evaporating in 2016, PE buyout “discount” to public companies increased from 2013 to 2015

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

As of December 31, 2017 • Enterprise Value/EBITDA



Number of Companies

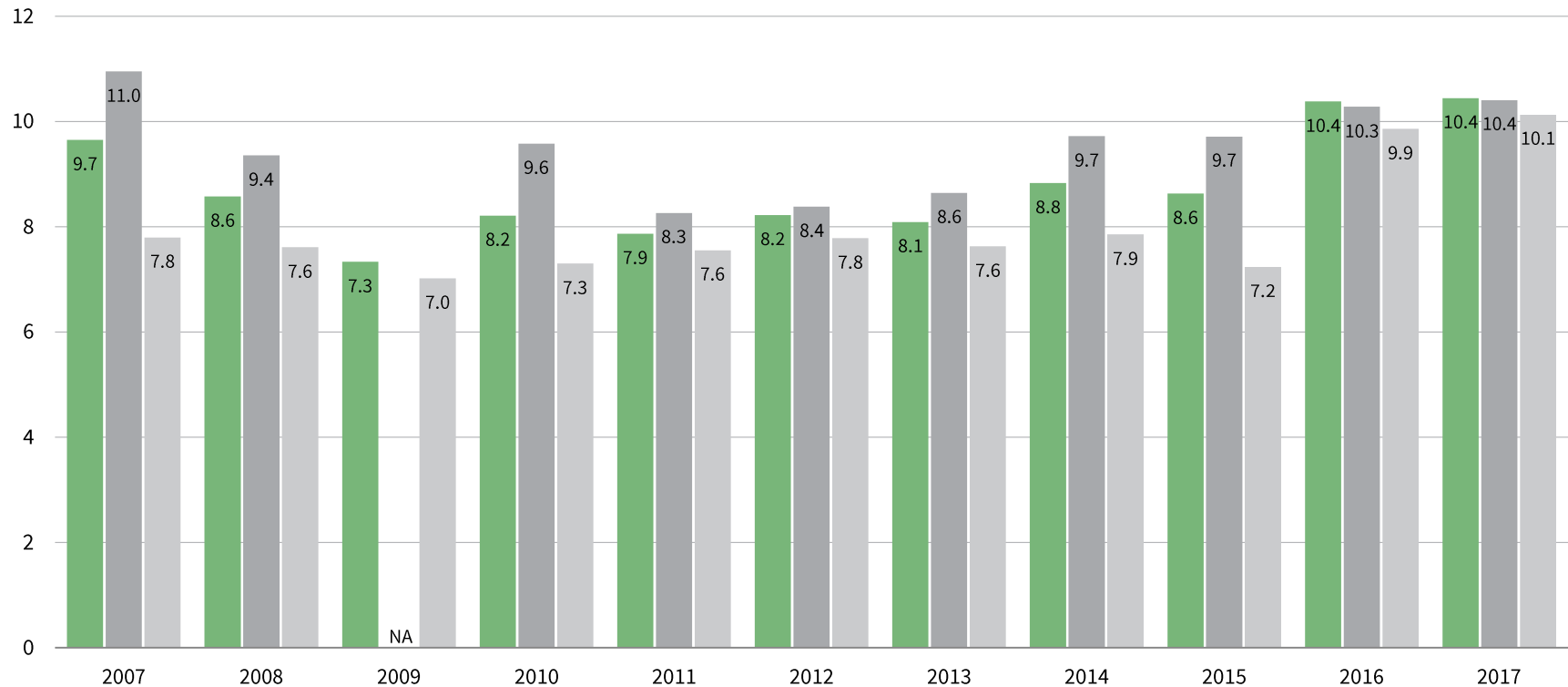
| | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 |
|-------------------------------|------|------|------|------|------|------|------|------|------|------|------|
| Buyout Companies | 151 | 103 | 48 | 119 | 132 | 83 | 88 | 100 | 73 | 78 | 52 |
| MSCI All Country Europe Index | 318 | 241 | 216 | 230 | 229 | 227 | 231 | 236 | 239 | 221 | 218 |

Small European buyout companies are historically cheapest ...

... but the discount is shrinking

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

As of December 31, 2017 • Enterprise Value/EBITDA



Number of Companies

| | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 |
|------------------|------|------|------|------|------|------|------|------|------|------|------|
| Buyout Companies | 151 | 103 | 48 | 119 | 132 | 83 | 88 | 100 | 73 | 78 | 52 |
| EV €250M – €1B | 54 | 40 | NA | 35 | 45 | 29 | 21 | 33 | 32 | 36 | 17 |
| EV < €250M | 58 | 47 | 31 | 72 | 78 | 42 | 55 | 56 | 39 | 38 | 30 |

EUROPEAN ANALYSIS

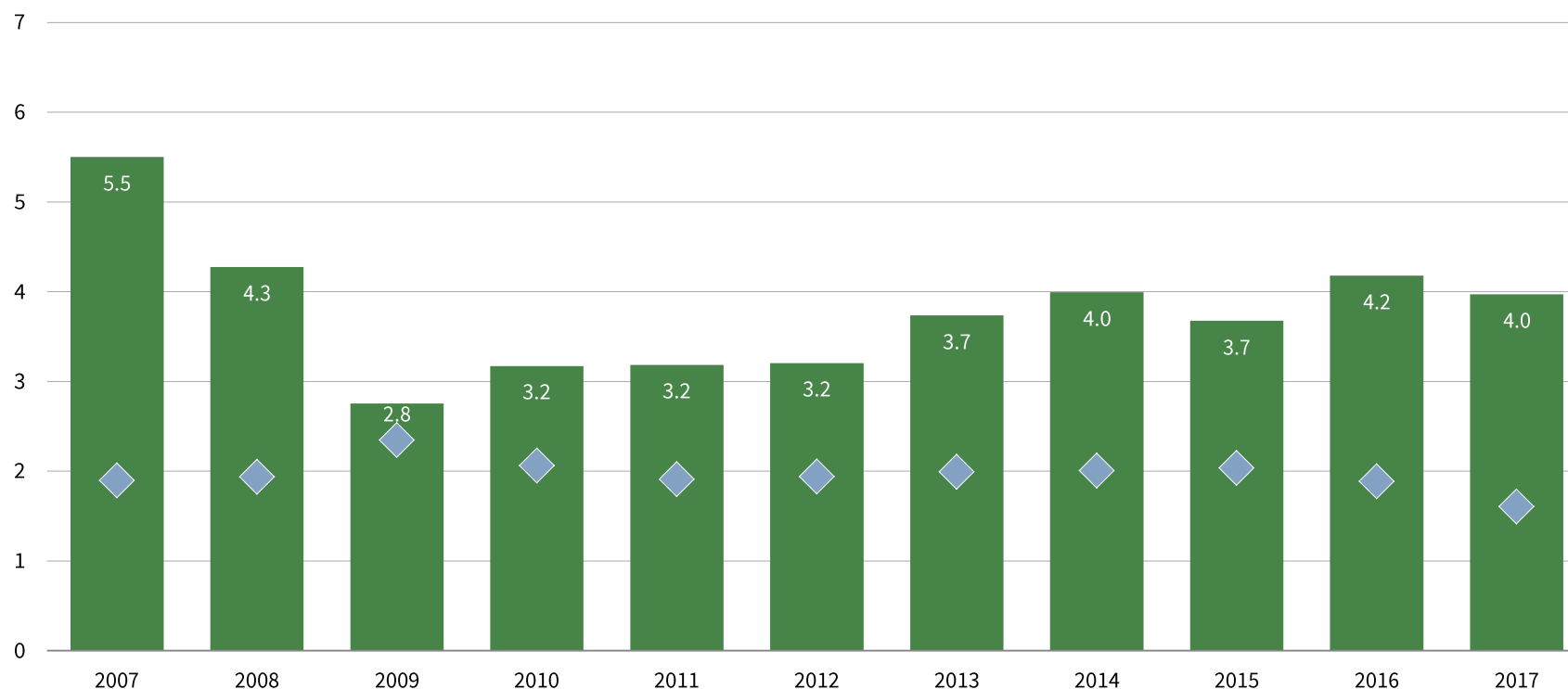
- Purchase Price Multiple
- **Leverage Multiple**
- Revenue Growth
- EBITDA Growth
- EBITDA Margin
- Exit Metrics

Since 2009, leverage has increased in PE-owned companies and has remained relatively constant in publics

Buyouts dominate the European sample

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

As of December 31, 2017 • Net Debt/EBITDA



Number of Companies

| | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 |
|--------------------------------|------|------|------|------|------|------|------|------|------|------|------|
| Private Equity-Owned Companies | 167 | 120 | 51 | 141 | 143 | 107 | 94 | 116 | 84 | 82 | 55 |
| MSCI All Country Europe Index | 253 | 208 | 187 | 184 | 195 | 192 | 187 | 199 | 192 | 184 | 177 |



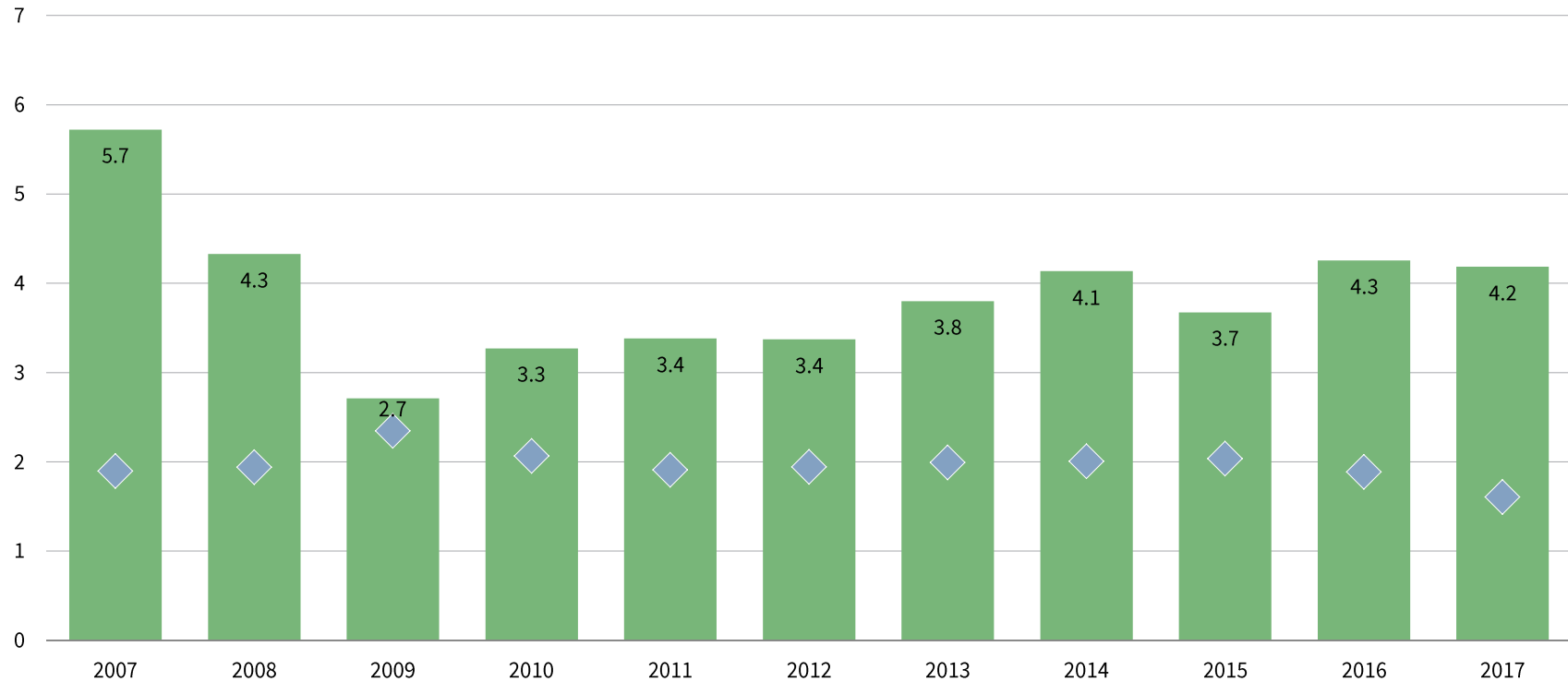
Sources: Cambridge Associates LLC Private Investments Database (as reported by investment managers), FactSet Research Systems, and MSCI Inc. MSCI data provided "as is" without any express or implied warranties.
 Note: Outliers were identified and excluded and the same methodology was applied to the private equity and public company universes.

Leveraged buyouts lived up to their name

For the last five years, PE-owned companies have carried approximately twice the leverage of public companies

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

As of December 31, 2017 • Net Debt/EBITDA



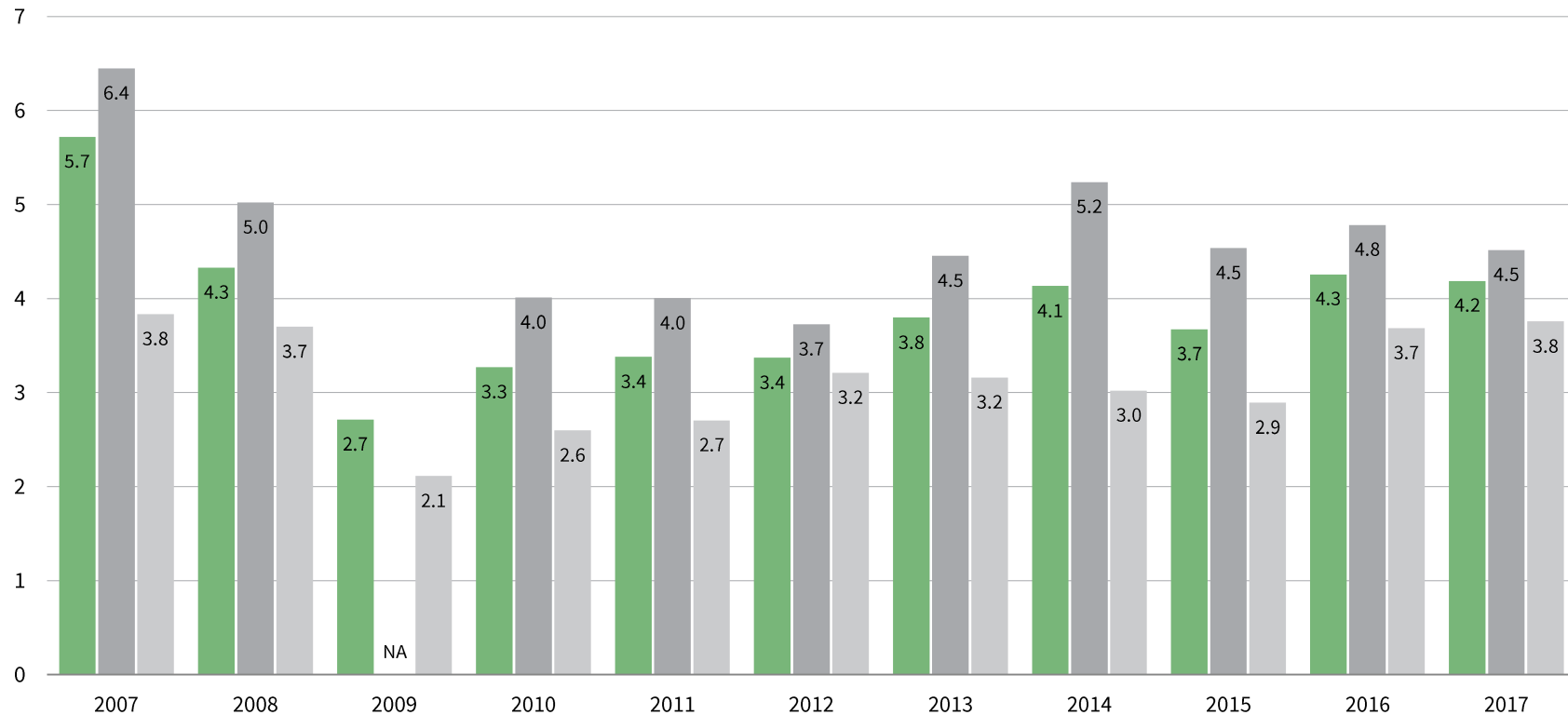
Number of Companies

| | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 |
|-------------------------------|------|------|------|------|------|------|------|------|------|------|------|
| Buyout Companies | 147 | 100 | 40 | 112 | 124 | 83 | 81 | 98 | 73 | 71 | 47 |
| MSCI All Country Europe Index | 253 | 208 | 187 | 184 | 195 | 192 | 187 | 199 | 192 | 184 | 177 |

Despite an increase in leverage in 2016 and 2017, small buyouts have remained less levered than larger peers

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

As of December 31, 2017 • Net Debt/EBITDA



Number of Companies

| | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 |
|------------------|------|------|------|------|------|------|------|------|------|------|------|
| Buyout Companies | 147 | 100 | 40 | 112 | 124 | 83 | 81 | 98 | 73 | 71 | 47 |
| EV €250M – €1B | 55 | 41 | NA | 35 | 44 | 29 | 23 | 34 | 28 | 36 | 15 |
| EV < €250M | 55 | 44 | 23 | 64 | 70 | 40 | 48 | 51 | 37 | 31 | 23 |

EUROPEAN ANALYSIS

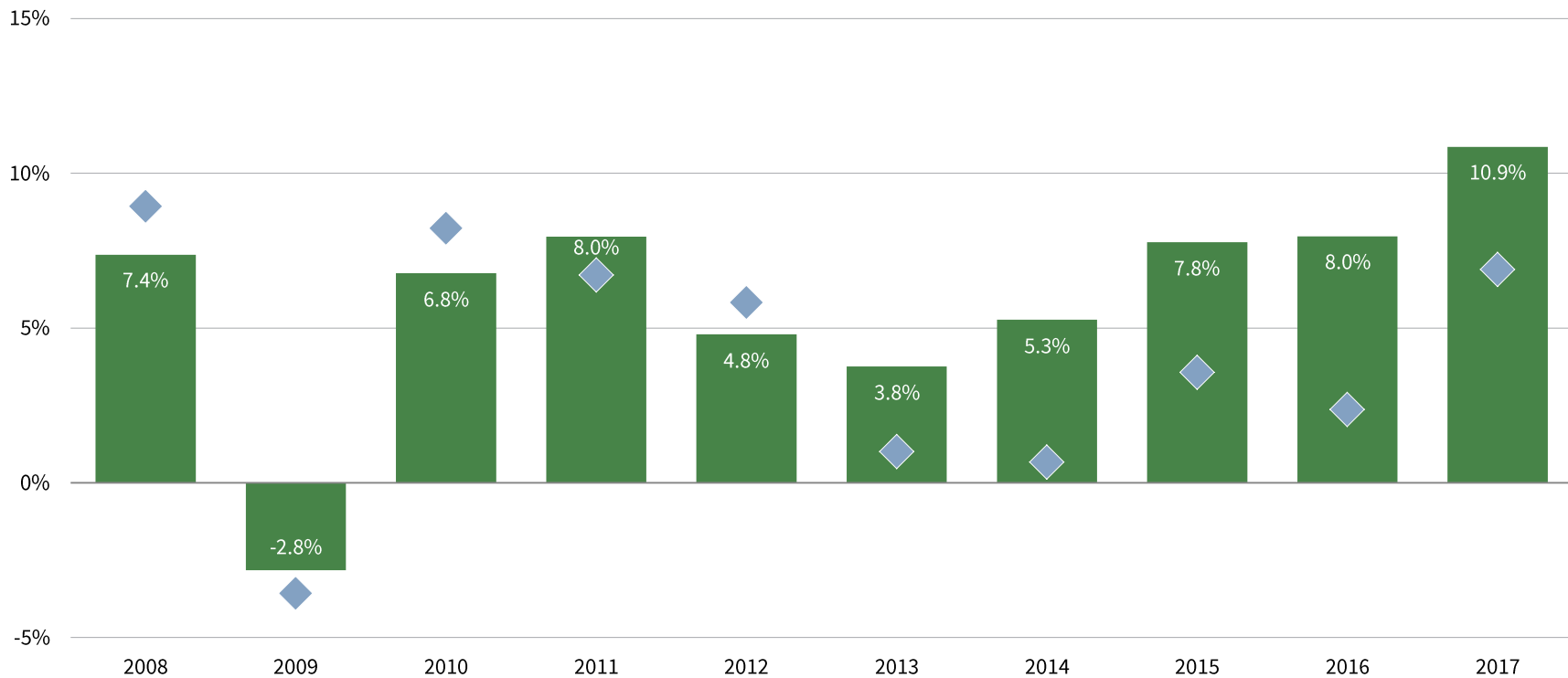
- Purchase Price Multiple
- Leverage Multiple
- **Revenue Growth**
- EBITDA Growth
- EBITDA Margin
- Exit Metrics

PE-owned companies grew revenue twice as fast in 2017 than they averaged over the previous nine years

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, 2017 • Annual Growth Rate (%)



Number of Companies

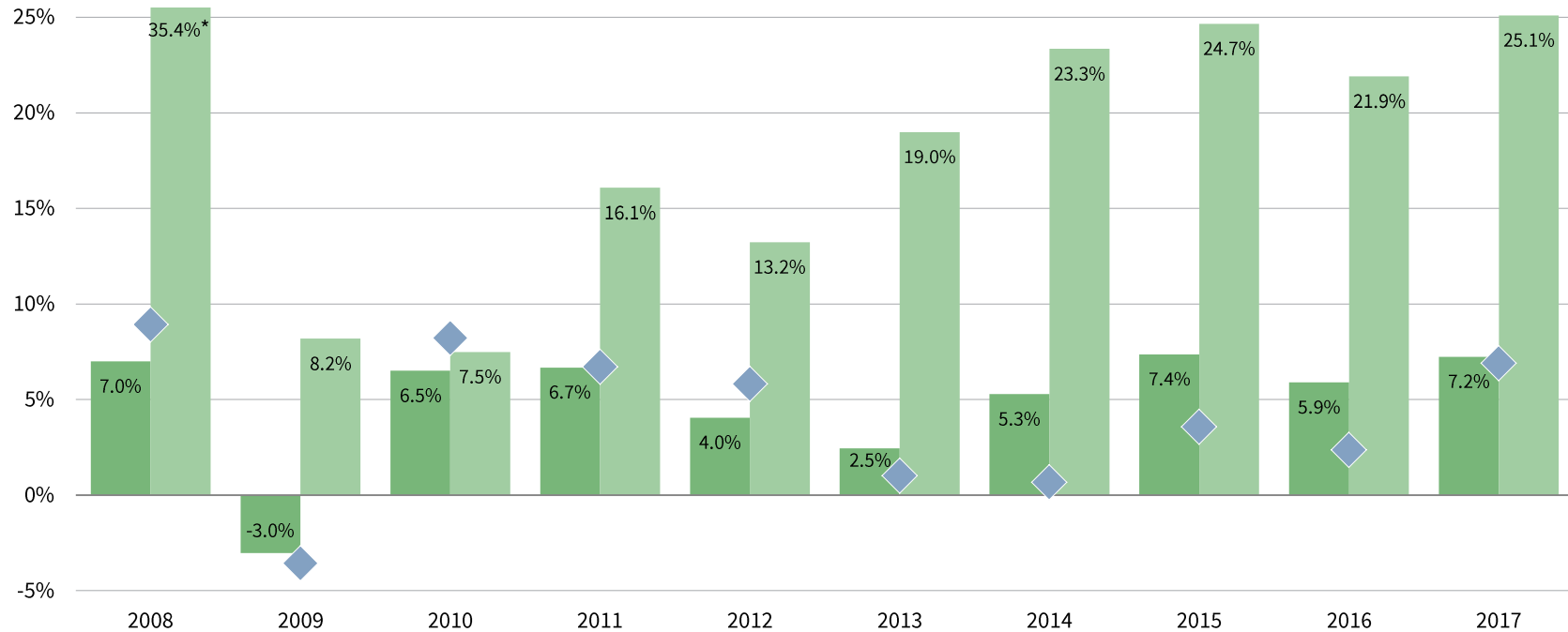
| | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 |
|--------------------------------|------|------|------|------|------|------|------|------|------|------|
| Private Equity-Owned Companies | 254 | 340 | 402 | 467 | 474 | 406 | 341 | 335 | 284 | 248 |
| MSCI All Country Europe Index | 454 | 459 | 418 | 432 | 431 | 421 | 450 | 458 | 451 | 439 |

Growth equity companies averaged annual revenue growth of 20% or more since 2014

Since 2008, growth equity averaged 19.4% annual growth; buyouts averaged 4.9%

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

As of December 31, 2017 • Annual Growth Rate (%)



Number of Companies

| | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 |
|-------------------------------|------|------|------|------|------|------|------|------|------|------|
| Buyout Companies | 225 | 288 | 321 | 368 | 367 | 319 | 252 | 242 | 200 | 168 |
| Growth Equity Companies | 22 | 28 | 47 | 61 | 73 | 61 | 76 | 72 | 64 | 58 |
| MSCI All Country Europe Index | 454 | 459 | 418 | 432 | 431 | 421 | 450 | 458 | 451 | 439 |

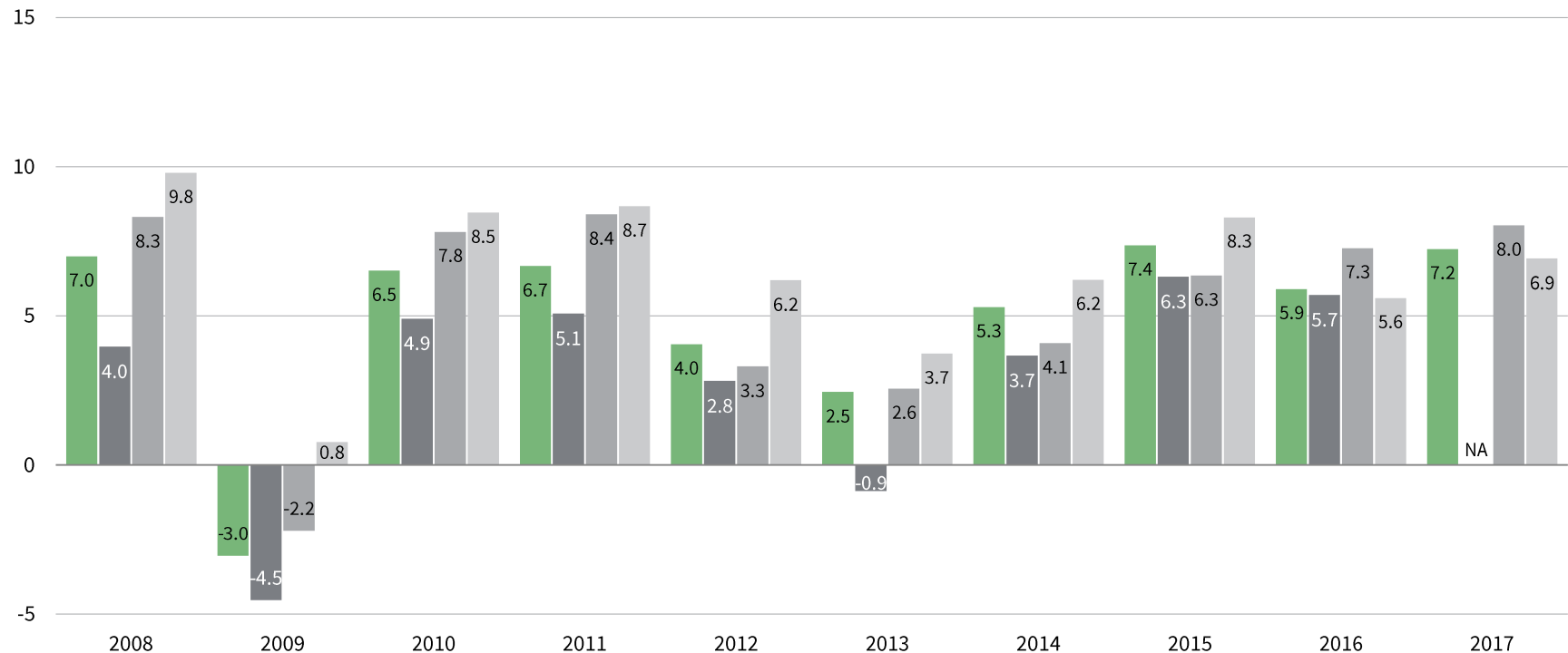
* Axis capped for scaling purposes.

Among buyouts, small company growth advantage has decreased since 2015

Instead, medium-sized companies grew the most in 2016 and 2017

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

As of December 31, 2017 • Annual Growth Rate (%)



Number of Companies

| | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 |
|------------------|------|------|------|------|------|------|------|------|------|------|
| Buyout Companies | 225 | 288 | 321 | 368 | 367 | 319 | 252 | 242 | 200 | 168 |
| EV > €1B | 75 | 90 | 94 | 99 | 73 | 57 | 37 | 26 | 23 | NA |
| EV €250M - €1B | 72 | 100 | 123 | 142 | 123 | 98 | 76 | 78 | 71 | 68 |
| EV < €250M | 78 | 101 | 110 | 134 | 170 | 161 | 138 | 142 | 105 | 84 |

EUROPEAN ANALYSIS

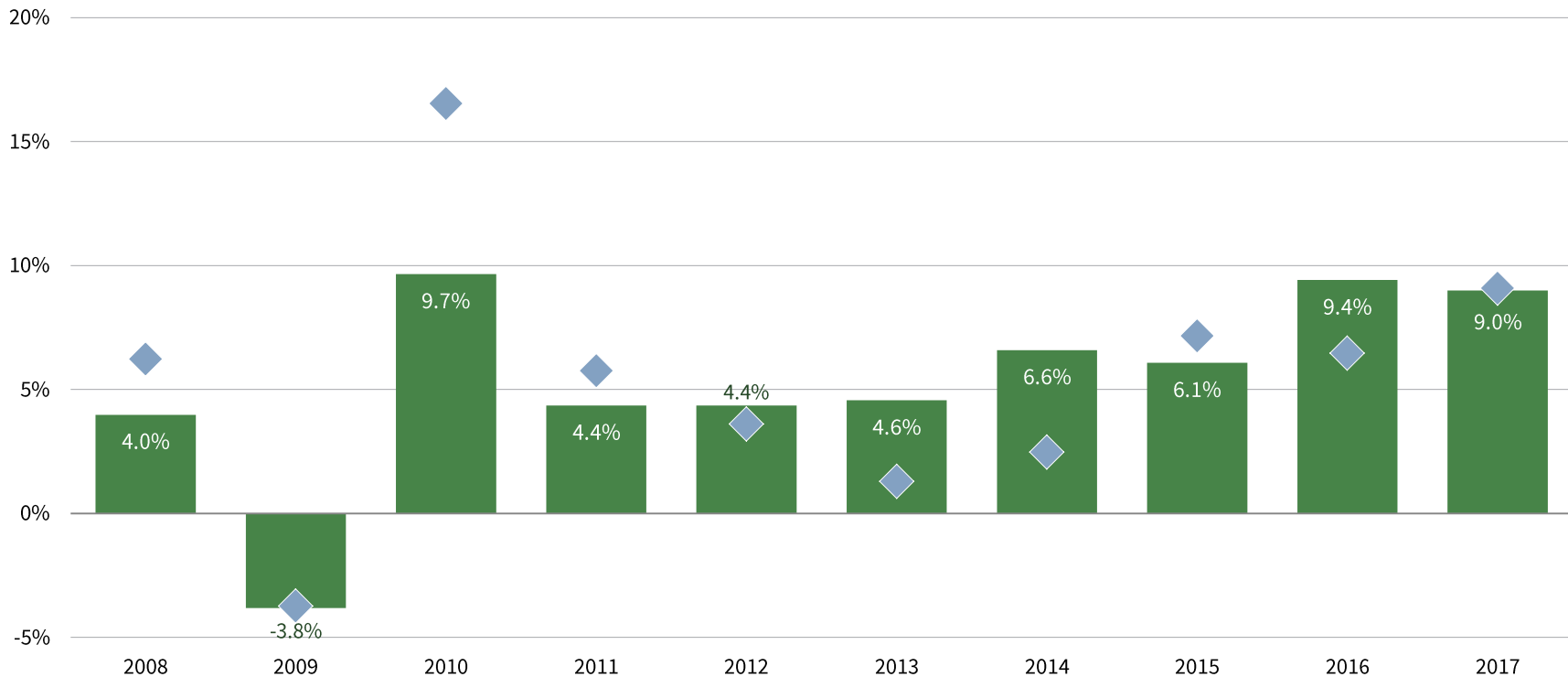
- Purchase Price Multiple
- Leverage Multiple
- Revenue Growth
- **EBITDA Growth**
- EBITDA Margin
- Exit Metrics

Over time, private company EBITDA growth has nearly equaled that of publics

In 2017, public company EBITDA growth increased; for PE companies, it decreased slightly

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

As of December 31, 2017 • Annual Growth Rate (%)



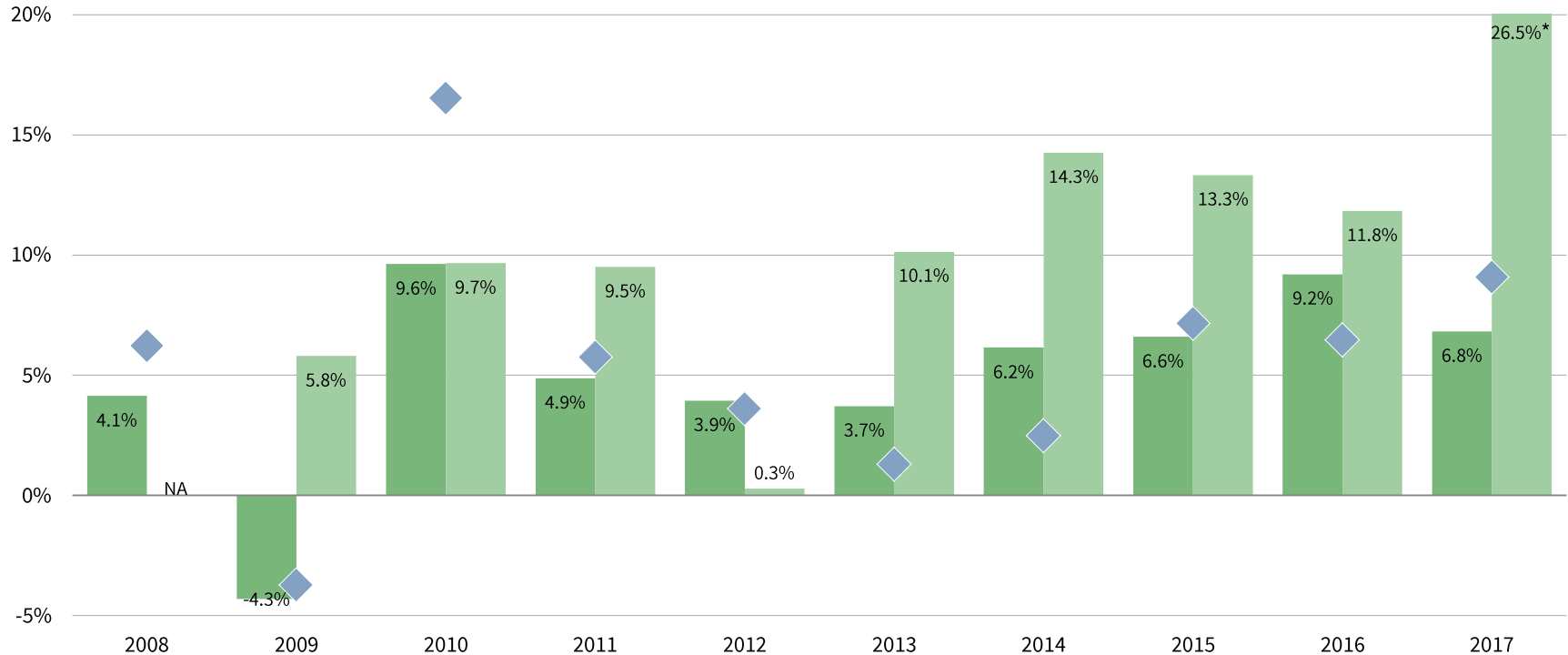
Number of Companies

| | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 |
|--------------------------------|------|------|------|------|------|------|------|------|------|------|
| Private Equity-Owned Companies | 234 | 314 | 348 | 432 | 438 | 363 | 307 | 311 | 252 | 205 |
| MSCI All Country Europe Index | 327 | 311 | 302 | 338 | 345 | 335 | 354 | 359 | 352 | 348 |

Growth equity and buyout companies grew EBITDA at an equal rate in 2010. Since then, growth equity companies have averaged double the growth of buyouts

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

As of December 31, 2017 • Annual Growth Rate (%)



Number of Companies

| | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 |
|-------------------------------|------|------|------|------|------|------|------|------|------|------|
| Buyout Companies | 212 | 273 | 288 | 353 | 358 | 294 | 240 | 238 | 199 | 162 |
| Growth Equity Companies | NA | 19 | 35 | 50 | 58 | 41 | 50 | 47 | 33 | 33 |
| MSCI All Country Europe Index | 327 | 311 | 302 | 338 | 345 | 335 | 354 | 359 | 352 | 348 |

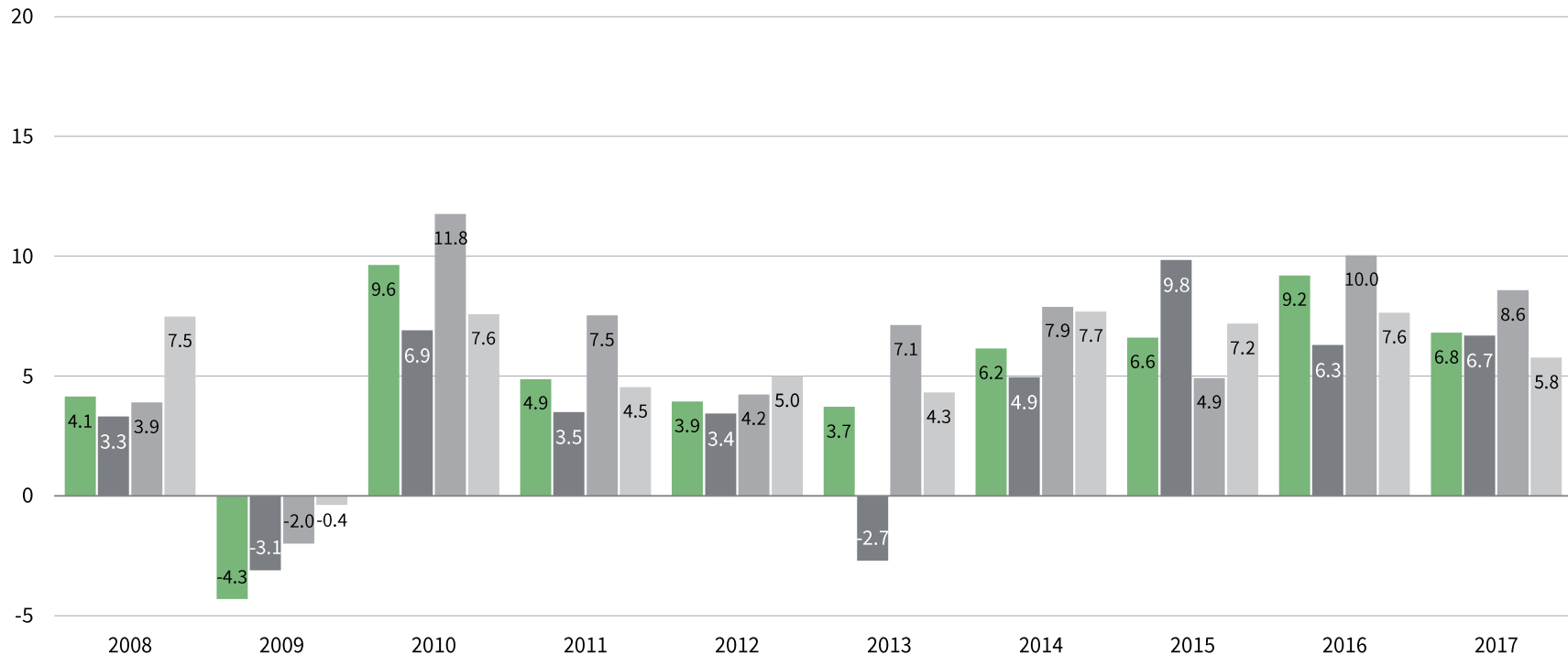
* Axis capped for scaling purposes.

EBITDA growth among large-sized buyouts was the most muted over the time period

At 6.4%, mid-sized companies averaged the best growth over the ten years

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

As of December 31, 2017 • Annual Growth Rate (%)



Number of Companies

| | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 |
|------------------|------|------|------|------|------|------|------|------|------|------|
| Buyout Companies | 212 | 273 | 288 | 353 | 358 | 294 | 240 | 238 | 199 | 162 |
| EV > €1B | 77 | 84 | 87 | 92 | 70 | 57 | 37 | 27 | 23 | 15 |
| EV €250M - €1B | 71 | 99 | 113 | 138 | 129 | 99 | 76 | 76 | 65 | 71 |
| EV < €250M | 70 | 93 | 90 | 123 | 156 | 142 | 127 | 133 | 108 | 78 |

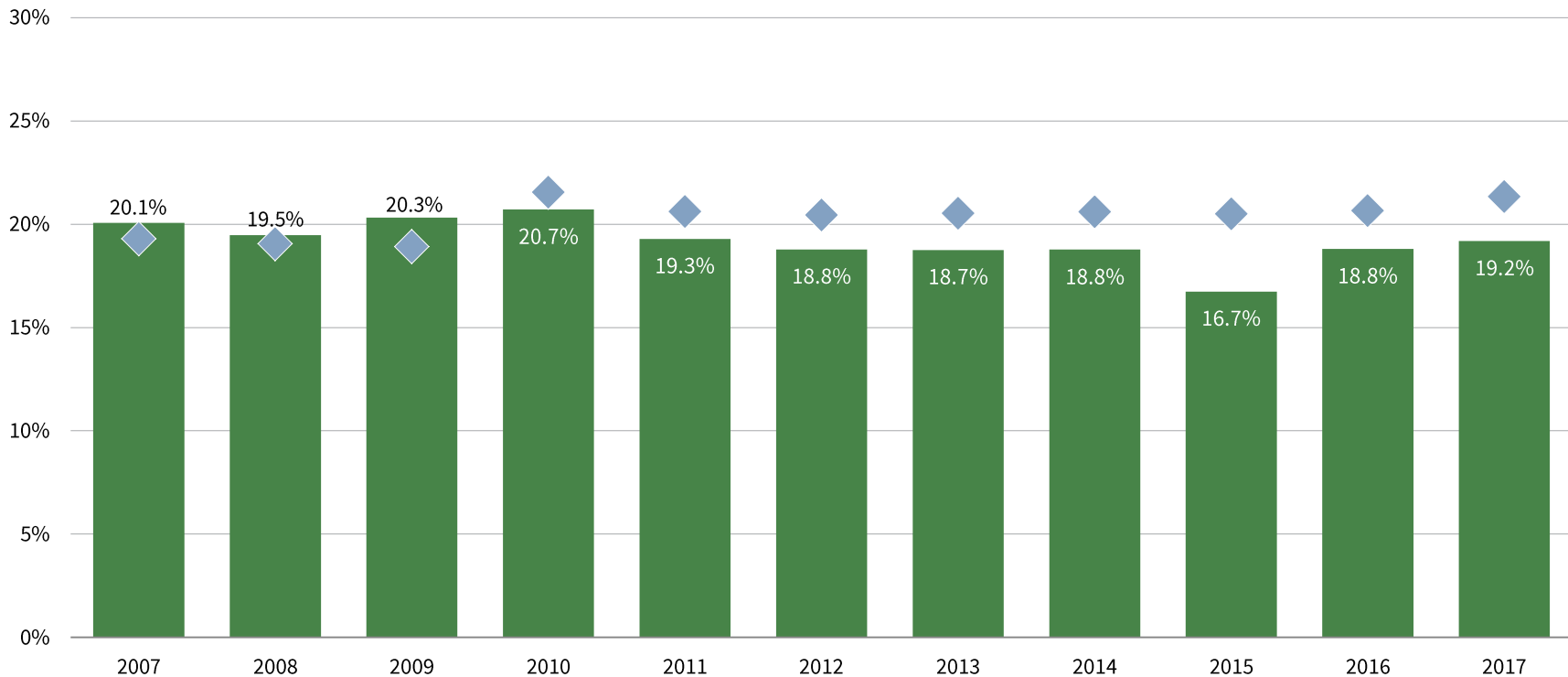
EUROPEAN ANALYSIS

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

Since 2010, public companies have operated at higher margins each year, with the gap between public and PE companies generally increasing

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

As of December 31, 2017 • EBITDA/Revenue (%)



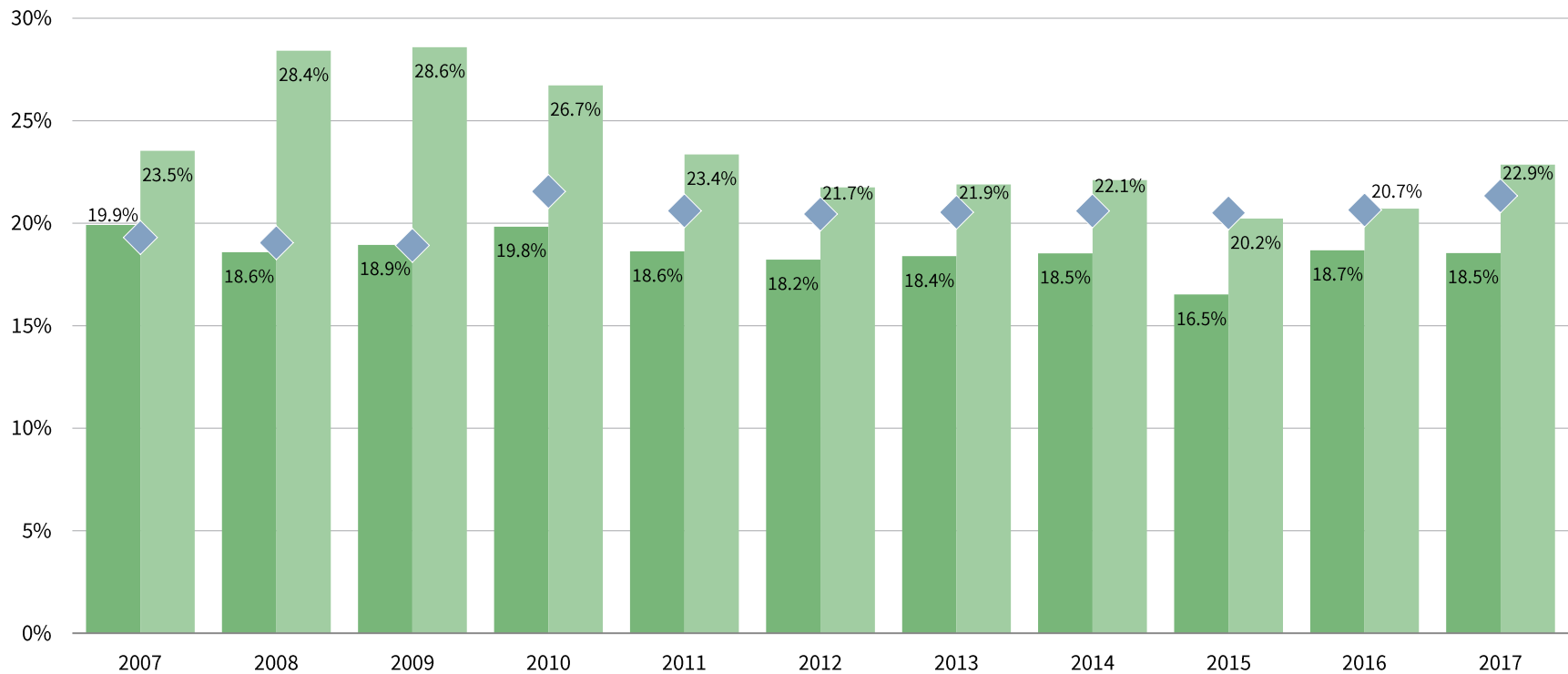
Number of Companies

| | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 |
|--------------------------------|------|------|------|------|------|------|------|------|------|------|------|
| Private Equity-Owned Companies | 276 | 347 | 430 | 531 | 630 | 618 | 515 | 556 | 480 | 433 | 363 |
| MSCI All Country Europe Index | 504 | 386 | 360 | 397 | 388 | 388 | 397 | 404 | 409 | 406 | 407 |

Growth equity companies operated at virtually equal or higher margins than buyouts and public peers in every year analyzed

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

As of December 31, 2017 • EBITDA/Revenue (%)



Number of Companies

| | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 |
|-------------------------------|------|------|------|------|------|------|------|------|------|------|------|
| Buyout Companies | 247 | 298 | 352 | 432 | 507 | 479 | 417 | 437 | 363 | 347 | 275 |
| Growth Equity Companies | 15 | 23 | 42 | 60 | 77 | 98 | 66 | 82 | 76 | 50 | 62 |
| MSCI All Country Europe Index | 504 | 386 | 360 | 397 | 388 | 388 | 397 | 404 | 409 | 406 | 407 |

Despite producing the slowest EBITDA growth, large-sized companies had the highest margins

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

As of December 31, 2017 • EBITDA/Revenue (%)



Number of Companies

| | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 |
|------------------|------|------|------|------|------|------|------|------|------|------|------|
| Buyout Companies | 247 | 298 | 352 | 432 | 507 | 479 | 417 | 437 | 363 | 347 | 275 |
| EV > €1B | 80 | 93 | 103 | 107 | 108 | 80 | 84 | 55 | 40 | 39 | 31 |
| EV €250M - €1B | 79 | 105 | 123 | 167 | 181 | 168 | 142 | 131 | 114 | 129 | 107 |
| EV < €250M | 87 | 101 | 119 | 152 | 211 | 226 | 189 | 245 | 204 | 176 | 127 |

EUROPEAN ANALYSIS

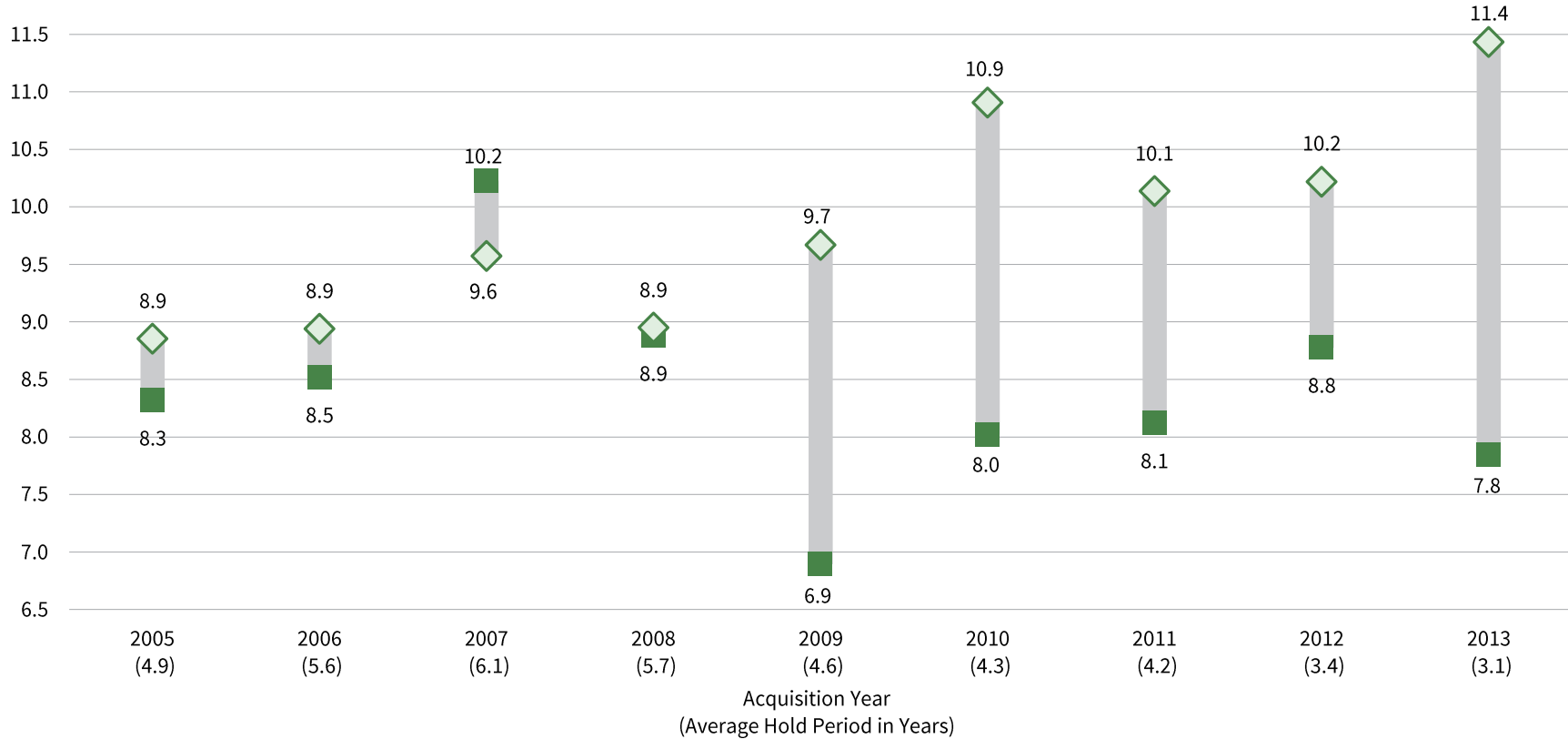
- Purchase Price Multiple
- Leverage Multiple
- Revenue Growth
- EBITDA Growth
- EBITDA Margin
- **Exit Metrics**

Private equity has achieved significant multiple expansion in the five most recent acquisition years shown

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, 2017 • Enterprise Value/EBITDA



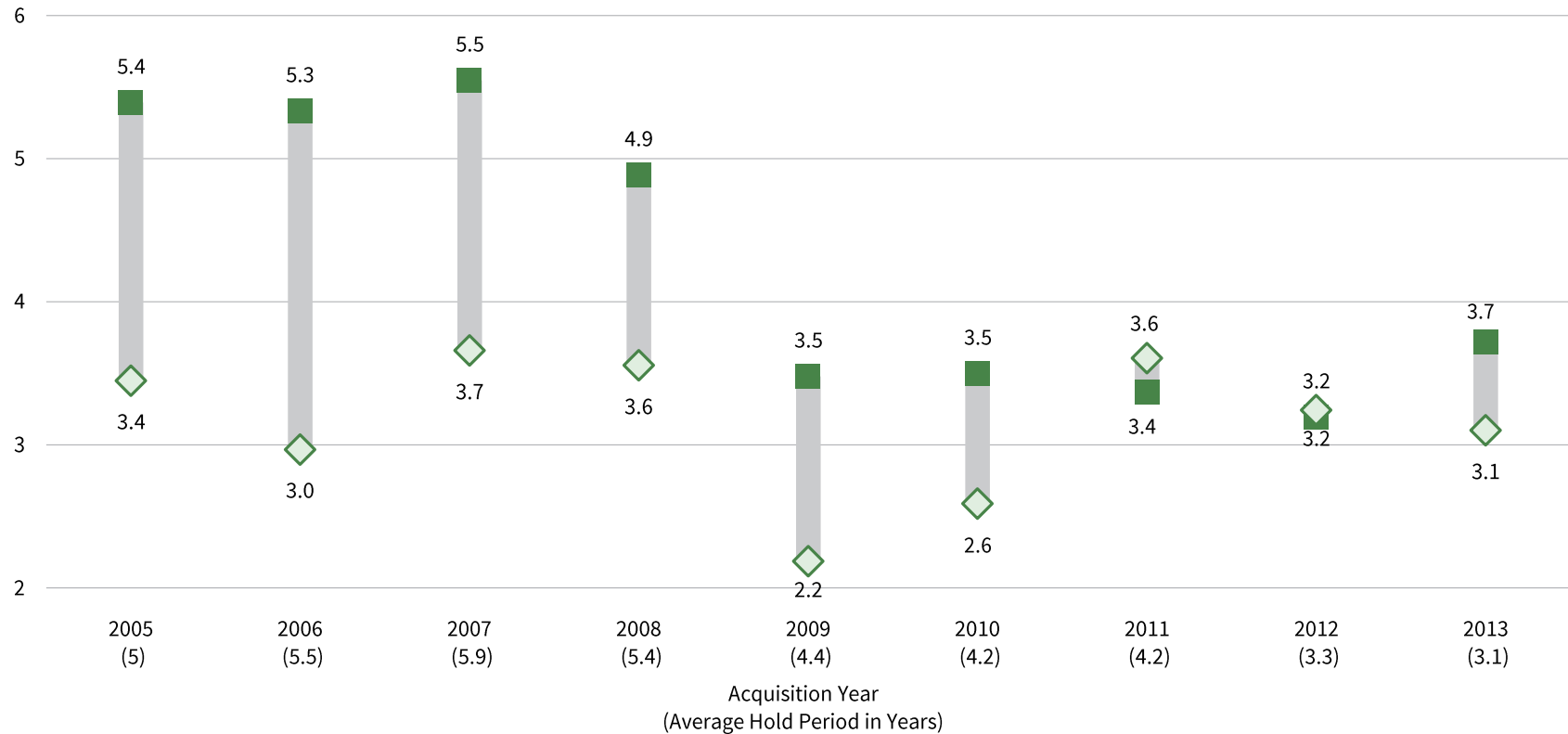
Number of Companies

| | 2005 | 2006 | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 |
|---------------------------|------|------|------|------|------|------|------|------|------|
| ■ Multiple at Acquisition | 92 | 128 | 102 | 67 | 44 | 82 | 58 | 34 | 20 |
| ◇ Multiple at Exit | 92 | 128 | 102 | 67 | 44 | 82 | 58 | 34 | 20 |

In the last cycle of 5.0x+ leverage multiples at acquisition, managers were able to exit at significantly lower leverage multiples

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

As of December 31, 2017 • Net Debt/EBITDA



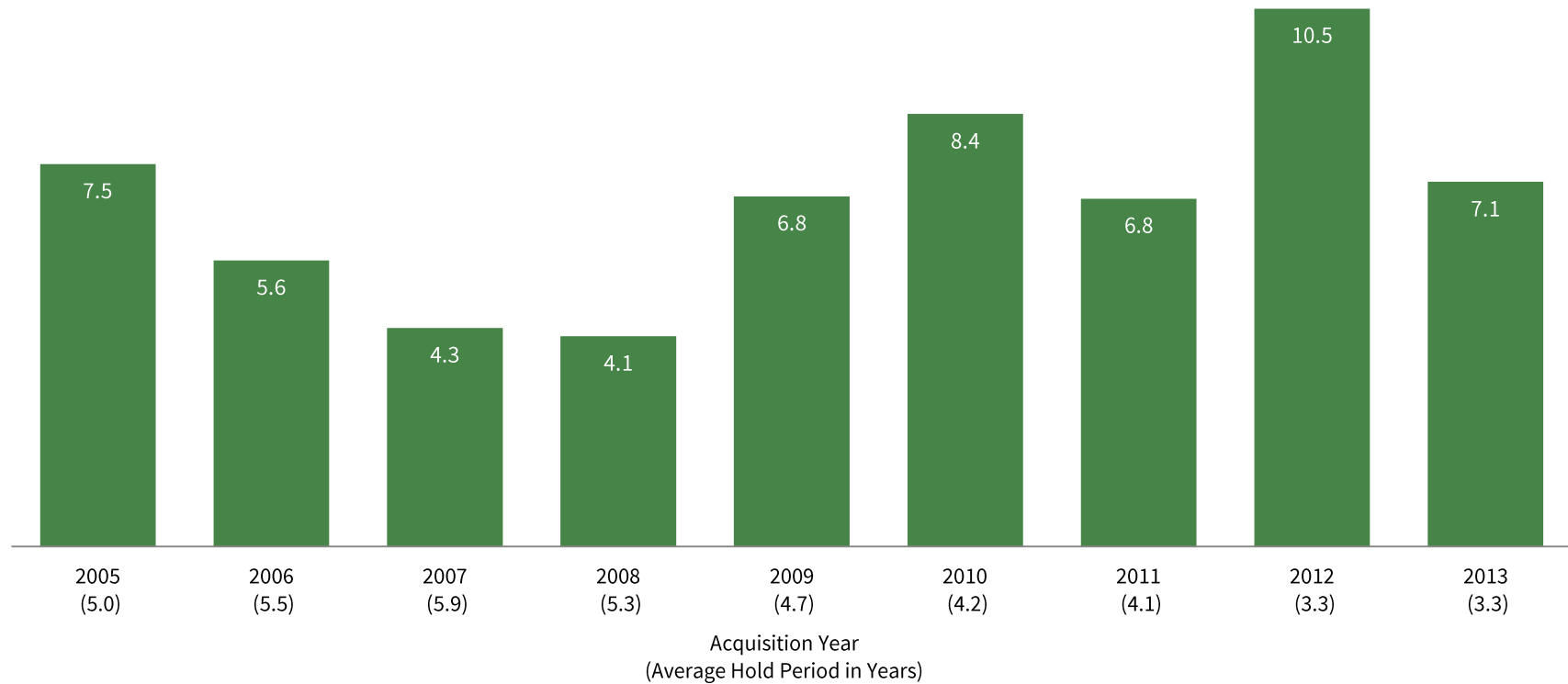
Number of Companies

| | 2005 | 2006 | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 |
|---------------------------|------|------|------|------|------|------|------|------|------|
| ■ Multiple at Acquisition | 91 | 123 | 97 | 58 | 30 | 68 | 48 | 31 | 20 |
| ◆ Multiple at Exit | 91 | 123 | 97 | 58 | 30 | 68 | 48 | 31 | 20 |

Exited companies analyzed averaged 6.6% revenue growth over their holding period . . .

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

As of December 31, 2017 • Compound Annual Growth Rate (%)

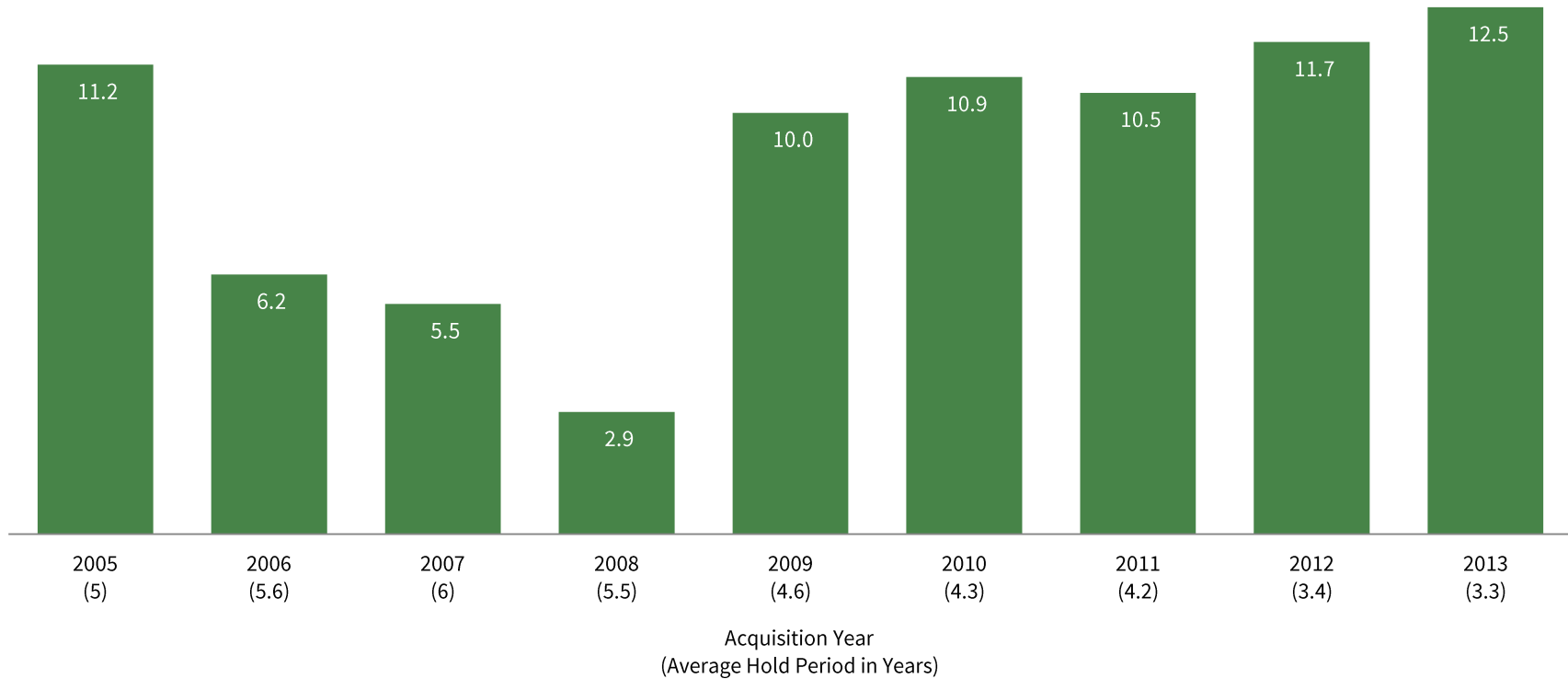


| | Number of Companies | | | | | | | | | |
|--------------------|---------------------|------|------|------|------|------|------|------|------|--|
| | 2005 | 2006 | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 | |
| PE-Owned Companies | 104 | 133 | 118 | 74 | 45 | 85 | 64 | 35 | 22 | |

... and EBITDA growth rates were even higher, averaging 8.2%

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

As of December 31, 2017 • Compound Annual Growth Rate (%)



Number of Companies

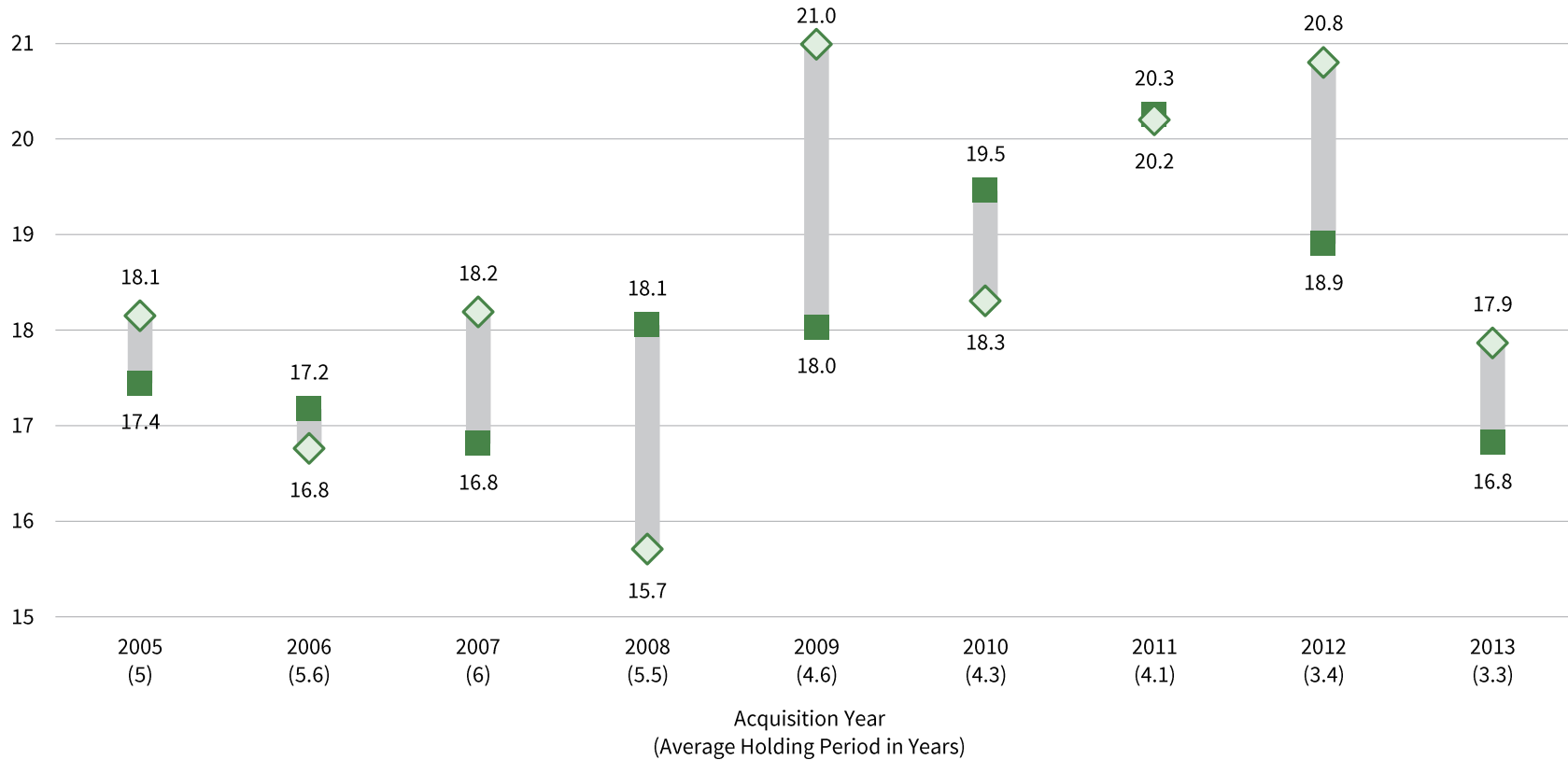
| | 2005 | 2006 | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 |
|--------------------|------|------|------|------|------|------|------|------|------|
| PE-Owned Companies | 98 | 130 | 110 | 70 | 44 | 82 | 60 | 35 | 22 |

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

Companies purchased from 2010 to 2012 had the highest EBITDA margins at acquisition

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

As of December 31, 2017 • EBITDA/Revenue (%)



Number of Companies

| | 2005 | 2006 | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 |
|-------------------------|------|------|------|------|------|------|------|------|------|
| ■ Margin at Acquisition | 98 | 127 | 106 | 65 | 43 | 80 | 59 | 33 | 21 |
| ◆ Margin at Exit | 98 | 127 | 106 | 65 | 43 | 80 | 59 | 33 | 21 |



ASIAN ANALYSIS

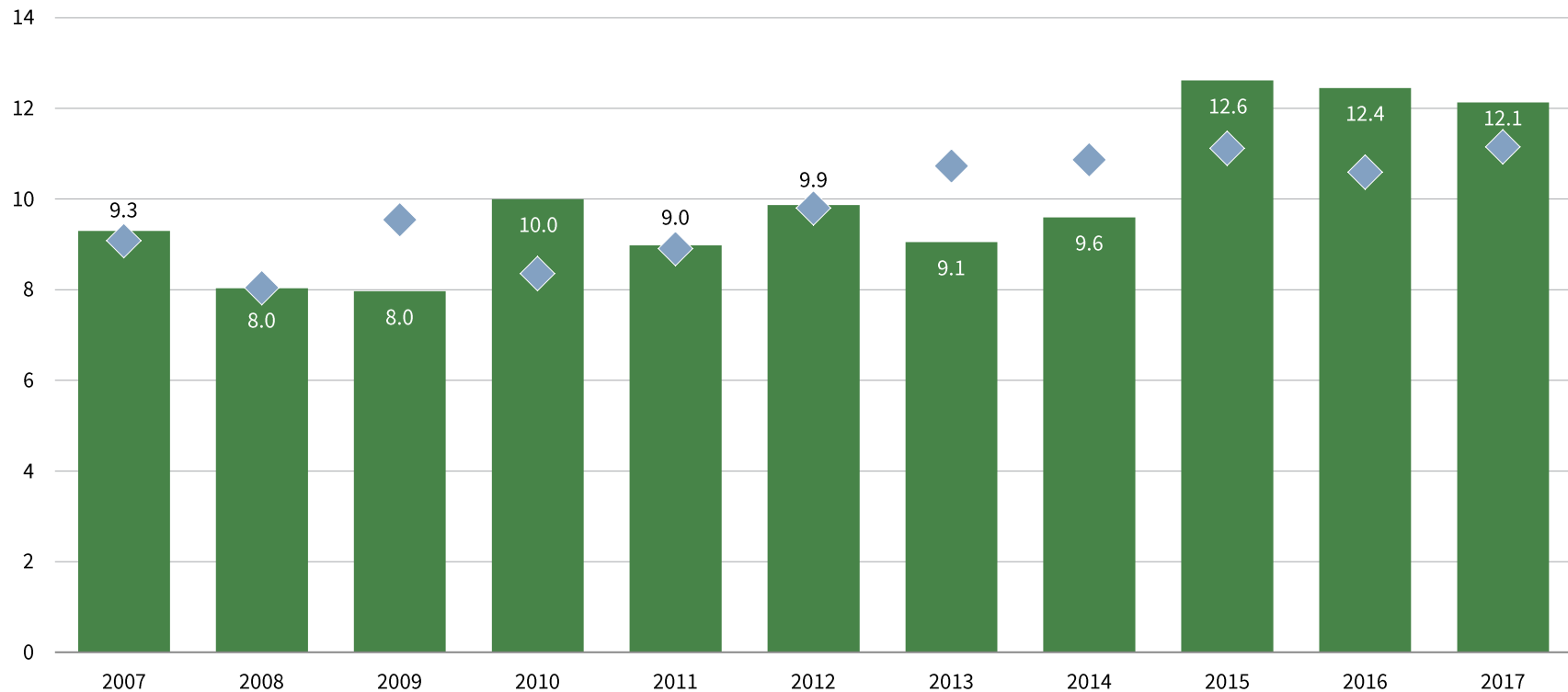
Investments are fully priced with moderately leveraged entry and a focus on growth thereafter.

From 2015 to 2017, PE-owned companies transacted at higher multiples than their public peers

Prior to 2015, private PPMs averaged 9.1x; in the last three years, they averaged 12.4x

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

As of December 31, 2017 • Enterprise Value/EBITDA



Number of Companies

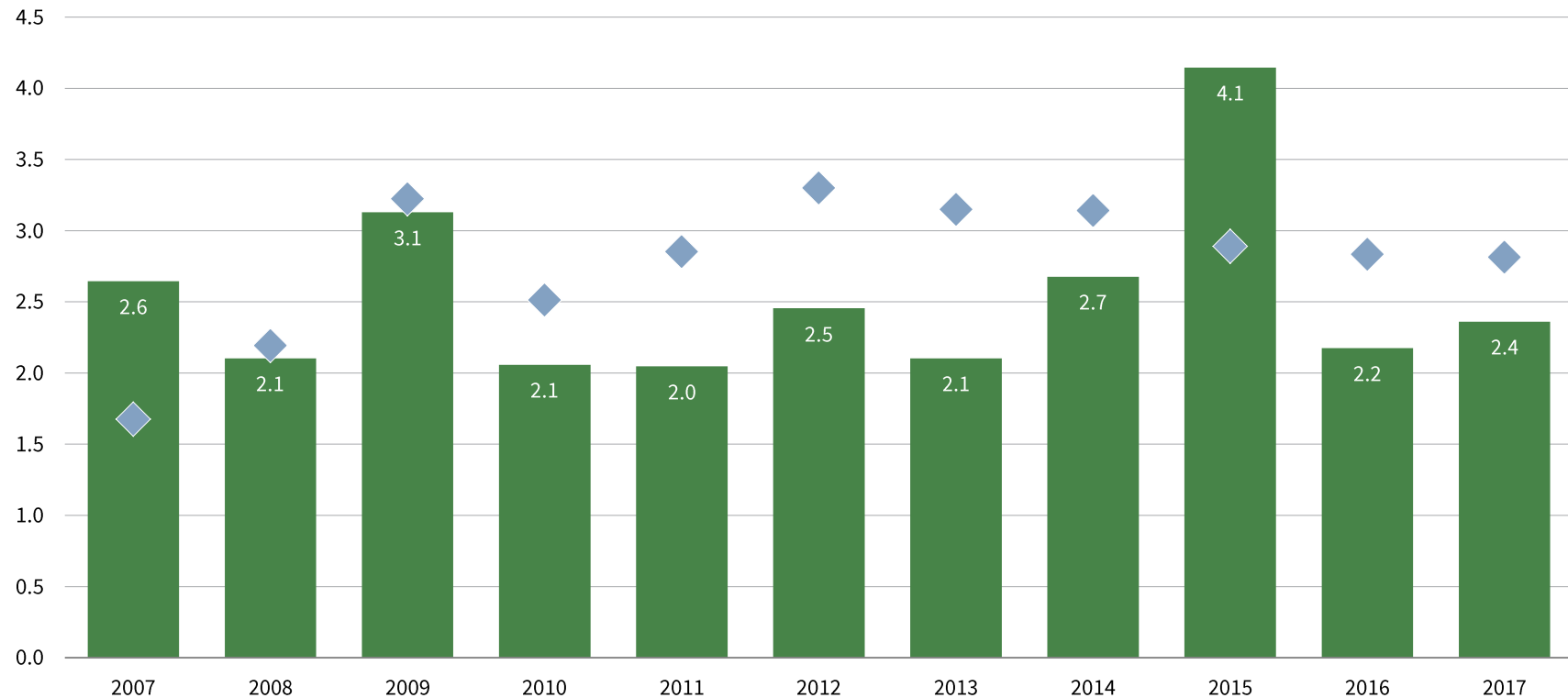
| | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 |
|--------------------------------|------|------|------|------|------|------|------|------|------|------|------|
| Private Equity-Owned Companies | 97 | 75 | 42 | 93 | 82 | 61 | 61 | 54 | 37 | 39 | 35 |
| MSCI All Country Asia Index | 320 | 338 | 412 | 543 | 559 | 575 | 603 | 604 | 604 | 607 | 613 |

Asian PE companies generally employed equal or 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, 2017 • Net Debt/EBITDA



Number of Companies

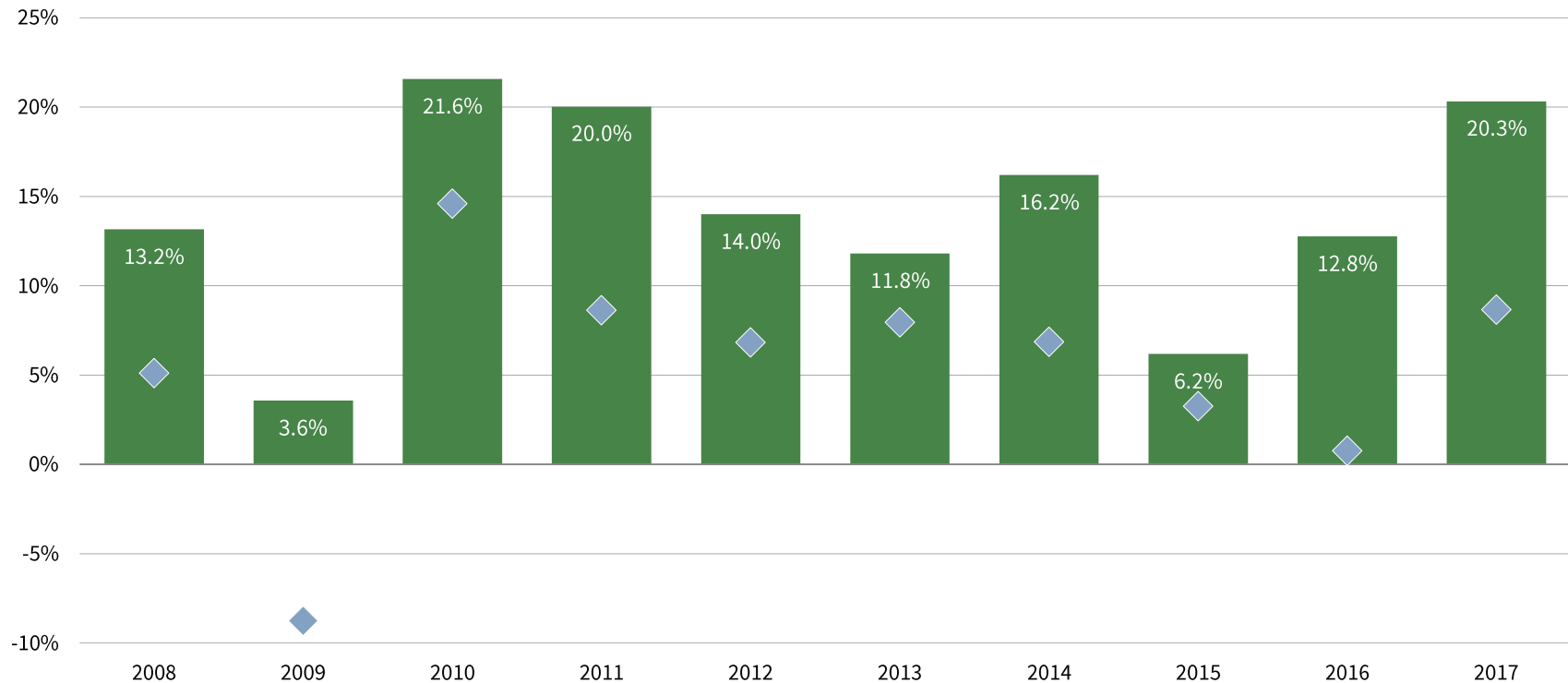
| | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 |
|--------------------------------|------|------|------|------|------|------|------|------|------|------|------|
| Private Equity-Owned Companies | 66 | 56 | 26 | 56 | 47 | 40 | 44 | 37 | 21 | 21 | 23 |
| MSCI All Country Asia Index | 194 | 207 | 266 | 352 | 362 | 373 | 377 | 381 | 375 | 384 | 377 |

Private companies averaged 8.5 percentage points more revenue growth than publics

Following three years of decline, public company revenue growth increased in 2017

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

As of December 31, 2017 • Annual Growth Rate (%)



Number of Companies

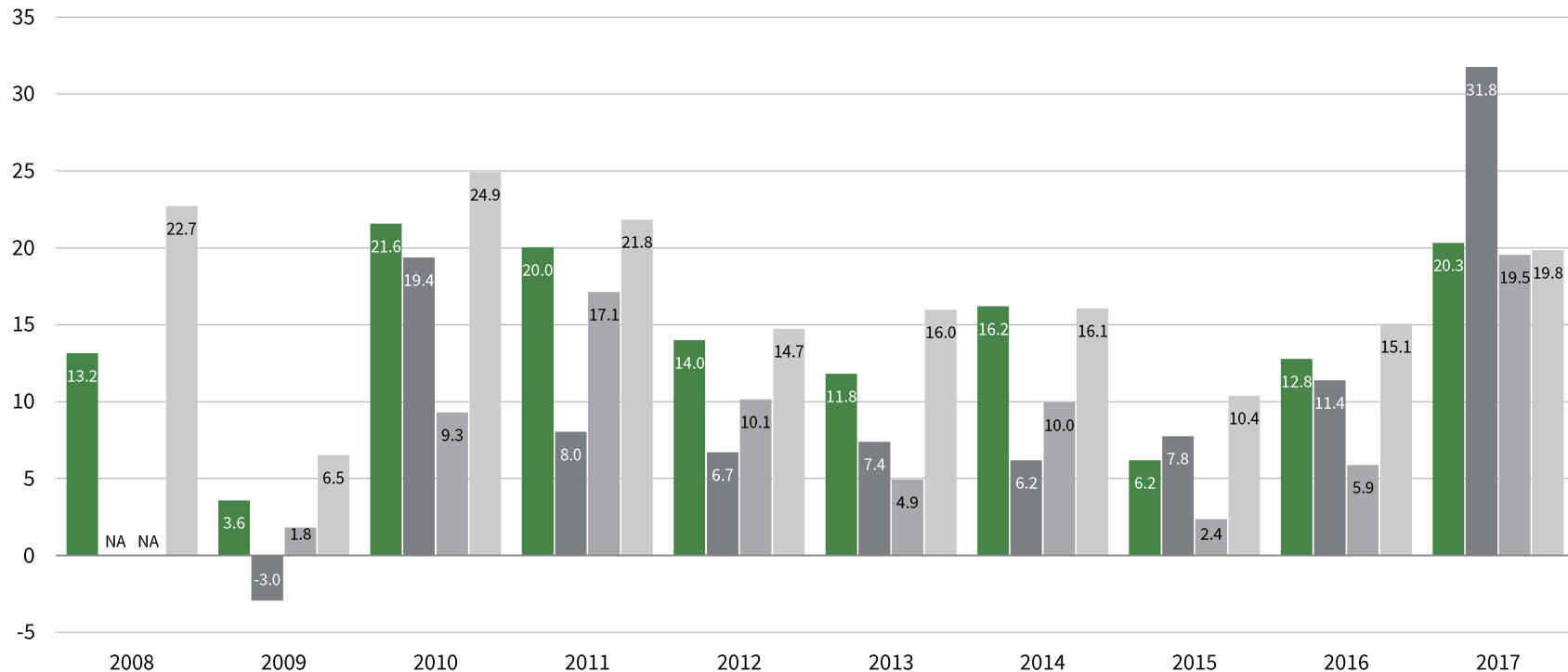
| | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 |
|--------------------------------|------|------|------|------|------|------|------|------|------|------|
| Private Equity-Owned Companies | 62 | 120 | 138 | 225 | 242 | 261 | 228 | 187 | 127 | 125 |
| MSCI All Country Asia Index | 607 | 662 | 676 | 716 | 768 | 757 | 765 | 732 | 790 | 779 |

After generally underperforming their counterparts, large-sized companies were the strongest performers in 2017

Large-sized companies averaged 8% annual revenue growth from 2009 to 2016 before quadrupling that pace in 2017

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

As of December 31, 2017 • Annual Growth Rate (%)



Number of Companies

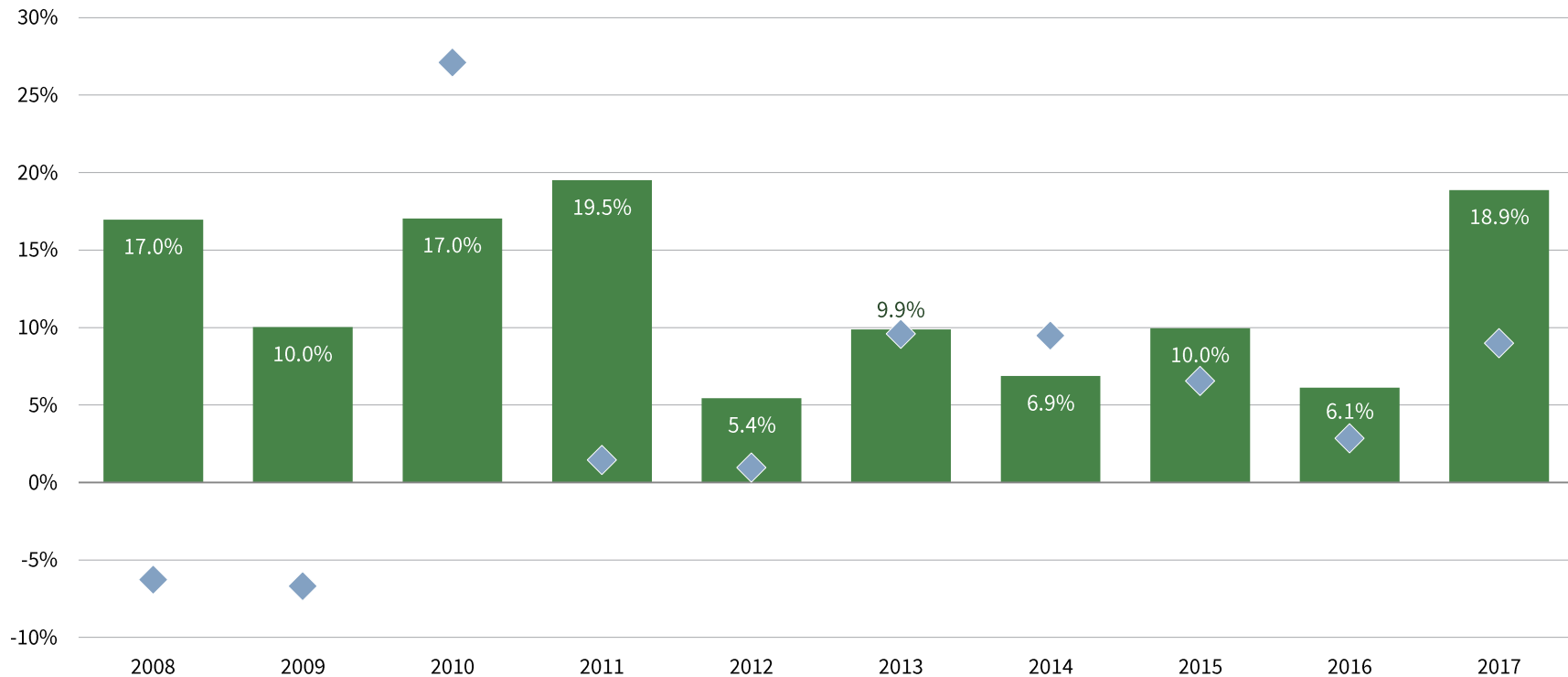
| | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 |
|--------------------|------|------|------|------|------|------|------|------|------|------|
| PE-Owned Companies | 62 | 120 | 138 | 225 | 242 | 261 | 228 | 187 | 127 | 125 |
| EV > \$1B | NA | 19 | 20 | 25 | 33 | 30 | 20 | 24 | 23 | 18 |
| EV \$250M - \$1B | NA | 25 | 28 | 49 | 52 | 62 | 38 | 47 | 36 | 36 |
| EV < \$250M | 36 | 72 | 88 | 134 | 146 | 163 | 164 | 120 | 61 | 66 |

PE-owned companies grew EBITDA at an equal or faster pace than publics in eight of ten years

In 2017, private company EBITDA growth nearly matched its previous peak in 2011

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

As of December 31, 2017 • Annual Growth Rate (%)



Number of Companies

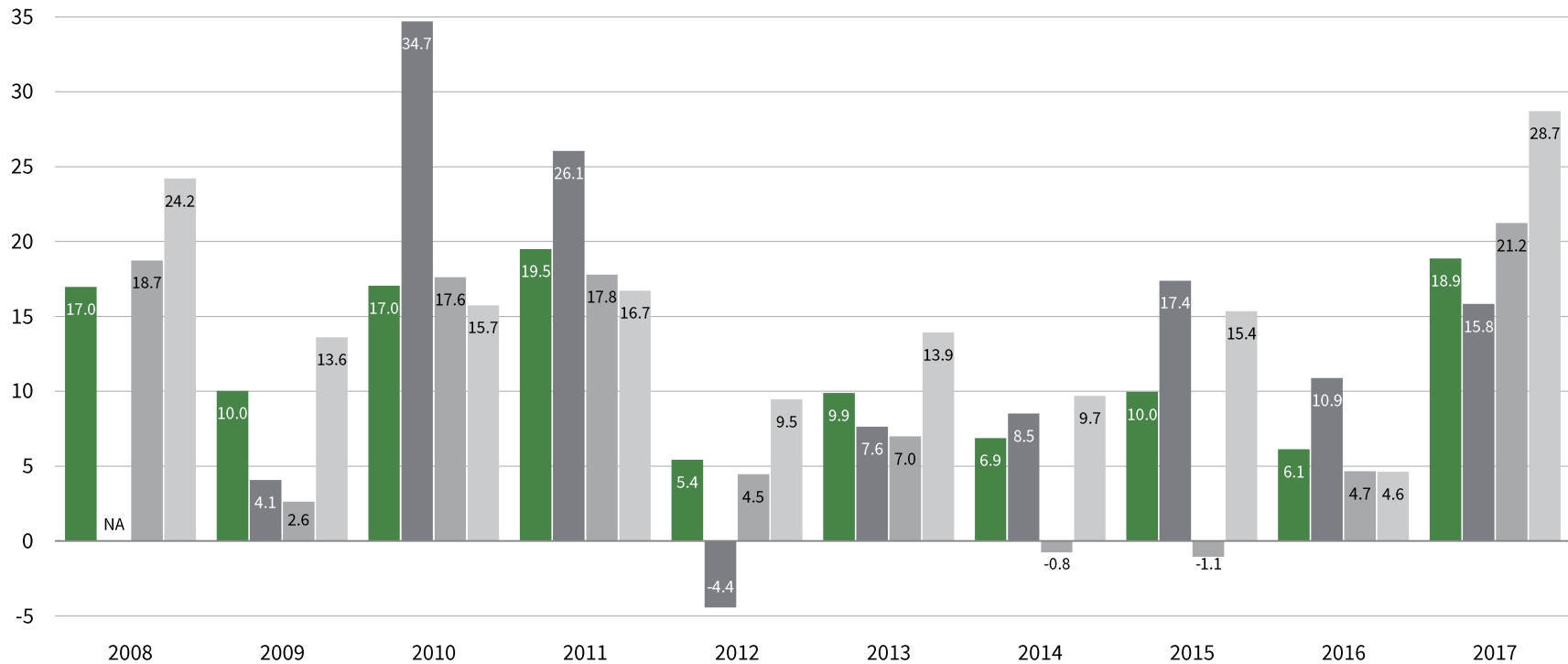
| | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 |
|--------------------------------|------|------|------|------|------|------|------|------|------|------|
| Private Equity-Owned Companies | 65 | 106 | 133 | 171 | 155 | 152 | 129 | 119 | 94 | 94 |
| MSCI All Country Asia Index | 350 | 368 | 433 | 550 | 584 | 607 | 610 | 607 | 648 | 650 |

For companies with positive EBITDA, growth has been strong, averaging 12.1% across the ten years analyzed

Calendar year 2017 showed the strongest growth across the size ranges over the last five years

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

As of December 31, 2017 • Annual Growth Rate (%)



Number of Companies

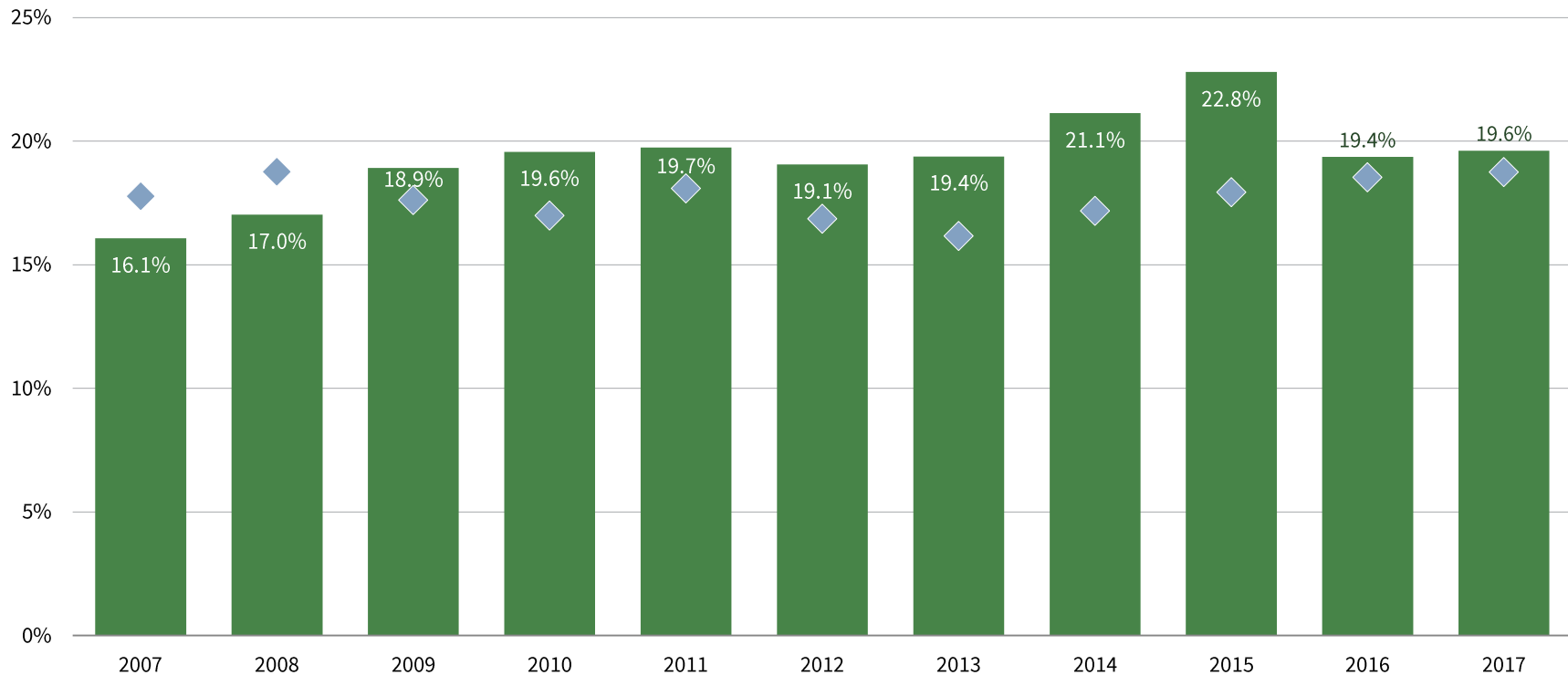
| | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 |
|--------------------|------|------|------|------|------|------|------|------|------|------|
| PE-Owned Companies | 65 | 106 | 133 | 171 | 155 | 152 | 129 | 119 | 94 | 94 |
| EV > \$1B | NA | 20 | 19 | 24 | 34 | 28 | 21 | 22 | 21 | 15 |
| EV \$250M - \$1B | 18 | 22 | 28 | 45 | 45 | 51 | 36 | 40 | 31 | 27 |
| EV < \$250M | 35 | 64 | 80 | 95 | 72 | 66 | 70 | 53 | 38 | 45 |

Private company EBITDA margins were higher than those of public companies in each year since 2009

However, margins for the PE-owned universe decreased notably over 2016–17, while public company margins trended up

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

As of December 31, 2017 • EBITDA/Revenue (%)



Number of Companies

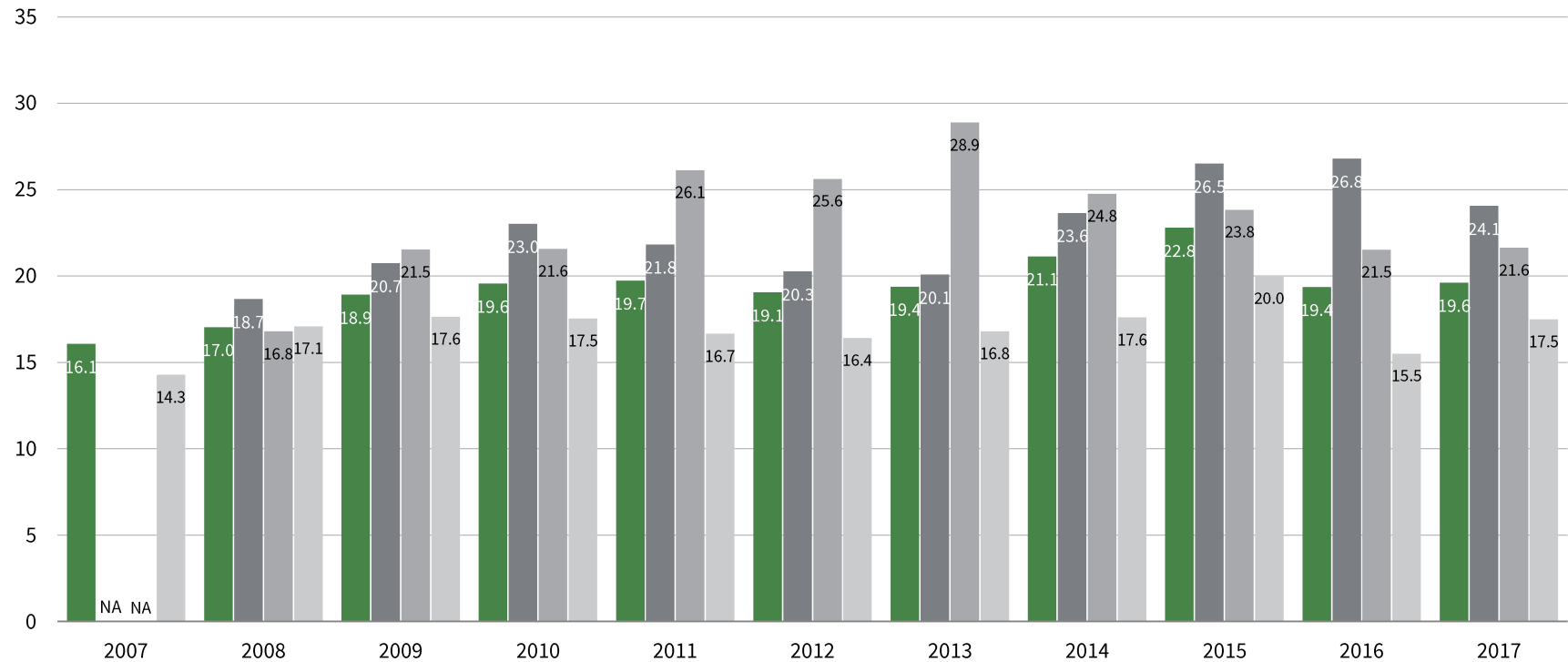
| | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 |
|--------------------------------|------|------|------|------|------|------|------|------|------|------|------|
| Private Equity-Owned Companies | 63 | 116 | 140 | 204 | 254 | 263 | 232 | 271 | 201 | 170 | 216 |
| MSCI All Country Asia Index | 289 | 513 | 417 | 499 | 644 | 672 | 682 | 715 | 718 | 728 | 731 |

Margins continued to be healthy across the various size groupings

Large caps led the way in the past three years

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

As of December 31, 2017 • EBITDA/Revenue (%)



Number of Companies

| | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 |
|--------------------|------|------|------|------|------|------|------|------|------|------|------|
| PE-Owned Companies | 63 | 116 | 140 | 204 | 254 | 263 | 232 | 271 | 201 | 170 | 216 |
| EV > \$1B | NA | 19 | 22 | 34 | 43 | 44 | 35 | 41 | 46 | 28 | 35 |
| EV \$250M - \$1B | NA | 25 | 31 | 51 | 70 | 85 | 72 | 78 | 68 | 45 | 76 |
| EV < \$250M | 37 | 72 | 86 | 111 | 134 | 134 | 113 | 138 | 80 | 82 | 100 |

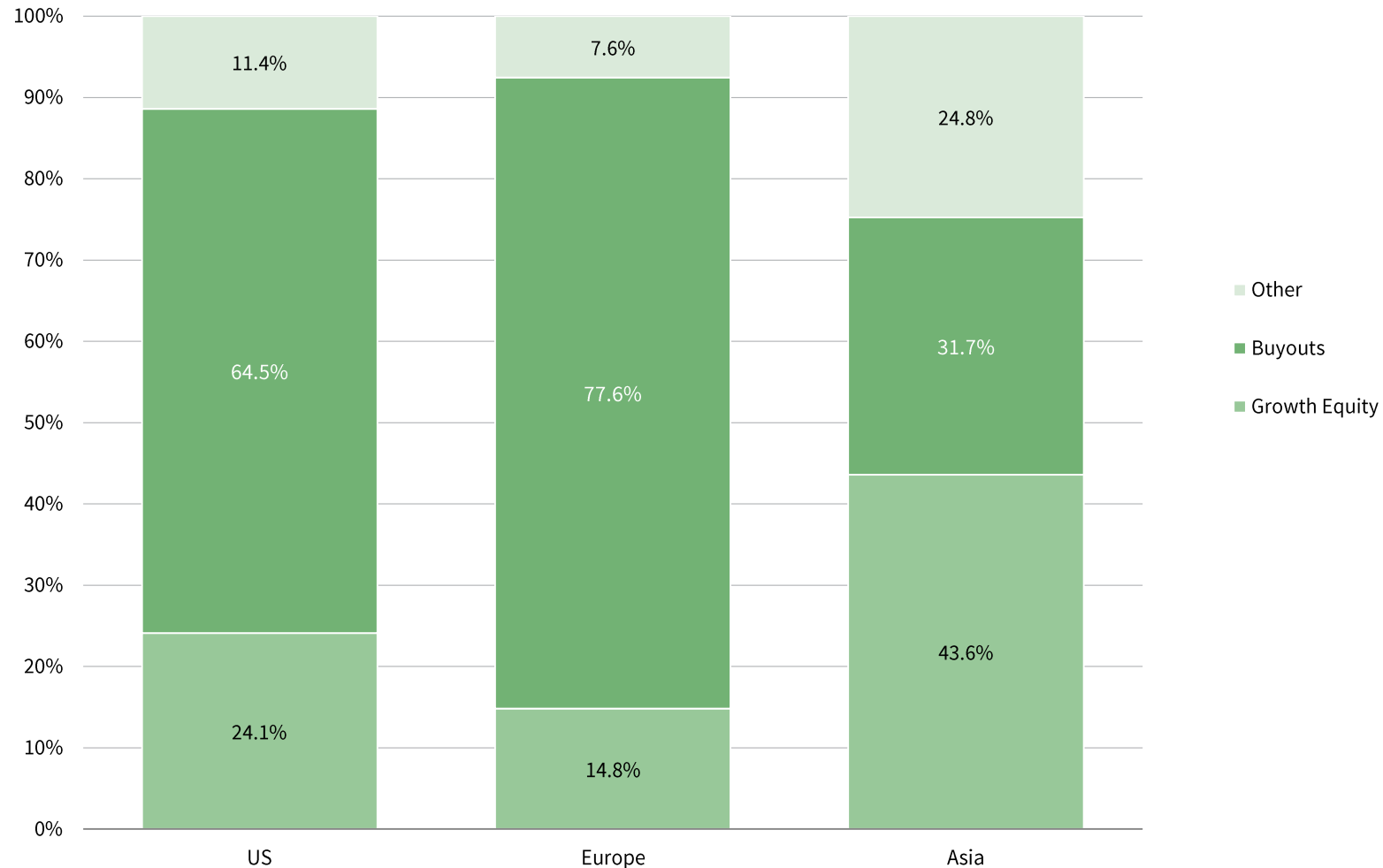


APPENDIX A
BREAKDOWN OF INVESTMENT STRATEGIES IN
ASIA, EUROPE, AND THE UNITED STATES

The US and Europe samples are comprised of mostly buyouts; Asia is heavily influenced by growth equity

BREAKDOWN OF INVESTMENT STRATEGIES BY REGION

As of December 31, 2017 • Percent (%)



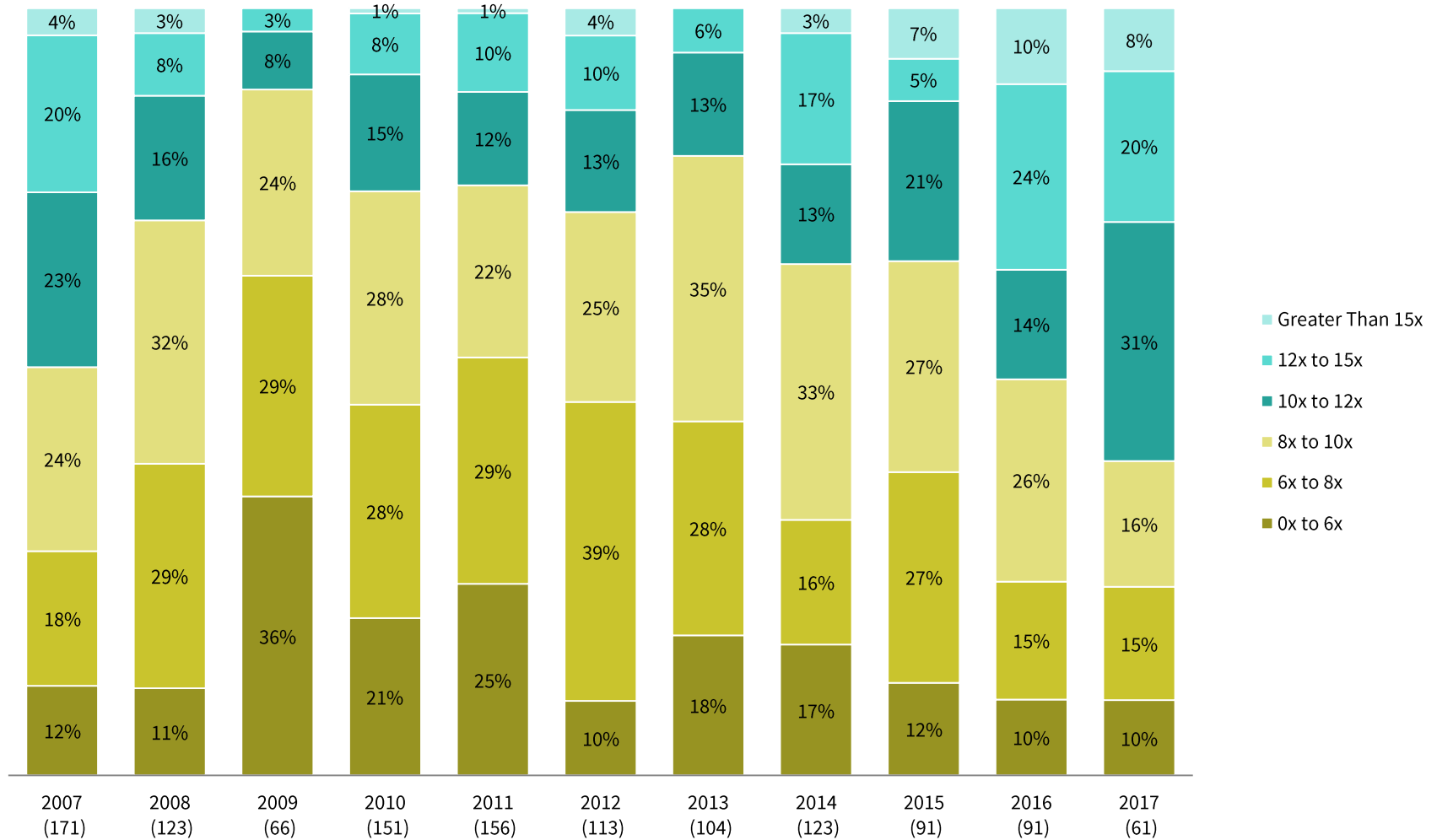


APPENDIX B
DISTRIBUTION OF ANALYZED METRICS FOR EUROPEAN COMPANIES

Distribution of European companies with various EBITDA PPMs at acquisition

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

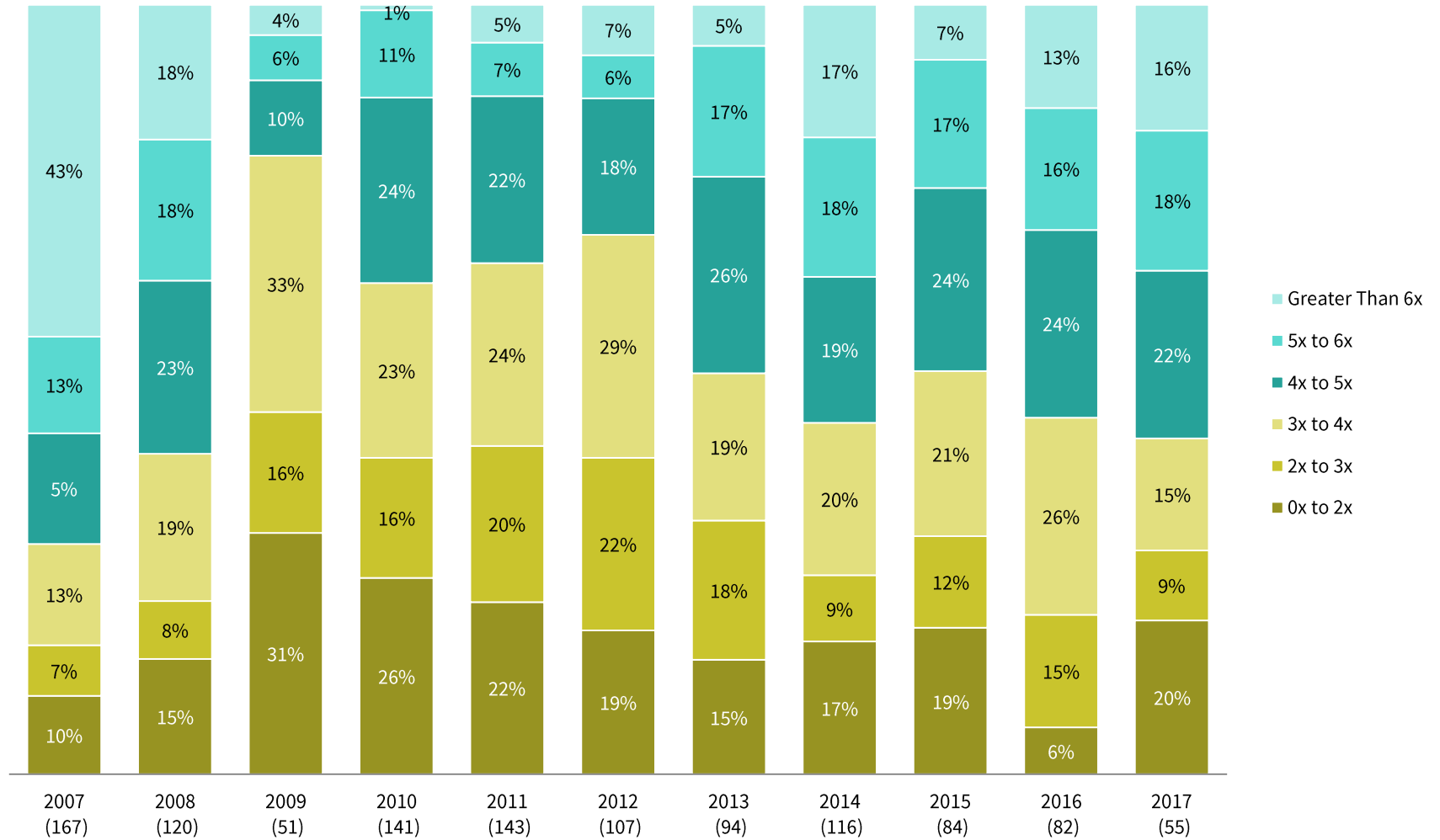
As of December 31, 2017



Distribution of European companies with various leverage multiples at acquisition

AVERAGE LEVERAGE MULTIPLE BREAKDOWN OF PRIVATE EQUITY-OWNED COMPANIES

As of December 31, 2017



Distribution of European companies achieving various levels of revenue growth

AVERAGE ANNUAL REVENUE GROWTH BREAKDOWN OF PRIVATE EQUITY-OWNED COMPANIES

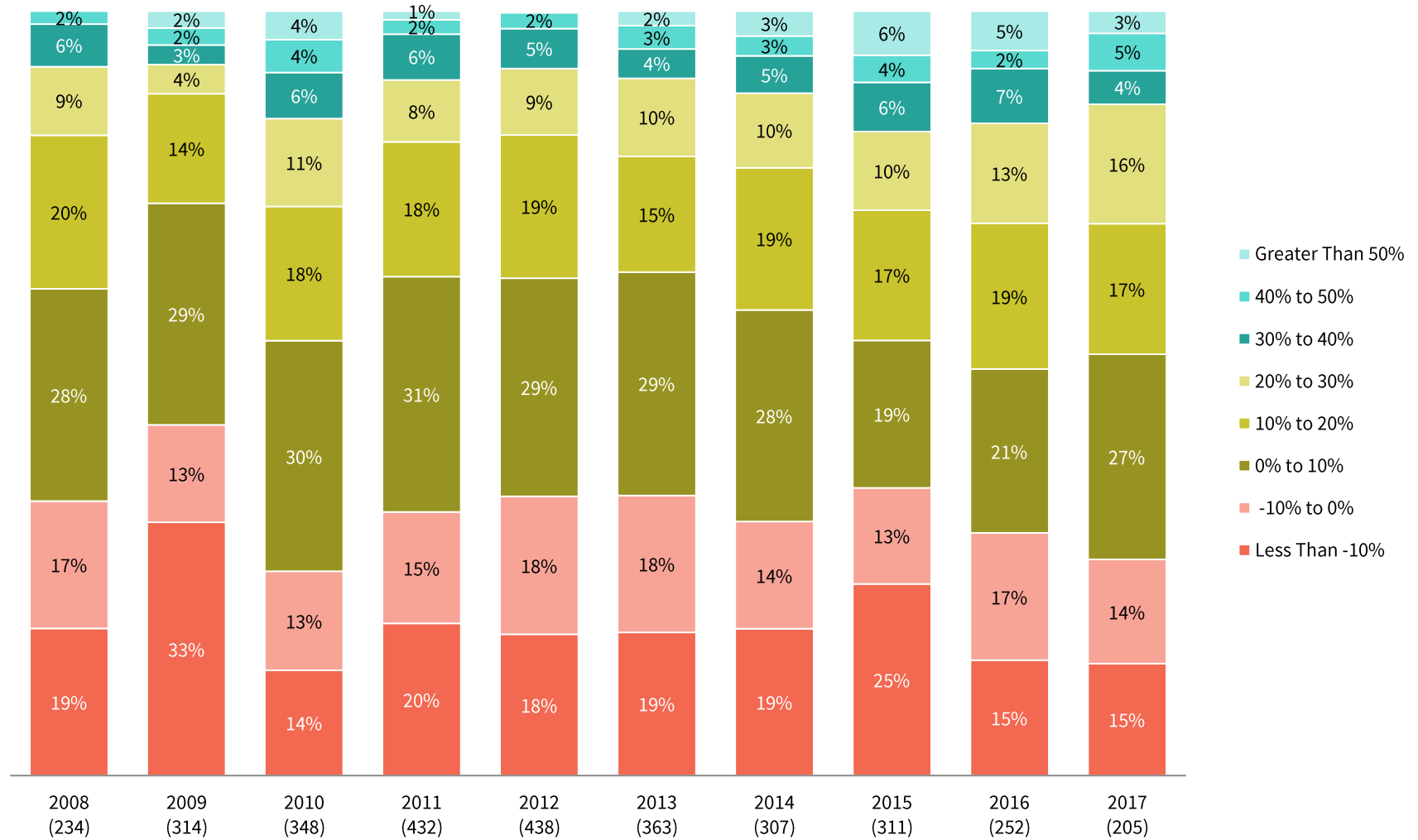
As of December 31, 2017



Distribution of European companies achieving various levels of EBITDA growth

AVERAGE ANNUAL EBITDA GROWTH BREAKDOWN OF PRIVATE EQUITY-OWNED COMPANIES

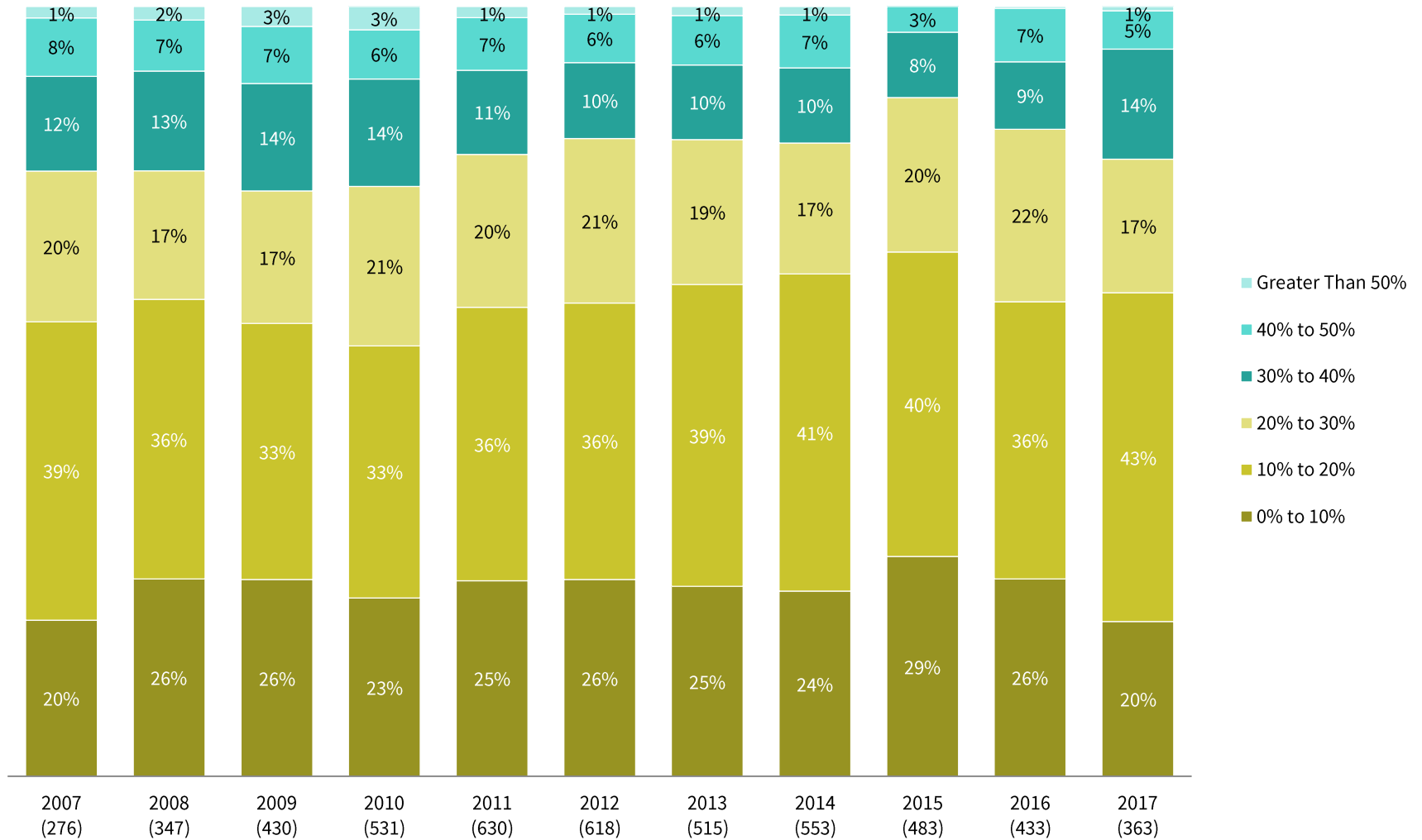
As of December 31, 2017



Distribution of European companies achieving various ranges of EBITDA margins

AVERAGE ANNUAL EBITDA MARGIN BREAKDOWN OF PRIVATE EQUITY-OWNED COMPANIES

As of December 31, 2017 • EBITDA/Revenue (%)

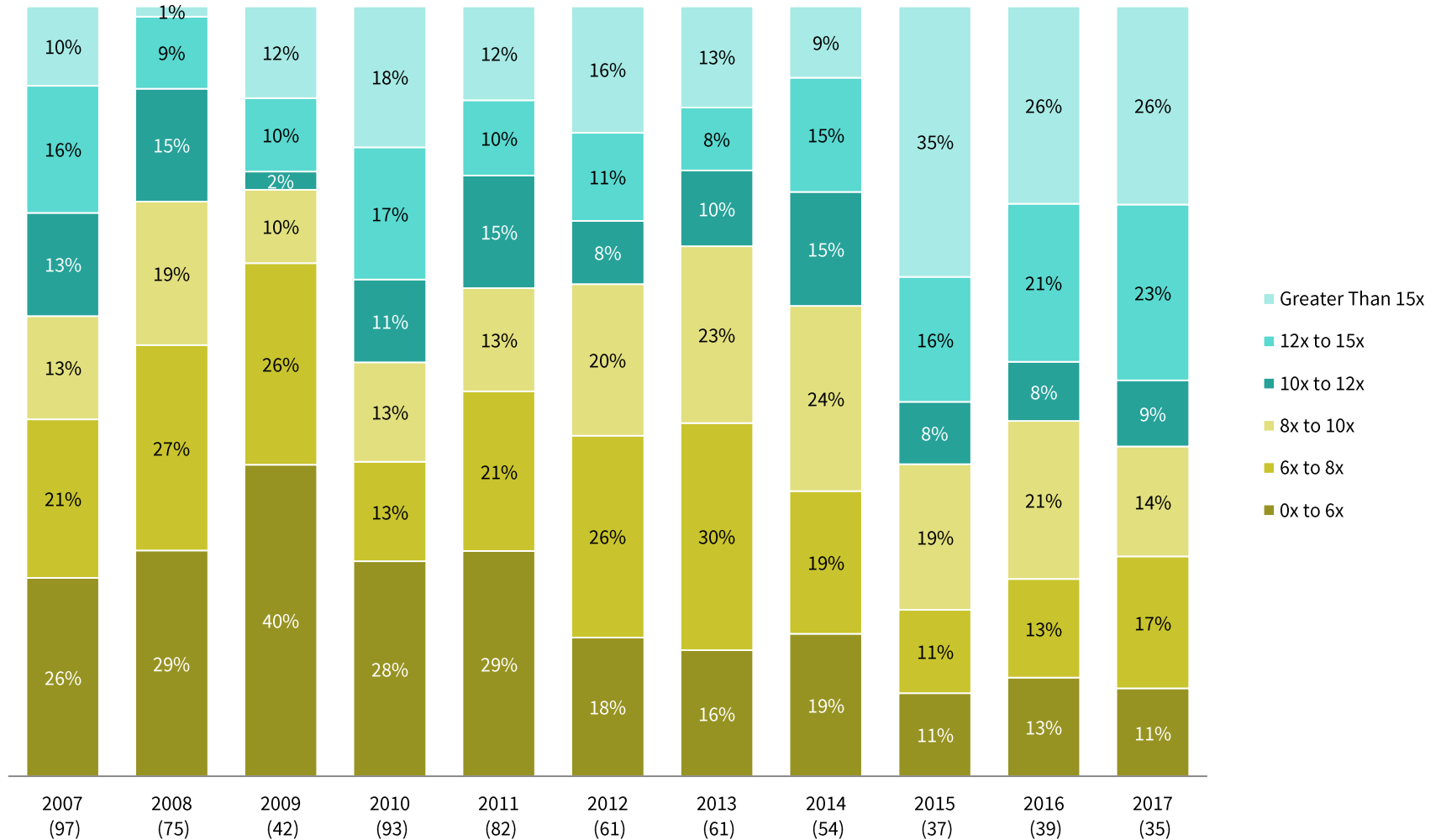


APPENDIX C
DISTRIBUTION OF ANALYZED METRICS FOR ASIAN COMPANIES

Distribution of Asian companies with various EBITDA PPMs at acquisition

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

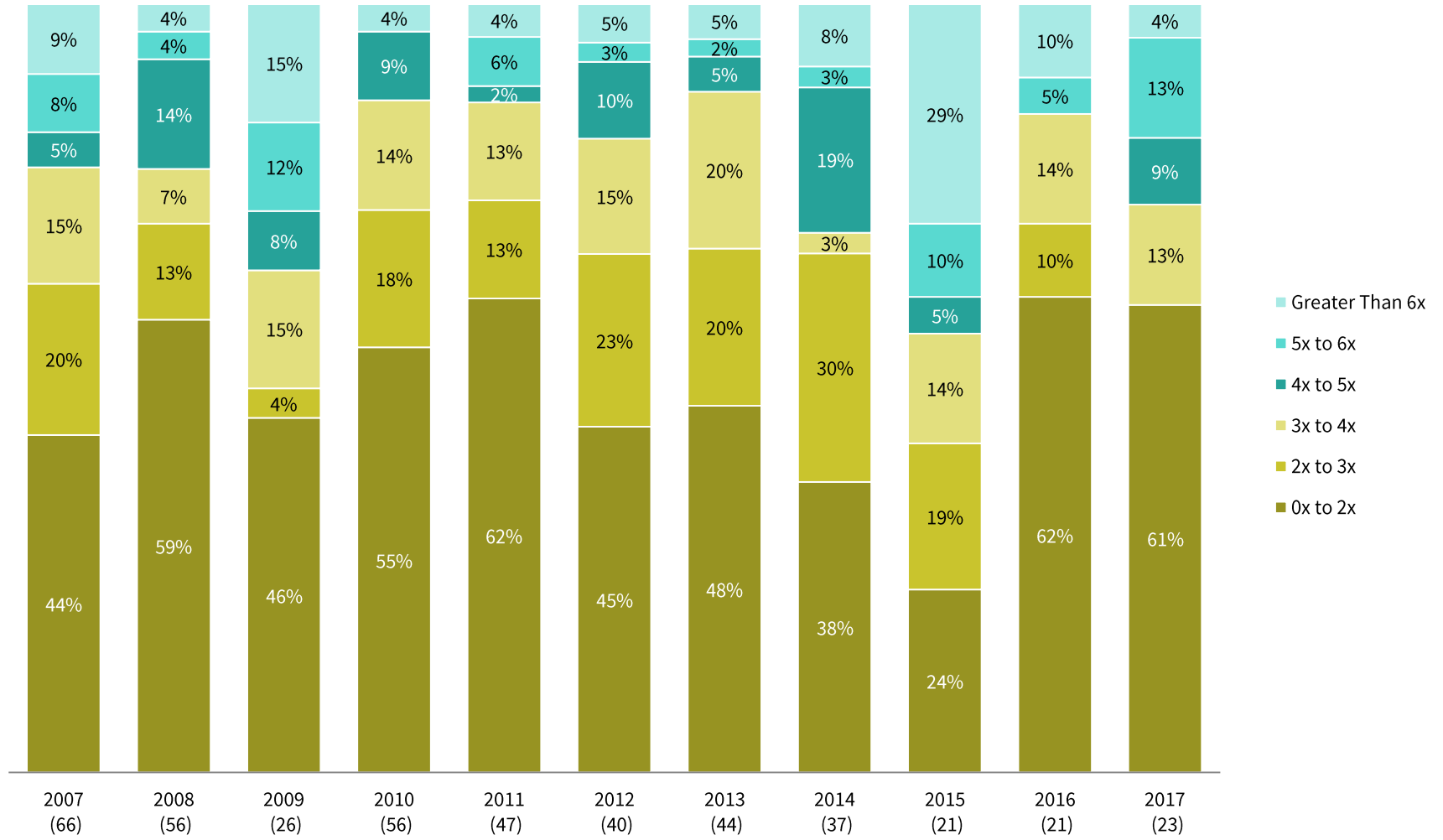
As of December 31, 2017



Distribution of Asian companies with various leverage multiples at acquisition

AVERAGE LEVERAGE MULTIPLE BREAKDOWN OF PRIVATE EQUITY-OWNED COMPANIES

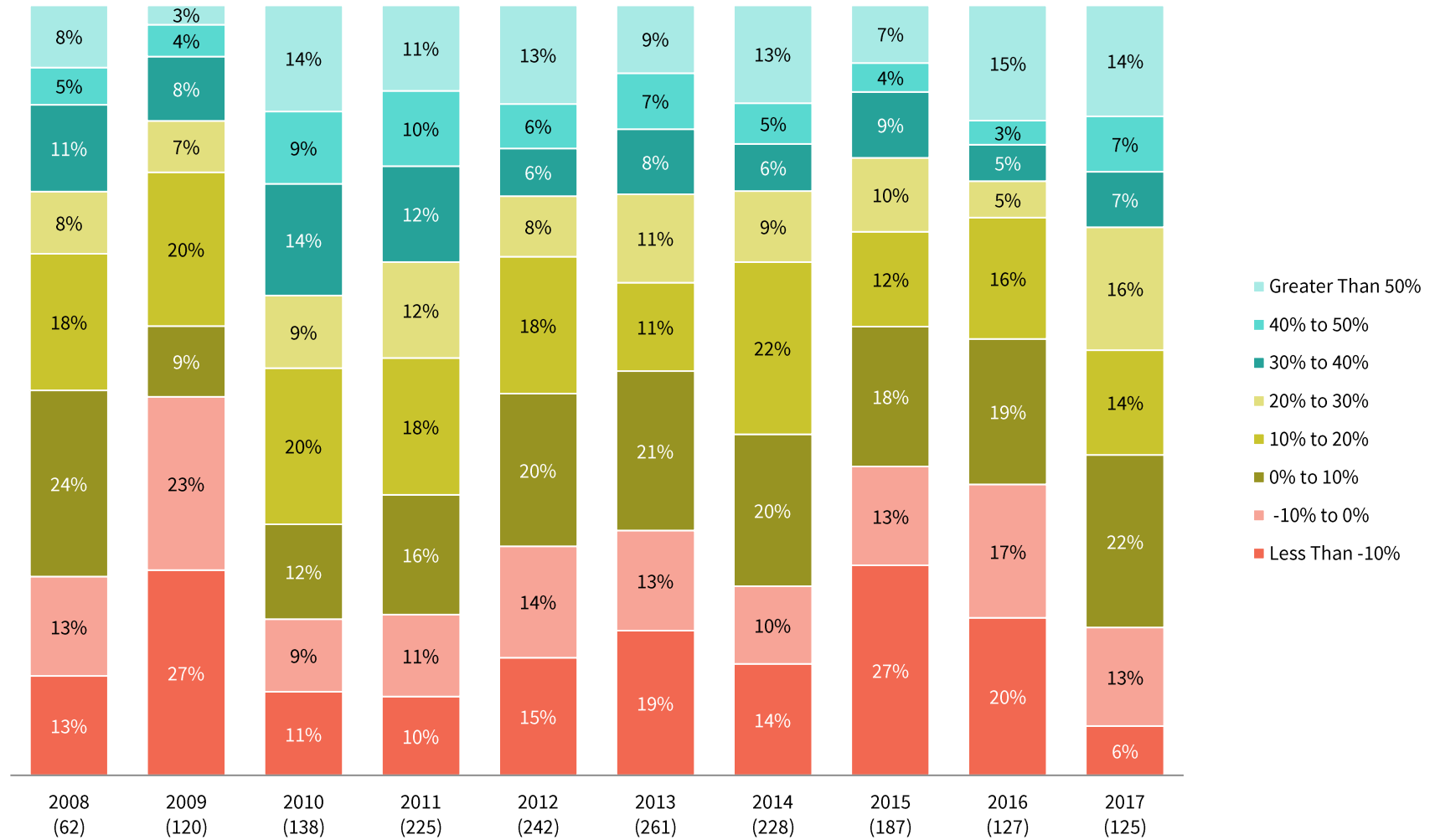
As of December 31, 2017



Distribution of Asian companies achieving various levels of revenue growth

AVERAGE ANNUAL REVENUE GROWTH BREAKDOWN OF PRIVATE EQUITY-OWNED COMPANIES

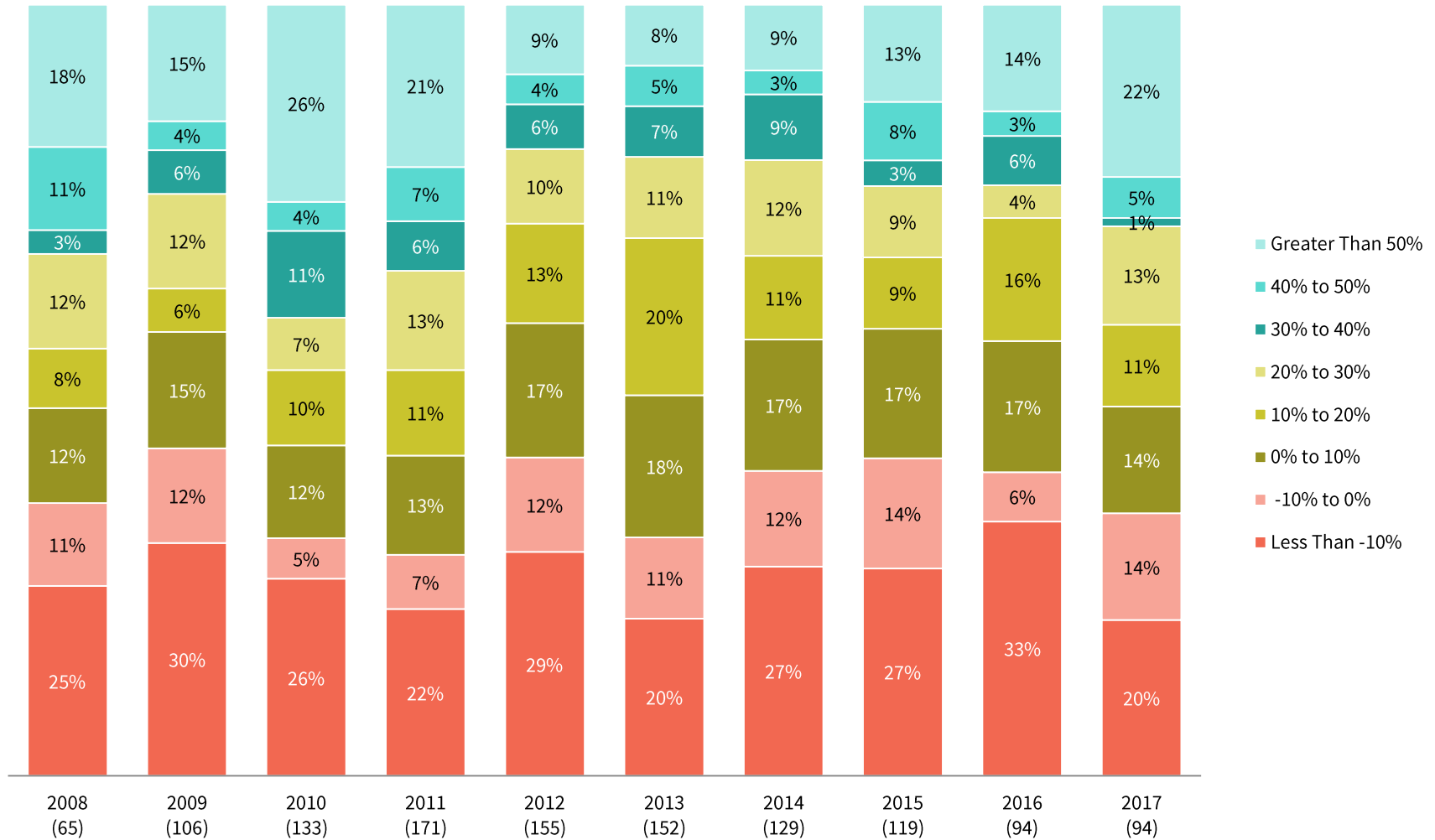
As of December 31, 2017



Distribution of Asian companies achieving various levels of EBITDA growth

AVERAGE ANNUAL EBITDA GROWTH BREAKDOWN OF PRIVATE EQUITY-OWNED COMPANIES

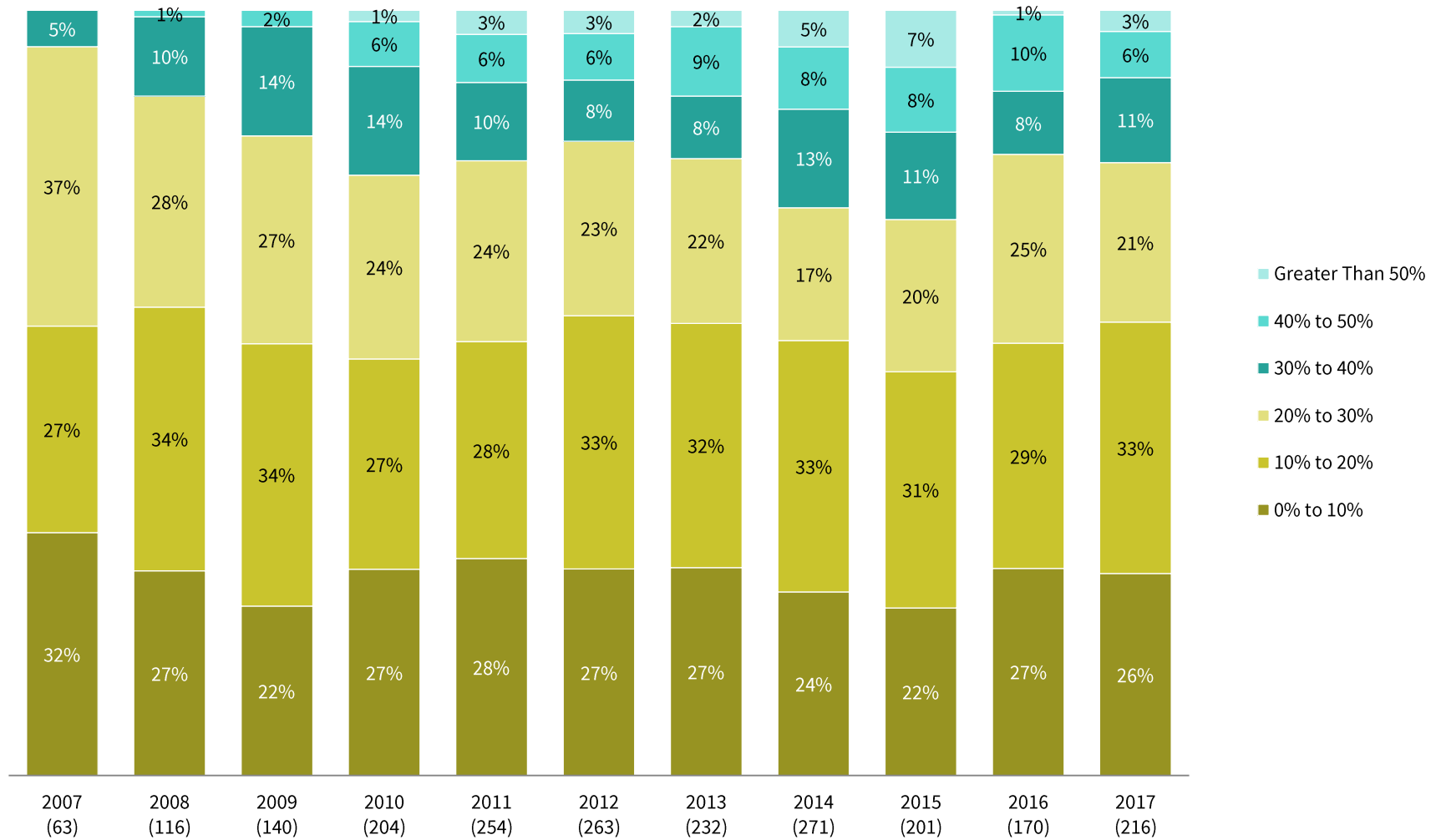
As of December 31, 2017



Distribution of Asian companies achieving various ranges of EBITDA margins

AVERAGE ANNUAL EBITDA MARGIN BREAKDOWN OF PRIVATE EQUITY-OWNED COMPANIES

As of December 31, 2017 • EBITDA/Revenue (%)





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