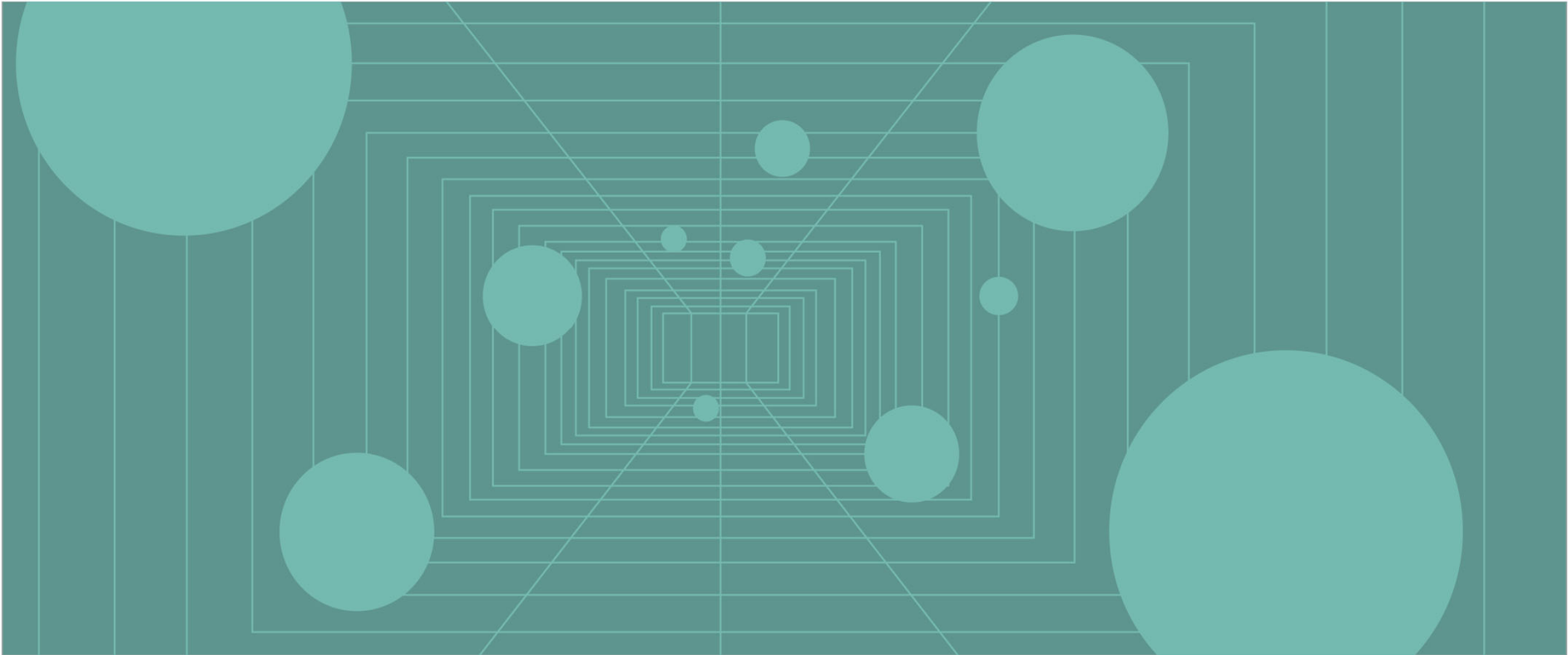


# PRIVATE COMPANY OPERATING METRICS: GLOBAL ANALYSIS



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#### Key Exit Metrics

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## Introduction to Operating Metrics

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- 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 captured and analyzed current and historical data from global PE funds since the year ending December 31, 2011. This year's report includes data through the period ended December 31, 2021.
- 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 almost 13,000 companies worldwide, of which about 6,700 are based in the United States, almost 3,300 in Europe, and 1,900 in Asia; they were acquired by PE firms from 2000 through 2021 and range in enterprise value from less than \$1 million to greater than \$100 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.
- Deal type categorizations have been made at the company level and reflect information provided by the private equity managers.
- Sector classifications are based on the Global Industry Classification Standard (GICS®). GICS was developed by 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.

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## GLOBAL PRIVATE EQUITY ANALYSIS

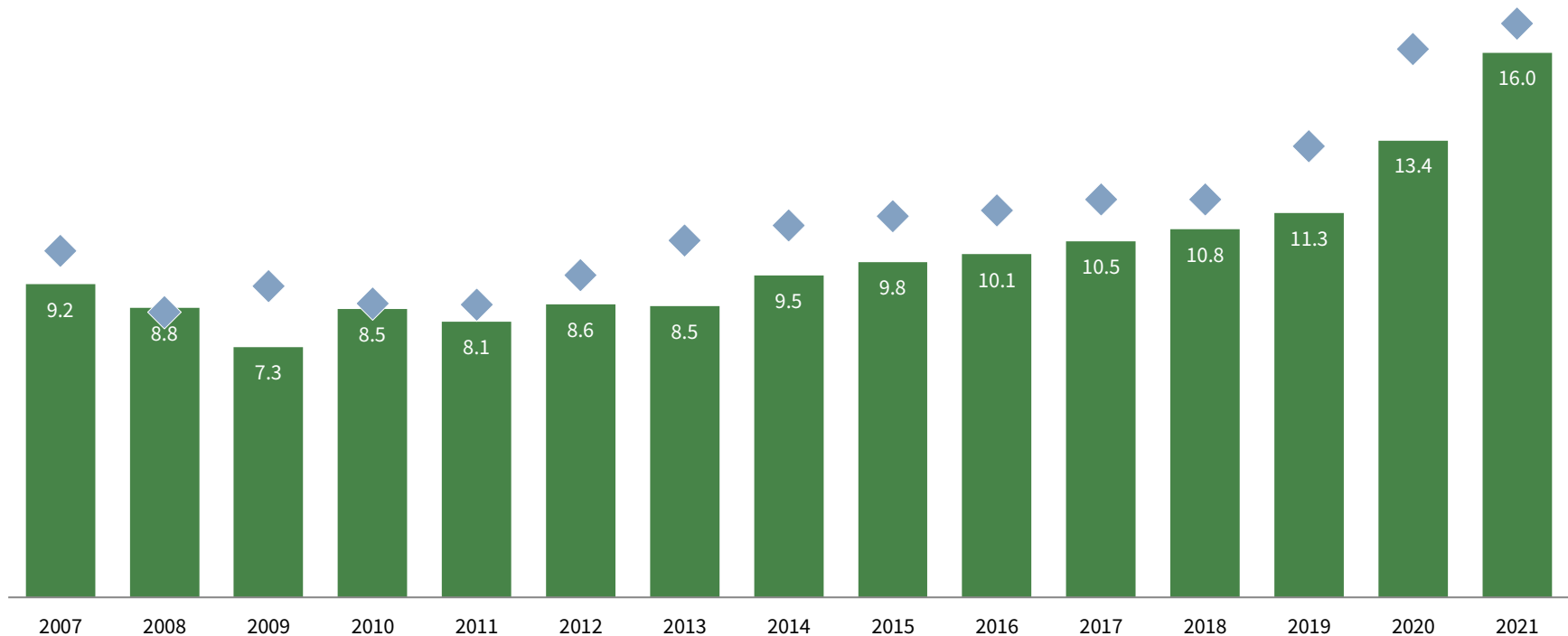
- **EBITDA Purchase Price Multiple**
- Leverage Multiple
- Revenue Growth
- EBITDA Growth
- EBITDA Margin
- Exit Metrics
- Revenue Purchase Price Multiple

## After gradually increasing since 2010, PPMs jumped to new heights during the COVID-19 era

The 2021 private discount to public counterparts was the smallest since 2012

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

As of December 31, 2021 • Enterprise Value/EBITDA



#### Number of Companies

	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
PE-Owned Companies	655	484	255	547	559	553	419	546	509	495	560	534	475	403	474
MSCI AC World® Index	1,345	1,247	1,346	1,451	1,465	1,499	1,501	1,520	1,519	1,544	1,546	1,680	1,915	1,845	1,802

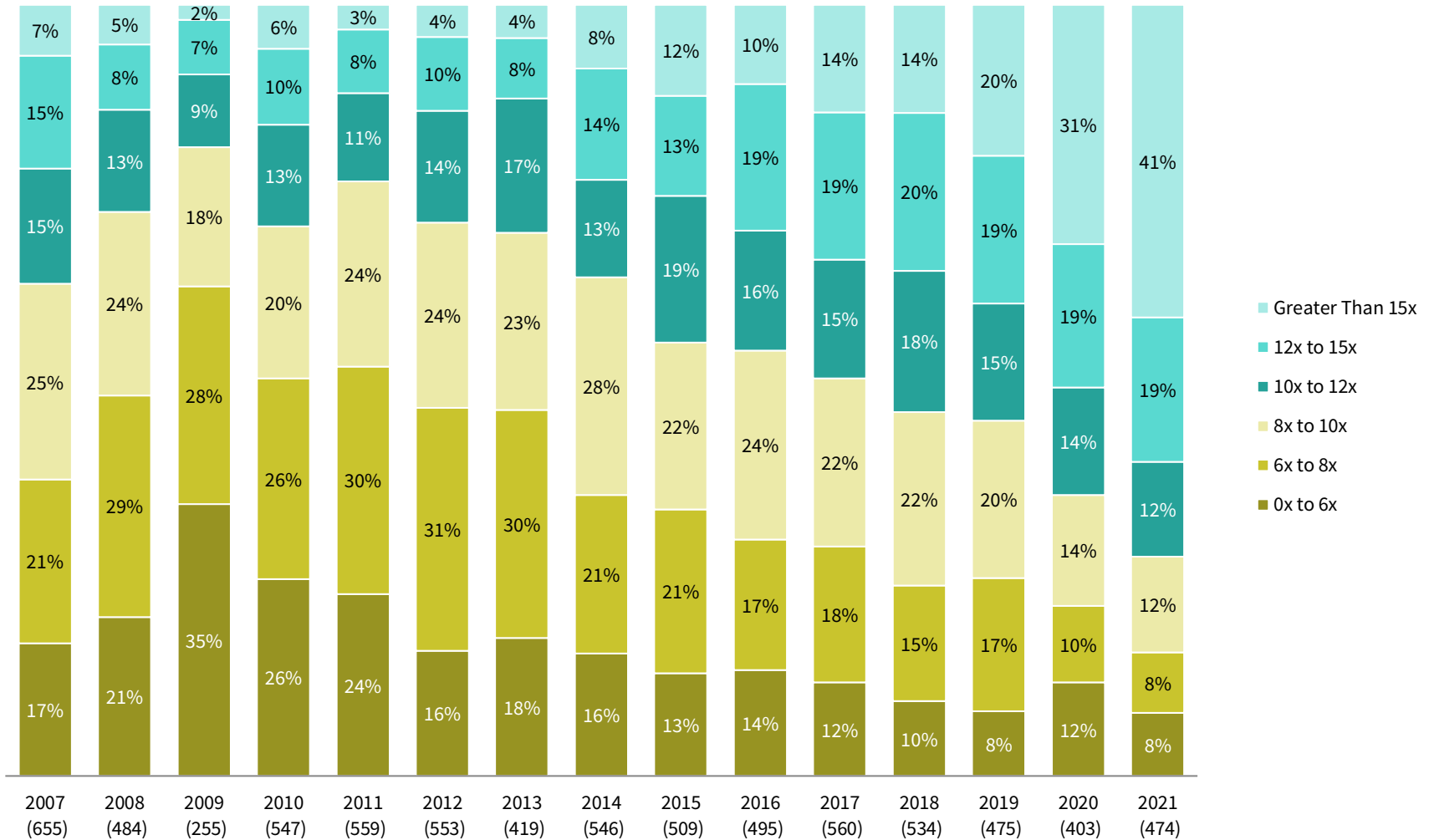


## The percentage of PE transactions completed at multiples >15x EBITDA was historically high over the past two years

Meanwhile, the percentage of transactions completed between 6x and 8x was historically low

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

As of December 31, 2021 • Enterprise Value/EBITDA

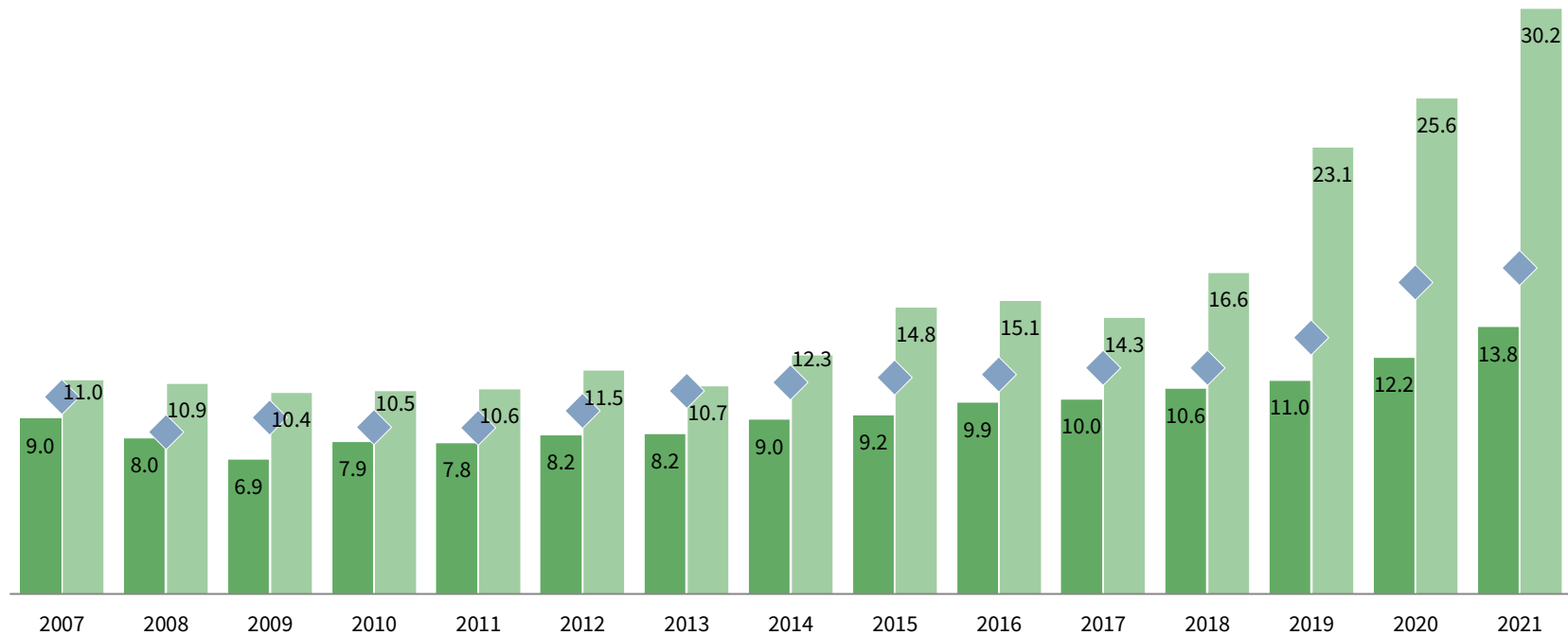


## Buyout PPMs have steadily increased since 2012 but have maintained their discount to publics

Growth equity multiples surged over the last three years, far outpacing those of public companies

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

As of December 31, 2021 • Enterprise Value/EBITDA



#### Number of Companies

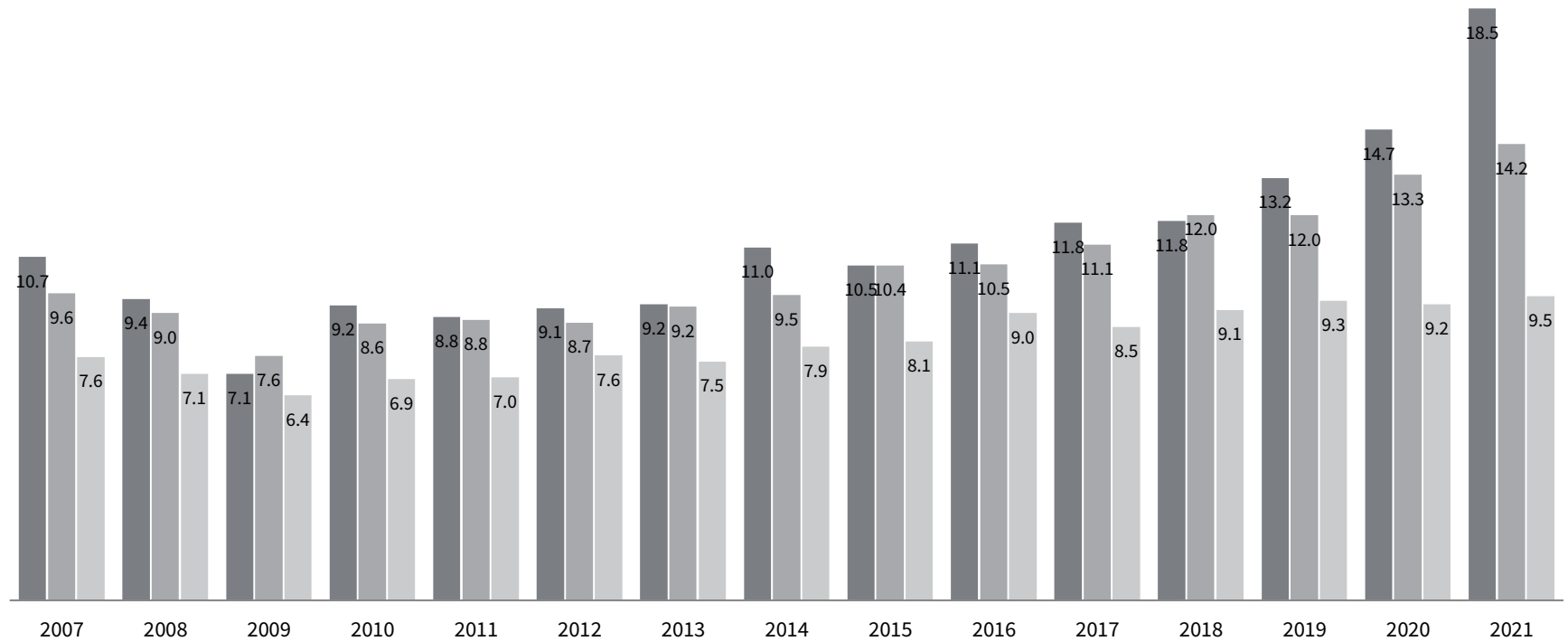
	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
Buyout Companies	523	350	188	396	429	421	312	422	405	388	432	408	361	266	341
Growth Equity Companies	129	118	58	146	118	122	89	118	103	106	110	105	86	113	139
MSCI AC World® Index	1,345	1,247	1,346	1,451	1,465	1,499	1,501	1,520	1,519	1,544	1,546	1,680	1,915	1,845	1,802

## Large buyouts were back in vogue in 2021, commanding significantly higher valuations than peers

Over the 15-year period, small-cap buyouts transacted at much lower multiples than their larger brethren, averaging 8.6x

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

As of December 31, 2021 • Enterprise Value/EBITDA



#### Number of Companies

	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
EV > \$1B	145	71	19	57	63	71	46	58	54	59	86	80	65	90	119
EV \$250M - \$1B	137	85	49	124	114	130	90	142	135	129	140	133	126	75	96
EV < \$250M	234	192	114	209	244	218	173	212	203	198	194	192	157	102	128

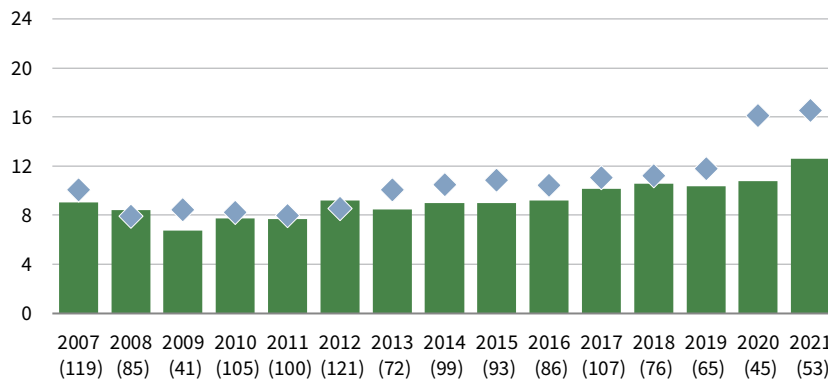
# IT company PPMs have continued to rise in both PE and public markets

During COVID-19, PE companies transacted at meaningfully lower valuations than public peers in consumer, healthcare, and industrial sectors

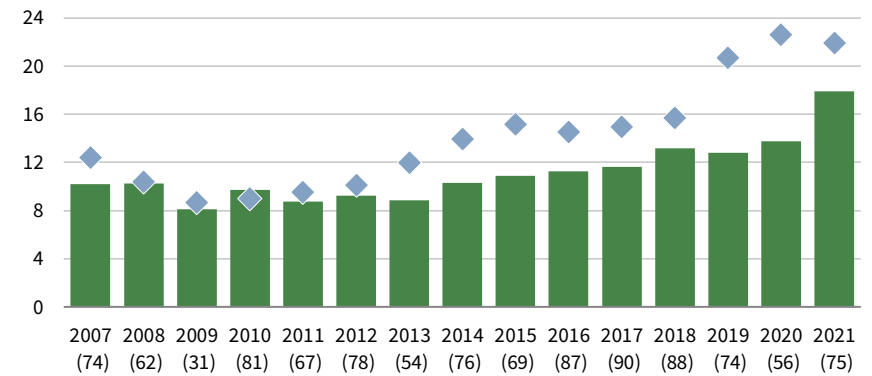
## AVERAGE EBITDA PURCHASE PRICE MULTIPLES AT ACQUISITION OF GLOBAL PRIVATE EQUITY-OWNED COMPANIES VS PUBLIC COMPANIES BY SECTOR

As of December 31, 2021 • Enterprise Value/EBITDA

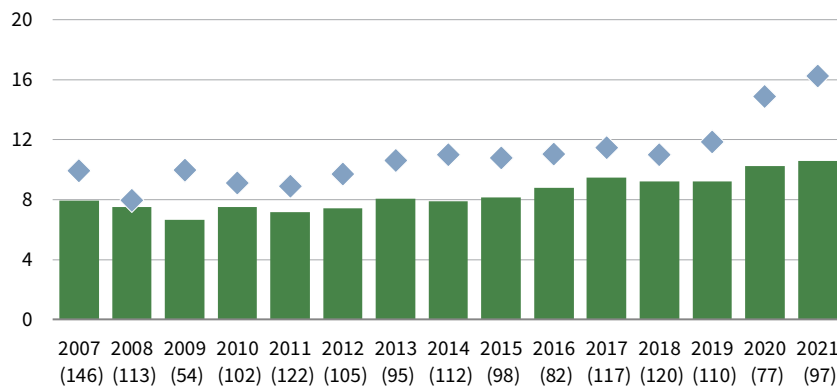
### Consumer Discretionary



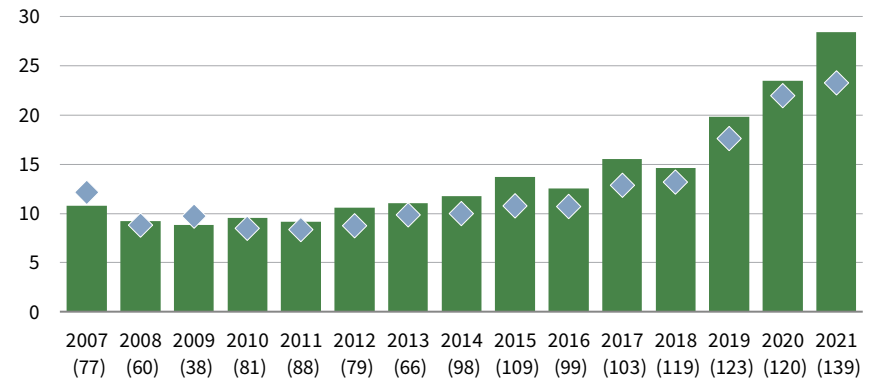
### Healthcare



### Industrials



### Information Technology



■ Private Equity Owned

◆ MSCI All Country World® Index

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## GLOBAL PRIVATE EQUITY ANALYSIS

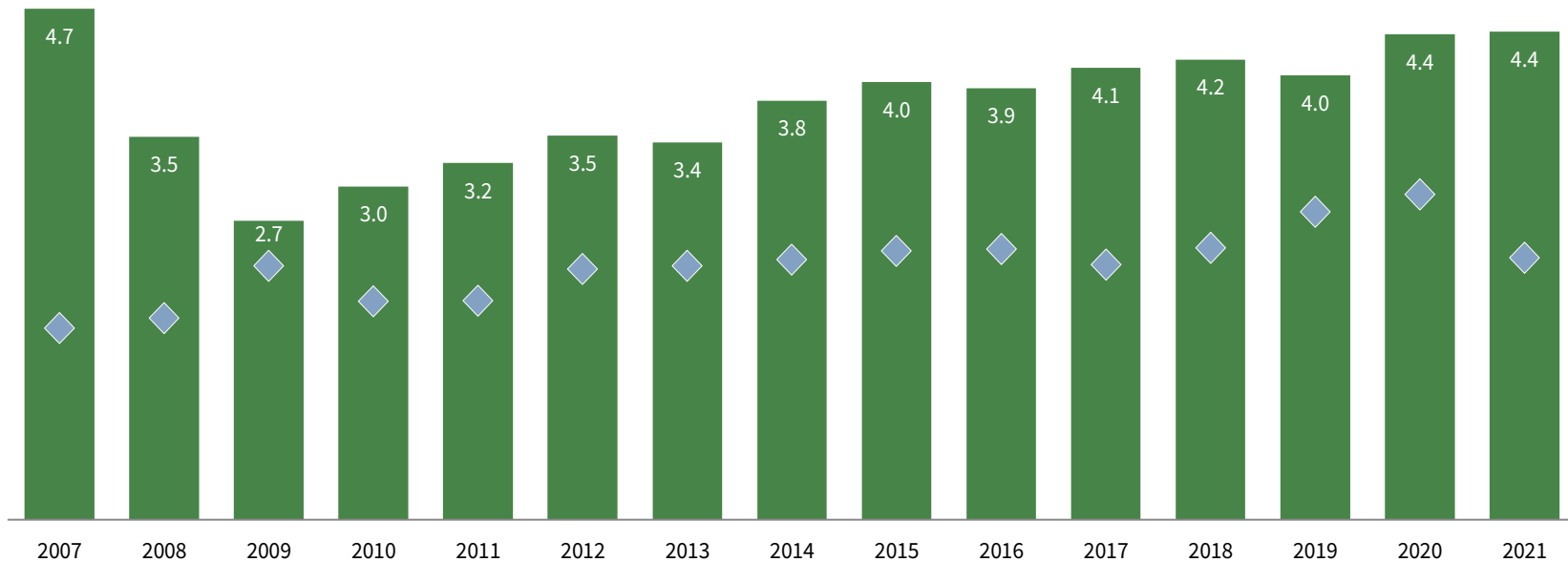
- Purchase Price Multiple
- **Leverage Multiple**
- Revenue Growth
- EBITDA Growth
- EBITDA Margin
- Exit Metrics
- Revenue Purchase Price Multiple

## Average PE leverage multiples have generally climbed since 2009 but have continued to trail 2007 peak

Within the global sample, PE leverage multiples have been consistently higher in the US and Europe than in Asia, due at least in part to higher buyout representation in the US and European samples

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

As of December 31, 2021 • Net Debt/EBITDA



#### Number of Companies

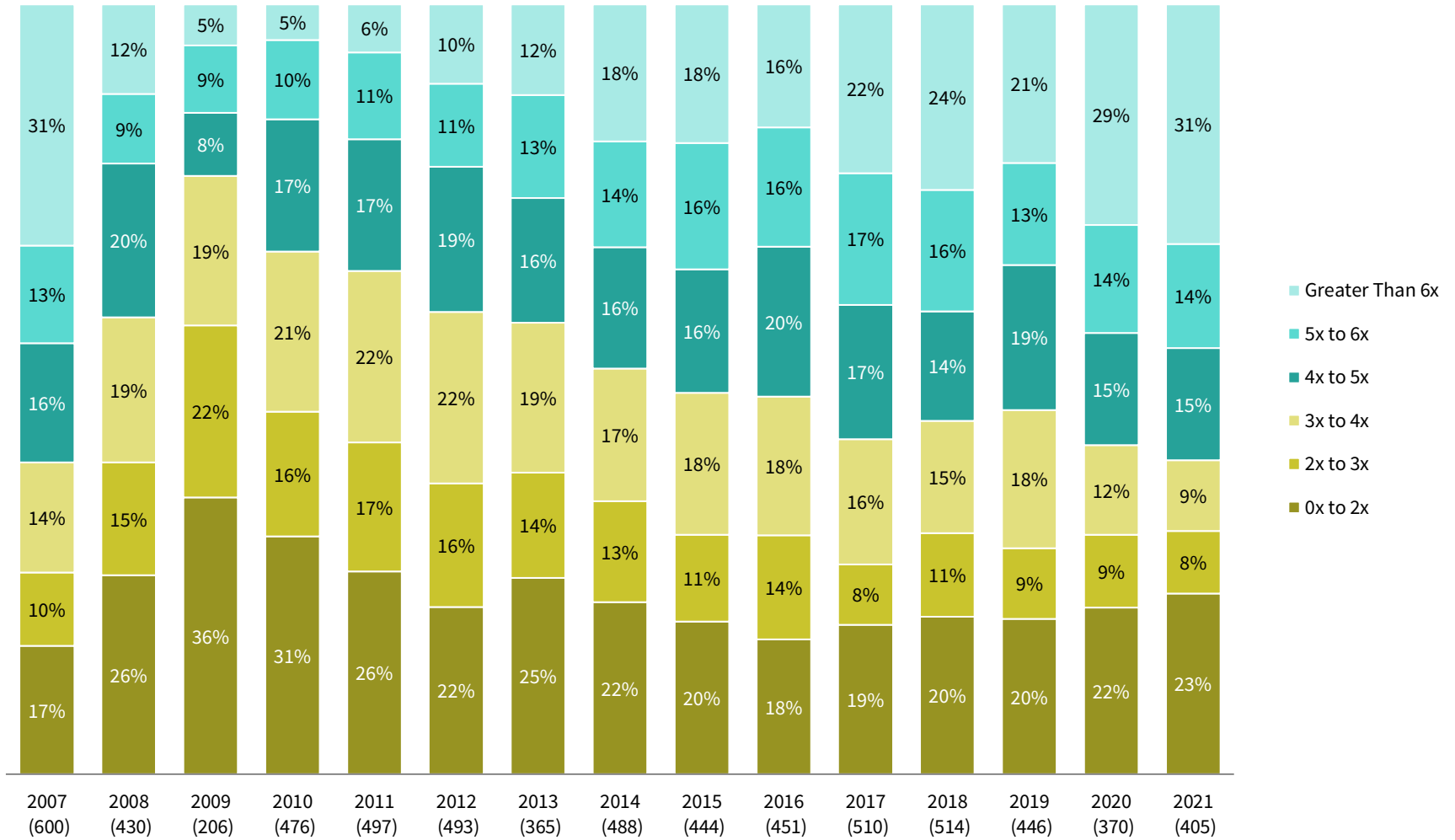
	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
PE-Owned Companies	600	430	206	476	497	493	365	488	444	451	510	514	446	370	405
MSCI AC World® Index	999	942	992	1,041	1,027	1,076	1,093	1,140	1,148	1,173	1,147	1,238	1,439	1,301	1,226

**In every year since 2013, at least a quarter of PE deals were levered at 5x EBITDA or higher**

In 2021, the percentage of transactions levered at greater than 6x EBITDA equaled that of 2007

**AVERAGE LEVERAGE MULTIPLE BREAKDOWN OF GLOBAL PRIVATE EQUITY-OWNED COMPANIES**

As of December 31, 2021 • Net Debt/EBITDA



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

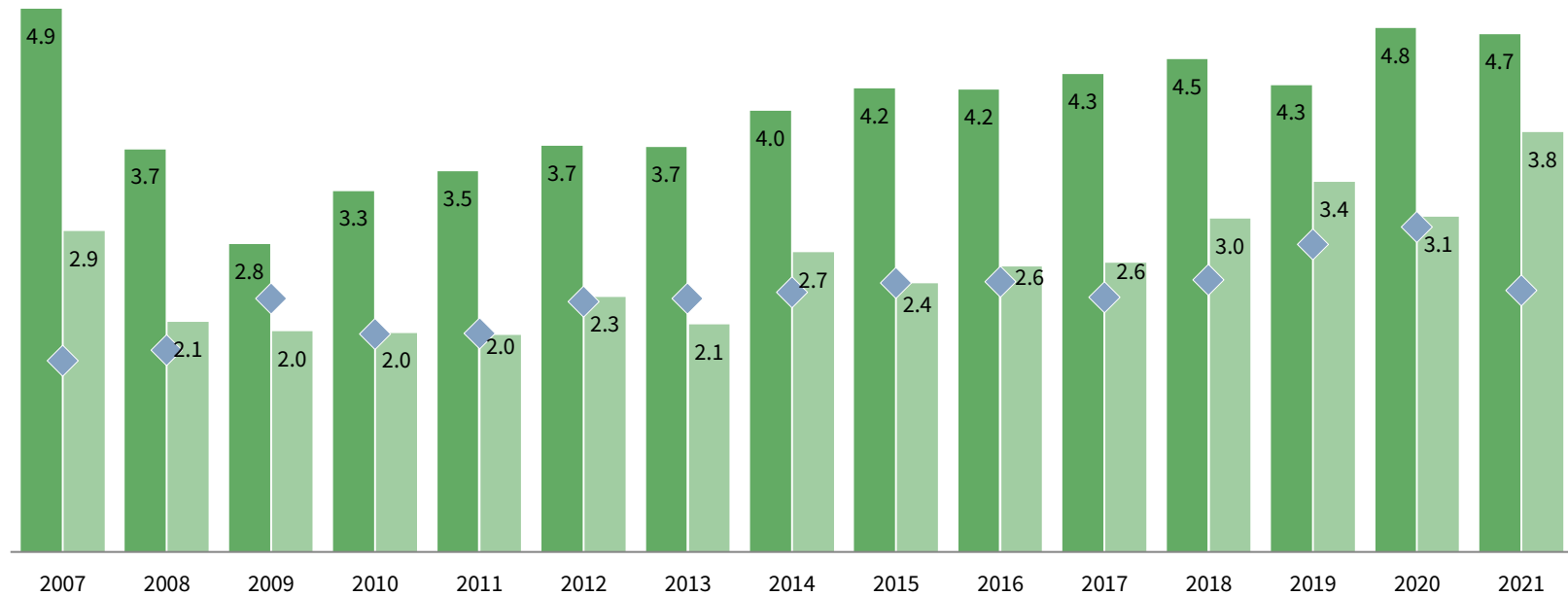
Notes: Outliers were identified and excluded. Numbers in parentheses represent total private companies in a year. Each range includes the lower bound value. For example, the "4x to 5x" range includes companies with reported leverage multiples of exactly 4x. Due to rounding, totals may not sum to 100%.

## Buyout leverage multiples during the COVID-19 era reached the highest levels since 2007

Average growth equity leverage multiples have trended higher since 2018, and they hit a new peak in 2021

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

As of December 31, 2021 • Net Debt/EBITDA



#### Number of Companies

	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
Buyout Companies	505	330	152	366	404	403	286	396	364	356	402	393	332	253	311
Growth Equity Companies	86	76	40	100	80	76	60	78	69	75	83	87	62	69	84
MSCI AC World® Index	999	942	992	1,041	1,027	1,076	1,093	1,140	1,148	1,173	1,147	1,238	1,439	1,301	1,226

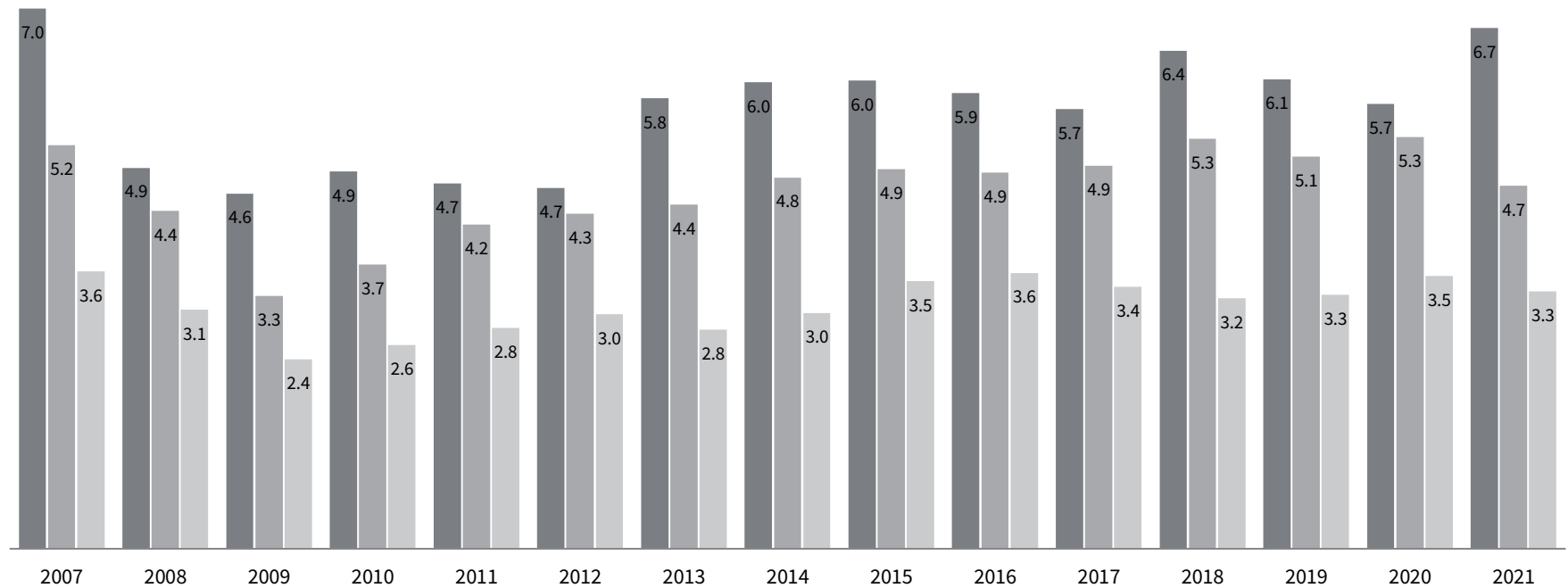


## Large buyouts were consistently the most levered; average multiples hit the second highest observed level in 2021

Mid-cap multiples declined in 2021, marking their lowest average since 2013

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

As of December 31, 2021 • Net Debt/EBITDA



#### Number of Companies

	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
EV > \$1B	138	72	18	54	59	70	41	55	47	52	83	74	58	89	95
EV \$250M - \$1B	135	79	44	119	103	120	84	137	126	118	128	125	111	64	91
EV < \$250M	220	180	89	192	240	207	160	198	181	180	175	178	146	91	111

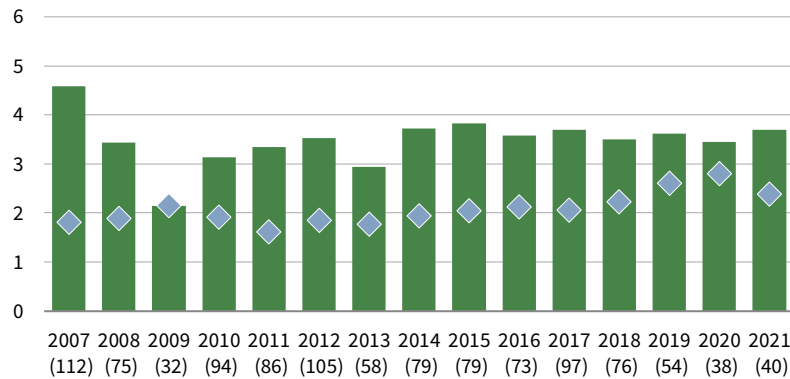
# IT and healthcare companies continued to be the most levered at acquisition

Leverage multiples for public and PE-backed companies are most similar in industrials and consumer discretionary

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

As of December 31, 2021 • Net Debt/EBITDA

### Consumer Discretionary



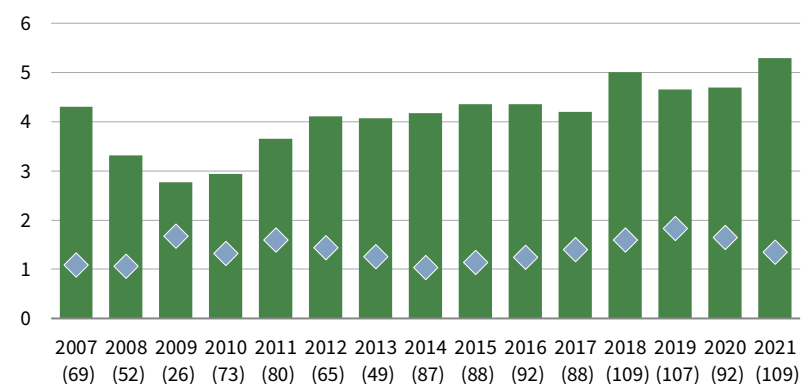
### Healthcare



### Industrials



### Information Technology



■ Private Equity Owned

◆ MSCI All Country World® Index

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## GLOBAL PRIVATE EQUITY ANALYSIS

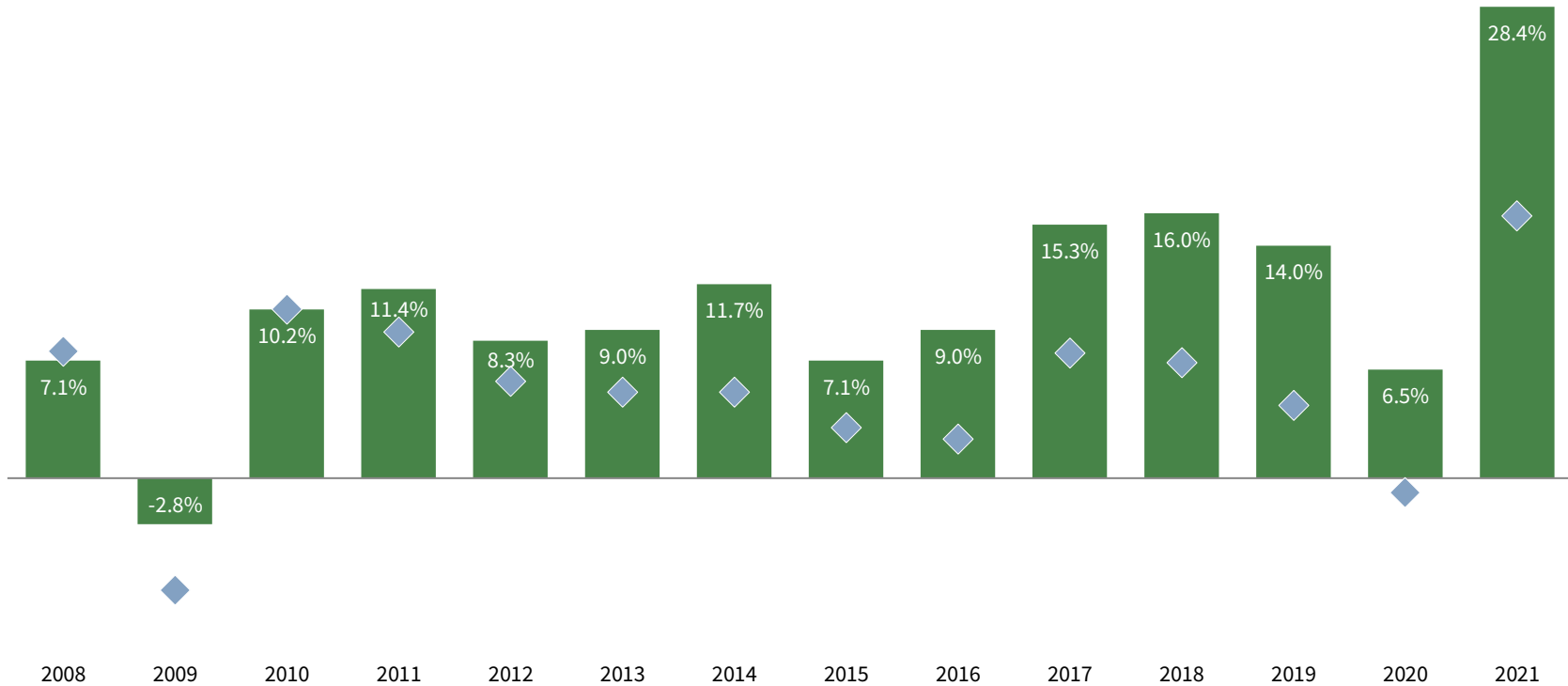
- Purchase Price Multiple
- Leverage Multiple
- **Revenue Growth**
- EBITDA Growth
- EBITDA Margin
- Exit Metrics
- Revenue Purchase Price Multiple

## Since 2010, PE companies have averaged 12.1% annual revenue growth

Both PE-backed and public companies saw a big bump in revenue in 2021

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

As of December 31, 2021 • Annual Growth Rate (%)



#### Number of Companies

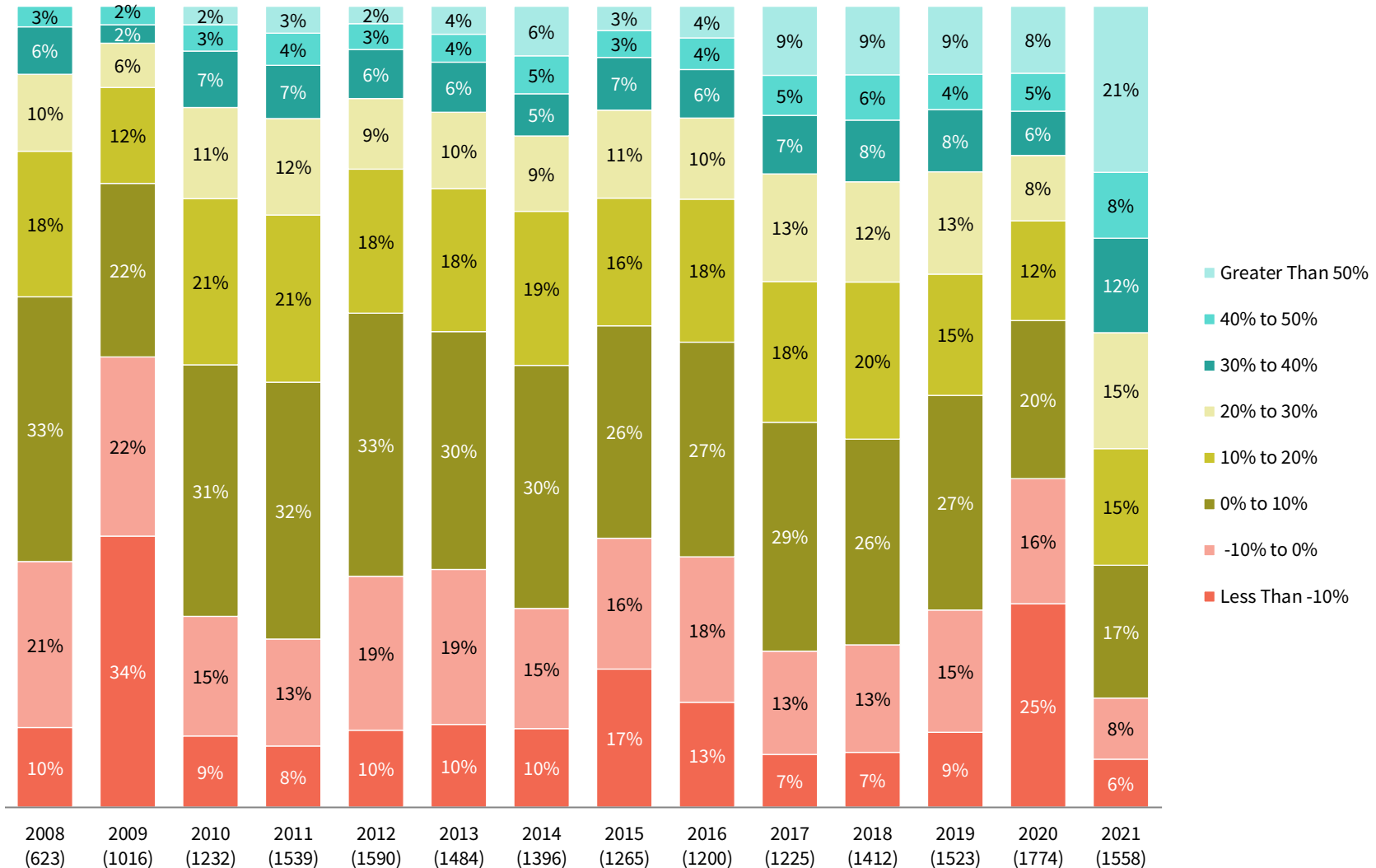
	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
PE-Owned Companies	623	1,016	1,232	1,539	1,590	1,484	1,396	1,265	1,200	1,225	1,412	1,523	1,774	1,558
MSCI AC World® Index	1,838	1,949	1,906	1,991	2,014	2,034	2,089	2,038	2,125	2,110	2,082	2,304	2,436	2,462

## Across the time period, 2021 was by far the best year for revenue growth

About four in ten companies grew revenue by more than 30% and only 14% saw revenue decline

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

As of December 31, 2021 • Annual Growth Rate (%)



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

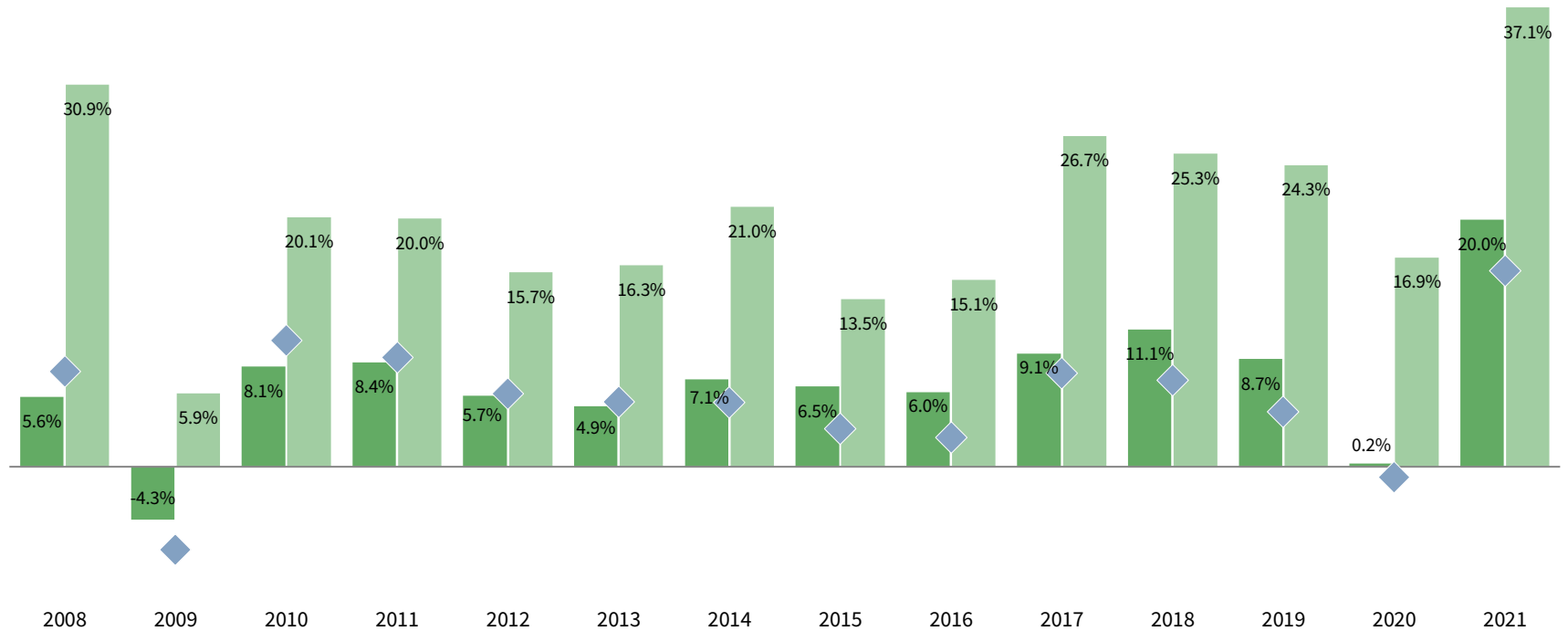
Notes: Outliers were identified and excluded. Numbers in parentheses represent total private companies in a year. Each range includes the lower bound value. For example, the "0% to 10%" range includes companies with reported growth of exactly 0%.

# Revenue growth for all company types reached new peaks in 2021

Growth equity averaged double-digit growth in all years but one; average buyout revenue growth exceeded that of public peers

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

As of December 31, 2021 • Annual Growth Rate (%)



### Number of Companies

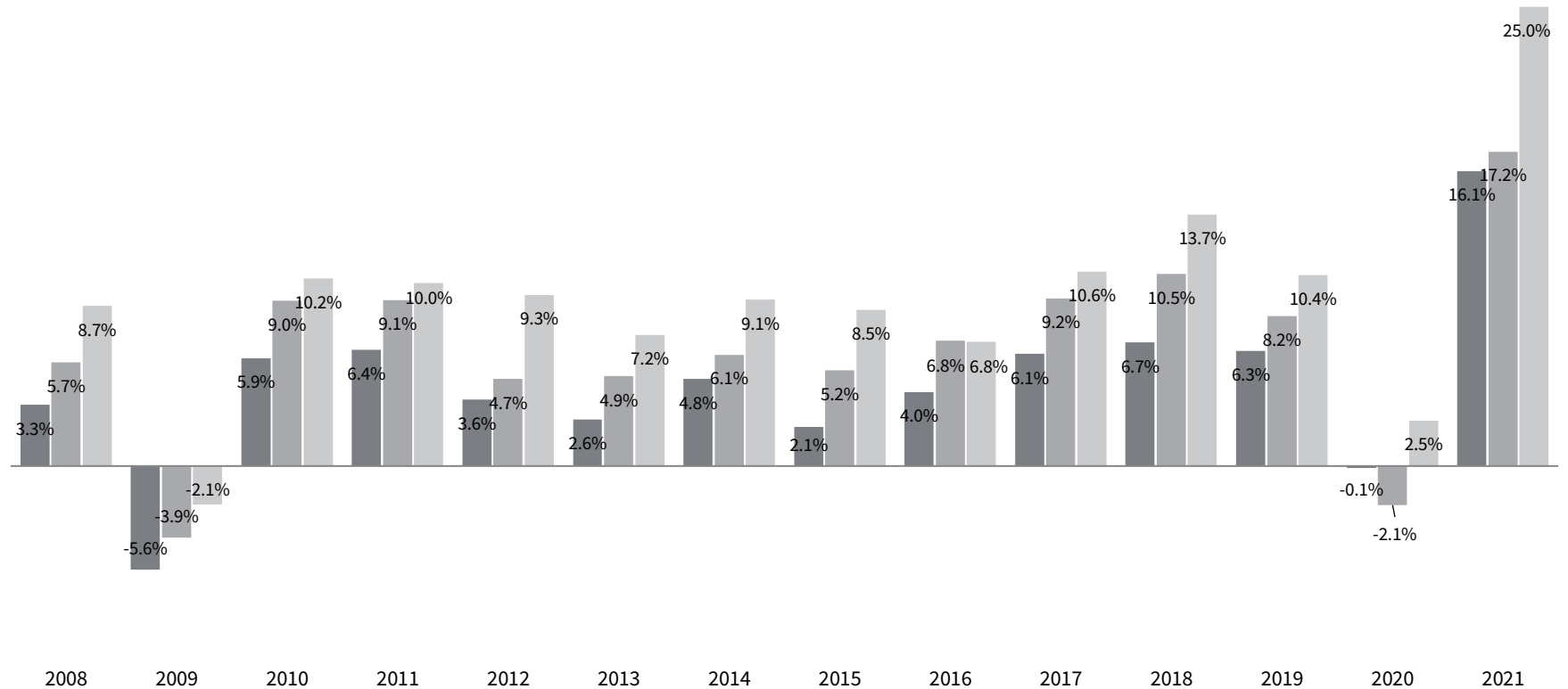
	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
Buyout Companies	544	830	947	1104	1054	911	823	717	711	706	832	850	944	754
Growth Equity Companies	101	172	247	365	438	479	492	470	454	455	546	631	754	740
MSCI AC World® Index	1,838	1,949	1,906	1,991	2,014	2,034	2,089	2,038	2,125	2,110	2,082	2,304	2,436	2,462

## Small buyout revenue growth has consistently outpaced that of their larger brethren

2021 was the only year that all size segments grew revenue by double digits

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

As of December 31, 2021 • Annual Growth Rate (%)



#### Number of Companies

	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
EV > \$1B	198	273	274	309	266	206	162	136	151	126	132	177	195	189
EV \$250M - \$1B	121	205	258	296	284	243	213	210	205	245	291	276	295	218
EV < \$250M	228	355	416	495	508	456	437	359	355	317	411	388	433	352

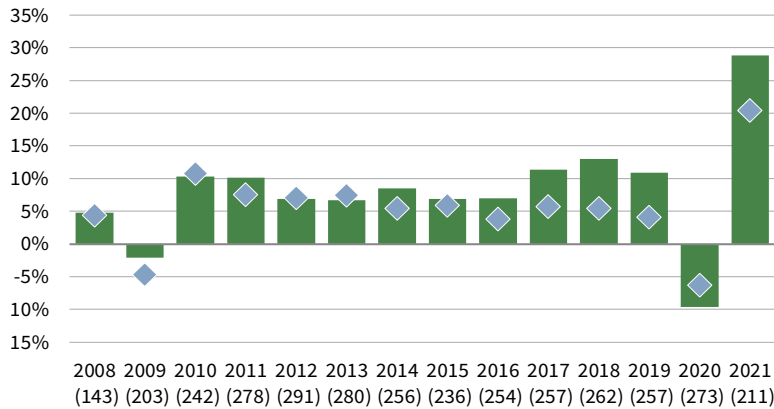
# Since 2008, in all sectors, PE companies have averaged higher revenue growth than publics

Fiscal stimulus enabled revenue growth for consumer discretionary companies to rebound most strongly from 2020 lows

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

As of December 31, 2021 • Annual Growth Rate (%)

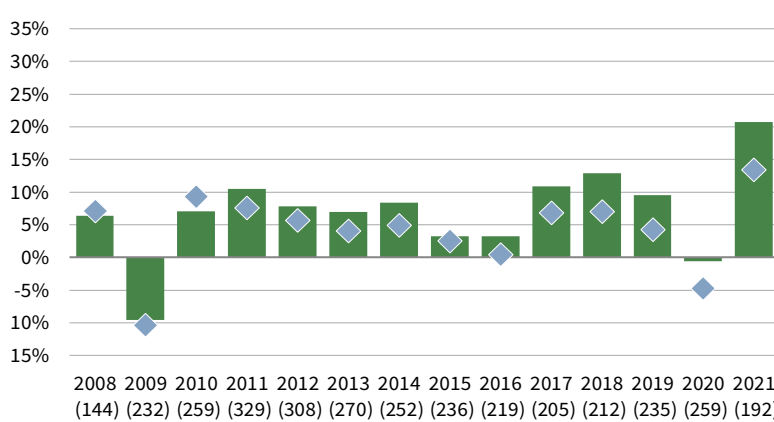
### Consumer Discretionary



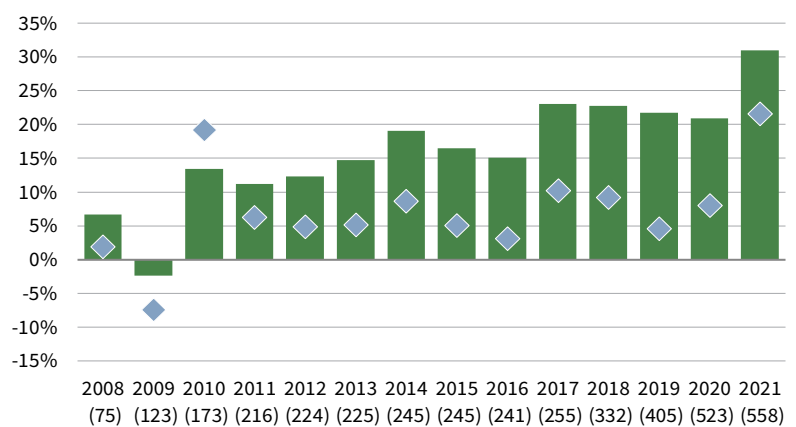
### Healthcare



### Industrials



### Information Technology



■ Private Equity Owned

◆ MSCI All Country World® Index



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## GLOBAL PRIVATE EQUITY ANALYSIS

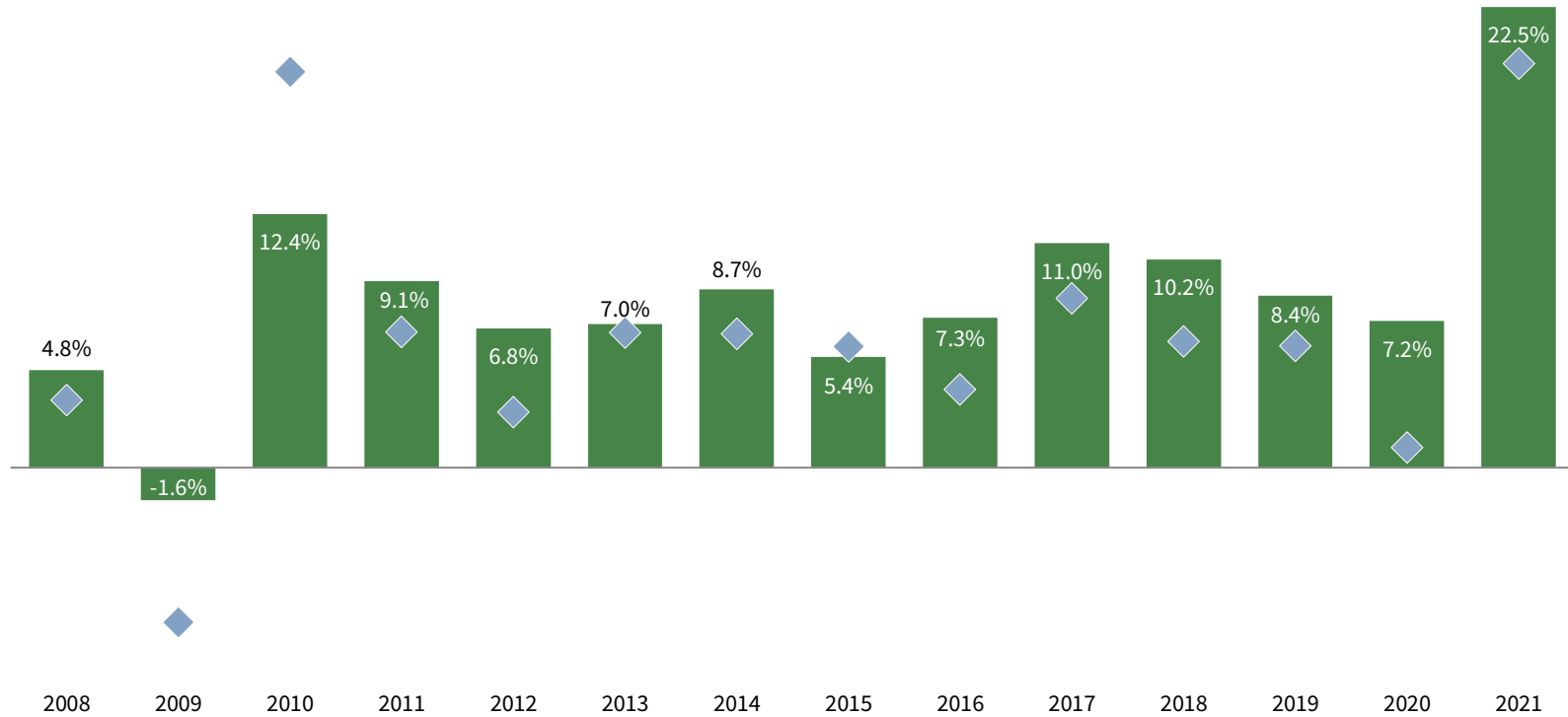
- Purchase Price Multiple
- Leverage Multiple
- Revenue Growth
- **EBITDA Growth**
- EBITDA Margin
- Exit Metrics
- Revenue Purchase Price Multiple

**Both PE and public companies grew EBITDA at greater than 20% in 2021, the only time during the period analyzed**

Since the Global Financial Crisis (2010), PE-backed companies have averaged better annual EBITDA growth than public peers

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

As of December 31, 2021 • Annual Growth Rate (%)



**Number of Companies**

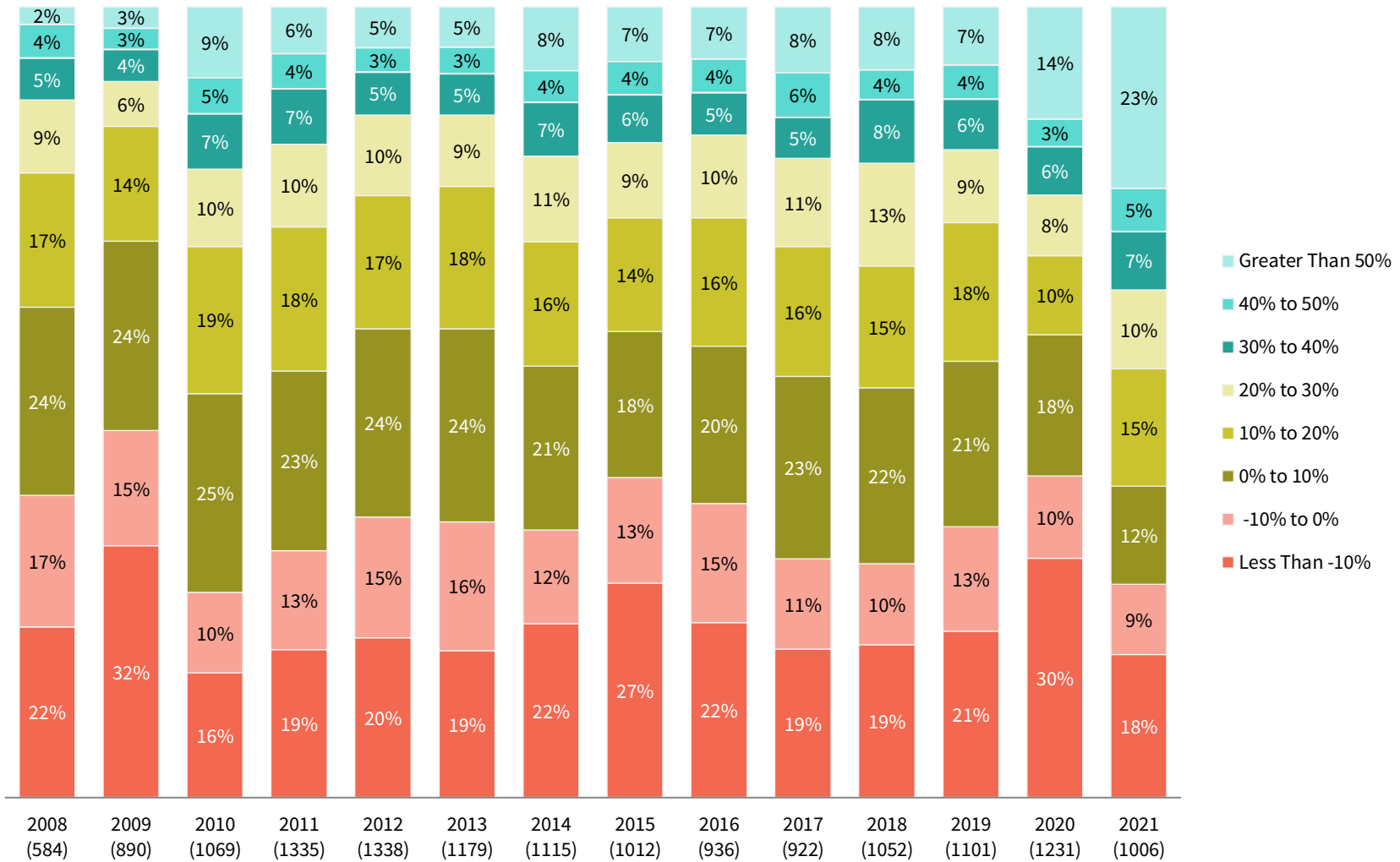
	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
PE-Owned Companies	584	890	1,069	1,335	1,338	1,179	1,115	1,012	936	922	1,052	1,101	1,231	1,006
MSCI AC World® Index	1,320	1,408	1,465	1,583	1,636	1,652	1,674	1,672	1,729	1,722	1,734	1,933	2,001	1,921

# The PE universe's strong average growth was lifted by the large percentage of companies that grew EBITDA by >50%

Despite the strong recovery in 2021, nearly 30% of PE-backed businesses saw EBITDA decline or stay flat

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

As of December 31, 2021 • Annual Growth Rate (%)



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

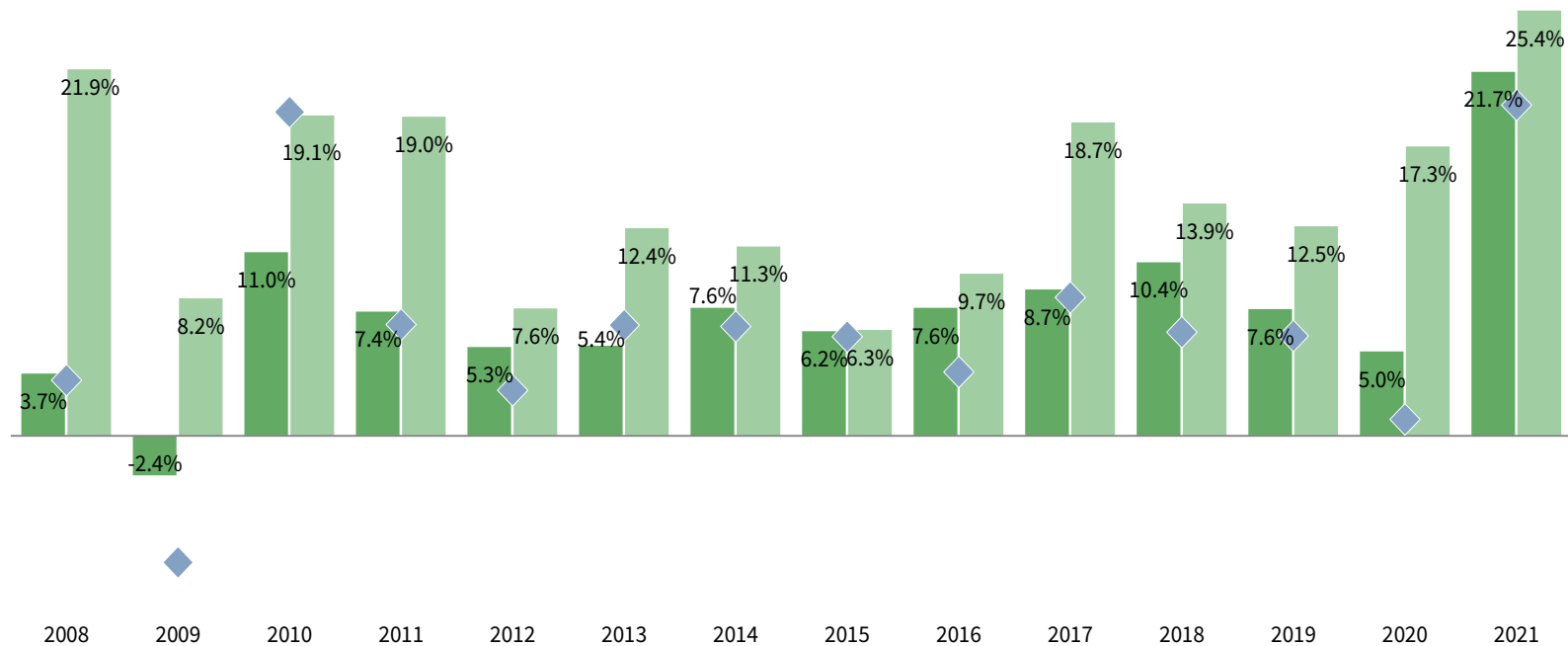
Notes: Outliers were identified and excluded. Numbers in parentheses represent total private companies in a year. Each range includes the lower bound value. For example, the "0% to 10%" range includes companies with reported growth of exactly 0%. Due to rounding, totals may not sum to 100%.

## Average EBITDA growth hit new highs for all company types in 2021

Over the full period, growth equity companies averaged nearly 15% growth per year, about double that of buyouts and public companies

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

As of December 31, 2021 • Annual Growth Rate (%)



#### Number of Companies

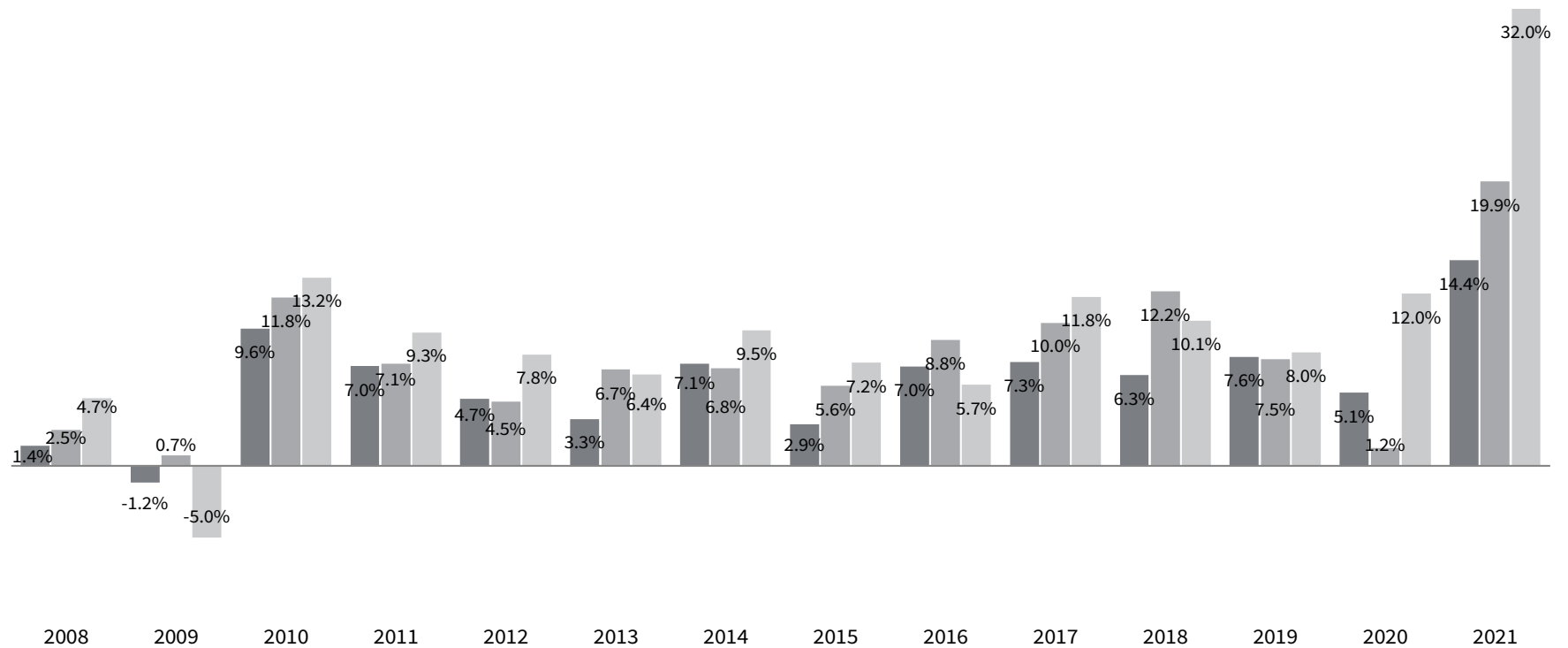
	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
Buyout Companies	524	757	865	1,034	1,000	851	783	687	654	638	756	767	839	675
Growth Equity Companies	70	127	196	266	293	294	294	279	253	244	276	300	343	316
MSCI AC World® Index	1,320	1,408	1,465	1,583	1,636	1,652	1,674	1,672	1,729	1,722	1,734	1,933	2,001	1,921

## Small buyouts have continued to dominate other size segments in growth

All three size segments had record years in 2021

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

As of December 31, 2021 • Annual Growth Rate (%)



#### Number of Companies

	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
EV > \$1B	203	253	279	313	263	210	166	139	148	122	125	162	180	171
EV \$250M - \$1B	124	190	231	294	280	237	206	206	200	236	282	260	284	201
EV < \$250M	212	316	347	442	461	415	413	331	311	291	362	343	364	307

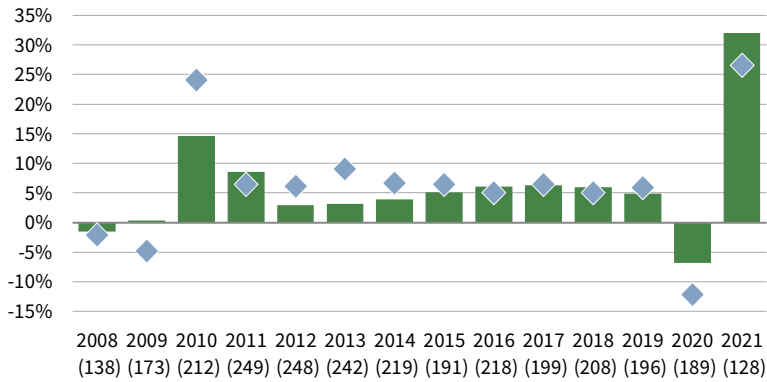
# PE-backed healthcare averaged highest annual EBITDA growth over the time period; IT was the second highest

Consumer discretionary companies had the strongest rebound from a weak 2020, eclipsing all other sectors

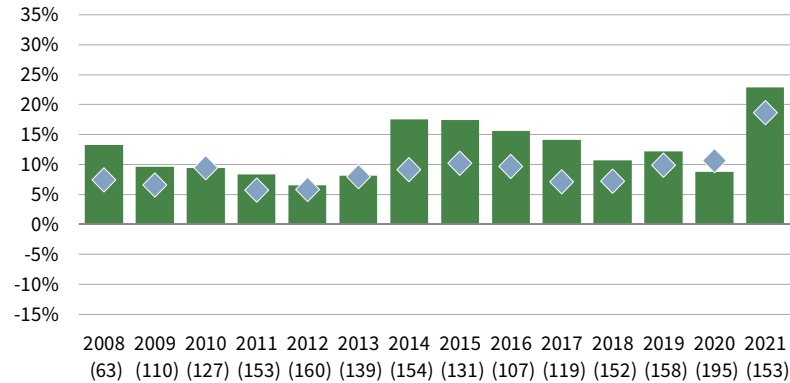
## AVERAGE ANNUAL EBITDA GROWTH OF GLOBAL PRIVATE EQUITY-OWNED COMPANIES VS PUBLIC COMPANIES BY SECTOR

As of December 31, 2021 • Annual Growth Rate (%)

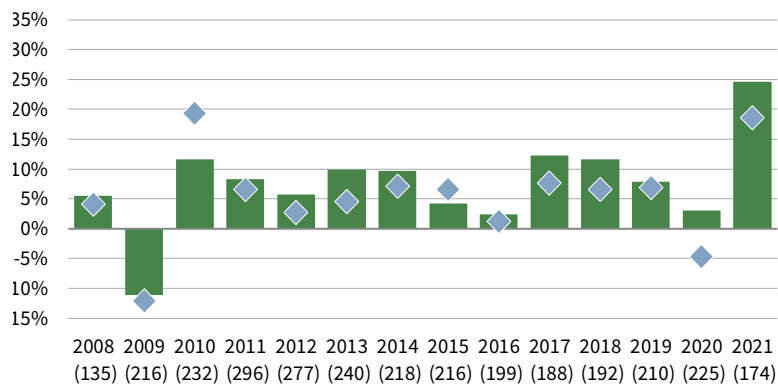
### Consumer Discretionary



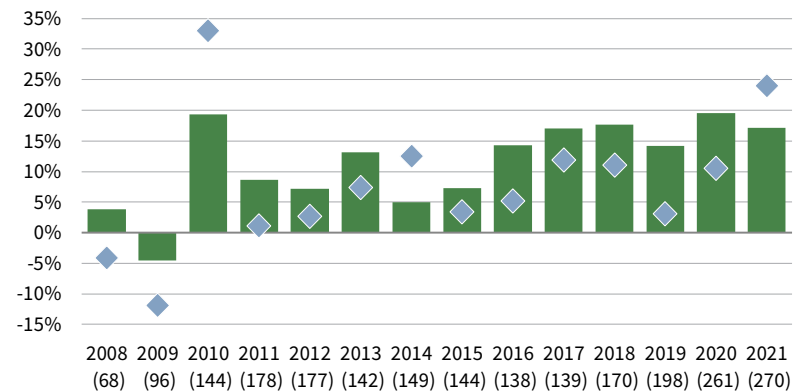
### Healthcare



### Industrials



### Information Technology



■ Private Equity Owned

◆ MSCI All Country World® Index

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## GLOBAL PRIVATE EQUITY ANALYSIS

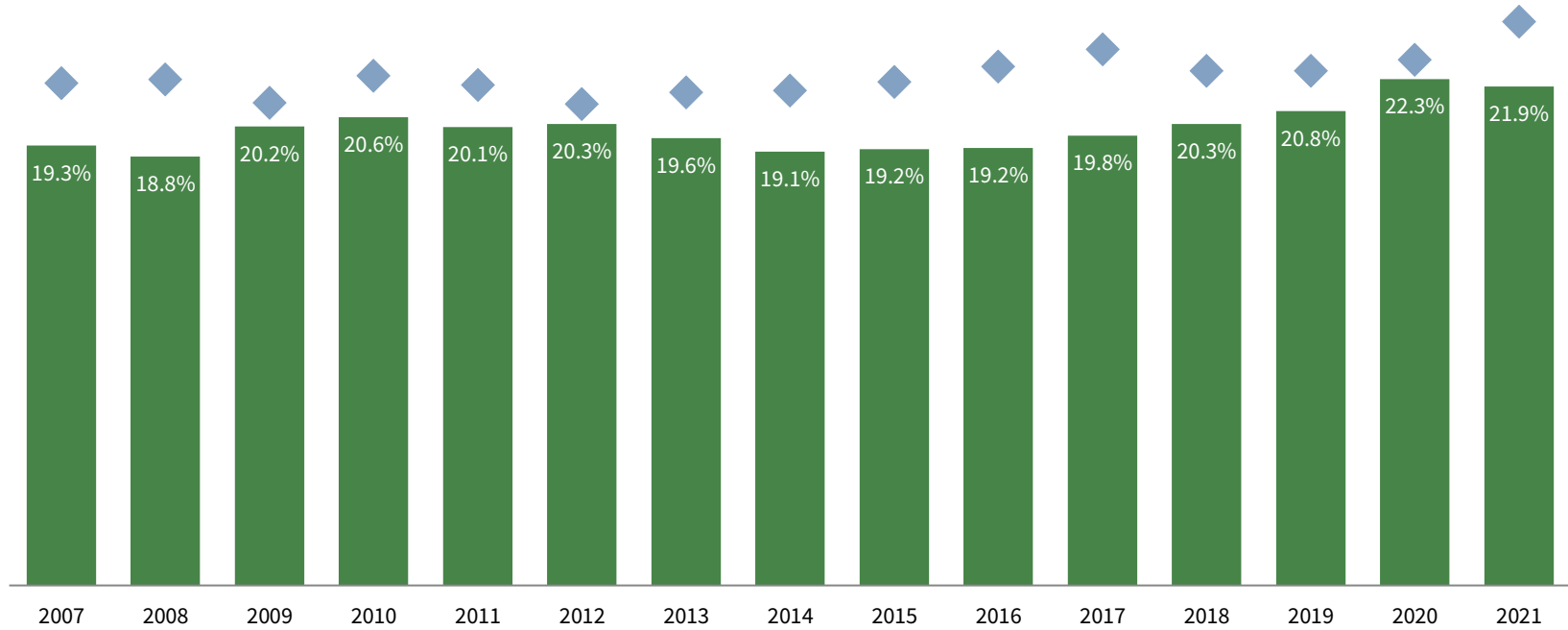
- Purchase Price Multiple
- Leverage Multiple
- Revenue Growth
- EBITDA Growth
- **EBITDA Margin**
- Exit Metrics
- Revenue Purchase Price Multiple

**PE margins were consistent across the time period, and have continued to lag those of public companies**

Pandemic-era of the years analyzed

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

As of December 31, 2021 • EBITDA/Revenue (%)



**Number of Companies**

	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2019	2020	2021
PE-Owned Companies	669	990	1,281	1,665	2,039	2,172	1,754	1,925	1,670	1,704	1,784	1,910	1,908	1,908	2,033	2,231
MSCI AC World® Index	1,885	1,616	1,723	1,867	1,910	1,908	1,918	1,948	1,952	1,973	1,997	2,198	2,474	2,474	2,386	2,352



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.

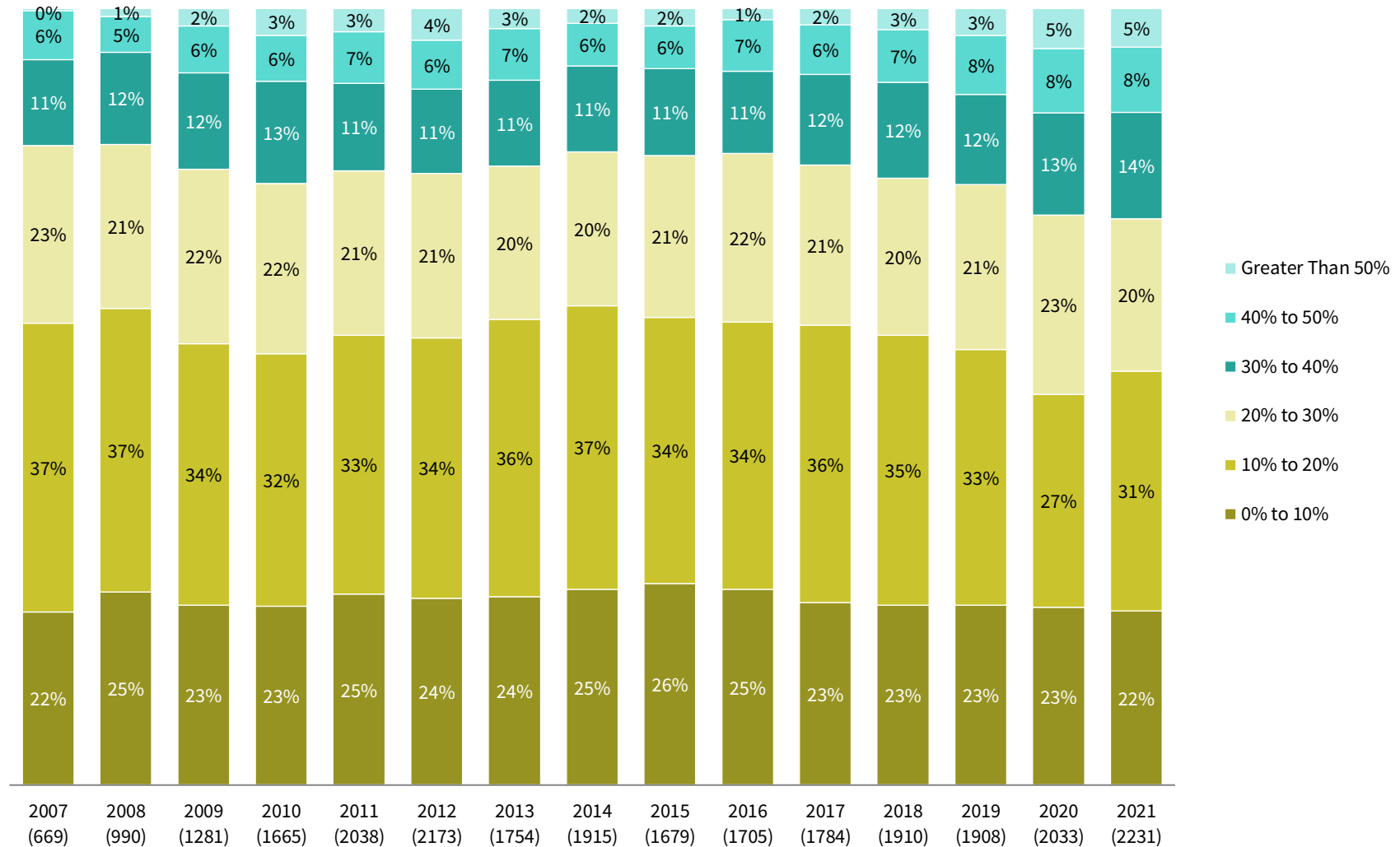


## EBITDA margins have been stable across the time period

The percentage of companies with margins higher than 30% has increased each year since 2017 and in 2021, those companies accounted for 27% of the sample

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

As of December 31, 2021 • EBITDA/Revenue (%)

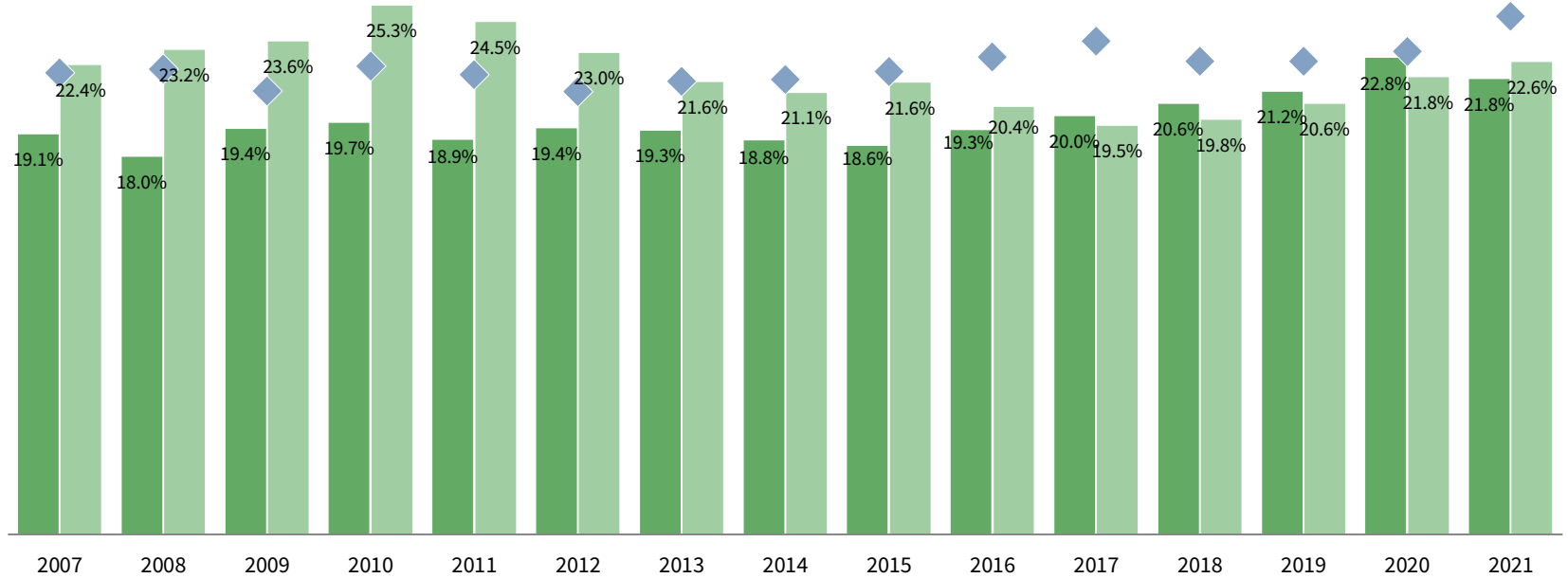


# Growth equity margins eclipsed those of buyouts in ten of the 15 years analyzed

Buyout margins have trended upward since 2016

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

As of December 31, 2021 • EBITDA/Revenue (%)



### Number of Companies

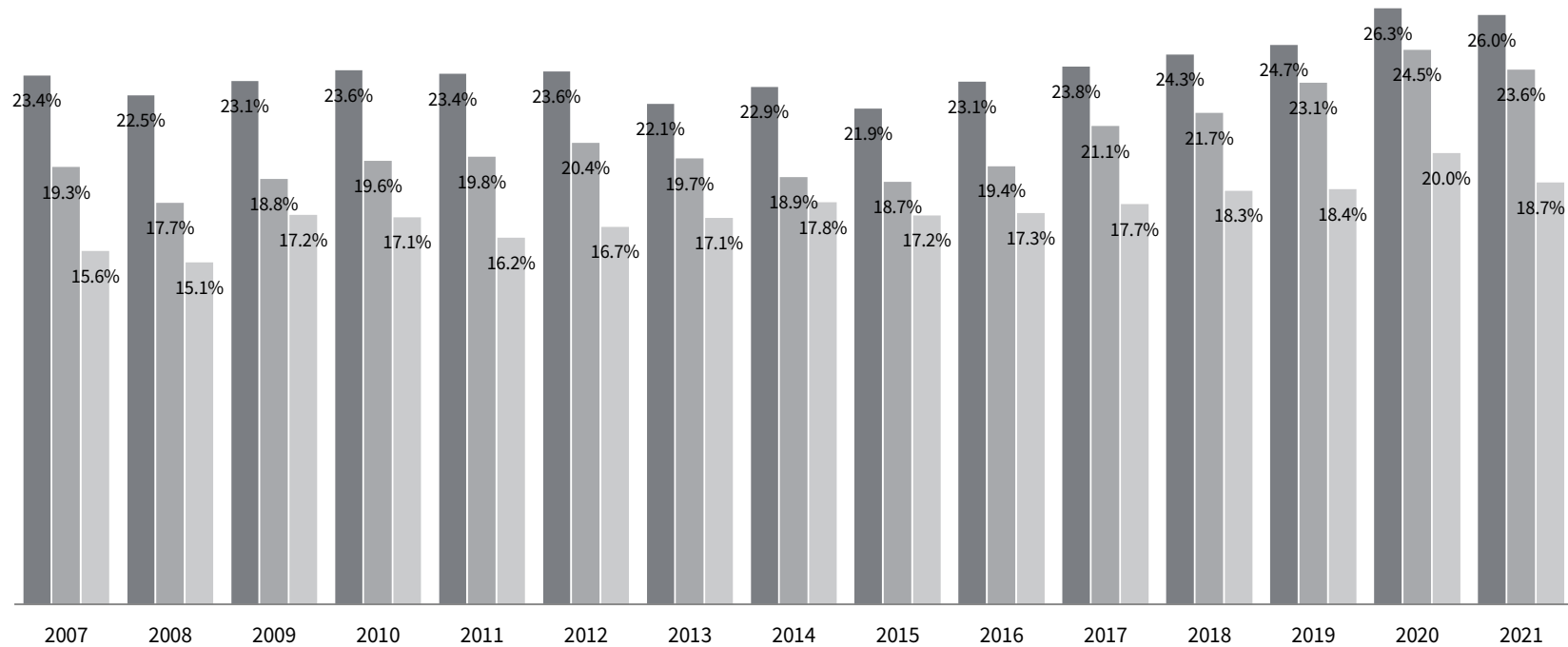
	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
Buyout Companies	588	827	1020	1269	1529	1556	1260	1346	1128	1211	1268	1356	1308	1317	1498
Growth Equity Companies	87	152	232	365	410	518	453	515	456	442	440	496	528	606	677
MSCI All Country World® Index	1,885	1,616	1,723	1,867	1,910	1,908	1,918	1,948	1,952	1,973	1,997	2,198	2,474	2,386	2,352

## Large buyouts consistently operated at the highest margins

More recently, the difference in margins between mid and large caps has diminished

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

As of December 31, 2021 • EBITDA/Revenue (%)



#### Number of Companies

	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
EV > \$1B	210	274	308	346	387	355	289	241	232	254	257	249	274	300	387
EV \$250M - \$1B	132	205	264	352	419	430	360	370	342	411	436	451	425	418	456
EV < \$250M	245	344	439	561	715	734	594	723	548	527	569	645	584	582	641

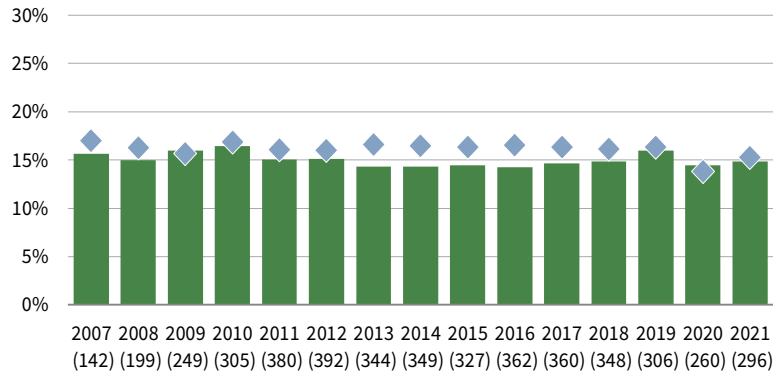
# By sector, IT companies operated at the highest margins and consumer discretionary operated at the lowest

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, 2021 • EBITDA/Revenue (%)

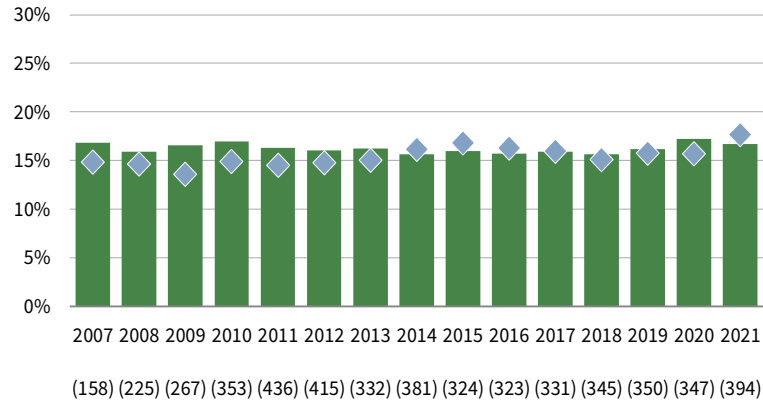
### Consumer Discretionary



### Healthcare



### Industrials



### Information Technology



■ Private Equity Owned

◆ MSCI All Country World® Index

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## GLOBAL PRIVATE EQUITY ANALYSIS

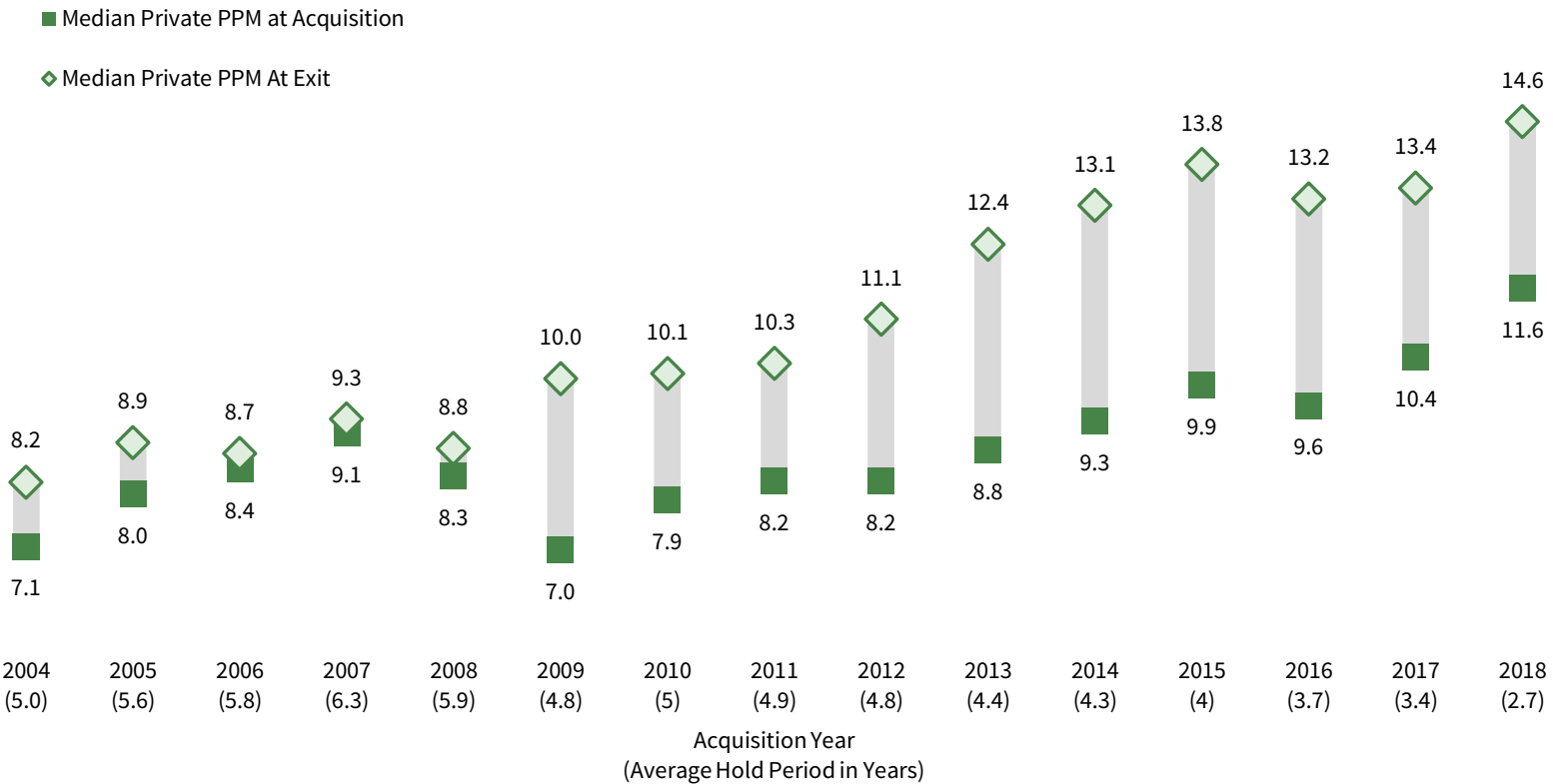
- EBITDA Purchase Price Multiple
- Leverage Multiple
- Revenue Growth
- EBITDA Growth
- EBITDA Margin
- Exit Metrics
- Revenue Purchase Price Multiple

**For companies acquired and exited since 2009, median PPM expansion has been at least two turns of EBITDA**

For acquisitions made in the lead up to the GFC, PPM expansion was significantly lower at exit

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

As of December 31, 2021 • Enterprise Value/EBITDA



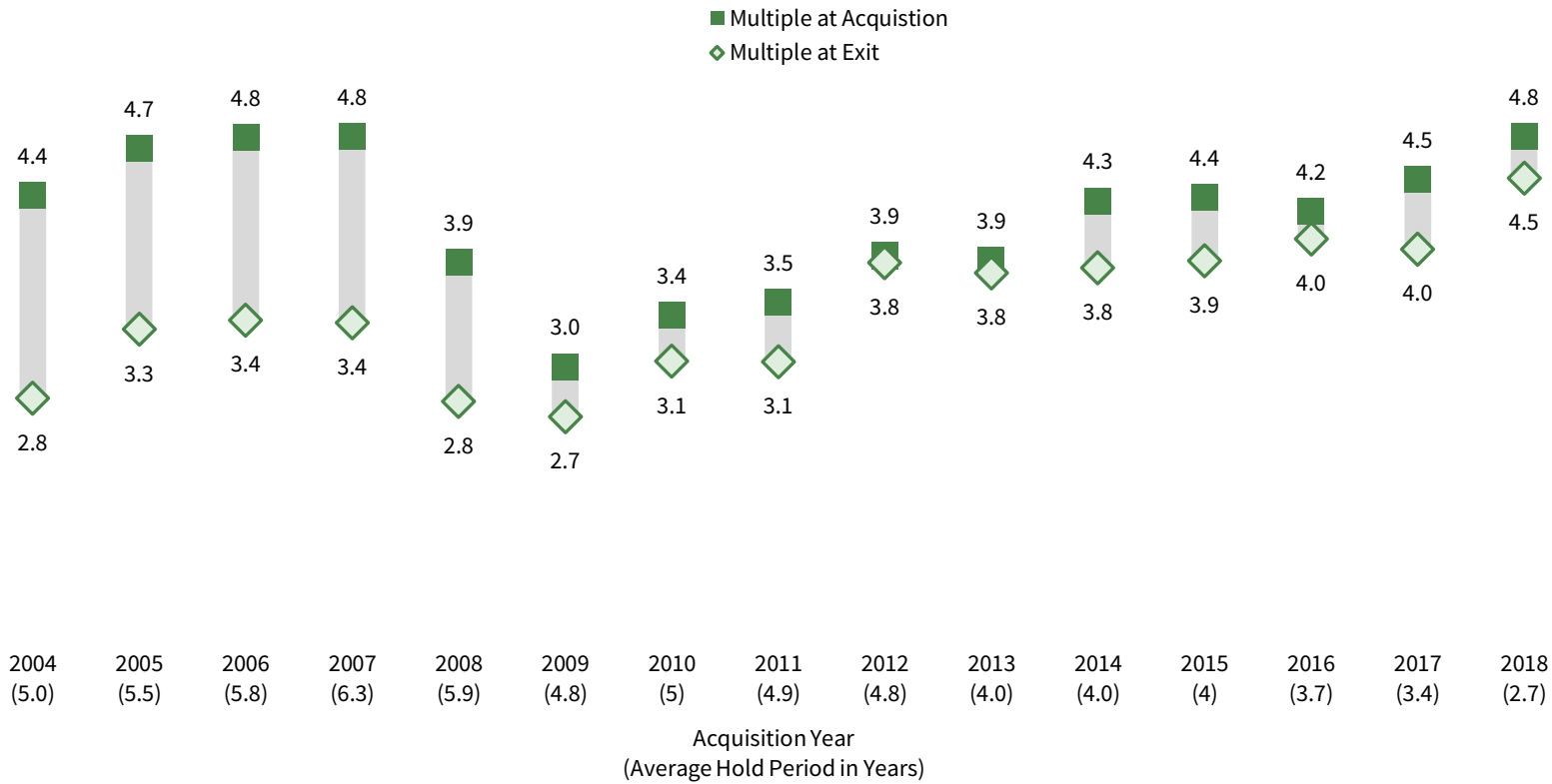
	Number of Companies														
	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
PE-Owned Companies	173	244	380	422	334	173	361	297	291	204	244	200	137	82	52

# Leverage multiples compressed most meaningfully for acquisitions in the pre-GFC period

Deleveraging, however, has been limited for exited companies acquired after 2008

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

As of December 31, 2021 • Net Debt/EBITDA



	Number of Companies															
	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	
PE-Owned Companies	164	217	332	373	271	122	283	236	240	160	196	162	122	77	46	



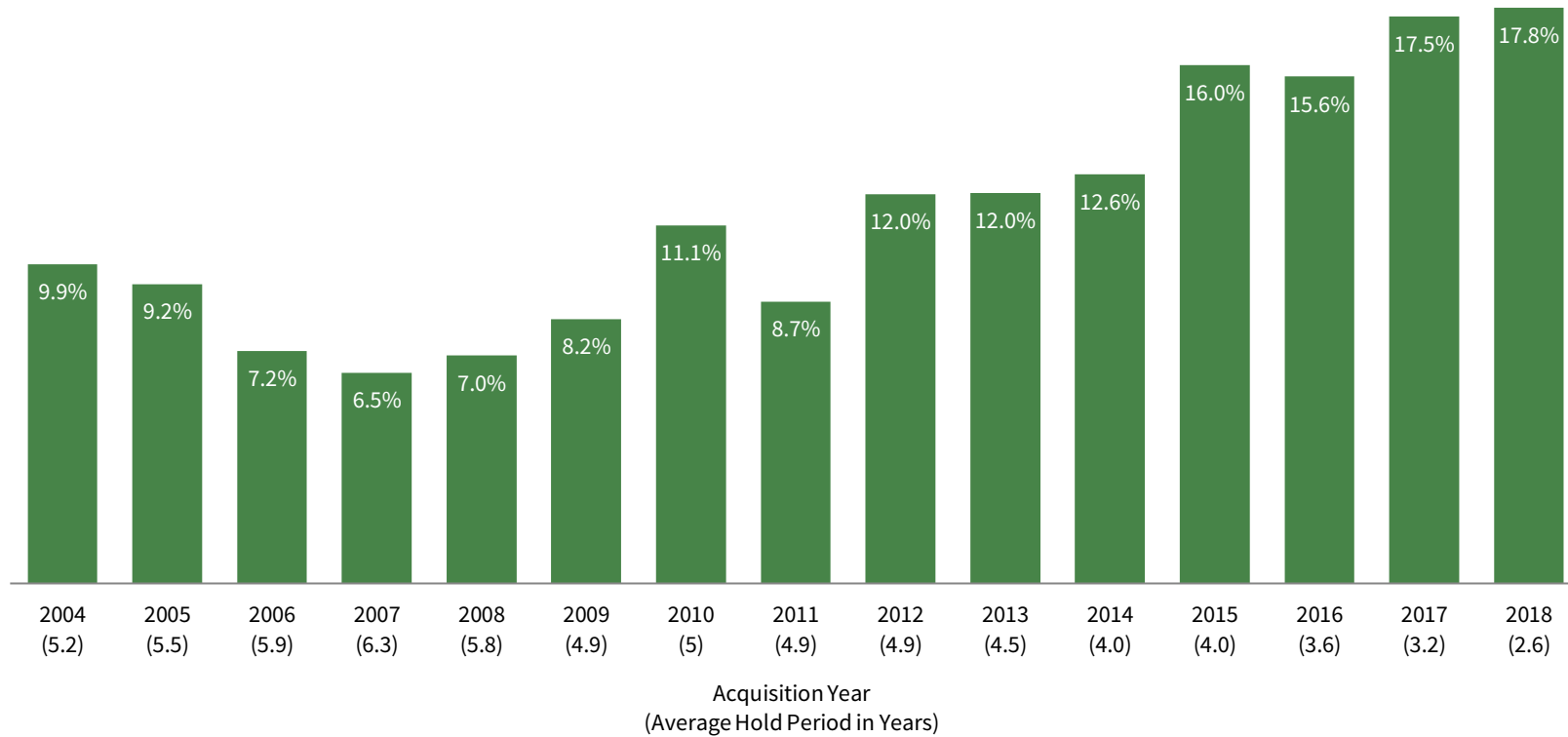
Source: Cambridge Associates LLC Private Investments Database (as reported by investment managers).  
 Note: Analysis only includes companies that have both acquisition and exit data.

## From acquisition to exit, revenue growth has been strong during PE ownership

Median rev CAGRs for PE companies acquired and exited since 2010 was 12.4%, but it was much lower for those acquired in 2006–08

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

As of December 31, 2021 • Compound Annual Growth Rate (%)



	Number of Companies															
	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	
PE-Owned Companies	218	293	454	514	393	221	428	366	347	253	307	266	177	127	73	

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

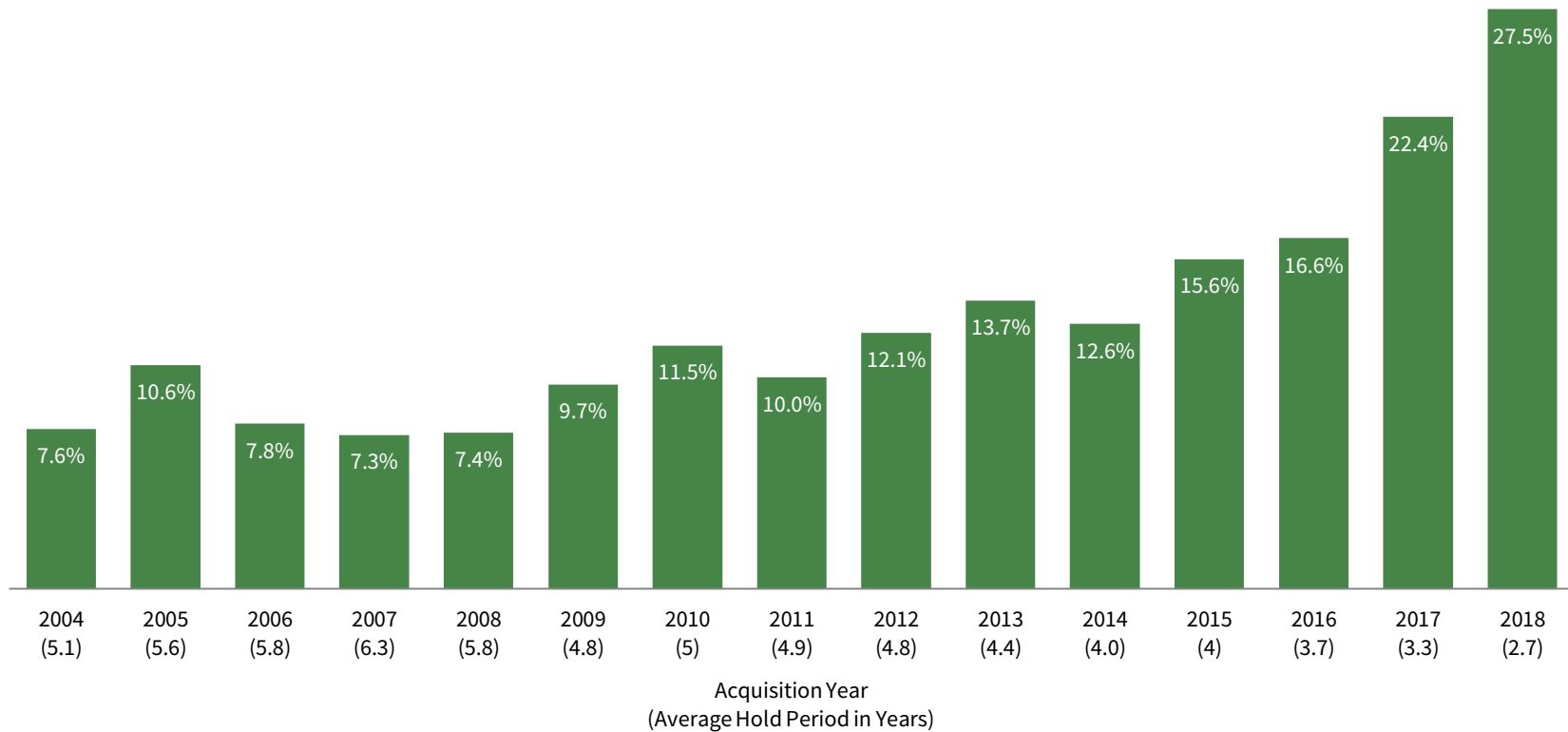


## Amid the post-GFC environment, EBITDA growth during PE ownership has been significant

Median EBITDA CAGR for PE companies acquired and exited since 2010 was 13.0%

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

As of December 31, 2021 • Compound Annual Growth Rate (%)



	Number of Companies														
	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
PE-Owned Companies	190	269	406	461	359	182	374	309	303	211	256	212	143	90	52

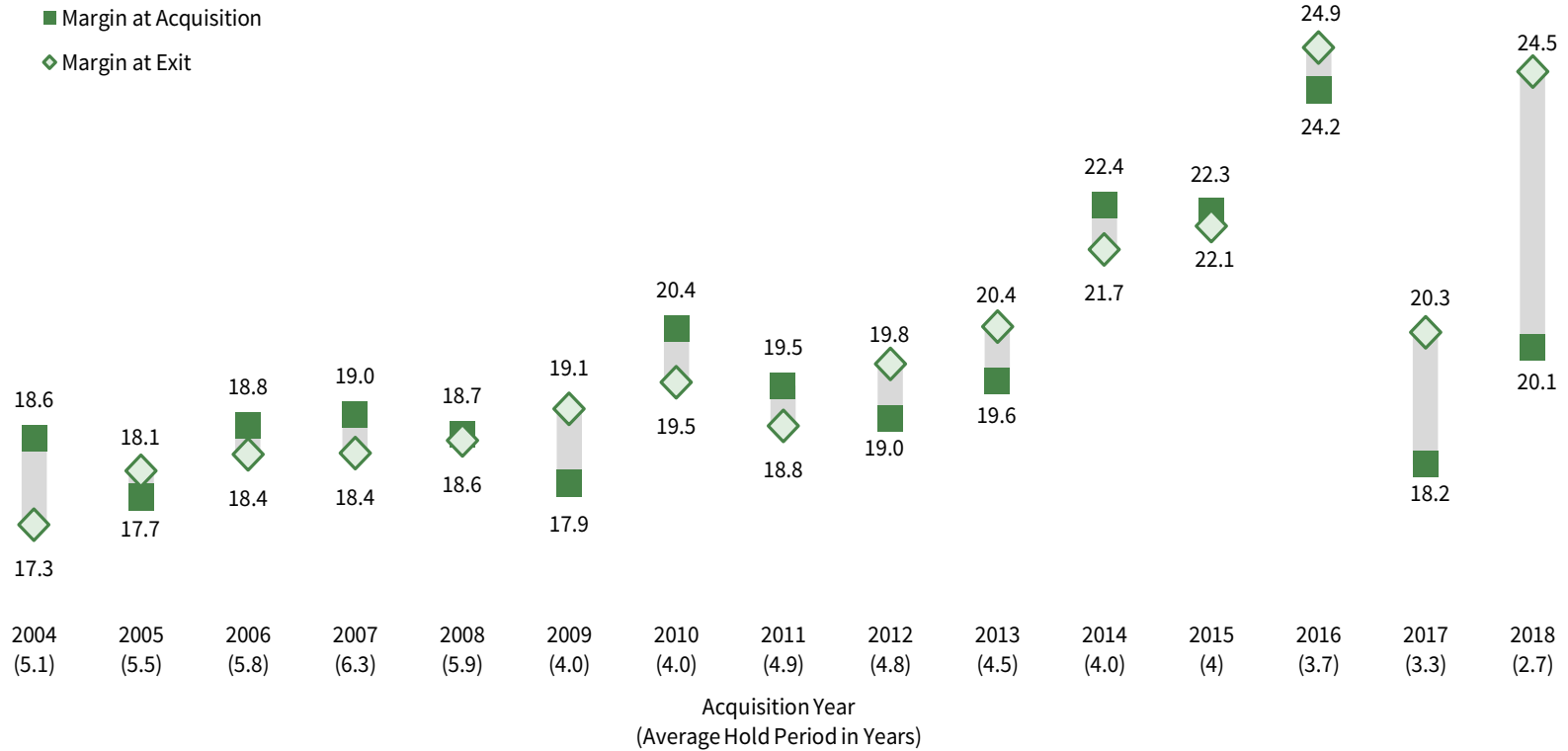
Source: Cambridge Associates LLC Private Investments Database (as reported by investment managers).

# EBITDA margins have historically been relatively stable from acquisition to exit

The most meaningful difference in EBITDA margins from acquisition to exit is seen in companies held for the shortest amount of time

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

As of December 31, 2021 • EBITDA/Revenue (%)



	Number of Companies															
	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	
PE-Owned Companies	182	260	393	444	341	178	367	305	298	208	256	212	138	89	50	

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## GLOBAL PRIVATE EQUITY ANALYSIS

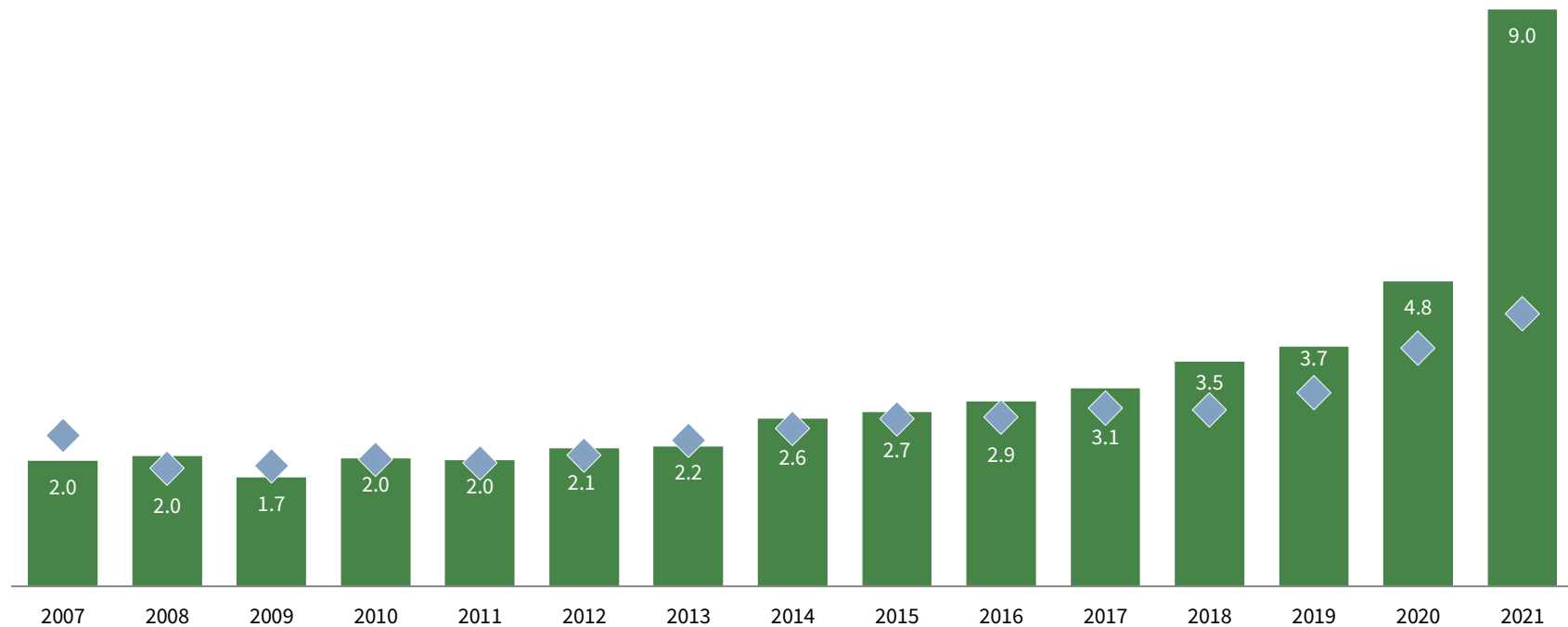
- EBITDA Purchase Price Multiple
- Leverage Multiple
- Revenue Growth
- EBITDA Growth
- EBITDA Margin
- Exit Metrics
- **Revenue Purchase Price Multiple**

## Revenue PPMs have steadily risen in public and PE universes since 2010

PE valuations have exceeded those of publics since 2014, with 2021 marking the largest difference

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

As of December 31, 2021 • Enterprise Value/LTM Revenue



#### Number of Companies

	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
PE-Owned Companies	693	526	301	617	651	635	487	661	603	593	689	662	632	556	756
MSCI All Country World® Index	1,827	1,658	1,672	1,720	1,748	1,752	1,758	1,786	1,796	1,782	1,802	1,970	2,245	2,215	2,161

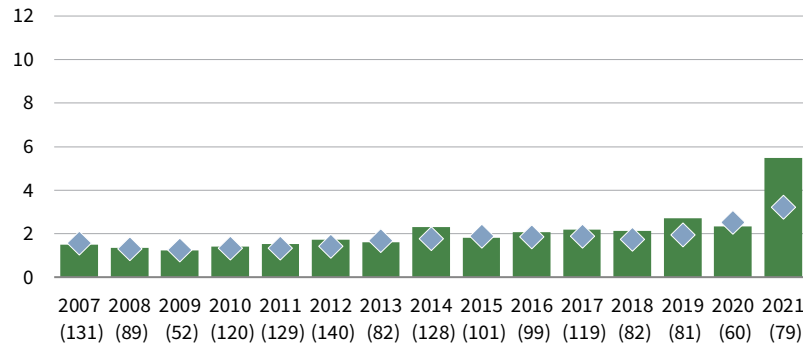
# IT PPMs have been meaningfully higher than other sectors for ten years

After trailing publics since 2013, PE healthcare valuations were in line with public peers in 2021

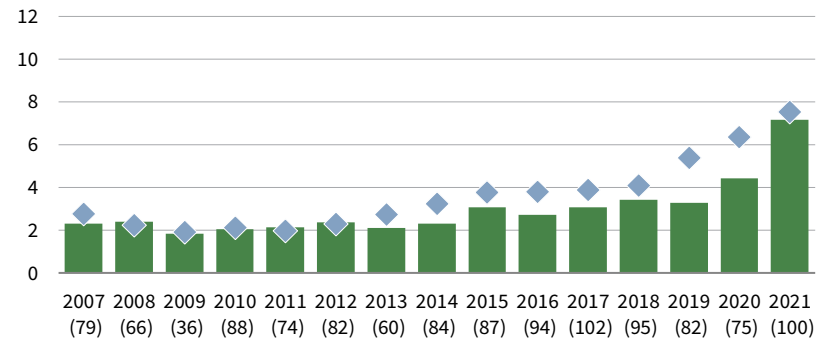
## AVERAGE REVENUE PURCHASE PRICE MULTIPLES AT ACQUISITION OF GLOBAL PRIVATE EQUITY-OWNED COMPANIES VS PUBLIC COMPANIES BY SECTOR

As of December 31, 2021 • Enterprise Value/Revenue

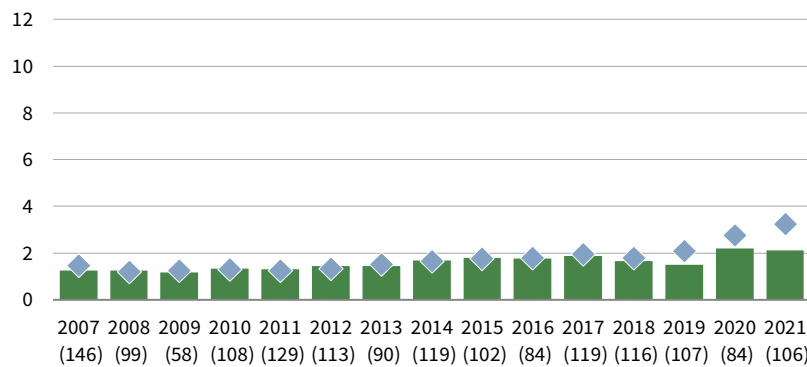
### Consumer Discretionary



### Healthcare



### Industrials



### Information Technology



■ Private Equity Owned

◆ Russell 2500™

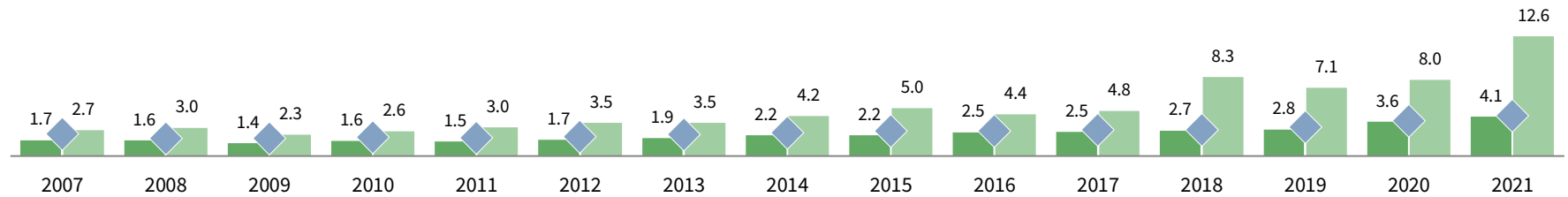
# Investor willingness to pay up for growth was evident in growth equity and IT in particular

Revenue PPMs for buyouts and buyout IT companies have increased more gradually, keeping more in line with publics

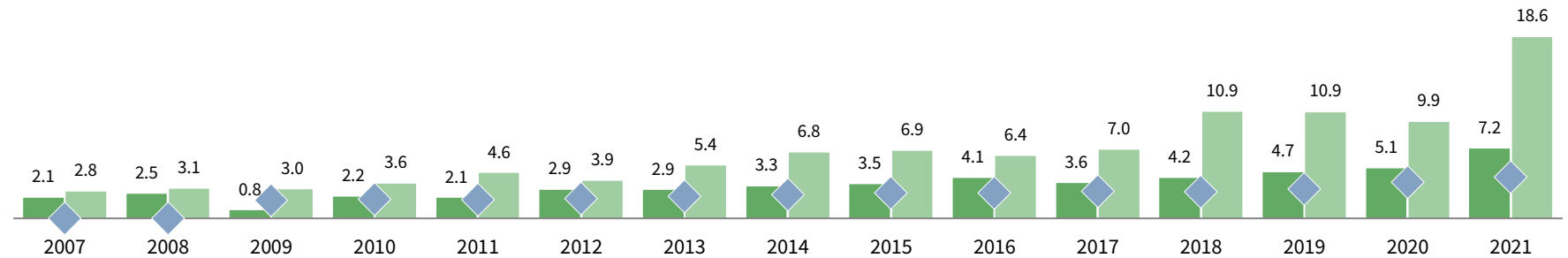
## AVERAGE REVENUE PURCHASE PRICE MULTIPLES AT ACQUISITION BY DEAL TYPE AND SECTOR VS PUBLIC COMPANIES

As of December 31, 2021 • Enterprise Value/LTM Revenue

### Deal Type



### Deal Type: IT Companies



### Number of Companies

	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
Buyout Companies	506	353	192	408	443	437	337	446	422	400	453	434	384	308	392
Growth Equity Companies	160	150	83	177	175	184	132	201	182	179	217	215	209	209	303
MSCI All Country World® Index	1,827	1,658	1,672	1,720	1,748	1,752	1,758	1,786	1,796	1,782	1,802	1,970	2,245	2,215	2,161
IT Buyout Companies	60	47	17	54	70	59	53	83	88	85	87	109	101	85	112
IT Growth Equity Companies	20	25	22	34	42	48	44	66	71	75	88	95	120	102	147
MSCI All Country World® Index IT Companies	1,827	1,658	1,672	1,720	1,748	1,752	1,758	1,786	1,796	1,782	1,802	1,970	2,245	2,215	2,161



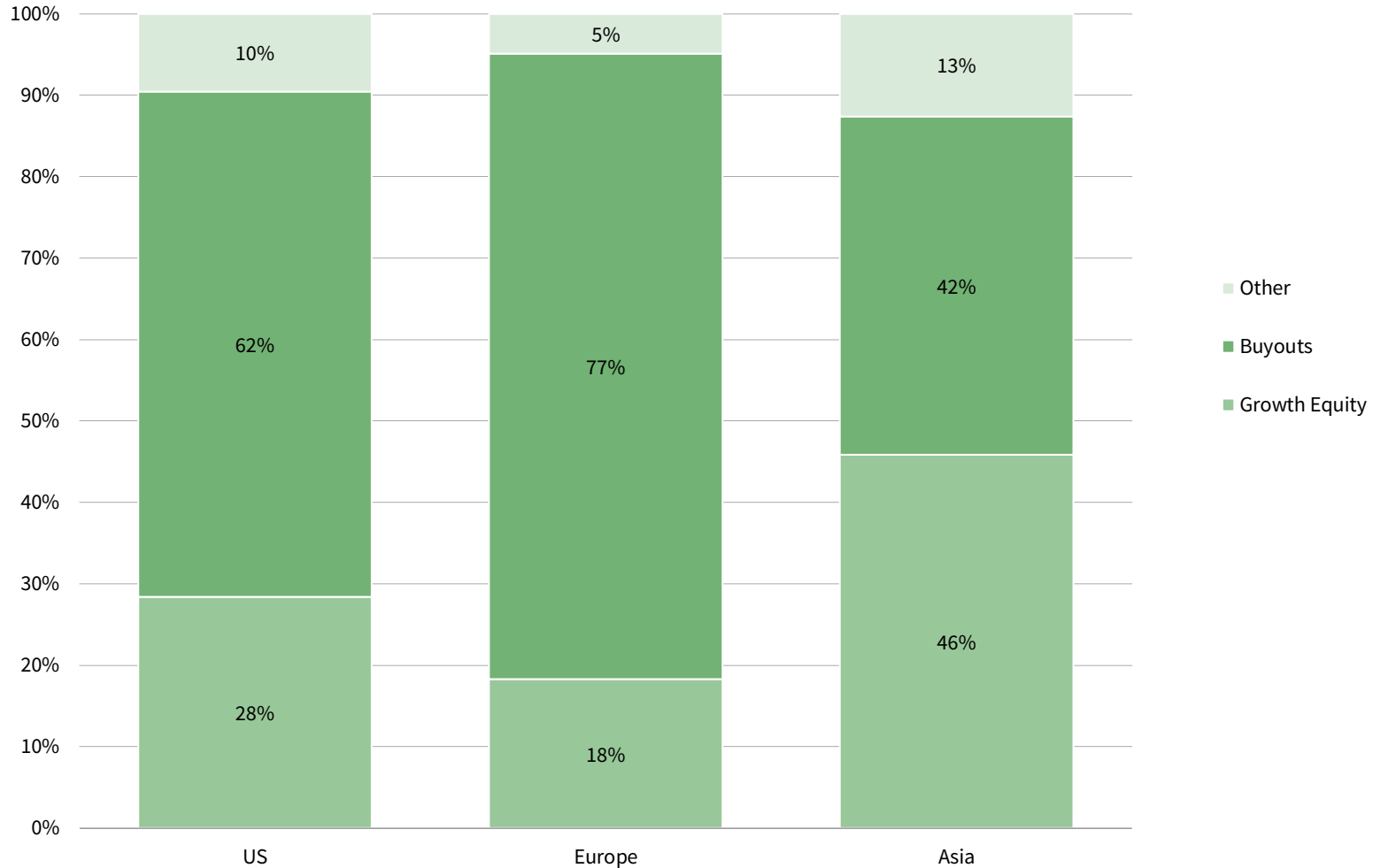
**REGIONAL COMPARISONS:  
ASIA, EUROPE, AND THE UNITED STATES**

Among the regions, the European sample had the largest concentration in buyouts and the Asia universe had the most growth equity

The US sample has become more growth-oriented over time

### BREAKDOWN OF INVESTMENT STRATEGIES BY REGION

As of December 31, 2021 • Percent (%)



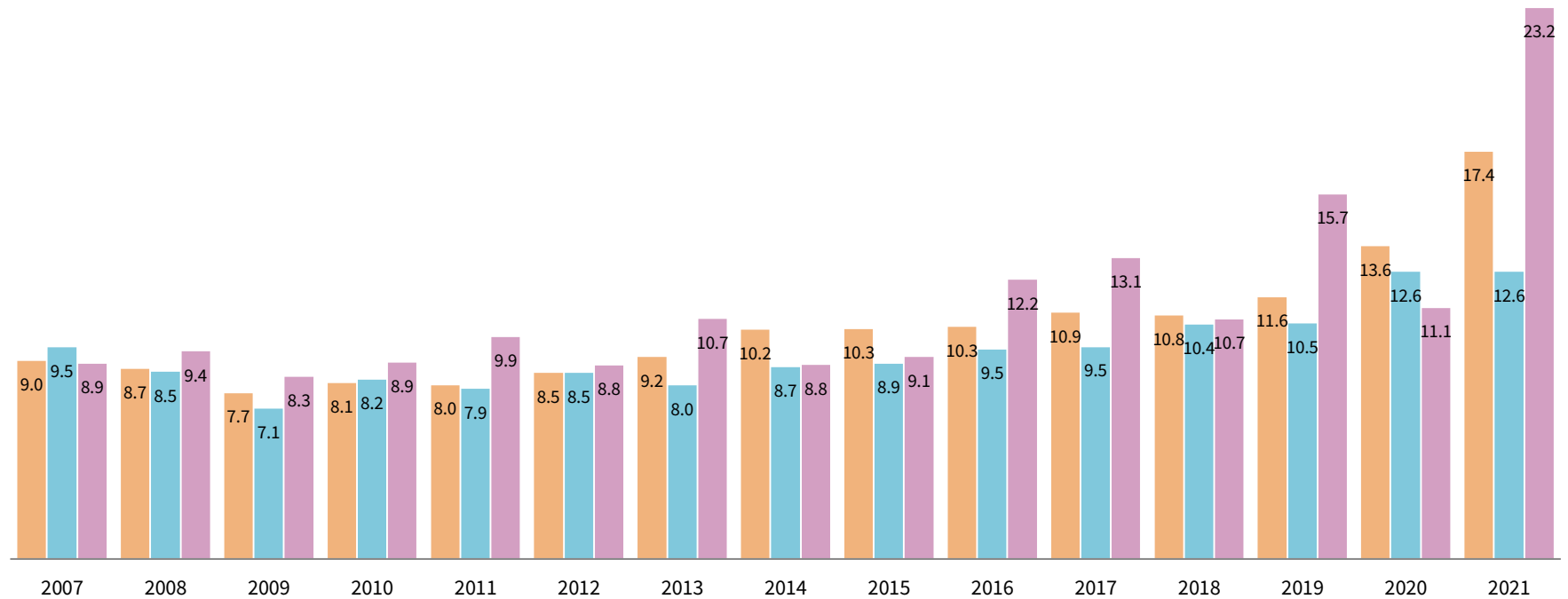


## In 2021, PPMs across regions reached their highest levels of the time period

Acquisition multiples for Asia-based companies were consistently highest among the regions, due in part to the highest representation of growth-oriented deals in its sample

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

As of December 31, 2021 • Enterprise Value/EBITDA



#### Number of Companies

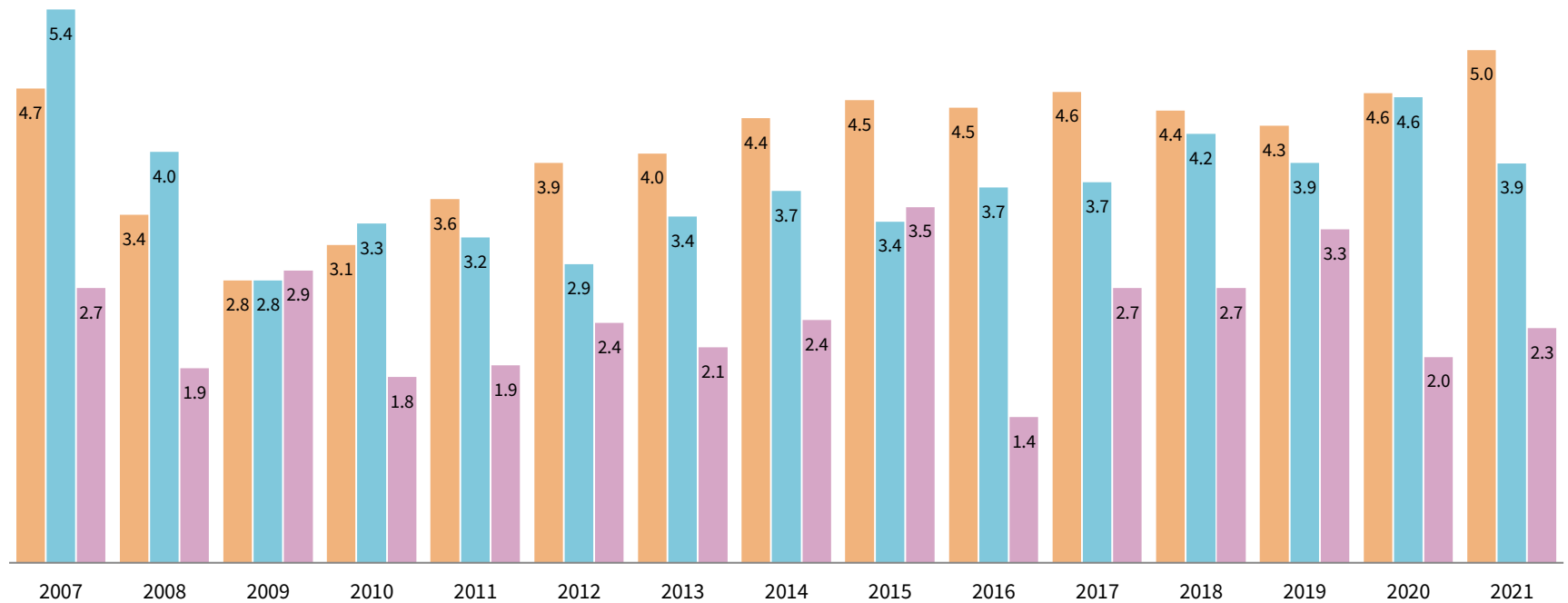
	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
United States	330	211	125	266	266	327	187	273	266	264	293	284	260	239	287
Europe	188	150	71	162	173	131	132	160	148	149	176	172	132	115	121
Asia	100	80	46	95	88	68	70	68	59	58	68	62	50	44	58

## US-based companies were typically acquired at the highest leverage multiples

The difference in leverage multiples between US and European acquisitions was the highest observed in 2021

### AVERAGE EBITDA LEVERAGE MULTIPLES AT ACQUISITION OF PRIVATE COMPANIES BY REGION

As of December 31, 2021 • Net Debt/EBITDA



#### Number of Companies

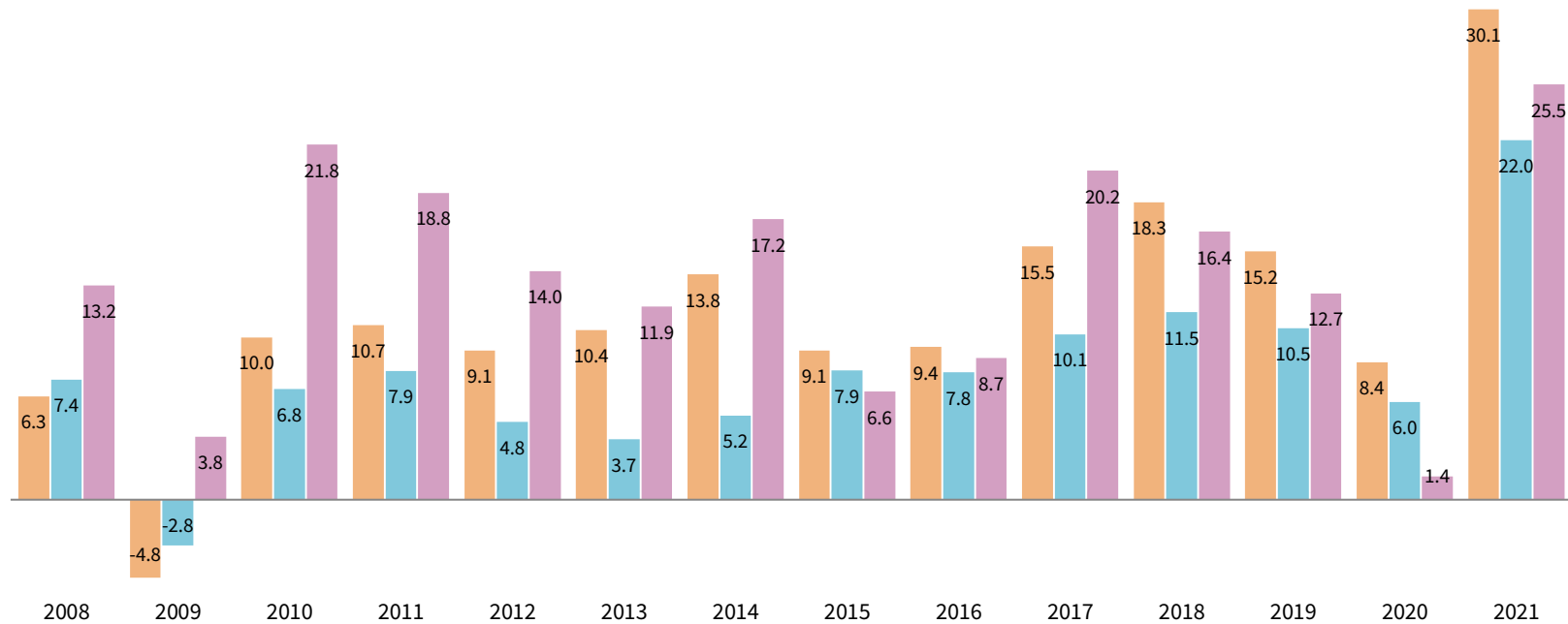
	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
United States	311	185	109	246	255	295	169	255	246	254	280	293	265	228	250
Europe	185	146	56	149	158	121	118	151	132	136	160	155	113	102	108
Asia	68	58	26	57	50	45	51	47	32	35	51	39	40	28	32

## Revenue growth was a microcosm of the pandemic-era experience—a weak 2020 and new highs in 2021

Over the full time period, Asia's growth company bias is apparent, averaging 13.7% annual growth (11.5% for US and 7.8% for Europe)

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

As of December 31, 2021 • Annual Growth Rate (%)



### Number of Companies

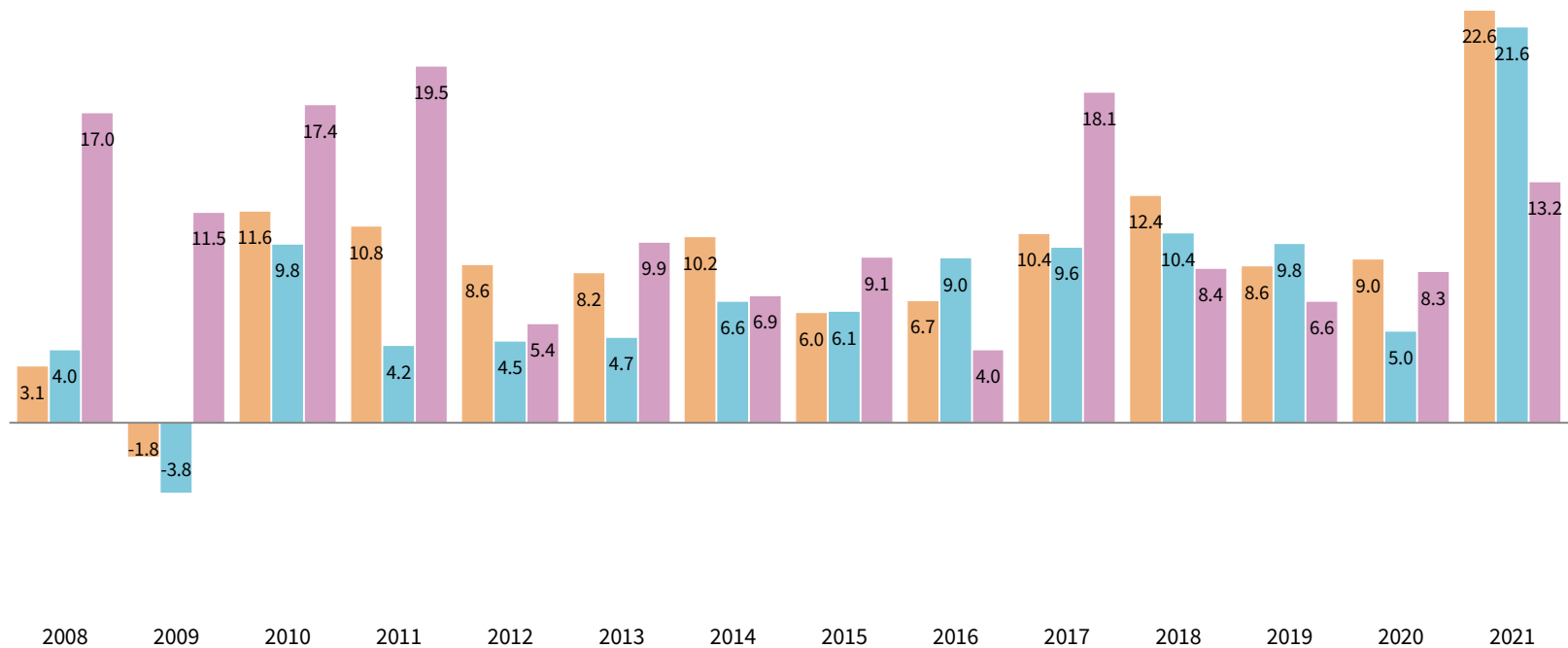
	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
United States	295	509	633	767	794	724	747	662	671	666	760	856	1042	930
Europe	254	341	403	466	473	405	341	341	292	297	343	340	351	298
Asia	62	121	139	223	242	261	224	184	150	172	197	225	278	226

## During and immediately after the GFC, Asia averaged the best EBITDA growth

But since 2012, no one region has dominated

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

As of December 31, 2021 • Annual Growth Rate (%)



#### Number of Companies

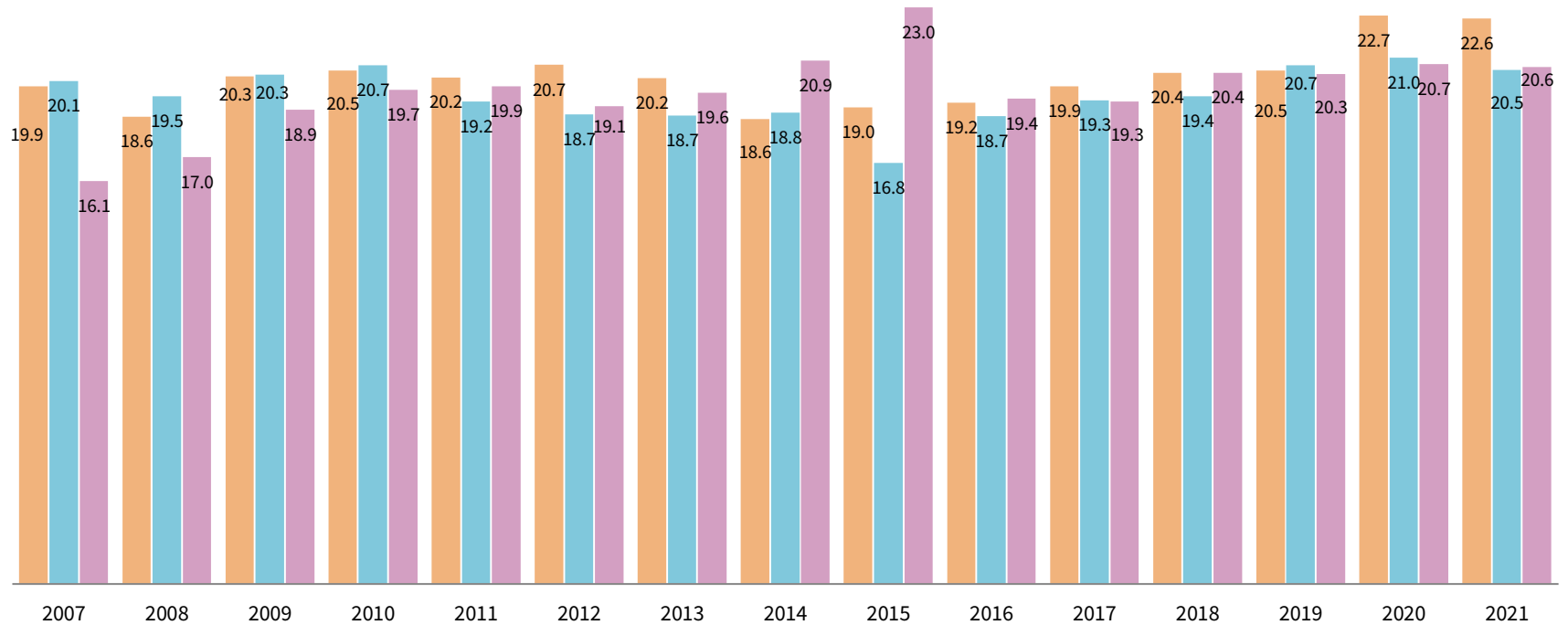
	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
United States	276	448	542	679	690	603	611	510	501	489	536	605	723	618
Europe	234	315	349	431	436	362	310	314	259	247	297	285	273	204
Asia	65	108	134	172	155	152	127	119	109	124	131	147	173	131

## Average EBITDA margins across regions have been approximately 20% per year

US company margins have trended upward since 2014

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

As of December 31, 2021 • EBITDA/Revenue (%)



#### Number of Companies

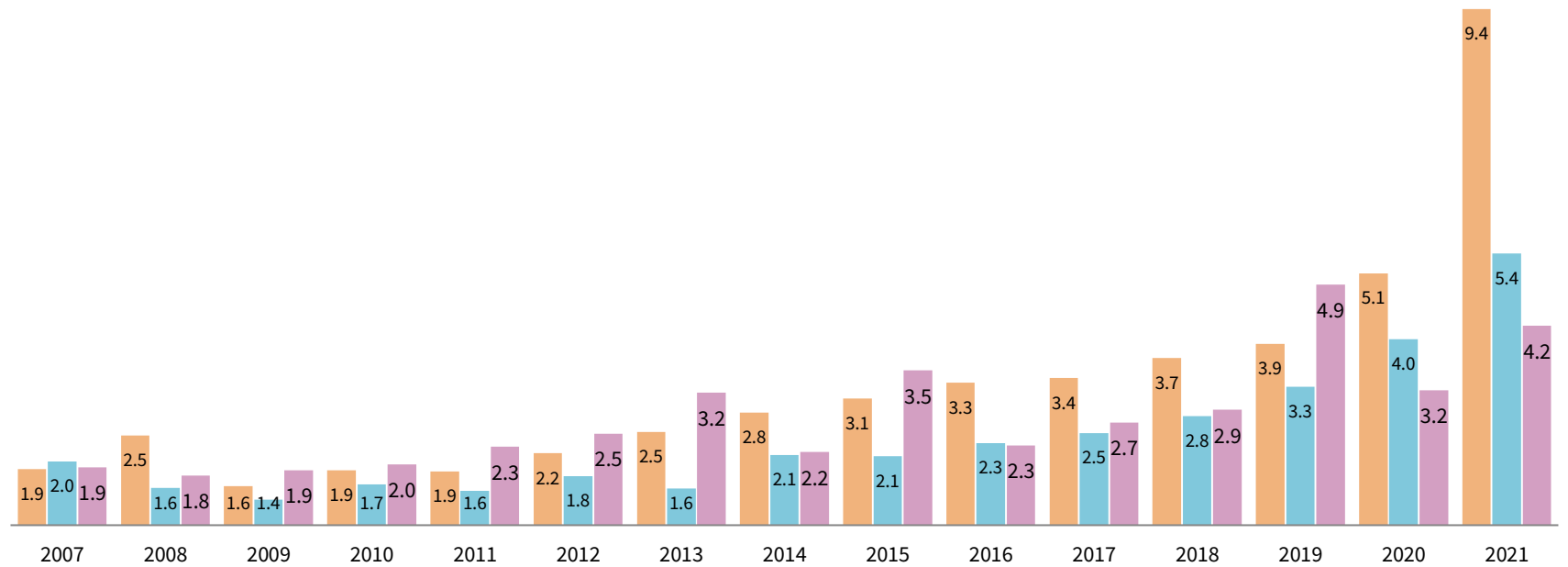
	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
United States	320	489	654	850	1,050	1,163	887	975	832	899	918	991	1,053	1,188	1,288
Europe	276	347	430	529	626	615	513	556	488	470	477	550	440	463	512
Asia	63	116	140	206	256	263	231	269	220	207	255	226	284	265	309

# Revenue-based acquisition multiples for US companies have been at their highest since 2016

There has been an upward trend in multiples since 2013, most visible in the US and Europe

## AVERAGE REVENUE PURCHASE PRICE MULTIPLES AT ACQUISITION OF PRIVATE COMPANIES BY REGION

As of December 31, 2021 • Enterprise Value/Revenue



### Number of Companies

	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
United States	355	236	143	298	299	362	229	330	322	332	384	377	367	336	450
Europe	191	152	69	159	173	130	130	174	160	157	185	179	154	140	163
Asia	103	98	62	120	131	107	87	114	71	72	88	82	69	55	89

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## EUROPEAN PRIVATE EQUITY ANALYSIS

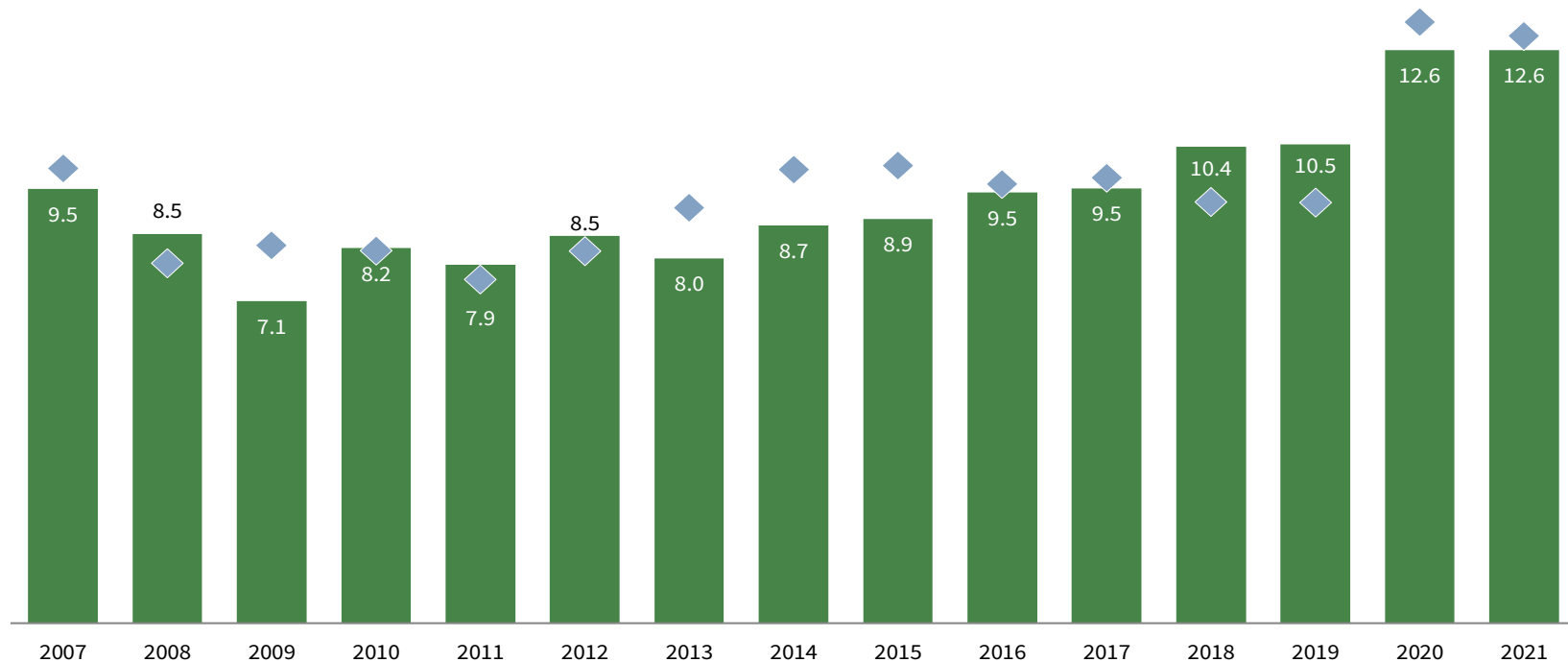
- **Purchase Price Multiple**
- Leverage Multiple
- Revenue Growth
- EBITDA Growth
- EBITDA Margin
- Exit Metrics

## Pandemic-era EBITDA PPMs for PE-backed companies were elevated

While other regions valuations were generally higher in 2021 than in 2020, European PPMs were unchanged, explained partly by Europe's buyout tilt

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

As of December 31, 2021 • Enterprise Value/EBITDA



#### Number of Companies

	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
PE-Owned Companies	188	150	71	162	173	131	132	160	148	149	176	172	132	115	121
MSCI All Country Europe Index	321	239	221	229	237	231	224	227	229	224	223	206	196	194	194

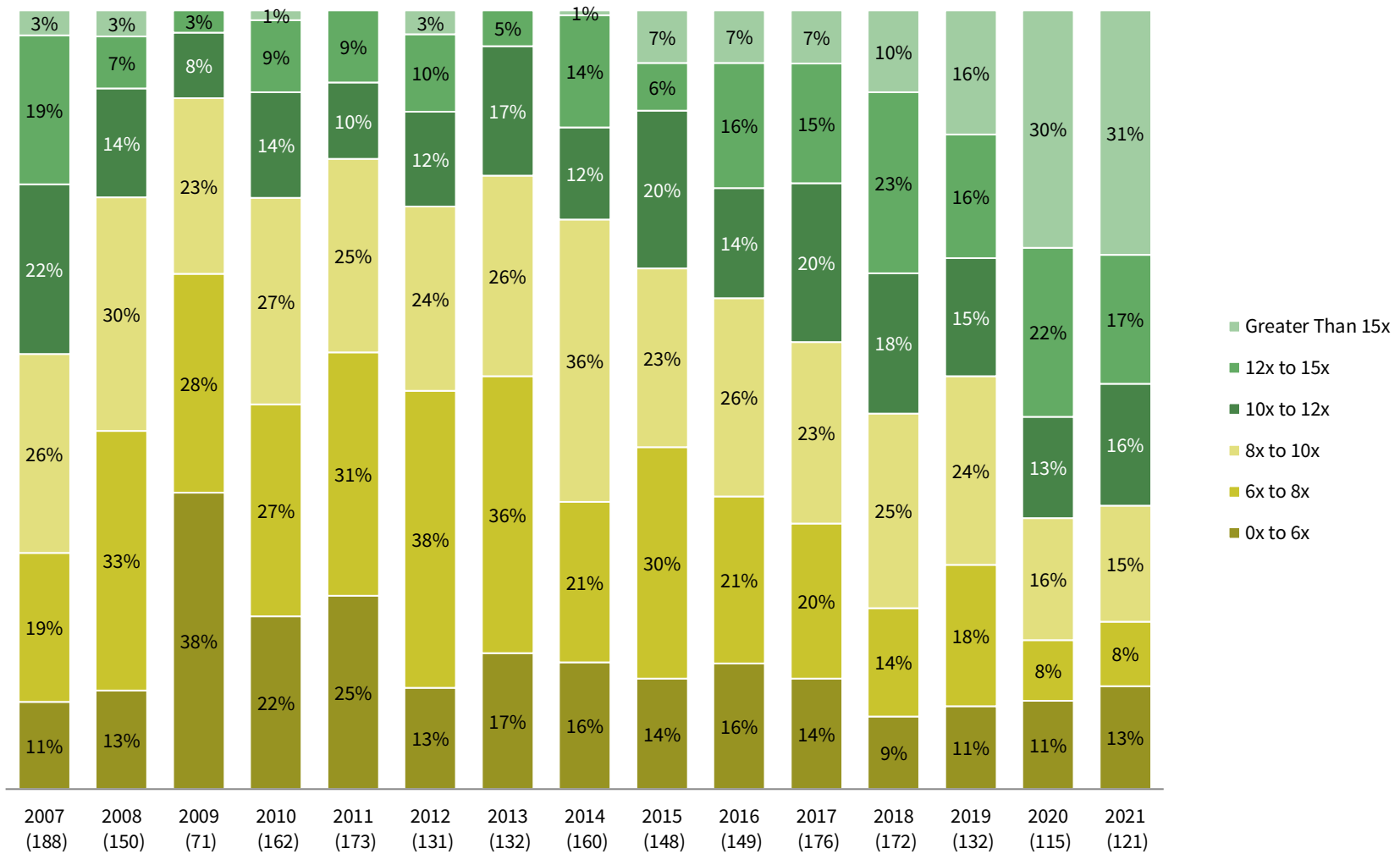


## More than half of all deals since 2018 were transacted at multiples of 10x EBITDA or higher

During the pandemic, about 30% of companies were acquired above a 15x PPM

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

As of December 31, 2021 • Enterprise Value/EBITDA



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

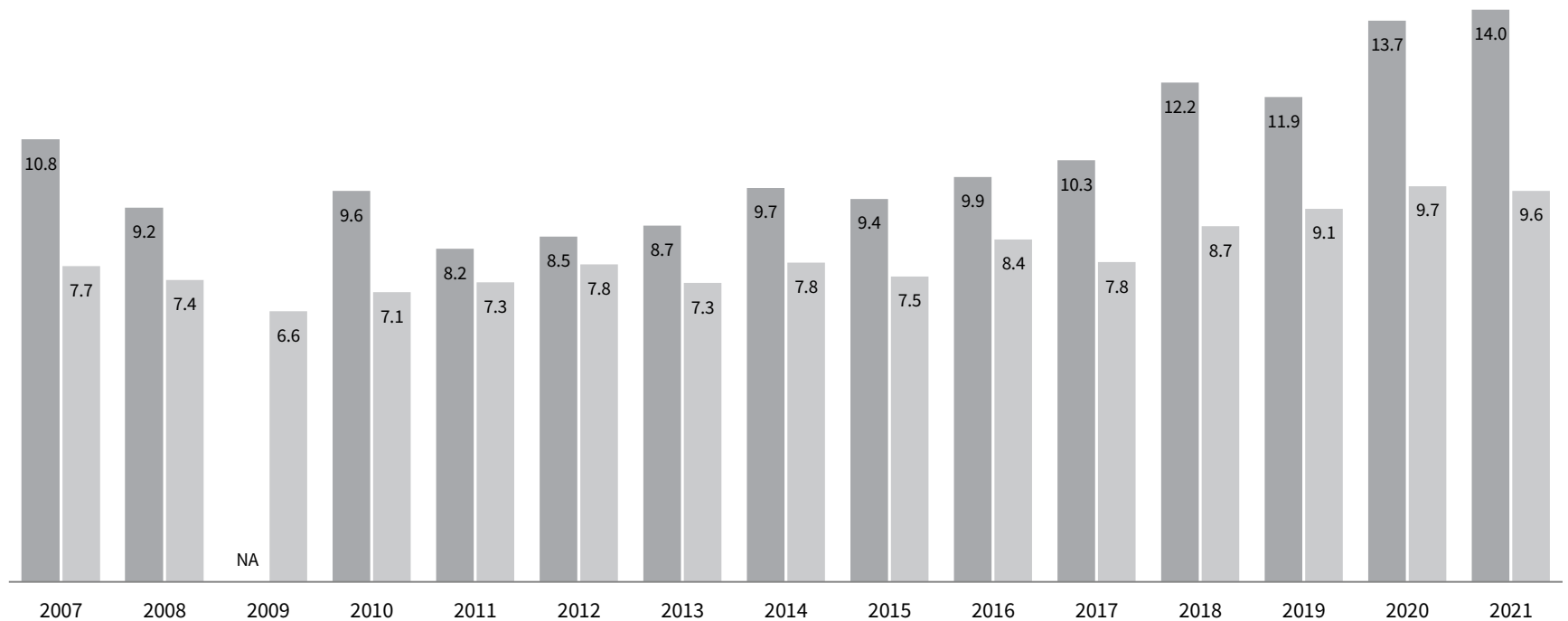
Notes: Outliers were identified and excluded. Numbers in parentheses represent total private companies in a year. Each range includes the lower bound value. For example, the "6x to 8x" range includes companies with reported EBITDA purchase price of exactly 6x. The majority of deals in the European private equity PPM sample are buyouts.

## In 2021, PPMs for mid-cap buyouts hit their highest level over the time period, while small buyout valuations remained flat

The disparity created the largest delta observed between the two size groups (4.4x)

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

As of December 31, 2021 • Enterprise Value/EBITDA



#### Number of Companies

	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
EV €250M – €1B	59	46	NA	42	45	29	26	41	48	52	51	49	42	21	36
EV < €250M	73	62	36	78	92	60	74	85	70	70	75	68	47	42	32

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## EUROPEAN PRIVATE EQUITY ANALYSIS

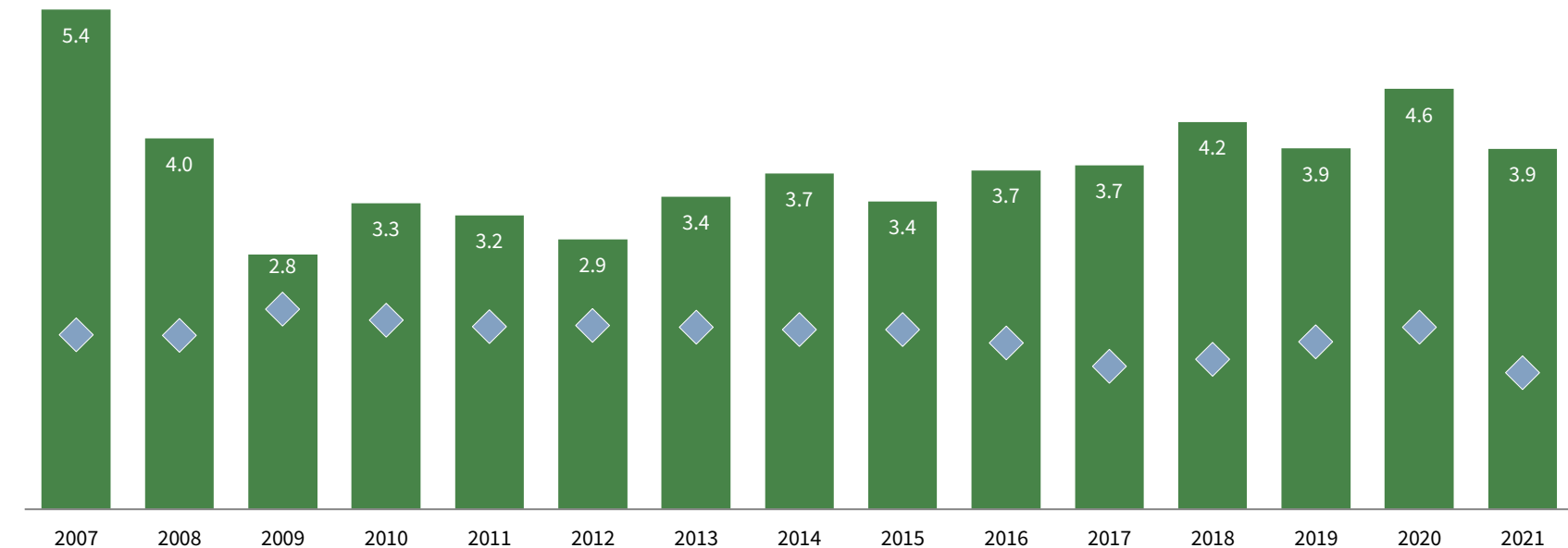
- Purchase Price Multiple
- **Leverage Multiple**
- Revenue Growth
- EBITDA Growth
- EBITDA Margin
- Exit Metrics

## Public and PE leverage multiples declined in 2021 in Europe

PE-backed multiples experienced their largest one-year drop since 2009 and public company multiples hit their lowest average of the time period analyzed

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

As of December 31, 2021 • Net Debt/EBITDA



#### Number of Companies

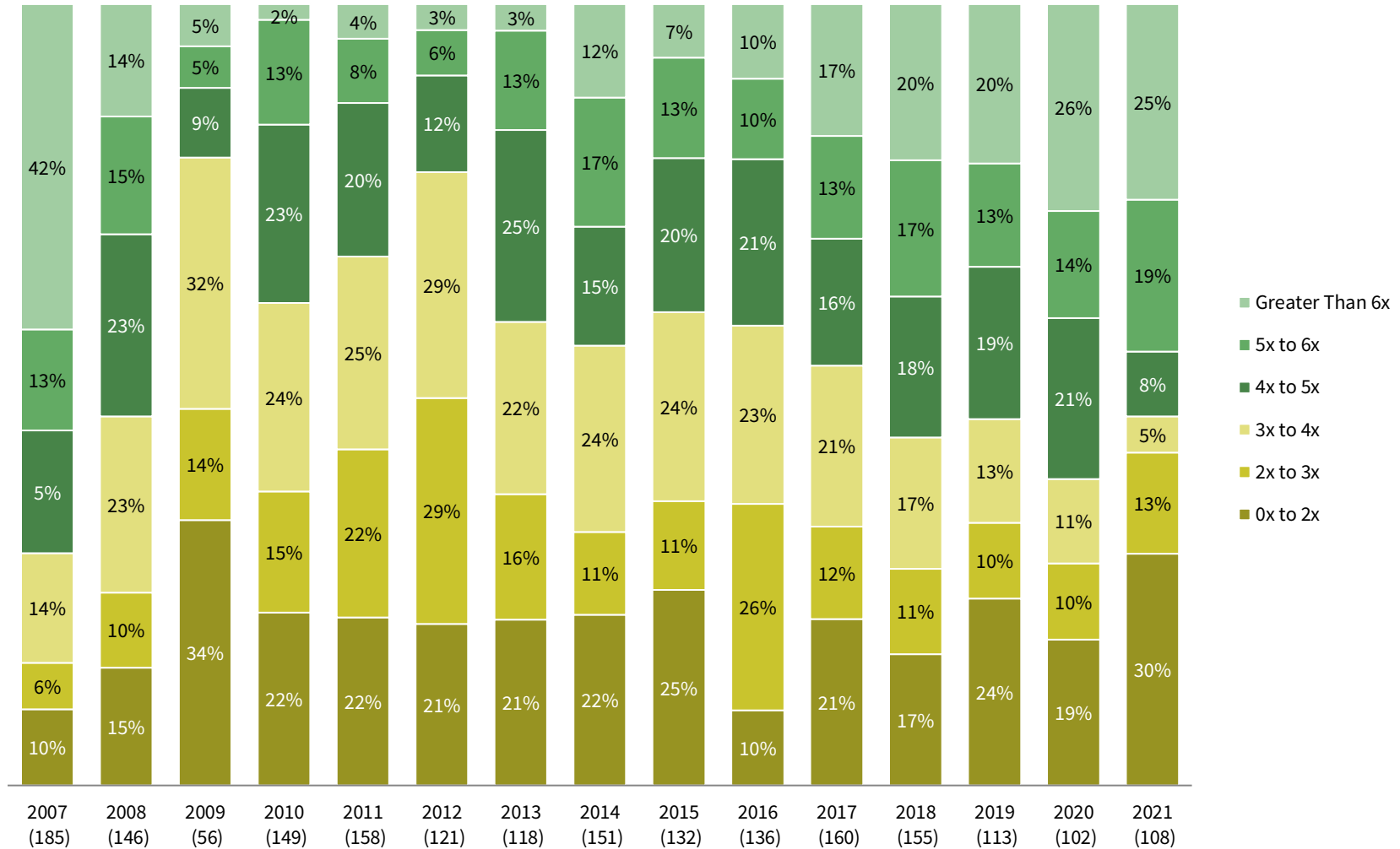
	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
PE-Owned Companies	185	146	56	149	158	121	118	151	132	136	160	155	113	102	108
MSCI All Country Europe Index	258	204	186	181	184	184	186	196	187	185	184	176	175	161	156

## 30% of PE-backed deals were levered under 2x EBITDA in 2021, the highest percentage since 2009

The upper end of the leverage ranges decreased slightly in 2021 and remained much lower than pre-GFC levels

### AVERAGE LEVERAGE MULTIPLE BREAKDOWN OF EUROPEAN PRIVATE EQUITY-OWNED COMPANIES

As of December 31, 2021 • Net Debt/EBITDA

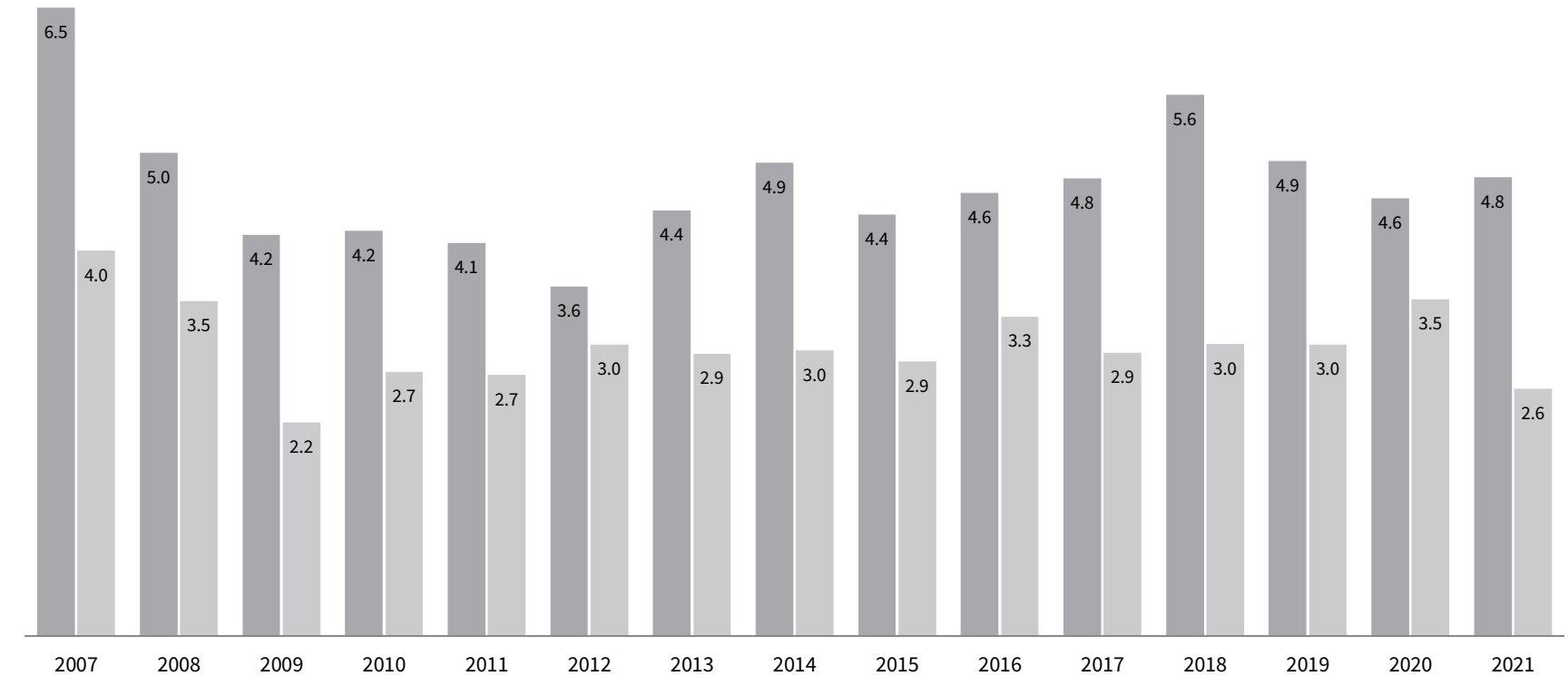


## Small buyout leverage multiples decreased by almost a full turn in 2021, hitting lowest average since 2009

Over the full time period, mid-cap buyout leverage multiples averaged 4.8x, significantly higher than those of their smaller peers (3.0x)

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

As of December 31, 2021 • Net Debt/EBITDA



#### Number of Companies

	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
EV €250M – €1B	59	46	17	43	42	27	22	36	38	48	44	45	35	21	31
EV < €250M	70	60	27	69	86	51	68	82	65	59	68	64	43	35	27

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## EUROPEAN PRIVATE EQUITY ANALYSIS

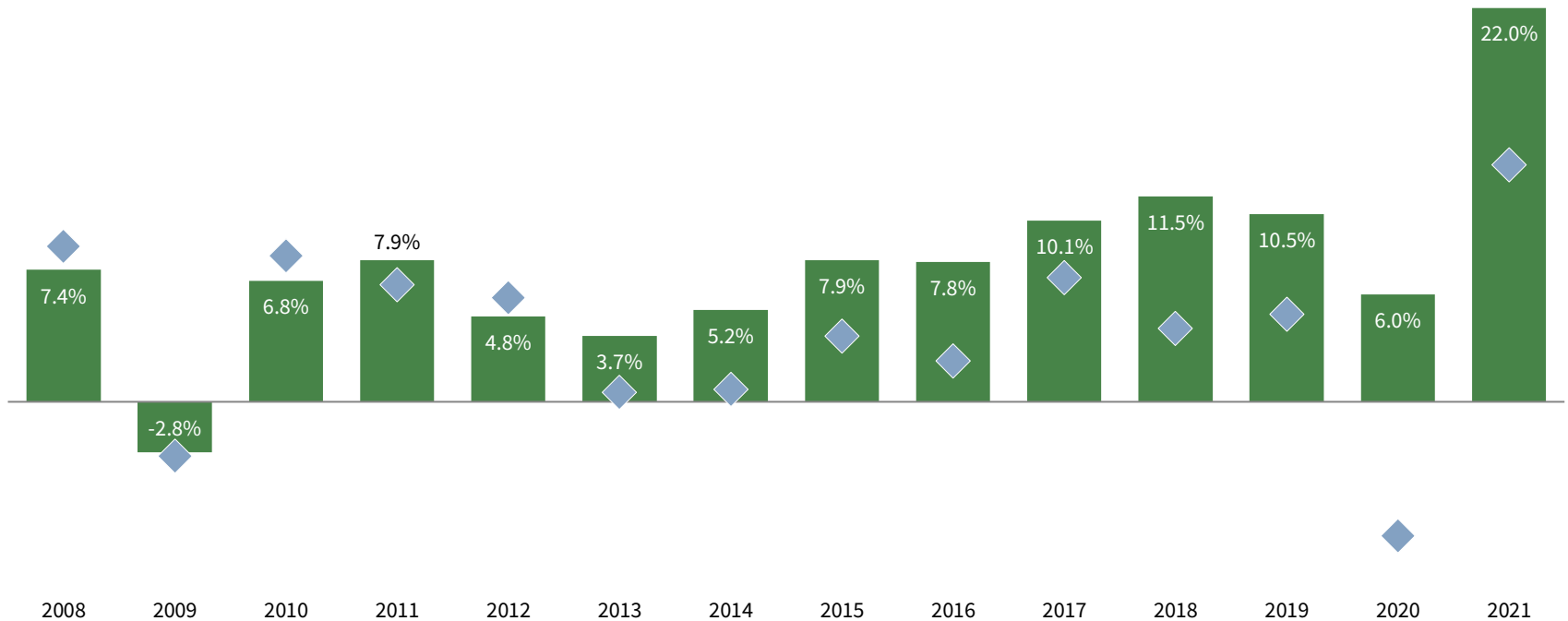
- Purchase Price Multiple
- Leverage Multiple
- **Revenue Growth**
- EBITDA Growth
- EBITDA Margin
- Exit Metrics

## Pandemic recovery and unprecedented fiscal stimulus helped to fuel revenue growth in 2021

During the year, PE-backed and public companies grew revenue at triple and double their prior 13-year annual averages, respectively

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

As of December 31, 2021 • Annual Growth Rate (%)



#### Number of Companies

	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
PE-Owned Companies	254	341	403	466	473	405	341	341	292	297	343	340	351	298
MSCI All Country Europe Index	457	428	442	422	421	421	452	457	450	452	410	417	411	415

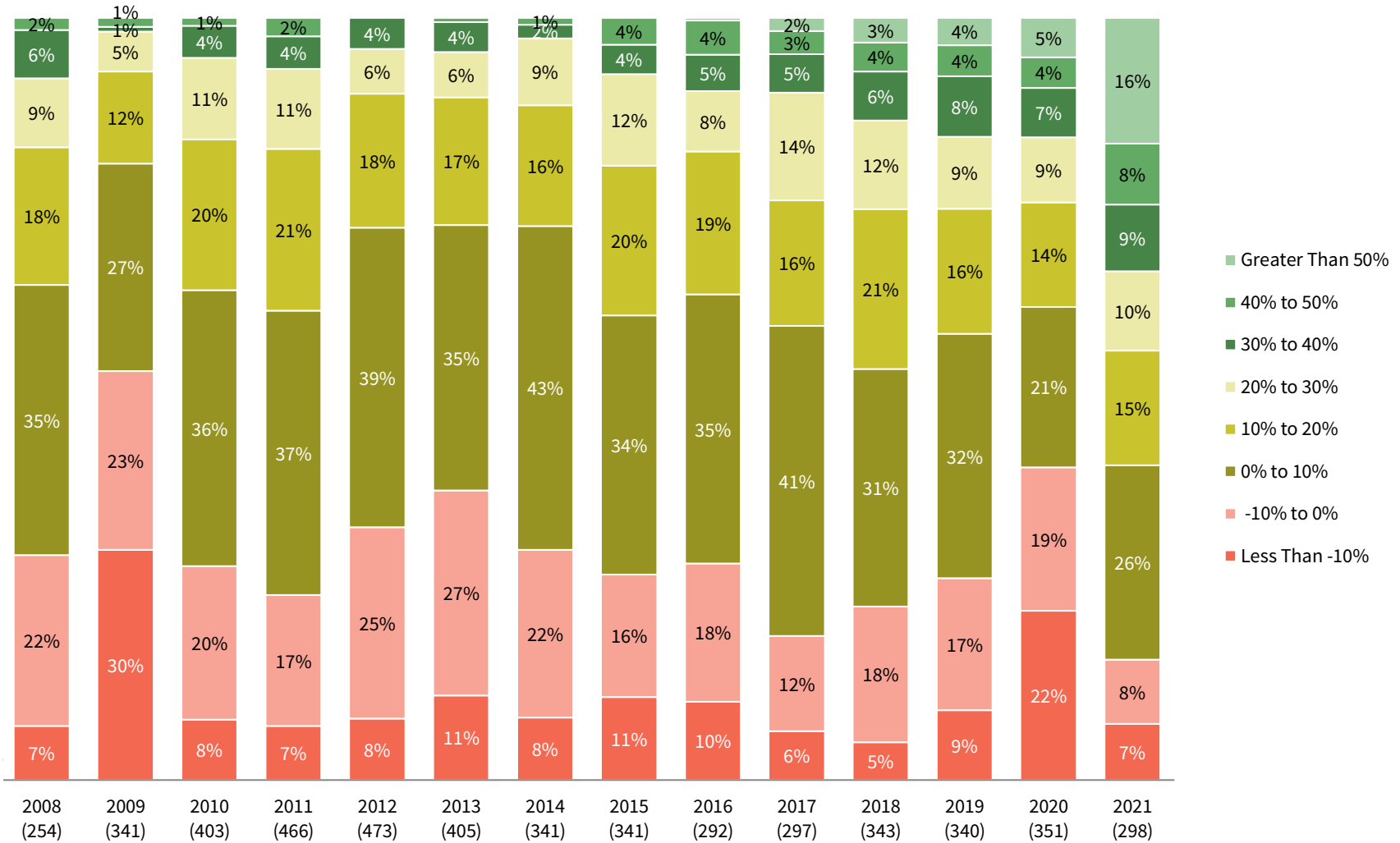


**In 2021, more than 40% of companies grew revenue by more than 20%**

At the same time, only 15% lost money, which represents the lowest amount for all years analyzed

**AVERAGE ANNUAL REVENUE GROWTH BREAKDOWN OF EUROPEAN PRIVATE EQUITY-OWNED COMPANIES**

As of December 31, 2021 • Annual Growth Rate (%)



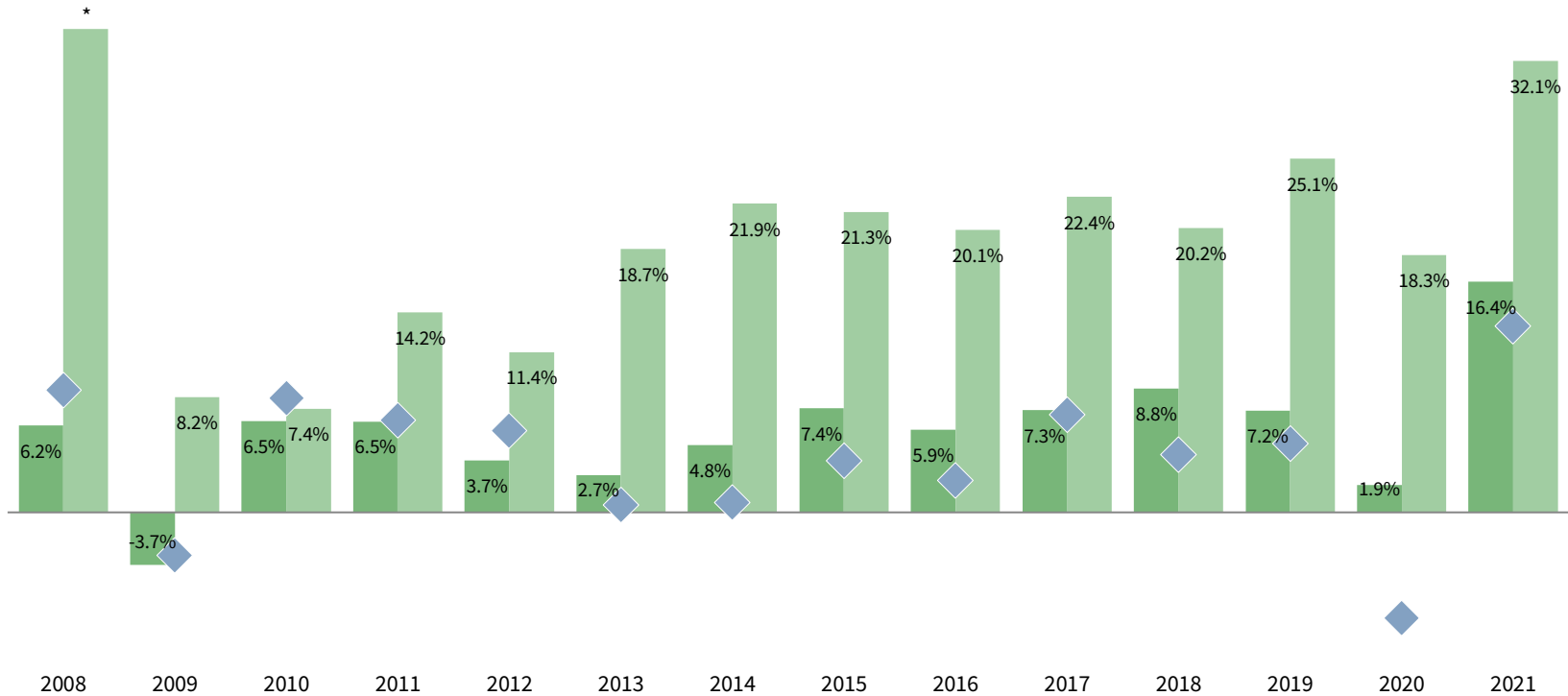
Source: Cambridge Associates LLC Private Investments Database (as reported by investment managers).  
 Notes: Outliers were identified and excluded. Numbers in parentheses represent total private companies in a year. Each range includes the lower bound value. For example, the "0% to 10%" range includes companies with reported growth of exactly 0%.

# All deal types hit new highs for revenue growth in 2021

Since 2013, buyouts achieved the same or slightly better revenue growth than publics, while growth equity outperformed every year

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

As of December 31, 2021 • Annual Growth Rate (%)



### Number of Companies

	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
Buyout Companies	238	310	340	384	385	335	268	259	214	209	252	242	225	155
Growth Equity Companies	23	29	50	66	75	64	75	71	68	70	78	90	119	127
MSCI All Country Europe Index	457	428	442	422	421	421	452	457	450	452	410	417	411	415



\* Axis capped for scaling purposes. The 2008 average for growth equity is 37.8%.

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.

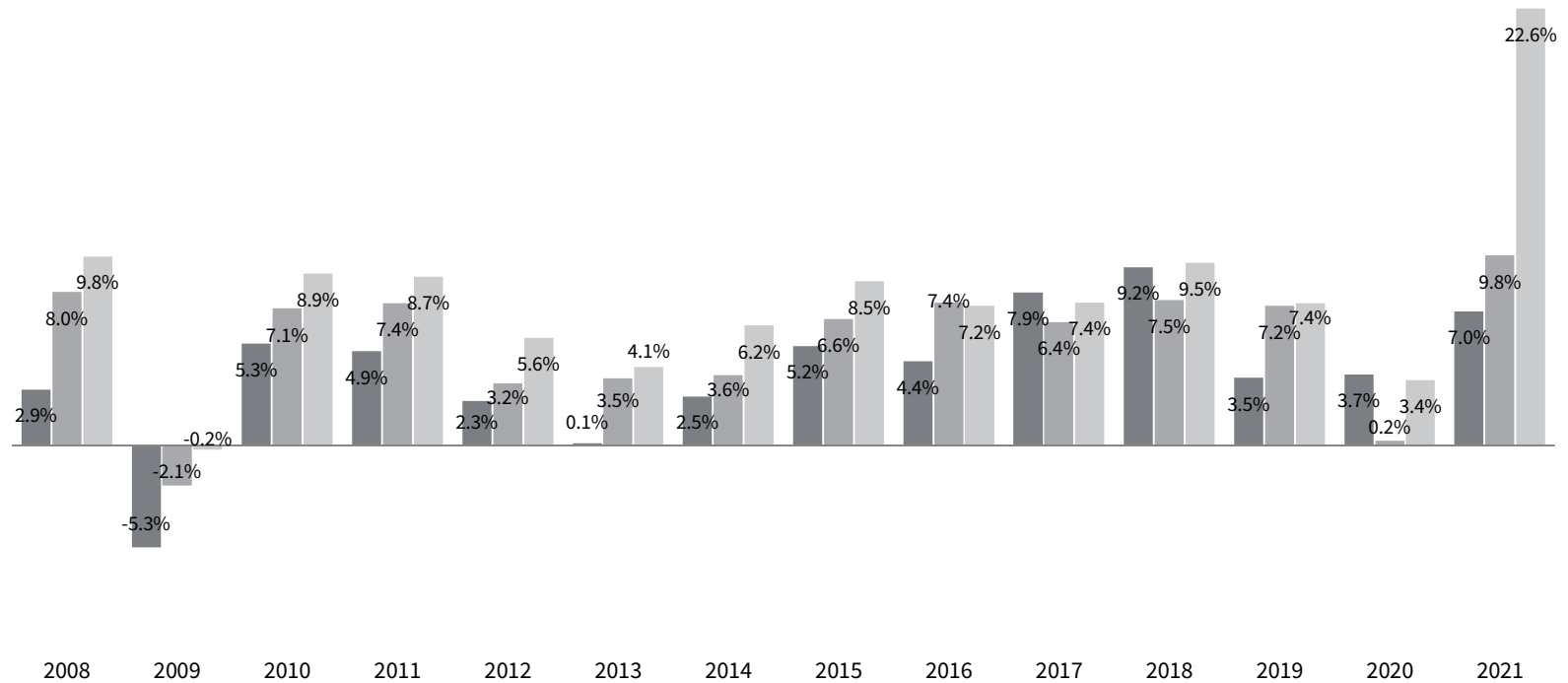
Note: Outliers were identified and excluded, and the same methodology was applied to the private equity and public company universes.

## For buyouts, smaller companies drove the overall increase during 2021, reaching 22.6%

Mid-cap and large buyouts kept more in line with their long-term averages

### AVERAGE ANNUAL REVENUE GROWTH OF EUROPEAN PRIVATE EQUITY BUYOUT COMPANIES BY ENTERPRISE VAL

As of December 31, 2021 • Annual Growth Rate (%)



#### Number of Companies

	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
EV > €1B	88	106	109	114	83	71	41	33	28	20	23	34	30	23
EV €250M - €1B	73	100	121	138	122	95	78	79	71	89	101	95	93	54
EV < €250M	78	106	116	140	178	170	147	151	116	98	127	108	91	74

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## EUROPEAN PRIVATE EQUITY ANALYSIS

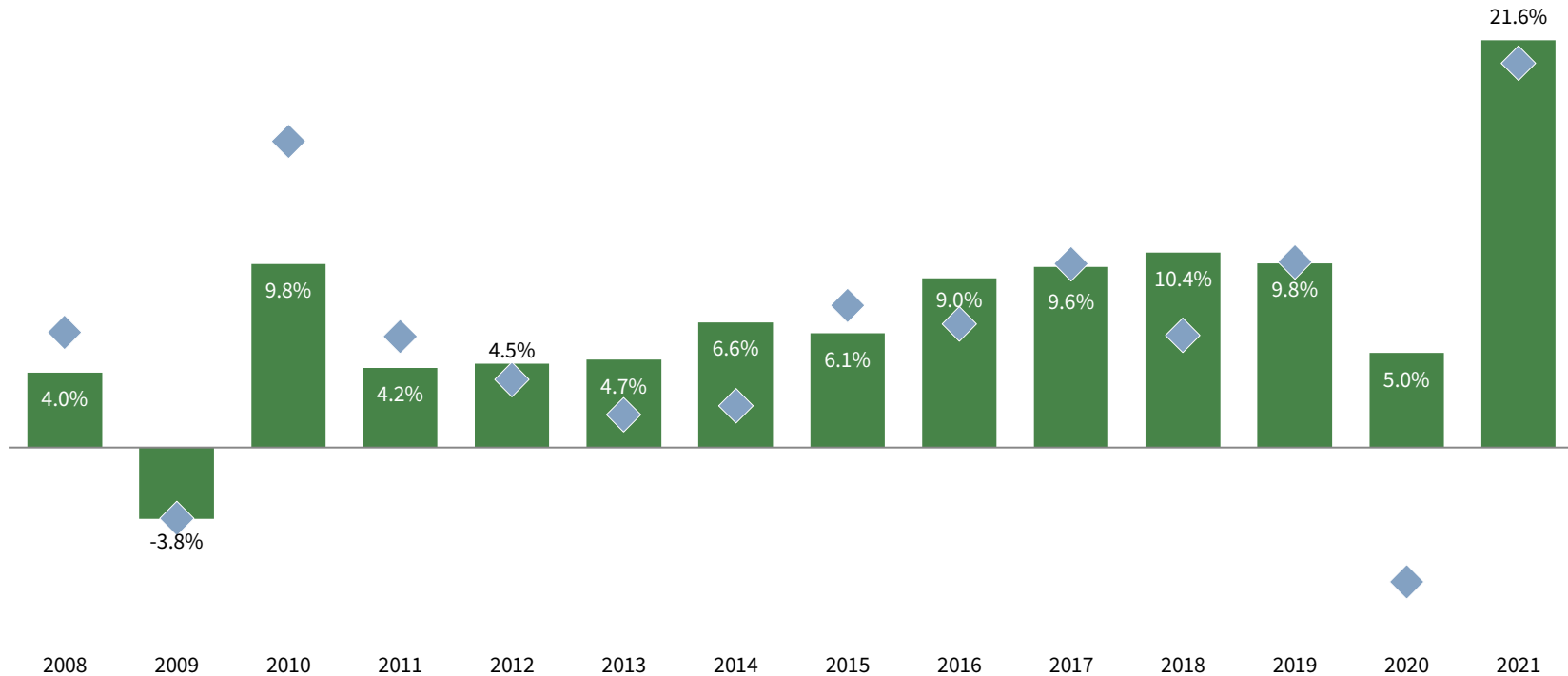
- Purchase Price Multiple
- Leverage Multiple
- Revenue Growth
- **EBITDA Growth**
- EBITDA Margin
- Exit Metrics

## Similar to the global sample, both PE and public companies grew EBITDA at greater than 20% in 2021

For PE, 2021 growth was more than double its previous high (2018)

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

As of December 31, 2021 • Annual Growth Rate (%)



#### Number of Companies

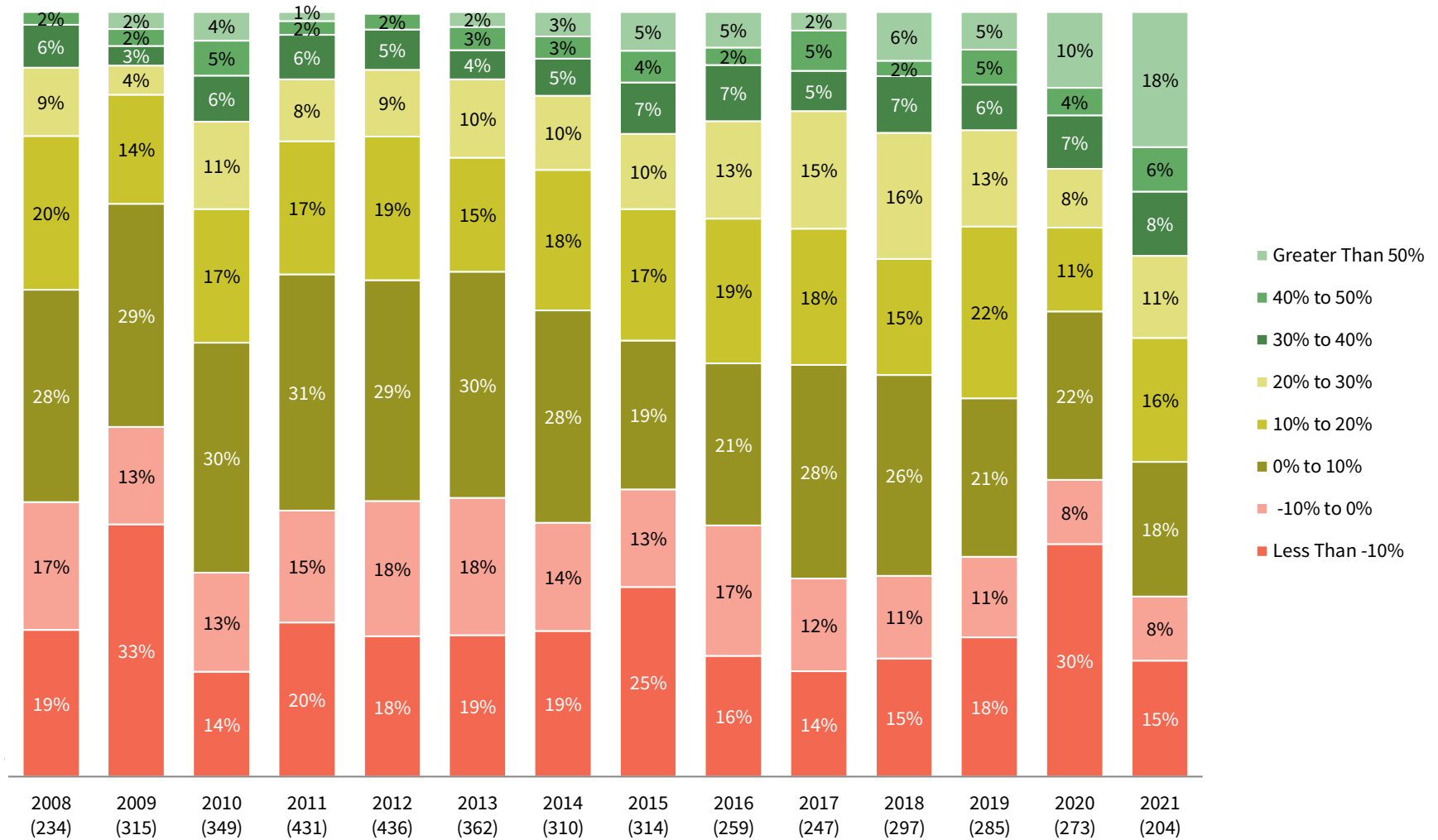
	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
Private Equity-Owned Companies	234	315	349	431	436	362	310	314	259	247	297	285	273	204
MSCI All Country Europe Index	340	303	326	336	337	328	355	353	351	363	354	353	323	331

## Three in ten companies grew EBITDA at a rapid pace (above 30%), lifting the average in 2021

Excluding 2020, increasingly more companies have achieved at least 10% annual EBITDA growth since 2014

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

As of December 31, 2021 • Annual Growth Rate (%)

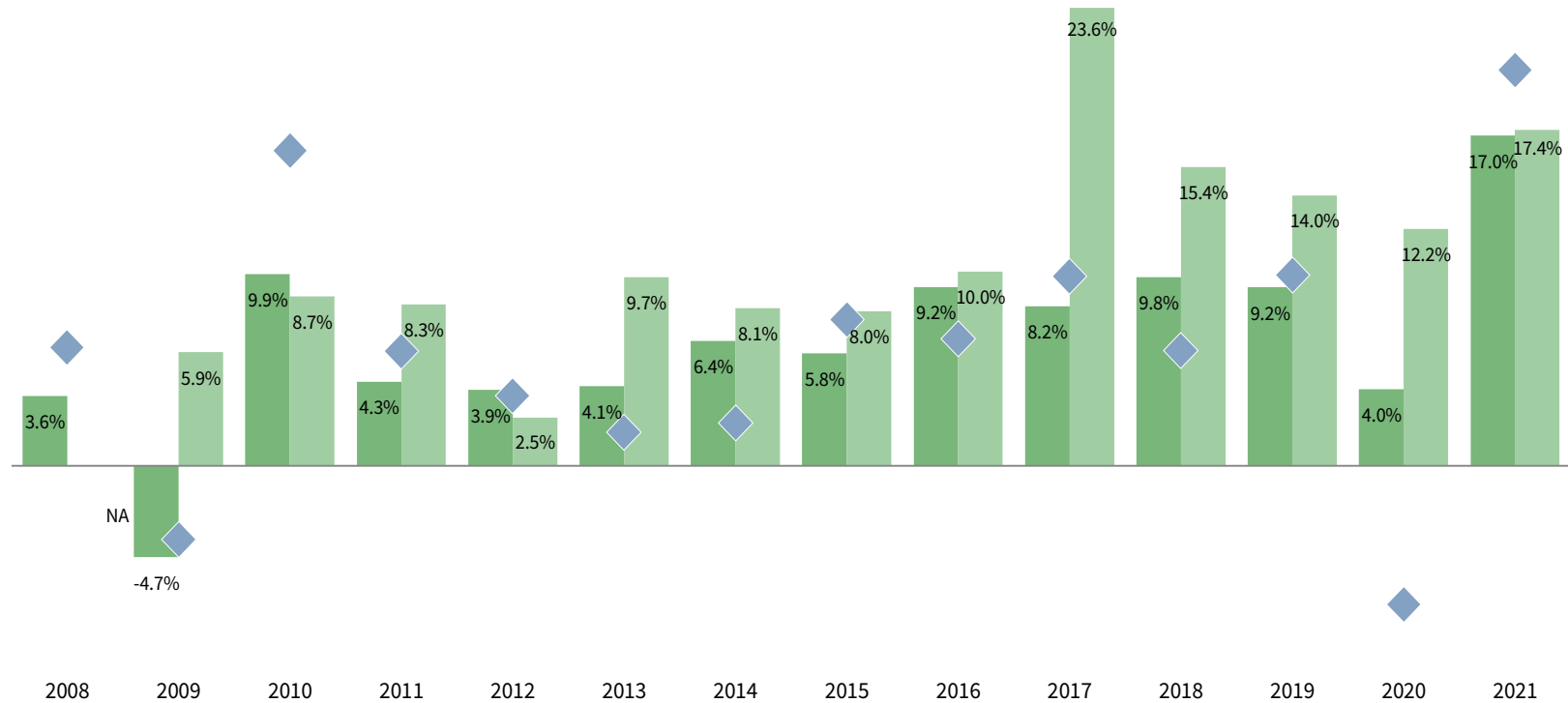


# In 2021, average EBITDA growth for buyouts and public companies climbed to new peaks

Growth equity also did well, but fell short of its 2017 average

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

As of December 31, 2021 • Annual Growth Rate (%)



### Number of Companies

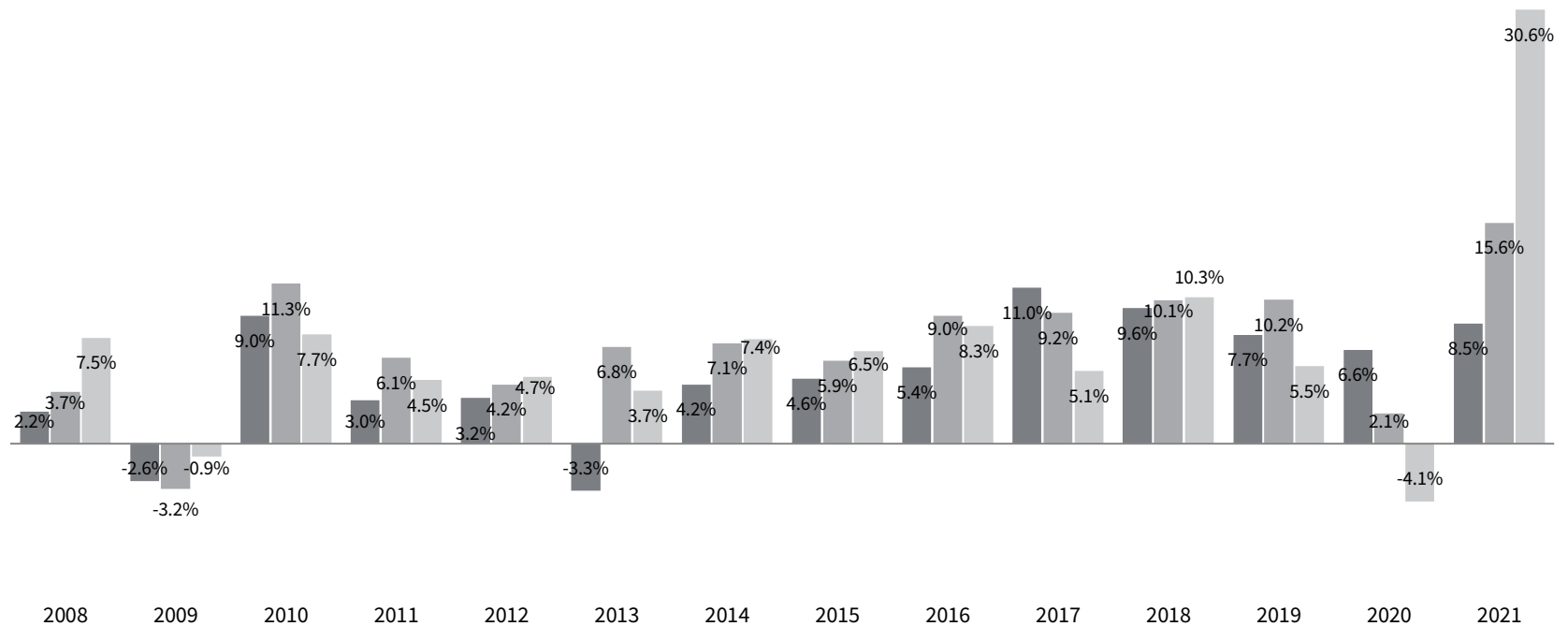
	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
Buyout Companies	226	294	307	373	376	315	258	257	211	199	237	234	208	132
Growth Equity Companies	NA	20	38	51	58	44	48	45	36	44	51	44	62	57
MSCI All Country Europe Index	340	303	326	336	337	328	355	353	351	363	354	353	323	331

## Like revenue growth, EBITDA growth for small buyout companies skyrocketed in 2021

With long-term annual EBITDA growth of just under 4%, large buyouts have usually trailed the other size segments

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

As of December 31, 2021 • Annual Growth Rate (%)



#### Number of Companies

	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
EV > €1B	88	98	102	108	79	69	42	35	28	21	21	40	33	22
EV €250M - €1B	72	100	110	138	127	98	78	79	67	91	102	92	98	49
EV < €250M	70	98	96	129	165	151	134	142	114	86	112	96	70	67



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## EUROPEAN PRIVATE EQUITY ANALYSIS

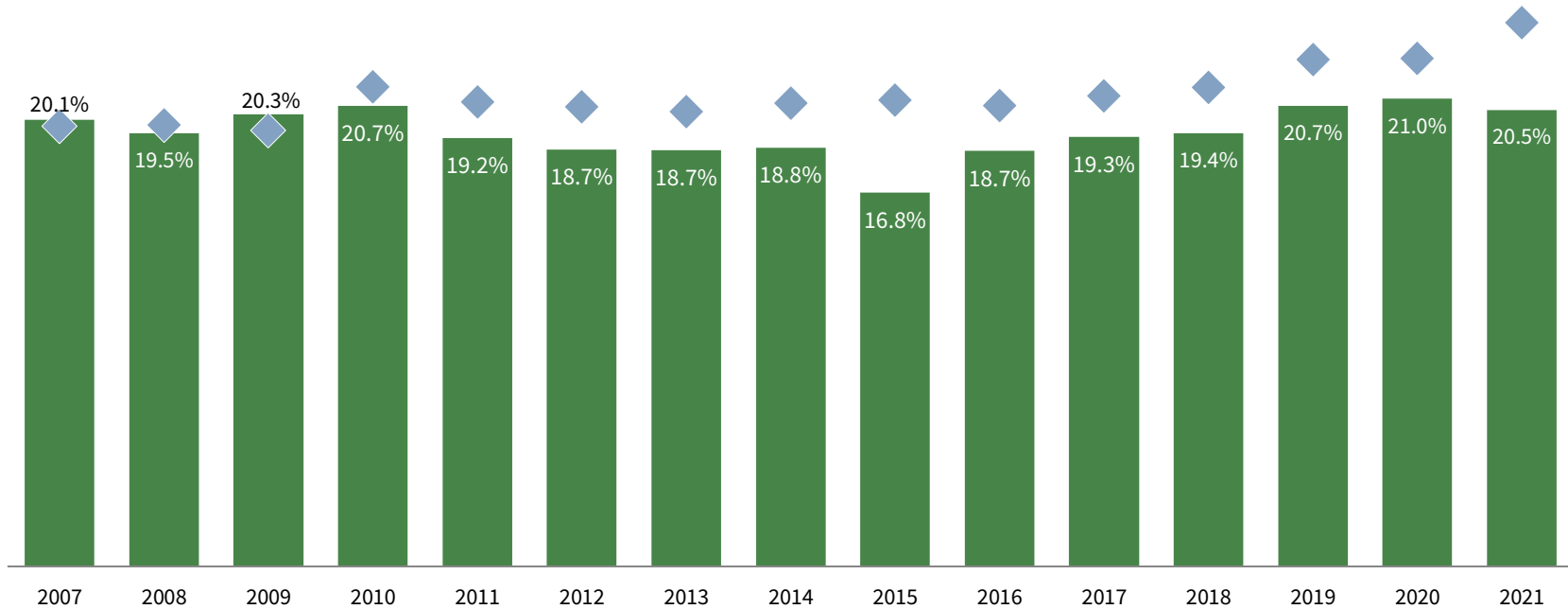
- Purchase Price Multiple
- Leverage Multiple
- Revenue Growth
- EBITDA Growth
- **EBITDA Margin**
- Exit Metrics

## Public European companies have operated at higher margins than PE-backed businesses since 2010

Margins were higher in 2019–21 for both public and PE-backed companies than they were from 2010–18

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

As of December 31, 2021 • EBITDA/Revenue (%)



#### Number of Companies

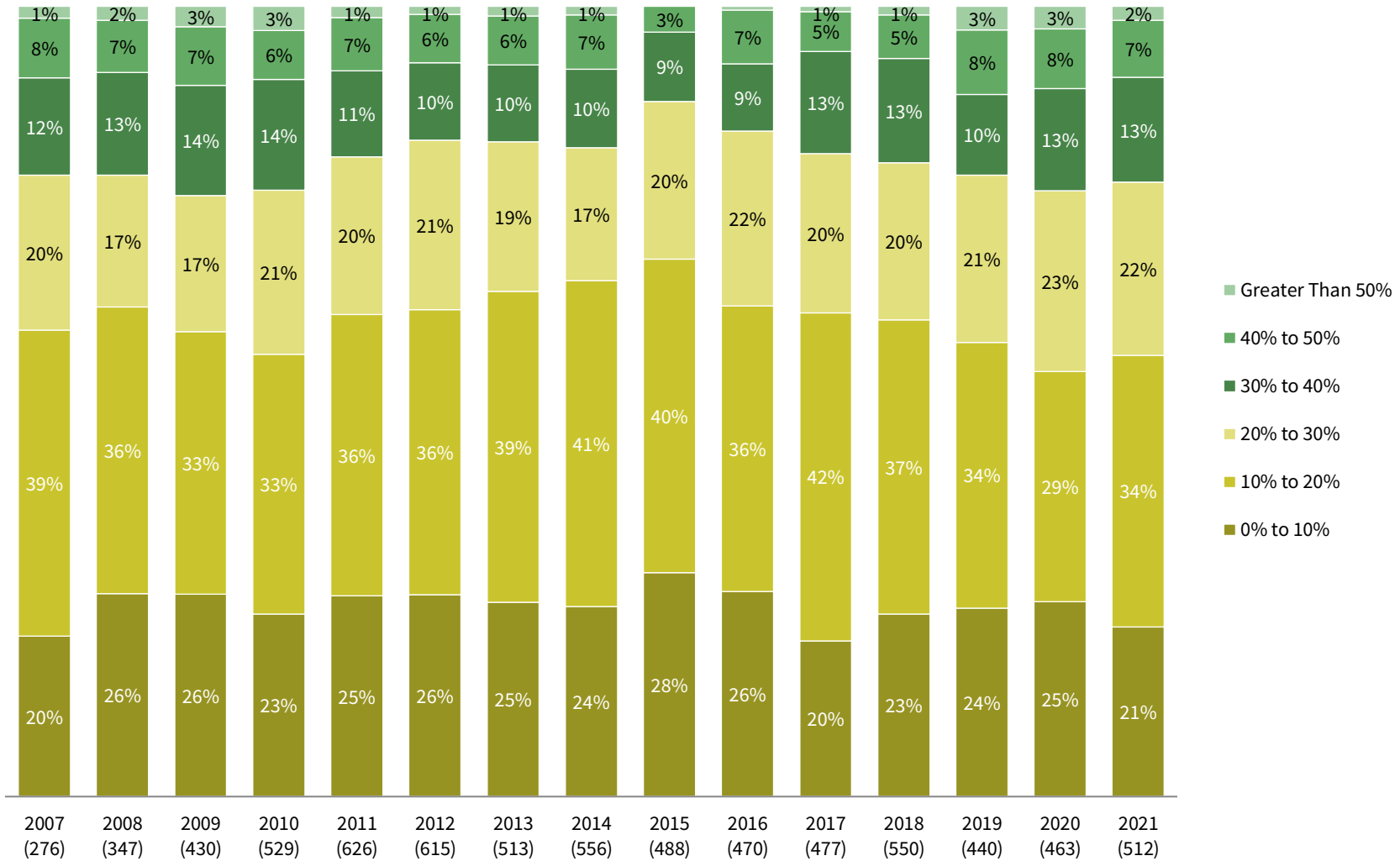
	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
Private Equity-Owned Companies	276	347	430	529	626	615	513	556	488	470	477	550	440	463	512
MSCI All Country Europe Index	519	402	379	402	388	388	395	404	408	404	408	395	389	381	374

## The distribution of operating margins has been consistent over the long term

On average, most operated with margins between 10% and 30%

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

As of December 31, 2021 • EBITDA/Revenue (%)

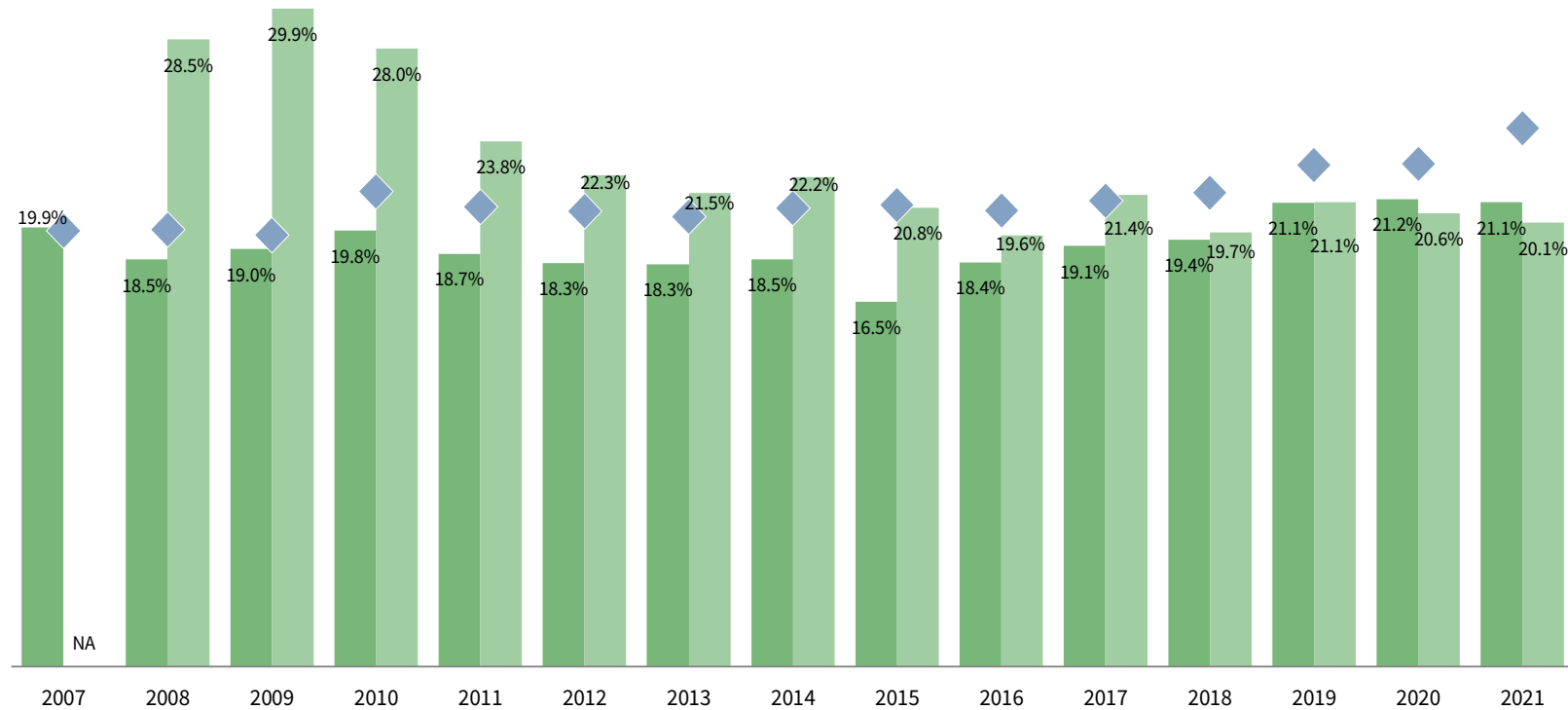


## Growth equity companies operated at higher EBITDA margins than buyouts from 2008 to 2017

Over the last four years, margins for both types of companies have been roughly equal

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

As of December 31, 2021 • EBITDA/Revenue (%)



#### Number of Companies

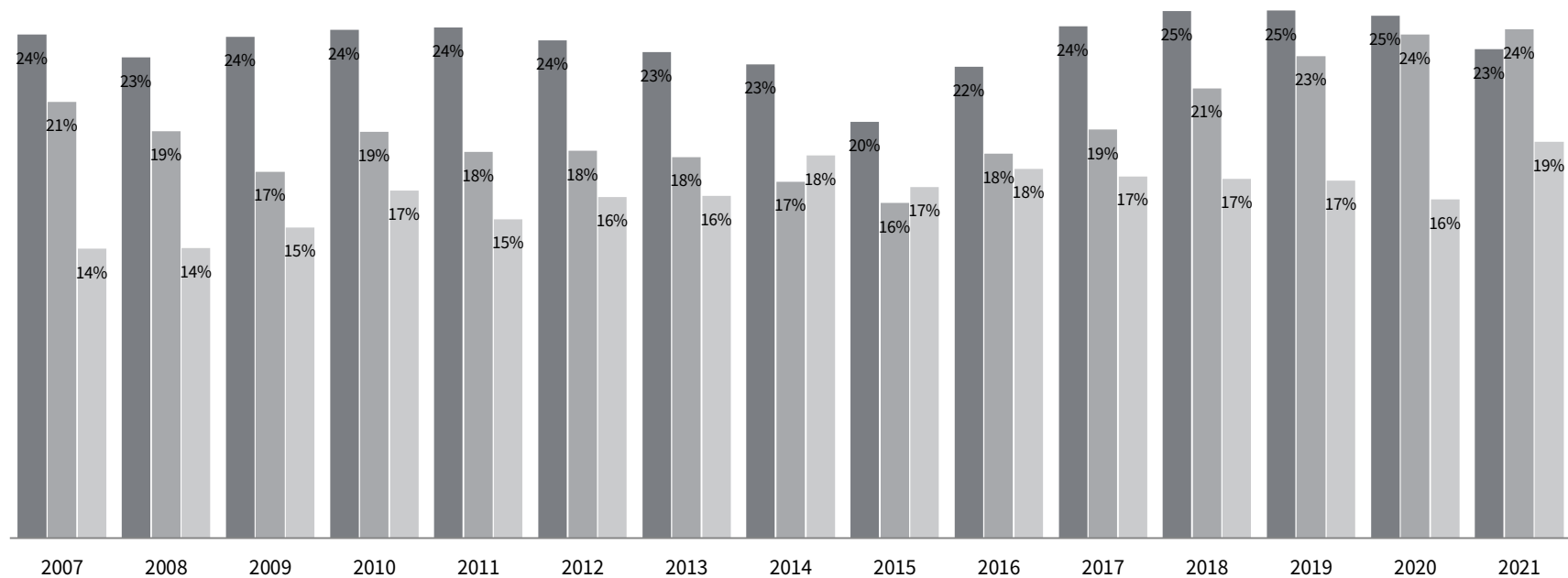
	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
Buyout Companies	262	318	375	458	538	505	436	458	387	387	373	458	353	340	369
Growth Equity Companies	NA	25	46	65	81	102	69	83	80	61	82	79	80	113	133
MSCI All Country Europe Index	519	402	379	402	388	388	395	404	408	404	408	395	389	381	374

## In 2021, small buyouts operated at their highest margins over the full time period

However, on average, mid- and large-cap buyouts still tend to operate at higher margins

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

As of December 31, 2021 • EBITDA/Revenue (%)



#### Number of Companies

	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
EV > €1B	92	109	119	122	125	97	97	64	51	50	46	57	64	62	67
EV €250M - €1B	81	105	124	171	183	168	141	132	115	150	155	169	149	136	113
EV < €250M	87	105	124	161	222	238	199	258	225	187	168	231	132	130	178

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## EUROPEAN PRIVATE EQUITY ANALYSIS

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

## Companies acquired from 2009 to 2017 have been increasingly successful at achieving multiple expansion at exit

The median multiple expansion for realized companies acquired in 2017 has been 4.1 turns of EBITDA, the most for any year analyzed

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

As of December 31, 2021 • Enterprise Value/EBITDA



#### Number of Companies

	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Private Equity-Owned Companies	94	134	126	104	52	116	95	71	71	79	65	40	21

## In Europe, leverage multiple compression has been minimal in recent years

Although multiples in general remained lower than in the US

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

As of December 31, 2021 • Net Debt/EBITDA



#### Number of Companies

	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Private Equity-Owned Companies	91	128	118	94	36	91	78	60	59	67	48	36	20

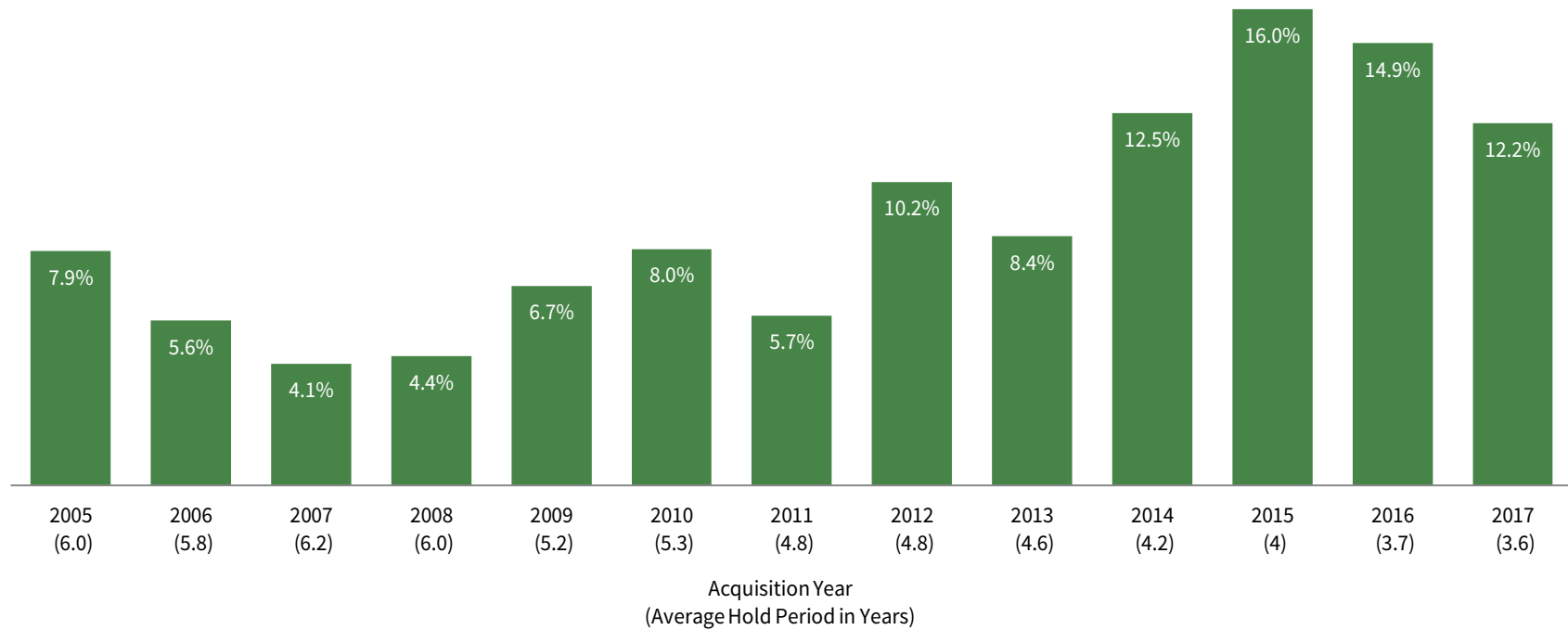


**For realized companies acquired since 2012, the median revenue CAGR was about 11%**

For those acquired before 2012, the median CAGR was about 6%

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

As of December 31, 2021 • Compound Annual Growth Rate (%)



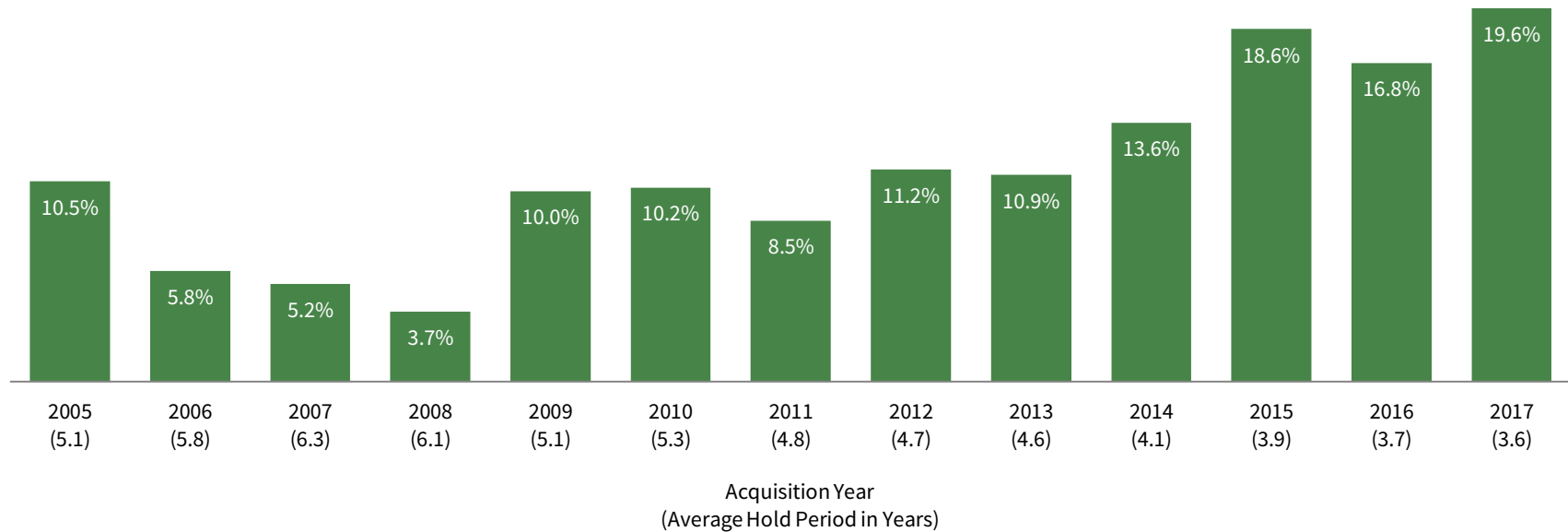
	Number of Companies												
	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
PE-Owned Companies	106	138	146	113	56	123	101	79	78	88	74	42	22

## Median EBITDA CAGRs for realized companies acquired in 2017 hit a new peak, 19.6%...

...continuing a general uptrend since 2014

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

As of December 31, 2021 • Compound Annual Growth Rate (%)



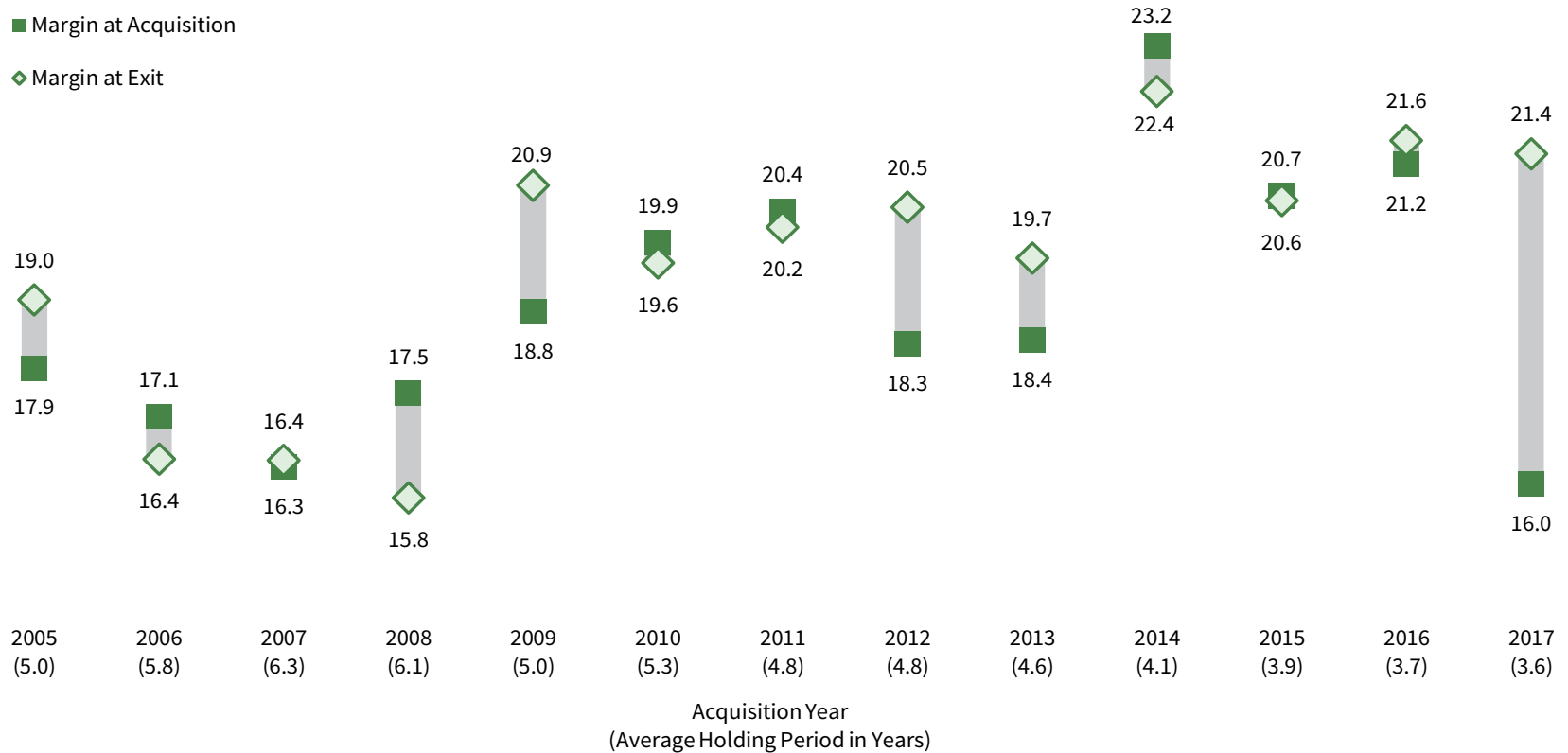
	Number of Companies												
	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
PE-Owned Companies	102	137	137	113	54	118	97	74	74	80	66	40	22

## Over the full analysis, median EBITDA margins remained flat during PE ownership

Margin improvement was most pronounced for realized companies acquired in 2017

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

As of December 31, 2021 • EBITDA/Revenue (%)



#### Number of Companies

	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Private Equity-Owned Companies	98	131	132	101	50	115	93	72	72	78	67	41	20

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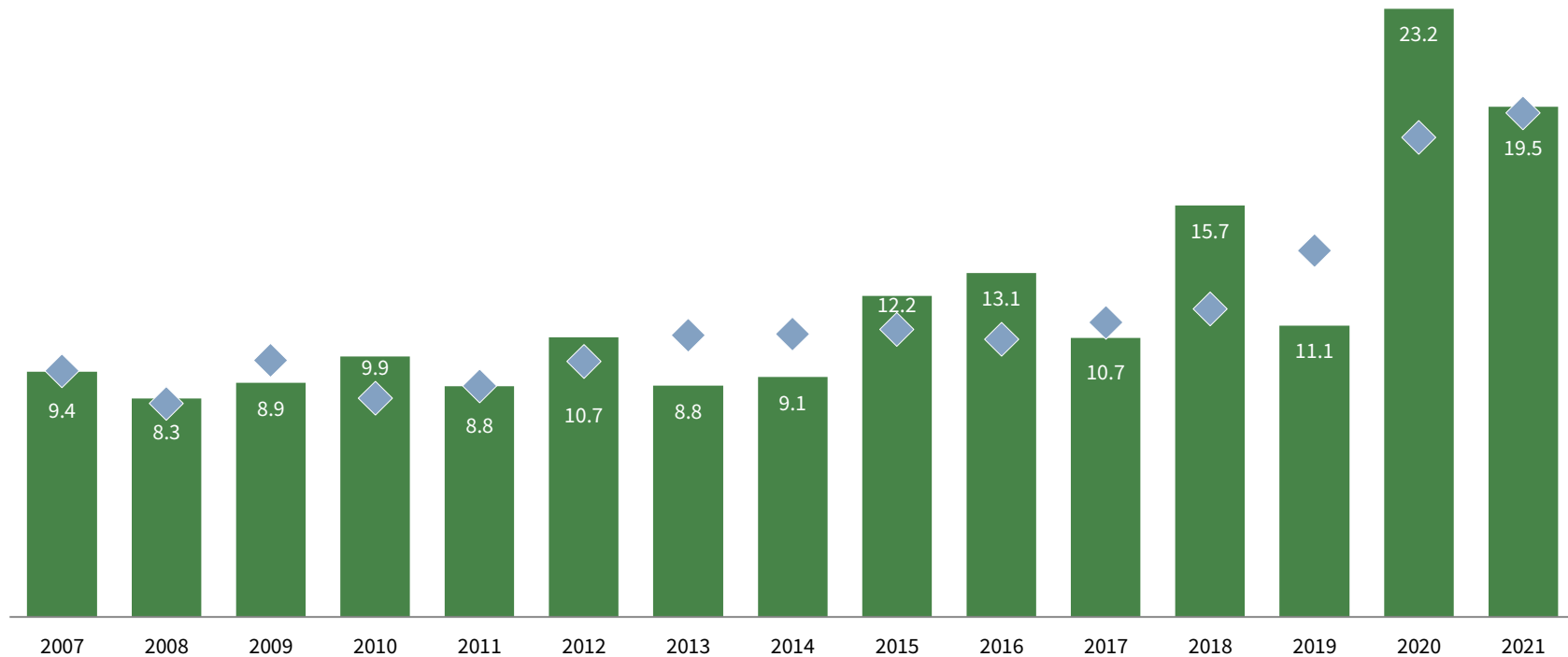
## ASIAN PRIVATE EQUITY ANALYSIS

## PE PPMs were second highest across the time period in 2021, despite receding nearly three turns from previous year

Public PPMs have steadily increased since 2016 and approximated PE valuations in 2021

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

As of December 31, 2021 • Enterprise Value/EBITDA



#### Number of Companies

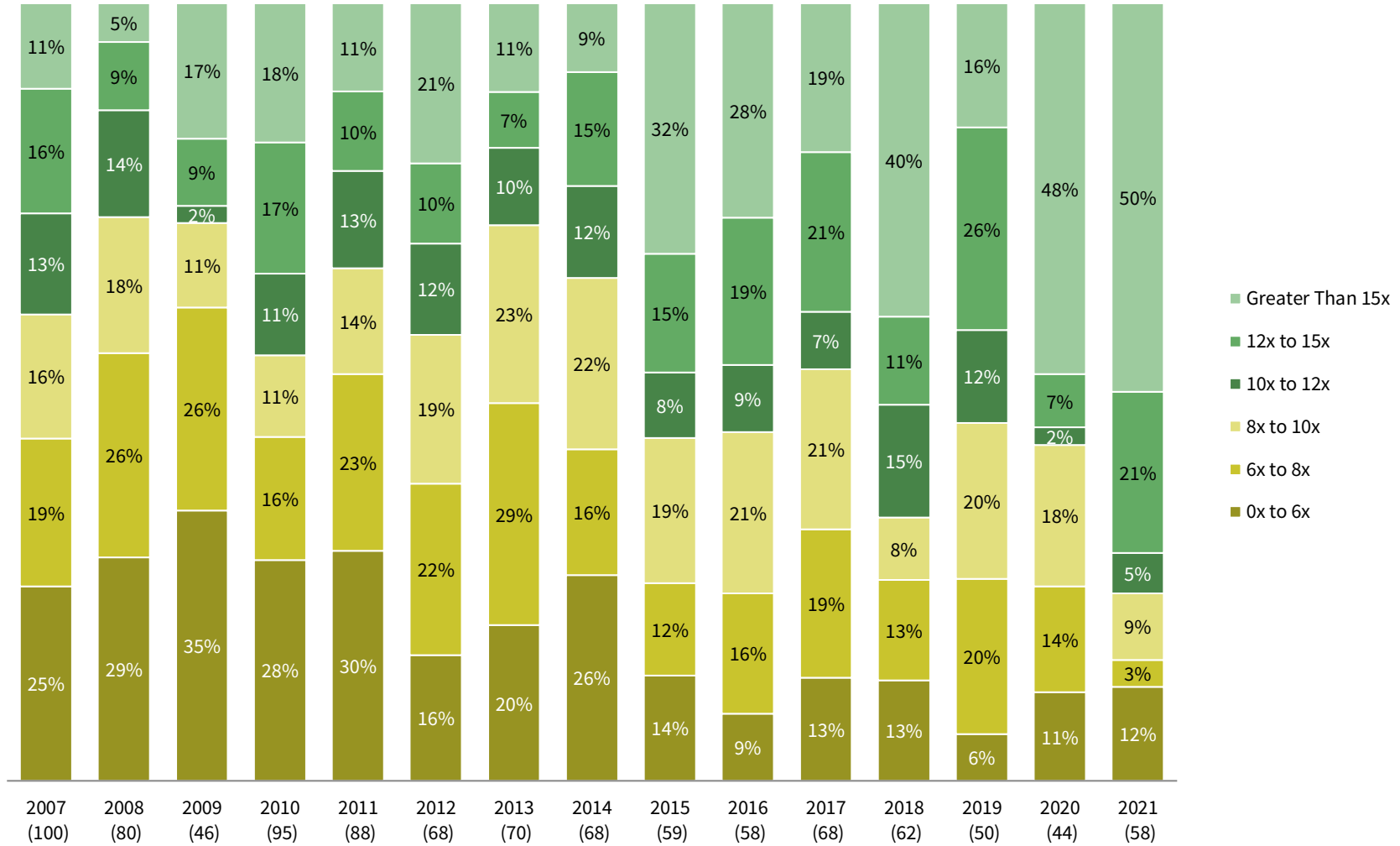
	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
PE-Owned Companies	100	80	46	95	88	68	70	68	59	58	68	62	50	44	58
MSCI AC Asia Pacific Index	339	357	458	546	550	573	583	583	589	600	612	781	1,008	984	966

# Reflecting broad market conditions, 71% of companies acquired in 2021 transacted at multiples of at least 12x EBITDA

Since 2007, only a third of deals transacted at those levels

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

As of December 31, 2021 • Enterprise Value/EBITDA

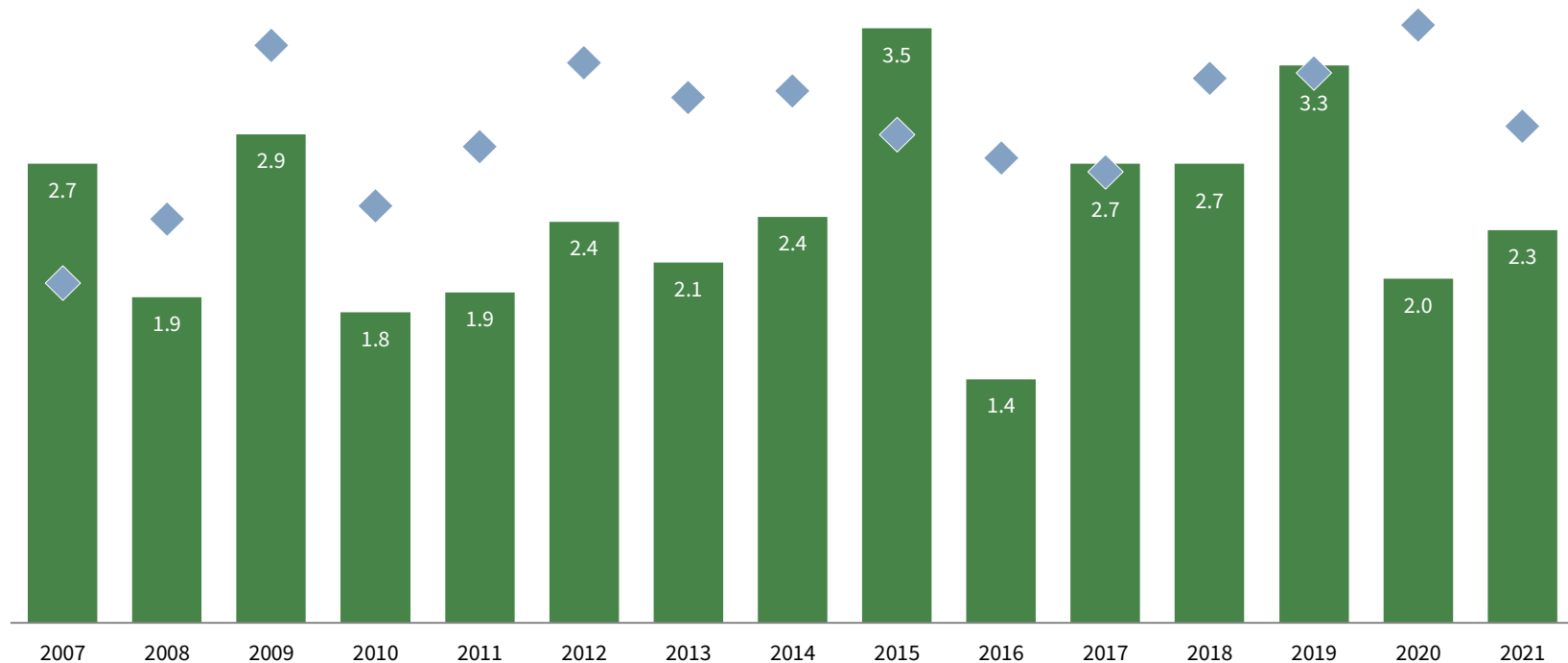


## PE leverage multiples have varied over the time period, averaging 2.4x EBITDA

However, they have consistently trailed those of public peers

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

As of December 31, 2021 • Net Debt/EBITDA



#### Number of Companies

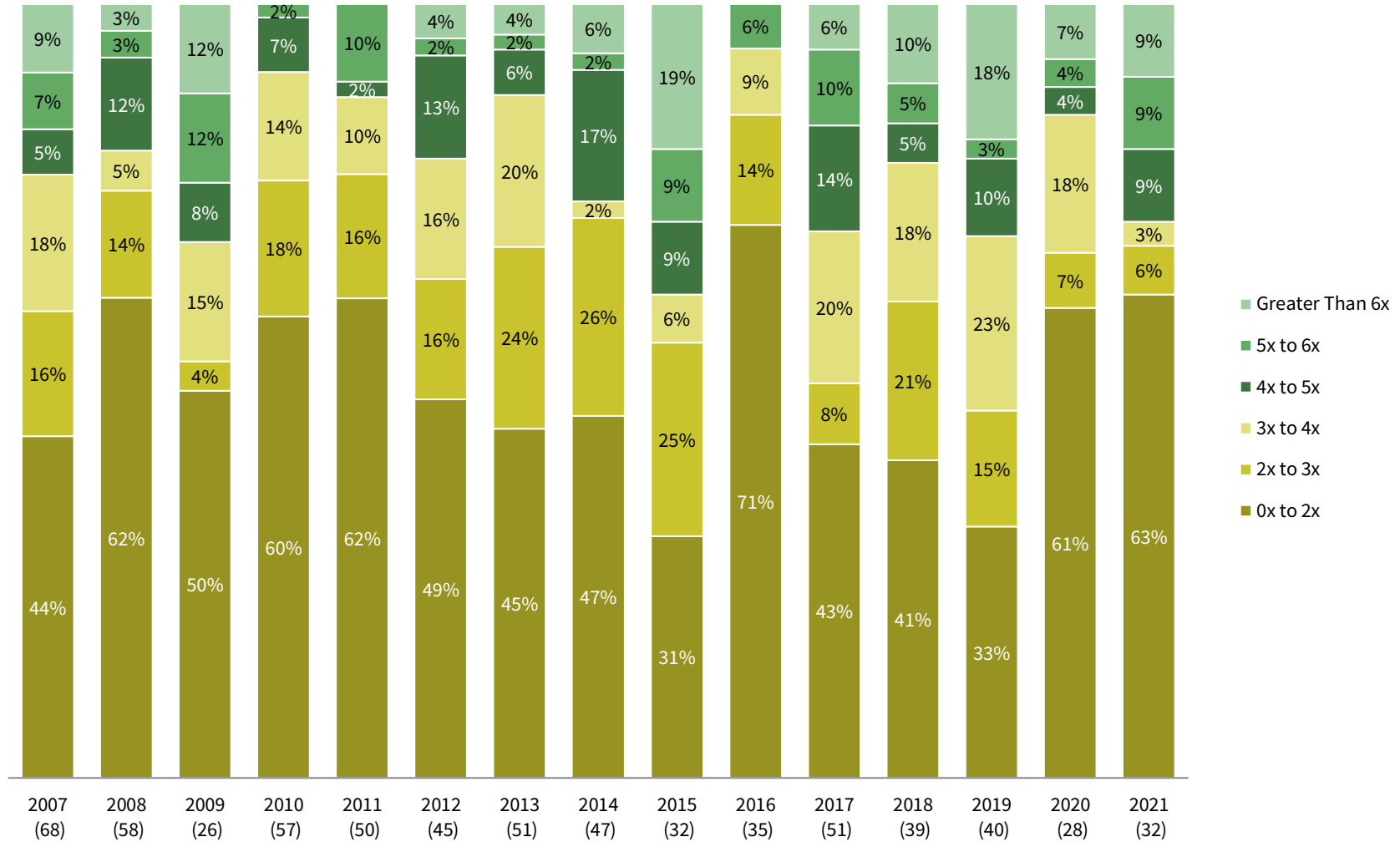
	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
PE-Owned Companies	68	58	26	57	50	45	51	47	32	35	51	39	40	28	32
MSCI AC Asia Pacific Index	223	230	301	345	339	362	360	366	364	373	368	486	629	546	518

During the pandemic years, more deals were levered below 2x EBITDA than there were on average in 2007–19

In contrast, 2021 also had an above average percentage of deals transact at leverage multiples of greater than 5x

**AVERAGE LEVERAGE MULTIPLE BREAKDOWN OF ASIAN PRIVATE EQUITY-OWNED COMPANIES**

As of December 31, 2021 • Net Debt/EBITDA



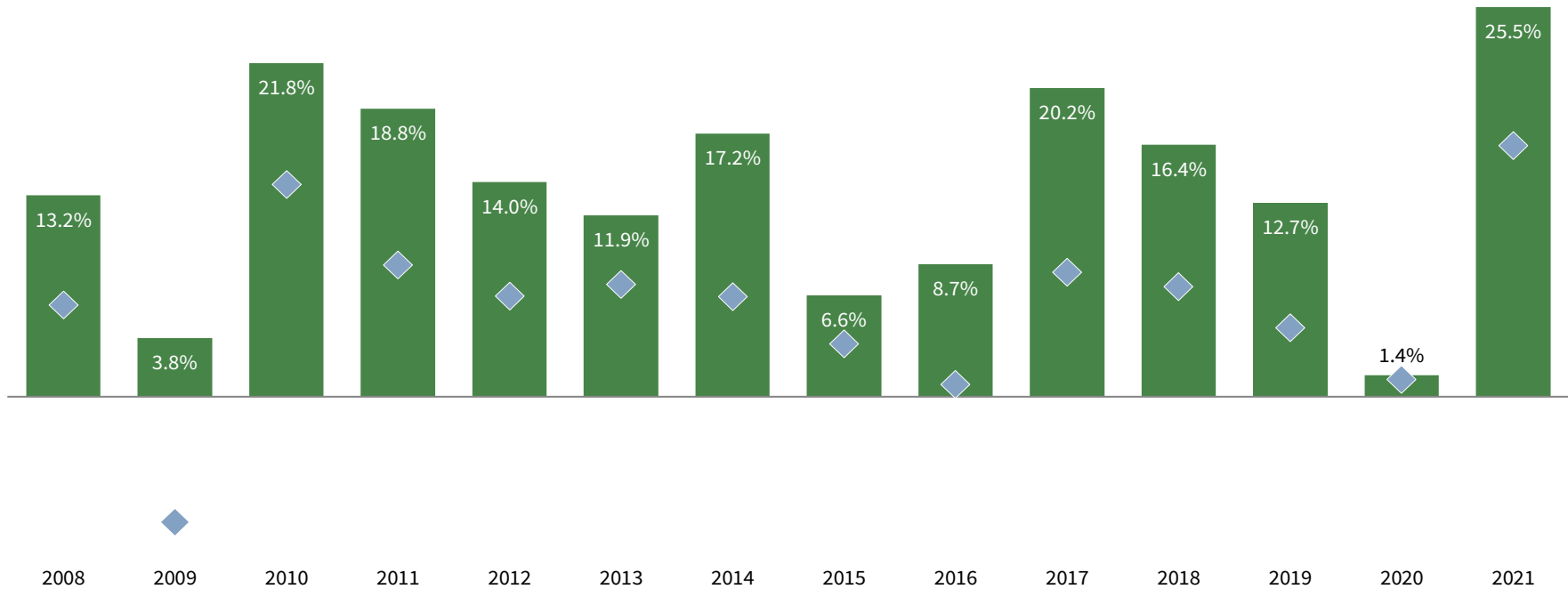


**Despite single-digit growth in four of the 14 years analyzed, PE-backed companies have averaged annual revenue growth of almost 14%**

Average annual revenue growth in 2020–21 was about 13%, just shy of the average over the previous 12 years

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

As of December 31, 2021 • Annual Growth Rate (%)



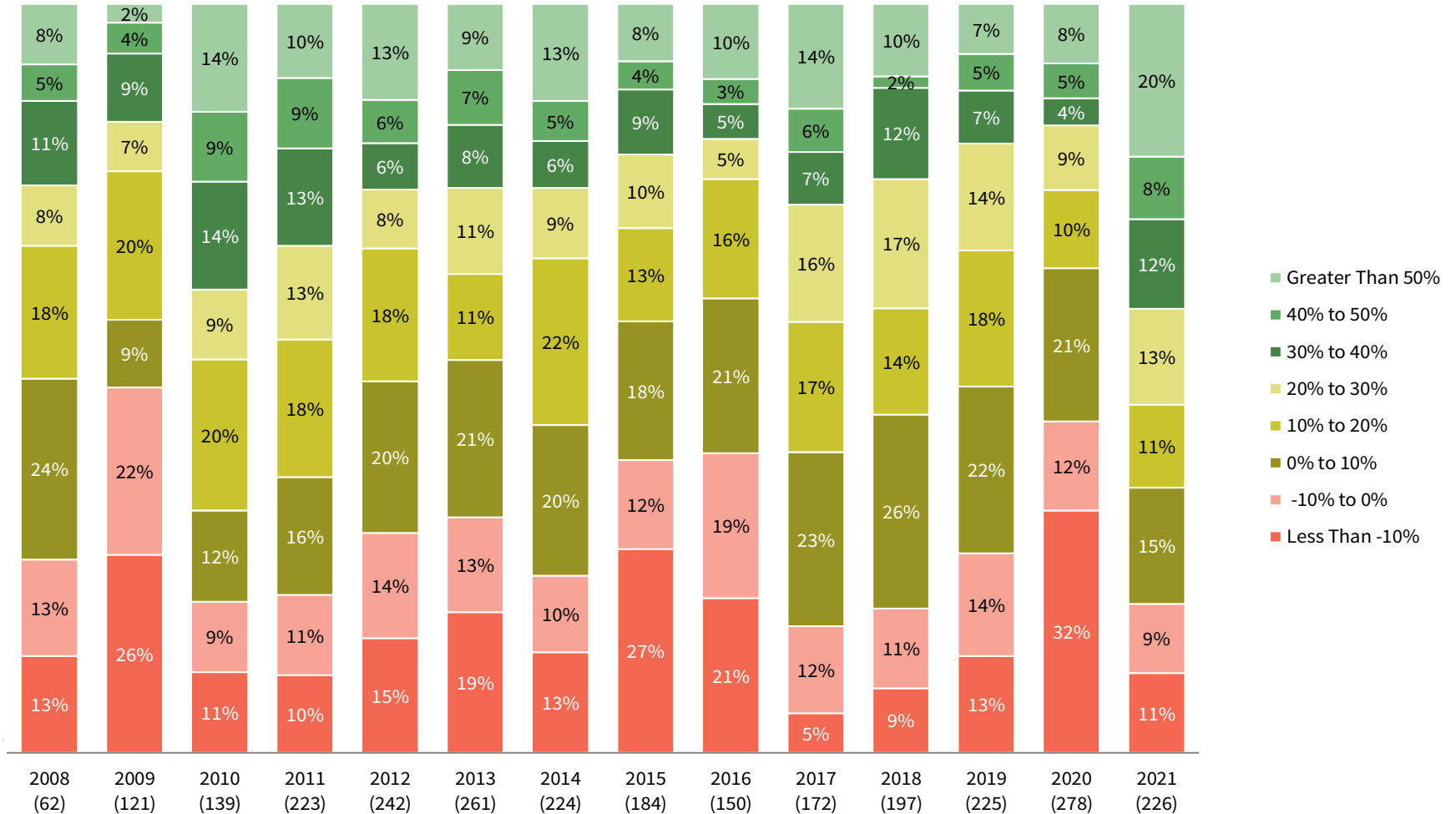
	Number of Companies															
	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021		
PE-Owned Companies	62	121	139	223	242	261	224	184	150	172	197	225	278	226		
MSCI AC Asia Pacific Index	684	742	750	778	829	815	831	802	864	861	847	1,117	1,243	1,233		

**40% of the universe grew revenue by at least 30% in 2021, a similar percentage to 2010, another “rebound” year**

The percentage of companies with declining revenue was less than half that of 2020, further evidence of recovery from the COVID-19 pandemic

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

As of December 31, 2021 • Annual Growth Rate (%)

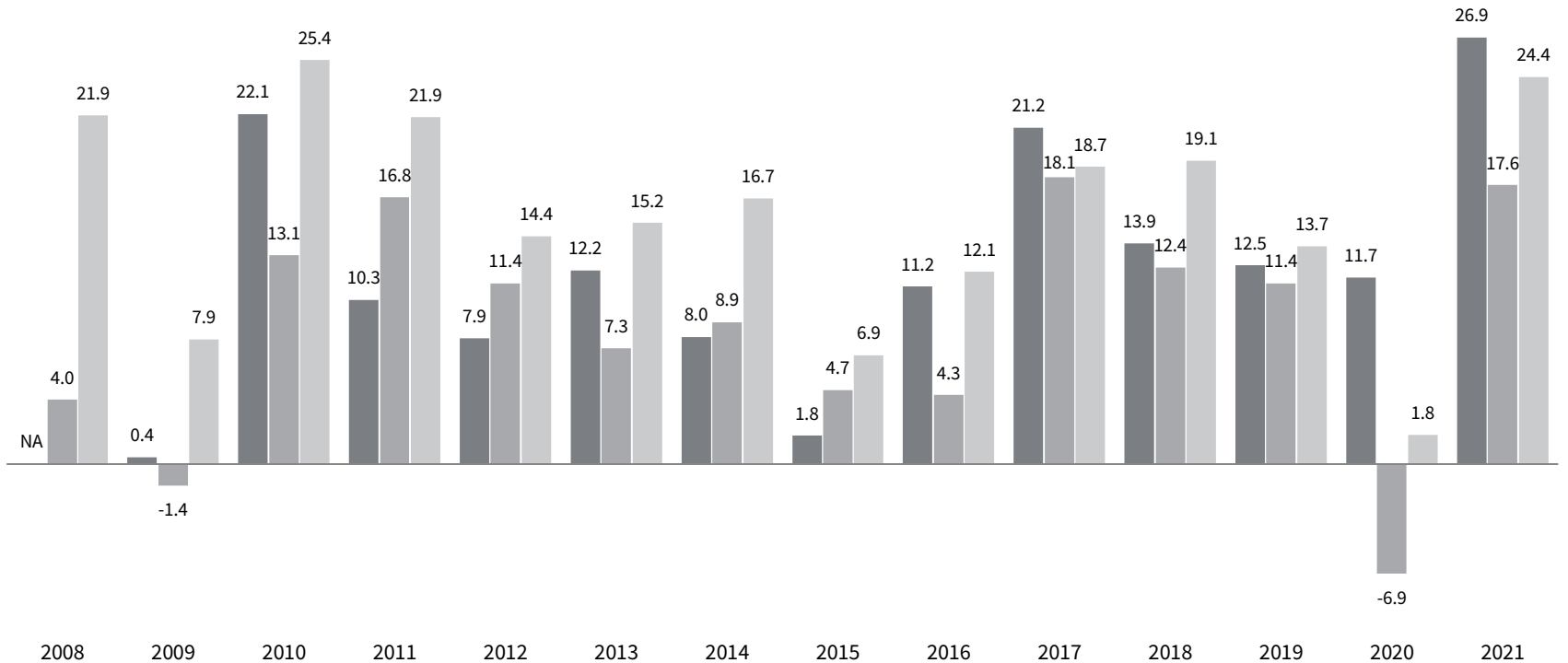


## Unlike in other regions, large companies in Asia grew revenue faster than any other size range across the time period

All sizes grew revenue at least 8% faster than their long-term averages in 2021; large companies exceeded their average by the widest margin

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

As of December 31, 2021 • Annual Growth Rate (%)



#### Number of Companies

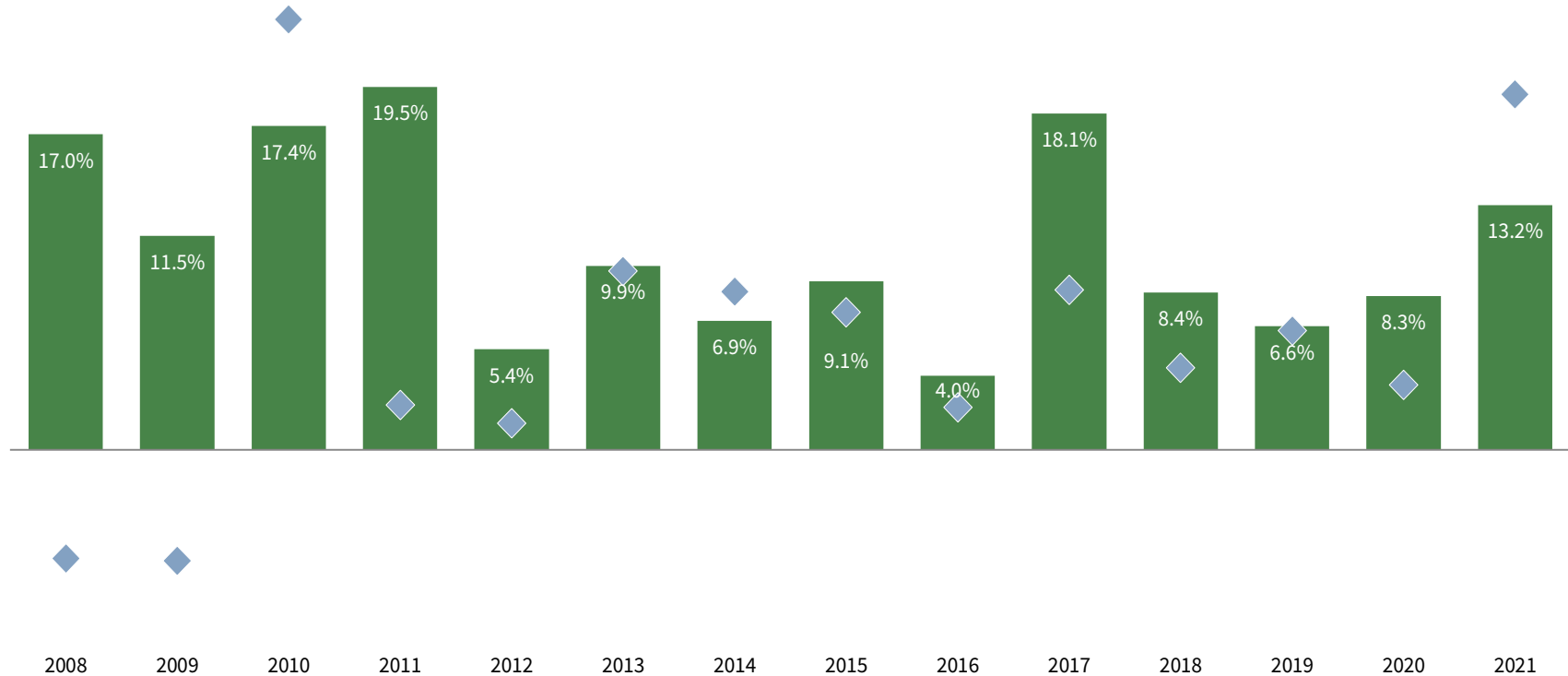
	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
EV > \$1B	NA	21	20	27	34	34	23	18	22	16	28	34	42	36
EV \$250M - \$1B	16	27	32	53	54	62	38	43	36	43	56	61	77	60
EV < \$250M	34	70	86	132	143	161	161	121	82	100	94	110	139	99

## Despite averaging double-digit EBITDA growth in 2021, PE companies trailed their GFC-era performance

PE-backed companies averaged equal or better annual EBITDA growth than publics in all but three years

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

As of December 31, 2021 • Annual Growth Rate (%)



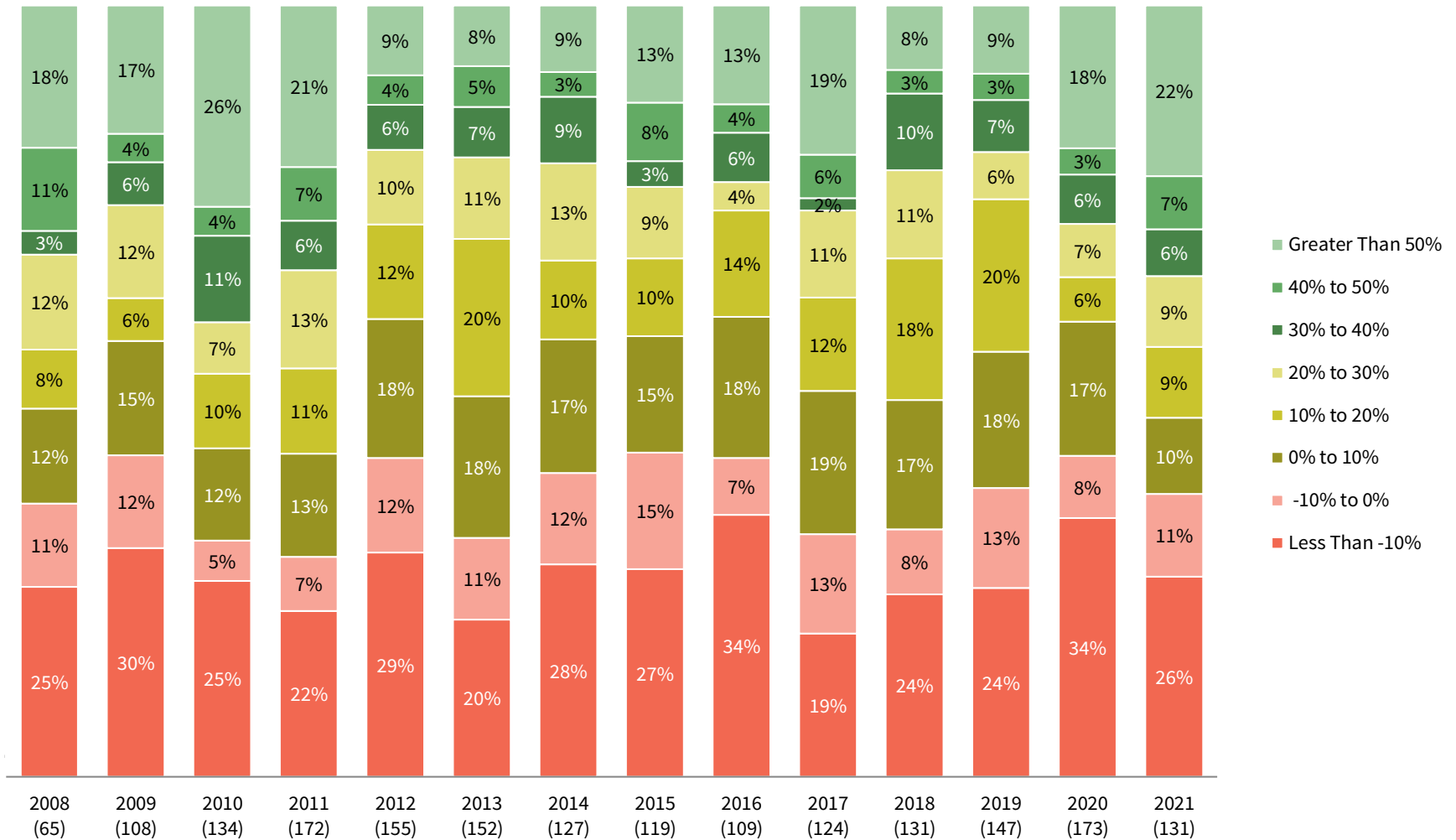
	Number of Companies															
	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021		
PE-Owned Companies	65	108	134	172	155	152	127	119	109	124	131	147	173	131		
MSCI AC Asia Pacific Index	428	441	539	615	647	669	660	668	715	719	731	943	1,036	975		

# The percentage of companies growing revenue annually by 30% or more trended upward since 2013

In 2021, the number of companies that grew revenue by at least 30% roughly equaled the number that saw revenue decline

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

As of December 31, 2021 • Annual Growth Rate (%)

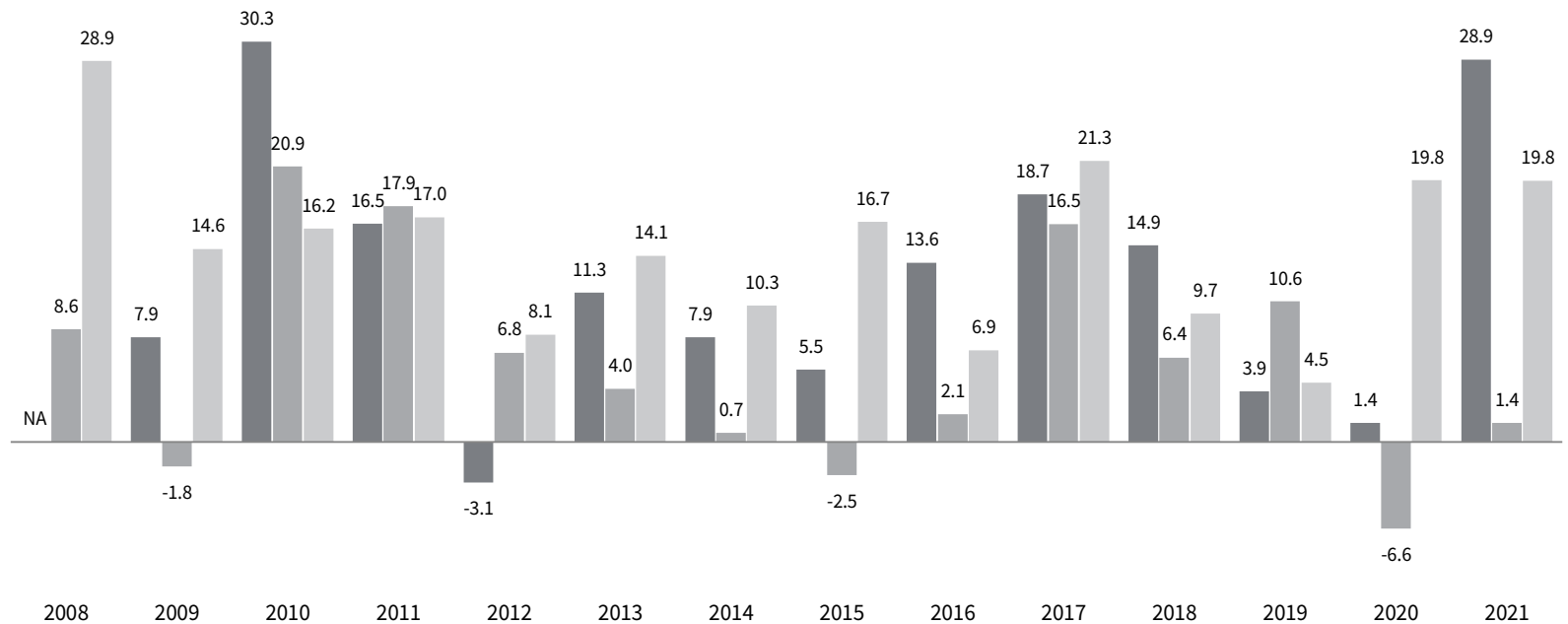


## Over the full period, small and large companies averaged faster annual EBITDA growth than their mid-cap peers

In 2021, large company EBITDA growth rebounded to its second-best average of the time period

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

As of December 31, 2021 • Annual Growth Rate (%)



#### Number of Companies

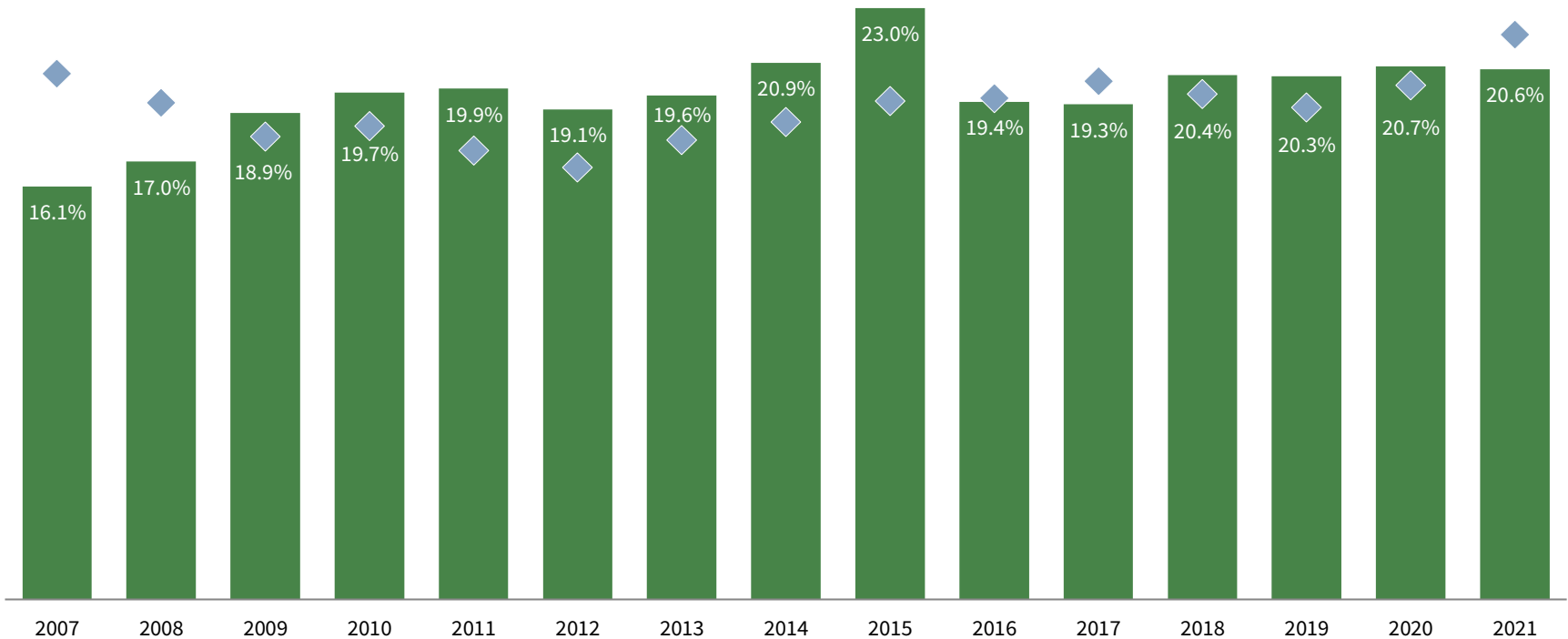
	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
EV > \$1B	NA	20	18	23	35	30	21	17	21	14	24	26	25	18
EV \$250M - \$1B	19	24	32	48	45	50	37	38	31	36	43	50	54	36
EV < \$250M	32	62	77	95	71	66	69	59	56	70	64	72	92	71

## With few exceptions, PE company margins have been consistent over time (averaging 20%)

In 2021, margins for PE-backed companies trailed those of their public peers by the largest amount since 2008

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

As of December 31, 2021 • EBITDA/Revenue (%)



#### Number of Companies

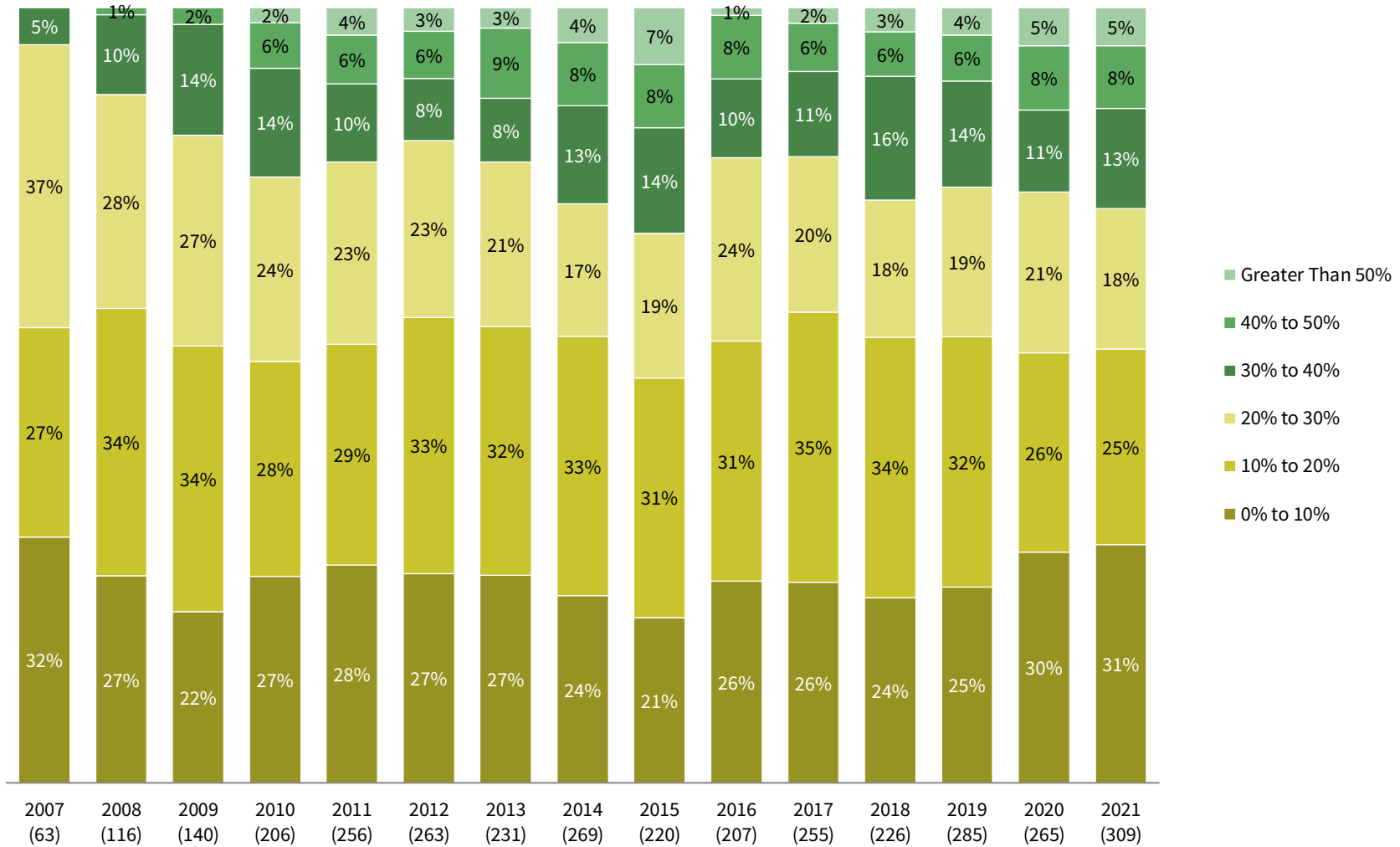
	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
PE-Owned Companies	63	116	140	206	256	263	231	269	220	207	255	226	284	265	309
MSCI AC Asia Pacific Index	620	515	617	719	743	753	762	775	786	791	801	1,059	1,283	1,231	1,234

## Since 2018, about a quarter of PE-backed companies have operated at margins of 30% or higher

In 2021, more companies operated at margins below 10% than in any year since 2007

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

As of December 31, 2021 • EBITDA/Revenue (%)



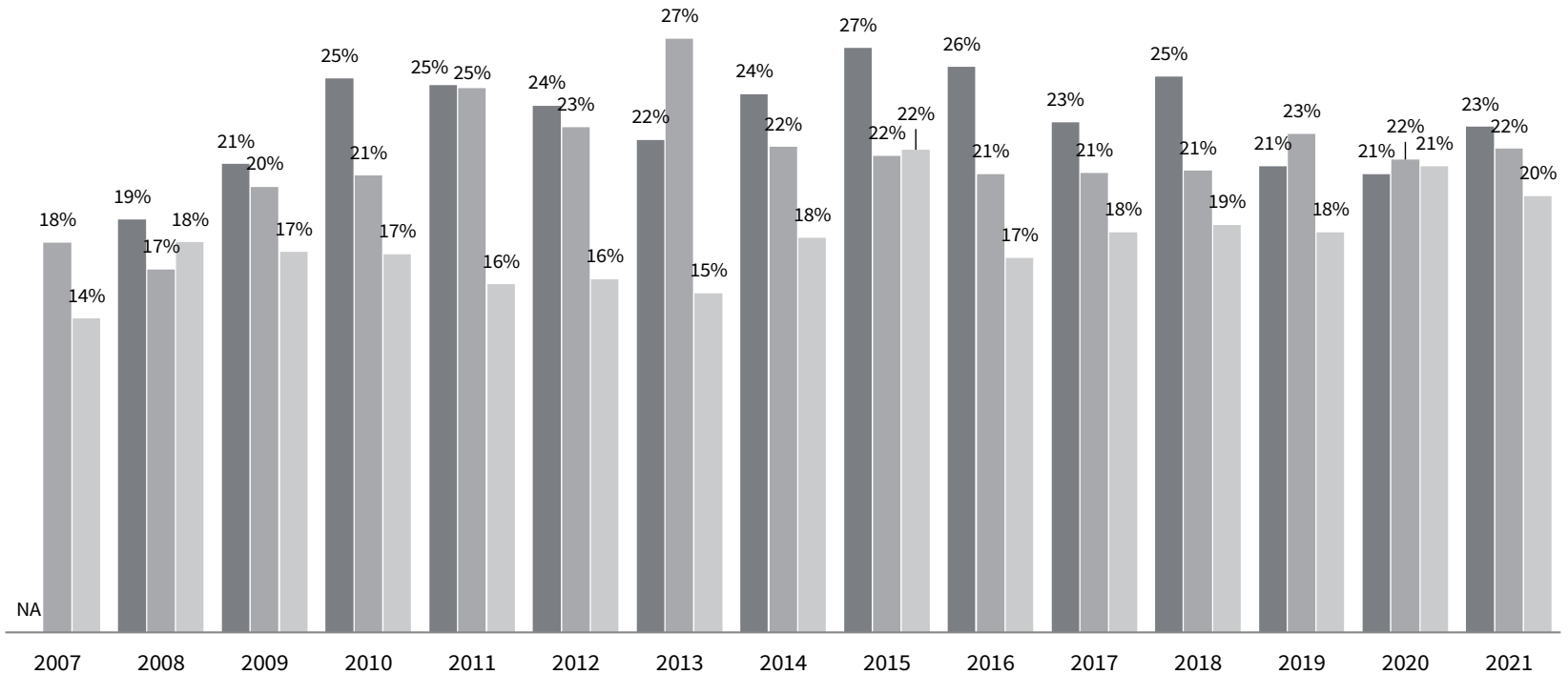


## As in other regions, large companies have averaged the highest margins

All size segments were able to maintain margins throughout the COVID-19 pandemic and subsequent recovery

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

As of December 31, 2021 • EBITDA/Revenue (%)



#### Number of Companies

	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
EV > \$1B	NA	18	22	35	46	48	36	37	45	29	37	35	44	46	59
EV \$250M - \$1B	15	27	33	55	71	83	70	79	66	54	83	64	86	73	92
EV < \$250M	35	71	82	108	130	130	118	139	104	117	133	121	140	138	152



CAMBRIDGE  
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