Quantitative Monographs
Understanding Size Investing

Equities

Global
Quantitative

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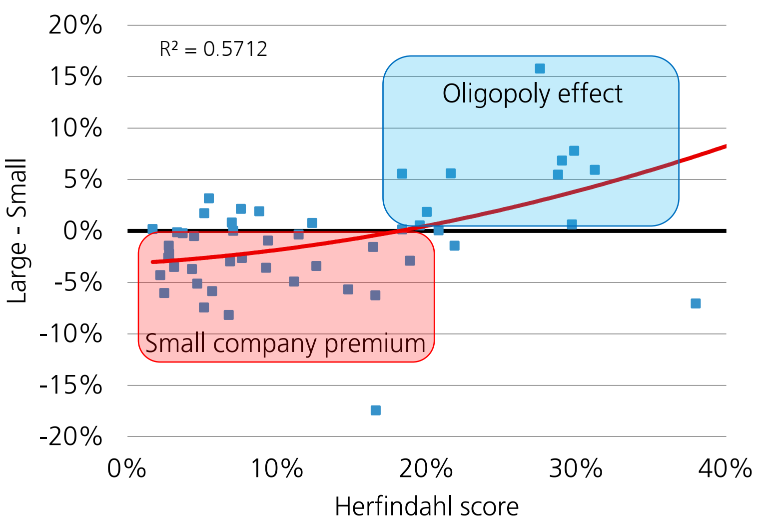
Do smaller companies outperform larger companies?
Over the long term smaller companies have outperformed larger companies. However, the outperformance has not been consistent and has been subject to considerable cycles. Is there a small cap premium? Or are there a number of premia that are simply more observable amongst smaller companies?

When large outperforms small... The Oligopoly Effect
In sectors dominated by oligopolies i.e. with high levels of concentration and low levels of competition large companies outperform small companies by an average of 4.9% pa. In sectors not dominated by oligopolies there is a 0.59% pa small cap premium.

In the long run small companies have outperformed large ones, however...
We find the premium has not been consistent and can be attributed to a number of factors including: tax-loss selling, risk and illiquidity, as well as macro risks.

Small companies and Quality
The small cap performance can be enhanced through controlling for quality. However, in sectors where oligopolies exist, only the highest quality stocks outperform.

Figure 1: Performance of Large minus Small companies and the industry concentration



Source: Thomson Reuters, UBS Universe: DJ World

Note: Returns are large minus small for each region/sector plotted against the region sector Herfindahl score.

Introduction

There has been an enormous amount written about the small cap premium. In the long term, smaller companies have outperformed larger ones in most markets (Australia is a clear exception). However, the outperformance has not been consistent and once we adjust for risk small caps have underperformed in most markets. Furthermore, the performance of smaller companies has been subject to considerable cycles. This leads us to question whether or not there is a 'small cap premium', or whether it is simply a number of premia which are more observable in the small cap space because it is a less efficient part of the market?

If we are to invest in smaller companies we need to understand what drives the performance cycle of large versus small companies. In order to do this, we need to understand the myriad of effects which drive the performance of larger and smaller companies. We document some of these effects in this note; we are certain that there are others.

The Oligopoly Effect: Larger companies tend to outperform when industry concentration is high (and potentially there is less competition). In the reverse, smaller companies tend to outperform when industry concentration is low.

The Tax-Year-End Effect: (Named the 'January effect' in the US as this is the start of the tax year). Investors tend to sell losing positions going into the end of the tax year in order to create a capital loss. They buy the position back in the new tax year. Consequently, smaller companies have tended to outperform at the start of the tax year. However, if we adjust for this effect, the so-called small cap premium disappears completely.

So why does Quality matter in smaller companies?

There is a high proportion of low quality stocks at the smaller end of the market. These low quality companies drag down the performance of smaller company benchmarks. Removing these names significantly improves the smaller company performance.

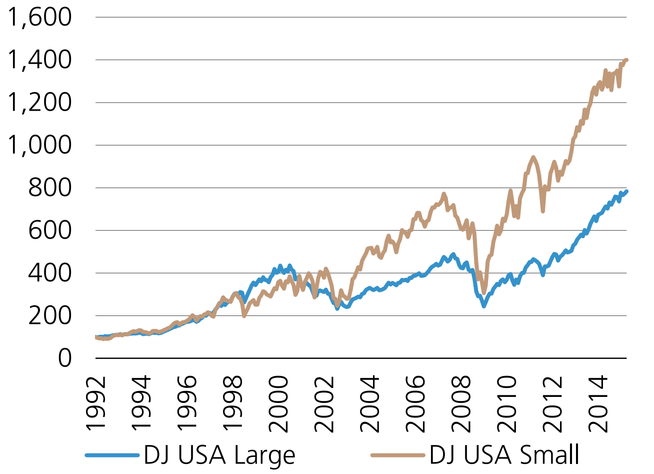
However, in line with our previous comments on the Oligopoly effect, we note that smaller companies tend to underperform in sectors that are dominated by oligopolies.

So what should I buy?

Japan, Asia and Australia have very high levels of concentration, whilst the US and European markets demonstrate low levels of concentration. Please see page 15 for a list of current oligopolies, as well as the highest quality small companies in sectors with low levels of concentration.

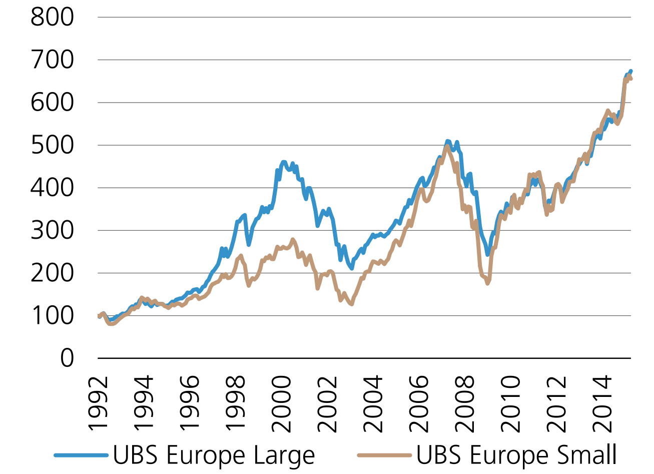
The Performance of Size

Figure 2: United States



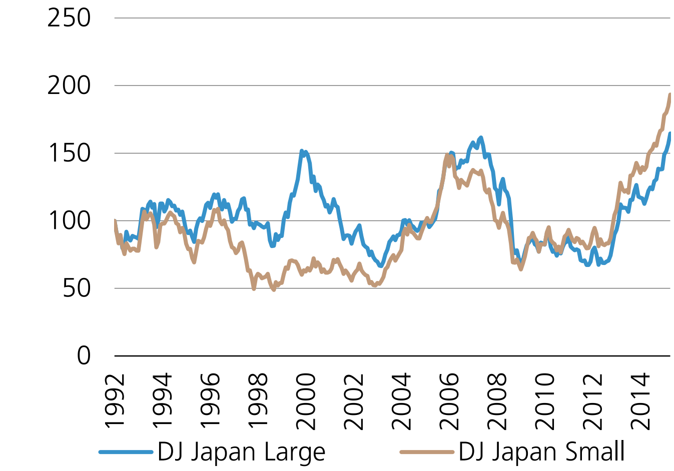
Source: Thomson Reuters, UBS

Figure 3: Europe



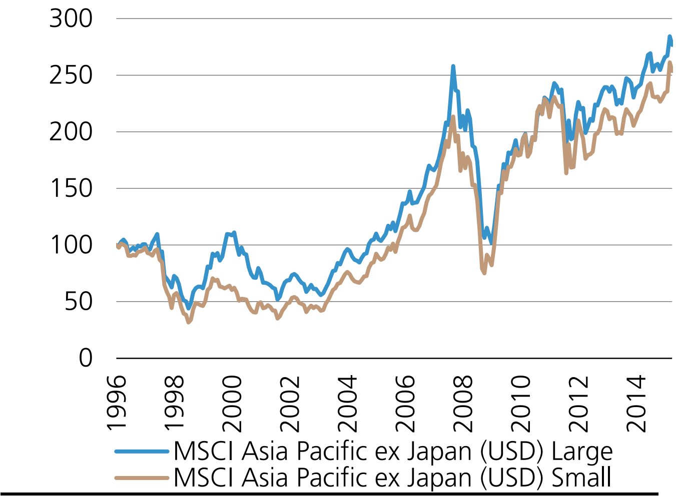
Source: Thomson Reuters, UBS

Figure 4: Japan



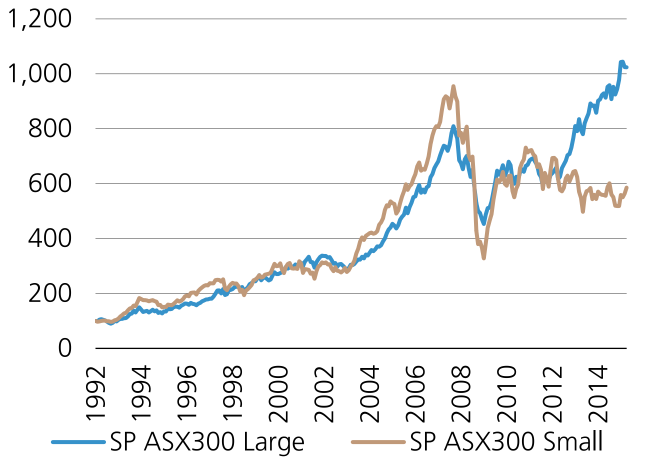
Source: Thomson Reuters, UBS

Figure 5: Asia Pacific ex-Japan



Source: Thomson Reuters, UBS

Figure 6: Australia



Source: Thomson Reuters, UBS

Figure 7: Performance of Large and Small cap stocks

		Total Return	Volatility	Sharpe (Rf=0)
DJ USA	Large	9.9%	14.4%	0.69
	Small	14.2%	23.7%	0.60
UBS Europe	Large	9.4%	15.3%	0.62
	Small	9.9%	18.9%	0.52
DJ Japan	Large	3.9%	18.8%	0.21
	Small	4.8%	19.9%	0.24
MSCI Asia Pacific ex Japan (U$)	Large	8.0%	23.2%	0.35
	Small	8.7%	27.6%	0.31
SP ASX300	Large	10.9%	12.9%	0.84
	Small	9.2%	17.7%	0.52

Source: Thomson Reuters, UBS

Literature Review

Discovery, Acceptance and Scrutiny

The small cap premium was first observed in the US market by Banz (1981). The discovery was in contrast to finance theory and the Sharpe-Litner CAPM that implied that small firms should not earn excess risk-adjusted returns if markets are efficient and the CAPM is not mis-specified. A debate regarding the efficacy of the small cap premium ensued. While Lo and MacKinlay (1990) and Black (1992) accused advocates of the small cap anomaly of data mining, researchers like Berk (1995) argued that firm size may be a proxy for risk. Indeed, one could argue that firms are at their most vulnerable when they are small but also offer great return potential if they are able to successfully grow larger.

In 1993 Fama and French expanded the CAPM to include the small cap premium in their three factor model suggesting that the small cap premium represented a source of systematic risk not captured by beta (Fama and French, 1993). Models that include a firm size effect are now used widely in finance.

Despite its acceptance, the small cap premium has come under increasing scrutiny in recent times for several reasons. Firstly, the presence and magnitude of the premium appears to be time varying (Fama and French, 2012; Dimson and Staunton, 2011). In the US market, Banz (1981) noted that the size effect had been in existence for at least forty years before his publication. However, it vanished promptly after its discovery (as is the case for many anomalies) and remained hidden until 1999 when it seems to have reappeared (Asness, Frazzini, Israel, Moskowitz and Pedersen, 2015). Secondly, the international evidence of a small cap premium is mixed with some regions exhibiting a very minor small cap premium if any (Barry, Goldreyer, Lockwood and Rodriguez 2002; Crain, 2011; Bryan, 2014).

Australian Evidence

Note, we focus on US and Australian data in this analysis as the US market has the longest history and a significant small cap premium, whilst Australia is the only market to show a small cap discount rather than a premium.

Australian research shows a less prominent size effect than in the US that has occurred mainly in January and July (Brown, Keim, Kleidon and Marsh, 1983). Using a purpose built data set from 1982 to 2006 and an approach that extends the definition of small cap stocks to a more practical size threshold that parallels the standard US approach, Brailsford, O'Brien and Gaunt (2011) find evidence of a small cap discount in the Australian market.

Inspired by trading strategies that capture the small cap premium in the US, Bettman, NG and Sault (2011) investigate whether there is a tradeable small cap premium in Australia. Using data from January 1990 to December 2008 they constructed portfolios containing the smallest decile of stocks and calculated their performance relative to the 3-month T-bill rate for a variety of time periods up to 12 months, which they used as dependent variables. They find no significant profits accrue from any of the small cap trading strategies after accounting for transaction costs.

While the literature has not yet identified a profitable systematic small cap trading strategy for the Australian market, it has identified that active small cap fund managers in Australia consistently outperform their benchmark, which is usually specified as the Small Ordinaries Index (XSO). Using data for 34 funds over the period January 1998 to March 2004, Chen, Comerton-Forde, Gallagher and Walter (2010) found that Australian small cap fund managers have earned an aggregate four-factor alpha of 68 basis points per month. Using a range of

performance metrics, the authors theorized that the outperformance may have been due to informational advantages associated with the limited coverage of small cap stocks, significant fund inflows and price inflation in small cap stocks due to larger market participants.

Quality and Market Concentration

Using merged CRSP and Compustat data between 1926 and 2012 Asness et al. (2015) have identified that controlling for low quality stocks produces a consistent and monotonic small cap premium in the US. The researchers also observed this result for 23 developed equity markets using XpressFeed Global data from 1983 to 2012. By introducing a quality minus junk (QMJ) factor that depends on profitability, growth, high dividend pay-out ratio and safety metrics, they show that the size effect is fighting a low quality headwind. Regression results show that the intersection of a Small minus Big (SMB) factor and the QMJ factor is significant and capable of overcoming several challenges to the efficacy of the small cap premium including the use of non-price based measures of size (see Berk 1995).

We confirmed these findings in our Academic Research Monitor (see *"Academic Research Monitor: Quality and Size Investing"*, Baltas, 18 May 2005).

The findings provide important insights for the relation between size and cross-sectional returns. Indeed, the implication for the Australian market is that it is characterised by low quality – probably more so than other regions given its small cap discount. However, the question of why large firms tend to be high quality while small firms tend to be low quality and why controlling for low quality produces a small cap premium continue to remain unanswered.

In this note we posit that market concentration at the sector level does a good job of explaining these effects. We find the basis for our thesis in Gallagher, Ignatieva and McCulloch (2014) who, using Herfindahl indices based on sales, total assets and book value, found that there is a significant positive relationship between excess returns and concentration – a high concentration premium – in the Australian market. Their work follows a study undertaken by Hou and Robinson (2005) who found the opposite result in the US; a significant negative relationship between excess returns and concentration – a high concentration discount. Gallagher et al. (2014) reconcile this result by explaining that the size and rigorous regulatory environment in the US market promotes a much higher level of competition than the Australian market. Further, they found that smaller dominant companies in concentrated industries have higher average stock returns than large dominant companies while Hou and Robinson (2005) did not consider firm size effects.

Is there a Small Cap Premium?

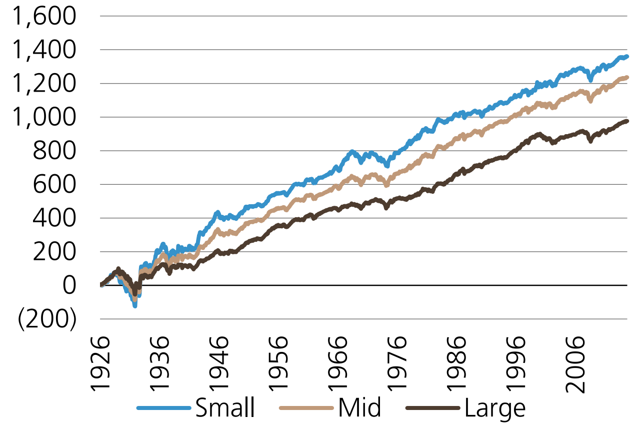
Is there a 'small cap premium'? Or is it simply a number of premia which are more observable in the small cap space because it is a less efficient part of the market?

Is there a 'small cap premium'? or is it simply a number of premia which are more observable in the small cap space because it is a less efficient part of the market?

In order to investigate this, we use US data as it is the market with the longest history. We use cap weighted returns from Kenneth French's data library, to define large mid and small cap stocks. We also revert to the 'small minus large' convention as we are investigating a potential small cap premium.

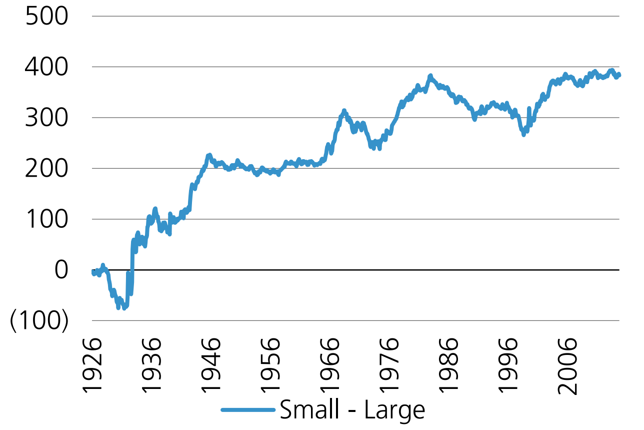
Looking at a 'naïve' chart of cumulative returns by size band would indicate that there is indeed a small cap premium. However, when we assess the premium as 'small minus large' cap we find that the premium occurred largely between 1926 and 1981 (when it was first written up). Since 1981 there has been little excess return from small caps over large.

Figure 8: Cumulative returns by Size



Source: Kenneth French, UBS

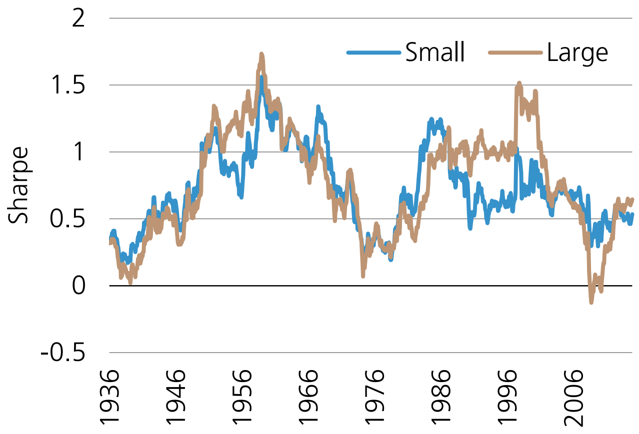
Figure 9: Cumulative returns of Small minus Large cap



Source: Kenneth French, UBS

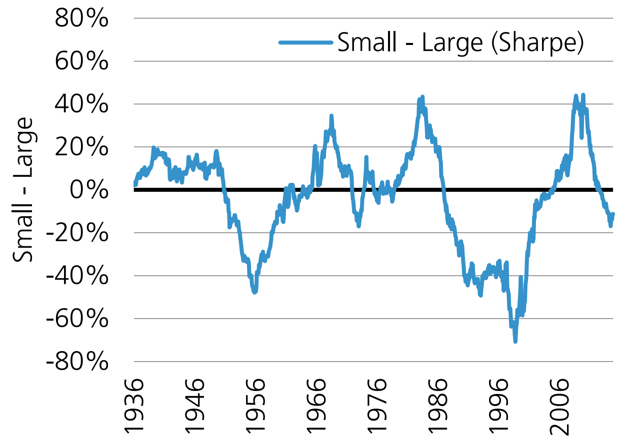
Even more concerning, however, are the risk adjusted returns. Below are the rolling 10-year Sharpe ratios for Small and Large caps and the difference between the two. This highlights that on a risk adjusted basis, small caps have not outperformed and the performance has been time varying.

Figure 10: Rolling 10y Sharpe ratios of Small and Large caps



Source: Kenneth French, UBS

Figure 11: Small minus Large Sharpe ratios (rolling 10y)



Source: Kenneth French, UBS

The Oligopoly Effect

Larger companies tend to outperform when industry concentration is high (and potentially there is less competition). In the reverse, smaller companies tend to outperform when industry concentration is low.

For this analysis, we compare the region/sector Herfindahl score with the returns of large minus small (we break tradition and use large minus small as our hypothesis here is that there is a 'large cap premium' in sectors that are highly concentrated).

Herfindahl score: is a measure of the size of firms in relation to the industry and an indicator of the amount of competition among them.

$$H = \sum_{i=1}^{N} s_i^2$$

Where:

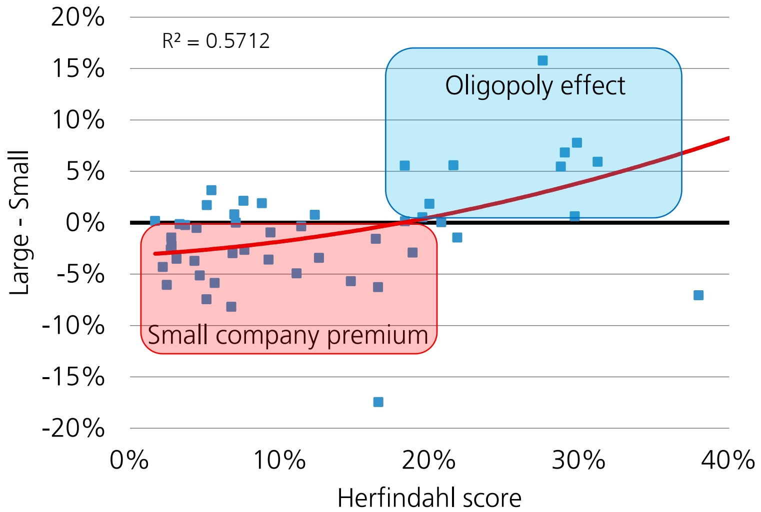
S_i is the market share of firm i in the sector, and N is the number of firms

(Note: for this note we proxy market share with sector weight)

For this analysis we use Dow Jones region, sector and size classifications. Returns are market cap weighted.

The US Department of Justice anti-trust division categorises markets with scores greater than 1500 as moderately concentrated, and those greater than 2500 as highly concentrated. In line with this, we find that sectors with Herfindahl scores greater than 20% (or 2000 points) exhibit a 'large cap premium'.

Figure 12: Performance of Large minus Small and industry concentration



Source: Thomson Reuters, UBS Universe: DJ World

Note: Returns are large minus small for each region/sector plotted against the region sector Herfindahl score

Figure 13: Performance of Large minus Small in oligopoly and non-oligopoly sectors

	Asia-Pacific (Developed)	Japan	Australia	North America	Western Europe	Asia-Pacific (Emerging)	Developed World
Oligopoly	8.9%	9.6%	4.4%	-1.4%	-1.6%	24.4%	**4.9%**
Non-oligopoly	-0.3%	-0.6%	-0.5%	-3.8%	-3.0%	-2.0%	**-0.6%**

Source: Thomson Reuters, UBS

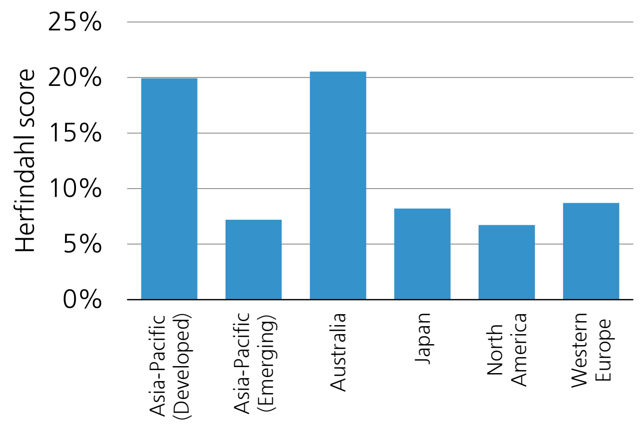
Note: Oligopoly sectors are defined as those with a Herfindahl score of greater than 20%, with the exception of North American, Europe and Asia-Pacific (EM) where we have used 10% as there are relatively few sectors with scores greater than 20%.

We find that the Oligopoly effect is alive and well in Asia Pacific (DM), Japan and Australia with Oligopoly premia of between 4.4% and 9.6%.

In North America and Western Europe, we find that there are generally very low levels of sector concentration. As a consequence, we have used a Herfindahl cutoff of 10% to define the Oligopoly effect. In these markets we find that smaller companies tend to outperform, but as we expected, the outperformance is lower in sectors with high levels of concentration (Oligopoly sectors).

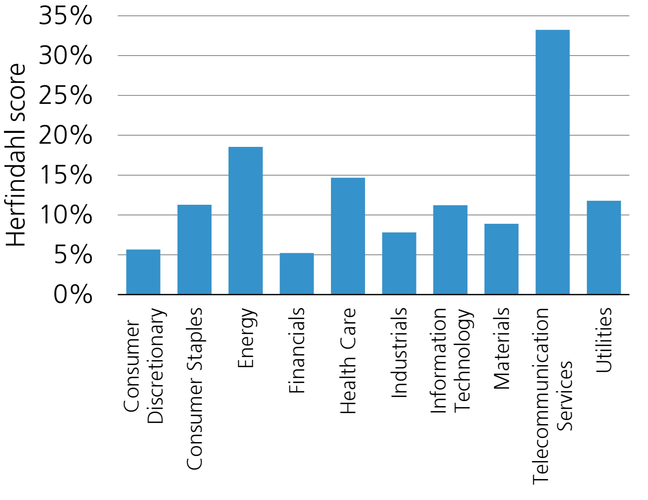
The exception is the Asia Pacific emerging markets where despite the low levels of concentration, the Oligopoly premium is a whopping 24.4% driven by the energy sector. Ex energy, the premium reduces to 2.7%.

Figure 14: Herfindahl scores by region



Source: Thomson Reuters, UBS

Figure 15: Herfindahl scores by sector

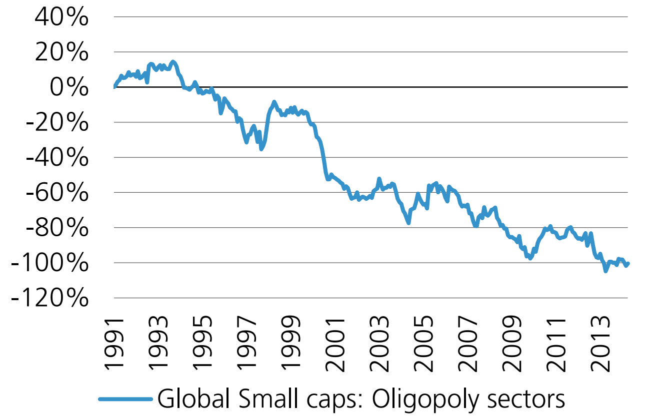


Source: Thomson Reuters, UBS

Note: Universe is Dow Jones Developed World and Asia Pacific (EM)

Assessing the performance of smaller companies within highly concentrated sectors over time (against their regional small cap benchmark), highlights that there is a 4.3% per annum small cap discount to companies within oligopolistic sectors, and that the discount is fairly consistent through time.

Figure 16: Performance of Smaller companies within oligopolistic sectors relative to their regional small cap benchmark



Source: Thomson Reuters, UBS

Figure 17: Excess returns of Smaller companies within oligopoly sectors relative to their regional small cap benchmark

	Developed World
Total excess return	-4.3%
Tracking error	10.3%
IR	-0.42
T-statistic	-2.02

Source: Thomson Reuters, UBS

Note: Universe is Dow Jones Developed World

Conclusion:

There is an oligopoly premium that can be achieved by investing in large cap companies in highly concentrated sectors. These companies are able to dominate the competitive landscape and as a consequence outperform small caps by on average 4.9% per annum.

Within smaller companies, there is a discount of -4.3% per annum that applies to smaller companies within highly concentrated sectors. Can we overcome this discount through the use of a Quality filter?

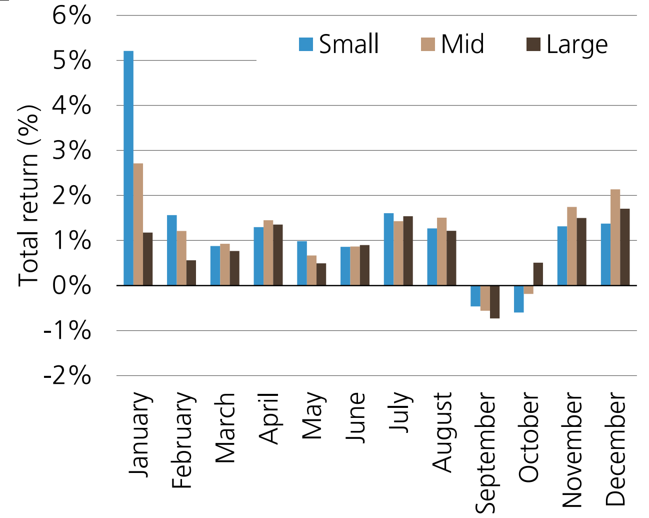
The Tax-Year-End Effect

Is the small cap premium simply a 'tax-year-end' effect in disguise?

Again, we use US data as it is the market with the longest history, and it also has a consistent tax year end.

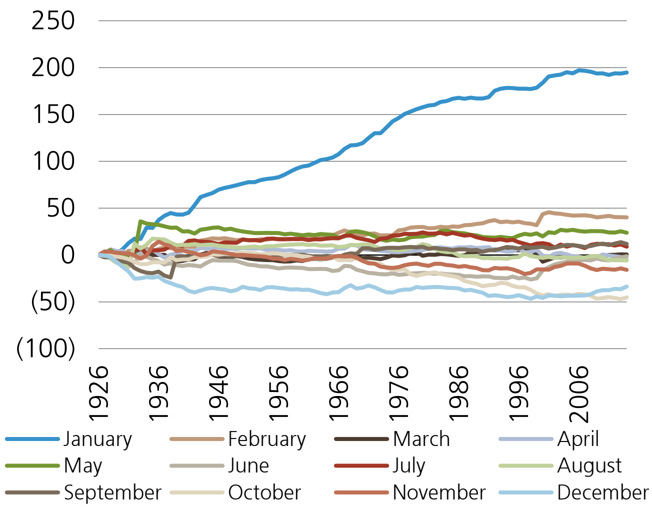
The tax-year-end effect seems to have disappeared since 2005, although it was first observed in 1942 by Sidney B. Wachtel. The theory states that income sensitive investors sell stocks at year end to claim a capital loss and reinvest in January. Due to the lower levels of liquidity in smaller companies the effect of selling in December and repurchasing in January has a larger market impact.

Figure 18: Performance of size bands by month



Source: Kenneth French, UBS

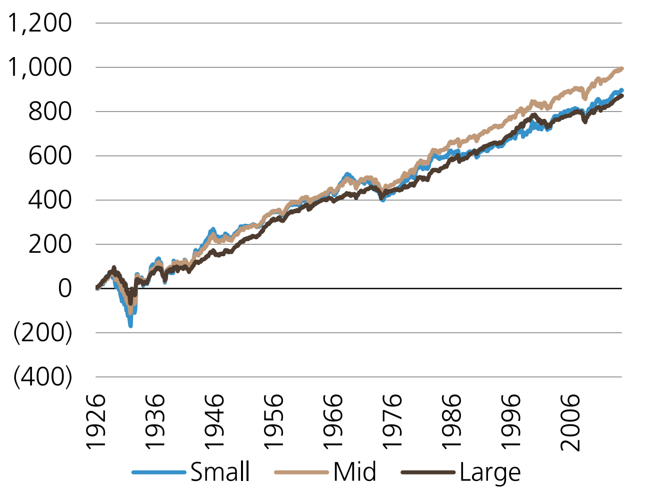
Figure 19: Cumulative return to small caps by month



Source: Kenneth French, UBS

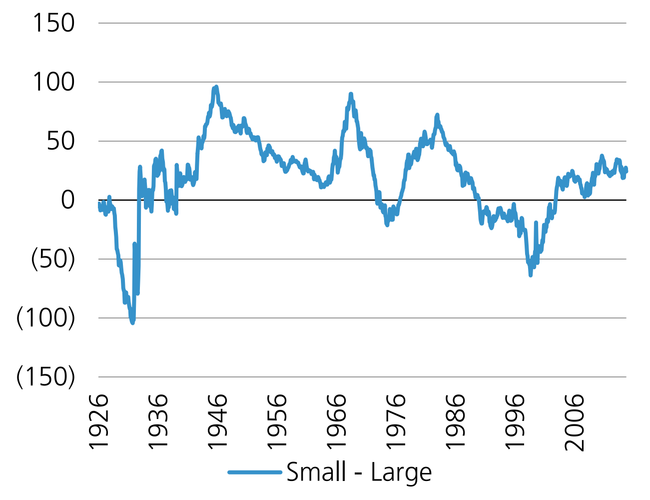
We test to see whether this is indeed the driver behind the small cap premium by removing January from the returns. We find that small caps and large caps now exhibit the same overall returns.

Figure 20: Cumulative returns by Size ex-January



Source: Kenneth French, UBS

Figure 21: Cumulative returns of Small minus Large cap ex-January



Source: Kenneth French, UBS

Figure 22: Returns by Size band

	Size	Total returns	Volatility	Sharpe (rf=0)
All time (1926-2015)	Small	15.3%	29.1%	0.53
	Mid	13.9%	23.3%	0.60
	Large	11.0%	18.1%	0.61
January removed	Small	11.0%	29.0%	0.38
	Mid	12.2%	23.5%	0.52
	Large	10.7%	18.3%	0.59

Source: Kenneth French, UBS

Conclusion:

Since 1926 smaller companies have outperformed larger companies by 4.3% per annum. However, if we remove January (tax-year-end) from the return series, smaller companies have outperformed by a mere 30 bps.

Once adjusted for risk, smaller companies have underperformed larger companies (with a small company Sharpe ratio of 0.53 vs 0.61 for large companies). If we remove January from the returns, the small cap underperformance is even more pronounced (with a small company Sharpe ratio of 0.38 vs 0.59 for large companies).

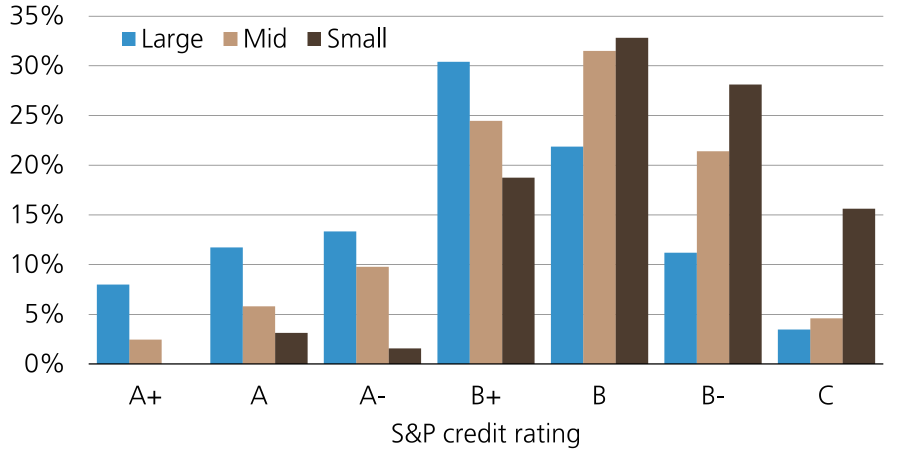
Smaller Companies and Quality

So where is this illustrious small cap premium? It would appear from the results so far that the premium doesn't apply generically to size. So, other than sector concentration and the tax-year-end effect, what else matters?

Below, we highlight the overall Quality of smaller companies vs mid and large companies by showing the proportion of companies in each credit rating category by size band.

Overall, we find that smaller companies tend to have lower credit ratings.

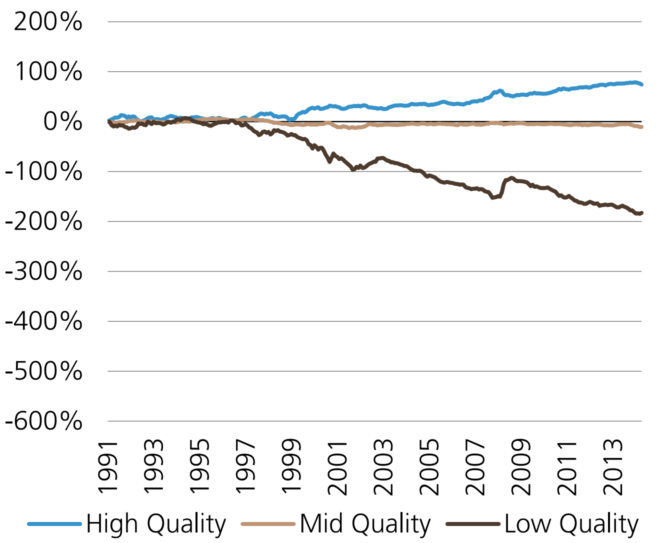
Figure 23: Proportion of companies in each credit rating by size band



Source: Factset, S&P, UBS Universe: Dow Jones Developed World

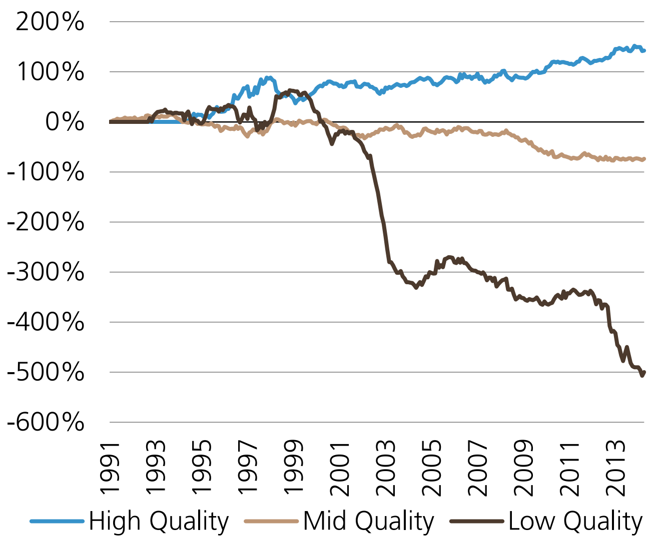
As a consequence (and in line with the findings of our Academic Research Monitor) we investigate how we could improve the returns to small cap investing through the use of a simple Quality filter (see "Investing in Quality", Winter, 17 April 2014).

Figure 24: Cumulative excess returns to small cap Quality strategies in non-oligopoly sectors



Source: Thomson Reuters, UBS Universe: Dow Jones Developed World

Figure 25: Cumulative excess returns to small cap Quality strategies in oligopoly sectors



Source: Thomson Reuters, UBS Universe: Dow Jones Developed World

In line with previous research, we find that the Quality filter works very well in differentiating performance within the small cap space. However, we find that the model performs significantly better in differentiating performance within sectors with high levels of concentration.

Within non-oligopolistic sectors, high quality stocks outperform by 3.2%, neutral quality stocks underperform marginally (-0.5%) and low quality stocks underperform by -7.9% per annum.

Within oligopolistic sectors, however, high quality stocks outperform by 7.2%, whilst neutral and low quality stocks underperform by -3.2% and -23.9% respectively.

Figure 26: Performance of Quality within oligopolistic and non-oligopolistic sectors

	Quality	Total excess return	Tracking error	IR	T-stat
Non-oligopoly	High	3.2%	5.7%	0.56	2.7
	Neutral	-0.5%	2.6%	-0.18	-0.8
	Low	-7.9%	10.3%	-0.76	-3.7
Oligopoly	High	7.2%	17.1%	0.42	2.0
	Neutral	-3.2%	11.7%	-0.27	-1.3
	Low	-23.9%	30.9%	-0.77	-3.5

Source: Thomson Reuters, UBS Universe: Dow Jones Developed World. Performance is relative to the region/size benchmark.

Conclusion:

Within smaller companies, Quality matters, and we should remove low quality companies from our investable universe.

Within sectors with high levels of concentration, we should only invest in the highest quality companies. It is likely that these companies have either found a niche within their sector, or are able to disrupt the competitive landscape.

Conclusion:

In order to understand Size investing, we need to think about the drivers of large versus smaller companies as well the premia that manifest themselves within smaller companies.

Large vs Small:

There is an oligopoly premium that can be achieved by investing in large cap companies in highly concentrated sectors. These companies are able to dominate the competitive landscape and as a consequence outperform smaller companies by on average 4.9% per annum.

Within smaller companies, there is a discount of -4.3% per annum that applies to smaller companies (against their region/size benchmark) within highly concentrated sectors.

So where is this illustrious small cap premium?

Since 1926 smaller companies have outperformed larger companies by 4.3% per annum. However, if we remove January (tax-year-end) from the return series, smaller companies have outperformed by a mere 30 bps per annum. On a risk adjusted basis, the small cap underperformance is significant (with a small company Sharpe ratio of 0.38 vs 0.59 for large companies).

Within smaller companies, Quality matters; we find that low quality companies underperform their region/sector benchmark by 7.9% per annum. Furthermore, in sectors with high levels of concentration we find that neutral quality companies underperform by -3.2% per annum, and low quality companies underperform the market by -23.9% per annum. As a result, within sectors with high levels of concentration, we should only invest in the highest quality companies. It is likely that these companies have either found a niche within their sector, or are able to disrupt the competitive landscape.

So what should I buy?

It would appear from the results that the premium doesn't apply generically to size. Rather, the small cap premium seems to be a conglomerate of premia that occur naturally in the market but are more observable in the small cap space due to lower levels of efficiency and liquidity.

We suggest that the smaller company premium is in fact a conglomerate of the Oligopoly Effect, the Tax-Year-End Effect, and the Quality Effect.

As a result:

1. Within sectors with high levels of concentration, buy large companies. If you wish to invest in smaller companies, only buy the highest quality stocks.

2. Within sectors with low levels of concentration, buy smaller companies, but remove the lowest quality stocks.

So what should I buy?

Figure 27: Sectors with Herfindahl scores greater than 10% (greater than 20% highlighted in green)

Region	Sector	Herfindahl Score
Asia-Pacific (Developed)	Consumer Staples	18.7%
Asia-Pacific (Developed)	Energy	12.0%
Asia-Pacific (Developed)	Health Care	15.1%
Asia-Pacific (Developed)	Industrials	10.2%
Asia-Pacific (Developed)	Information Technology	21.4%
Asia-Pacific (Developed)	Materials	29.3%
Asia-Pacific (Developed)	Telecommunication Services	43.6%
Asia-Pacific (Developed)	Utilities	22.1%
Asia-Pacific (Emerging)	Telecommunication Services	16.6%
Australia	Consumer Staples	39.8%
Australia	Energy	20.2%
Australia	Financials	12.7%
Australia	Health Care	36.3%
Australia	Industrials	10.9%
Australia	Information Technology	48.4%
Australia	Materials	24.9%
Australia	Telecommunication Services	68.6%
Australia	Utilities	27.8%
Japan	Energy	23.9%
Japan	Telecommunication Services	28.2%
Japan	Utilities	10.1%
North America	Telecommunication Services	32.8%
Europe	Energy	14.9%
Europe	Health Care	11.1%
Europe	Telecommunication Services	11.6%

Source: Thomson Reuters, UBS

Figure 28: High Quality small cap stocks

Bloomberg	Sedol	Company	Sector	Country	Absolute	Delta Quality	Risk Alert	Currency	Last Close	UBS Rating
Asia-Pacific (Developed)										
345.HK	6927590	VITASOY INTL HOLDINGS LTD	Consumer Staples	Hong Kong	10	19	9	HKD	13.42	NA
709.HK	6282040	GIORDANO INTERNATIONAL LTD	Consumer Disc.	Hong Kong	10	18	6	HKD	4.33	Neutral
SSG.SP	B657MH8	SHENG SIONG GROUP LTD	Consumer Staples	Singapore	10	18	9	SGD	0.84	NA
1382.HK	B1WMLF2	PACIFIC TEXTILES HOLDINGS	Consumer Disc.	Hong Kong	10	14	9	HKD	10.7	NA
8138.HK	B7TWG07	BEIJING TONG REN TANG CHINES	Health Care	Hong Kong	10	15	8	HKD	12.6	NA
32.HK	6235367	CROSS-HARBOUR HOLDINGS LTD	Consumer Disc.	Hong Kong	10	16	9	HKD	9.66	NA
831.HK	6317339	CONVENIENCE RETAIL ASIA LTD	Consumer Staples	Hong Kong	10	18	6	HKD	4.75	NA
573.HK	B1YZ9N3	TAO HEUNG	Consumer Disc.	Hong Kong	10	16	7	HKD	3.44	NA
950.HK	BQZF1T7	LEE'S PHARMACEUTICAL HLDGS	Health Care	Hong Kong	10	15	7	HKD	13.5	NA
321.HK	6039558	TEXWINCA HOLDINGS LTD	Consumer Disc.	Hong Kong	9	15	6	HKD	7.88	NA
Asia-Pacific (Emerging)										
086900.KQ	B3L2NF1	MEDY-TOX INC	Health Care	South Korea	10	16	6	KRW	515300	NA
030520.KQ	B0SQYP2	HANCOM INC	IT	South Korea	10	16	8	KRW	18400	NA
VGM.IS	B039M52	VAIBHAV GLOBAL LTD	Consumer Disc.	India	10	16	7	INR	539.25	NA
4137.TT	BGCWLC4	CHLITINA HOLDING LTD	Consumer Staples	Taiwan	10	12	7	TWD	203	NA
098460.KQ	B39Q399	KOH YOUNG TECHNOLOGY INC	IT	South Korea	10	17	9	KRW	43300	NA
058470.KQ	6430139	LEENO INDUSTRIAL INC	IT	South Korea	10	18	9	KRW	48850	NA
049960.KQ	6571146	CELL BIOTECH CO LTD	Health Care	South Korea	10	15	8	KRW	67000	NA
5287.TT	B840528	ADDCN TECHNOLOGY CO LTD	IT	Taiwan	10	16	9	TWD	390	NA
SNP.TB	BMNQ9H8	S&P SYNDICATE PCL	Consumer Disc.	Thailand	10	18	10	THB	26.75	NA
AMW.MK	6024996	AMWAY MALAYSIA HOLDINGS BHD	Consumer Disc.	Malaysia	10	13	10	MYR	10.56	NA
Australia										
JBH.AT	6702623	JB HI-FI LTD	Consumer Disc.	Australia	10	16	8	AUD	20.67999	Buy
NHF.AT	B28ZM60	NIB HOLDINGS LTD	Financials	Australia	10	13	9	AUD	3.63	NA
DMP.AT	B07SFG7	DOMINO'S PIZZA ENTERPRISES L	Consumer Disc.	Australia	9	15	6	AUD	35.98	NA
AHD.AT	6024208	AMALGAMATED HOLDINGS LTD	Consumer Disc.	Australia	9	18	10	AUD	12.8	NA
IGO.AT	6439567	INDEPENDENCE GROUP NL	Materials	Australia	9	20	6	AUD	4.84	Neutral
ABC.AT	6006886	ADELAIDE BRIGHTON LTD	Materials	Australia	9	15	9	AUD	4.54	Neutral
FXJ.AT	6467074	FAIRFAX MEDIA LTD	Consumer Disc.	Australia	8	17	7	AUD	0.915	Neutral
DLX.AT	B3VL4P5	DULUXGROUP LTD	Materials	Australia	8	16	9	AUD	5.82	Neutral
IRE.AT	6297497	IRESS LTD	IT	Australia	8	15	10	AUD	10.68	NA
CAB.AT	6194695	CABCHARGE AUSTRALIA LTD	Industrials	Australia	8	13	6	AUD	4.4	Neutral

Source: Thomson Reuters, UBS

For screening methodology and more stock ideas, please see our latest Quality Screen

Figure 29: High Quality small cap stocks

Bloomberg	Sedol	Company	Sector	Country	Absolute	Delta Quality	Risk Alert	Currency	Last Close	UBS Rating
North America										
CMG.CT	2223355	COMPUTER MODELLING GROUP LTD	IT	Canada	10	18	10	CAD	13.08	NA
MANH.UW	2239471	MANHATTAN ASSOCIATES INC	IT	United States	10	17	8	USD	57.74001	NA
CHS.UN	2196781	CHICO'S FAS INC	Consumer Disc.	United States	10	18	9	USD	16.64999	Neutral
MKTX.UW	B03Q9D0	MARKETAXESS HOLDINGS INC	Financials	United States	10	16	10	USD	86.31	NA
SWI.UN	B4MTR12	SOLARWINDS INC	IT	United States	10	16	10	USD	48.08	NA
CVLT.UW	B142B38	COMMVAULT SYSTEMS INC	IT	United States	10	16	9	USD	44	NA
DLX.UN	2260363	DELUXE CORP	Industrials	United States	10	13	7	USD	65.02001	NA
DLB.UN	B04NJM9	DOLBY LABORATORIES INC-CL A	IT	United States	10	14	10	USD	39.33	NA
CGNX.UW	2208288	COGNEX CORP	IT	United States	10	18	10	USD	49.41	NA
PLT.UN	2692030	PLANTRONICS INC	IT	United States	10	18	10	USD	56.71001	NA
Europe										
RMV.LN	B2987V8	RIGHTMOVE PLC	Consumer Disc.	UK	10	14	10	GBP	32.53999	Buy
BET.LN	BSPL1J9	BETFAIR GROUP PLC	Consumer Disc.	UK	10	18	7	GBP	25.39999	NA
PWL.ID	BWT6H89	PADDY POWER PLC	Consumer Disc.	Ireland	10	19	9	EUR	77.45	NA
IGG.LN	B06QFB7	IG GROUP HOLDINGS PLC	Financials	UK	10	17	10	GBP	7.64	Neutral
MCRO.LN	BQY7BX8	MICRO FOCUS INTERNATIONAL	IT	UK	10	15	7	GBP	13.54	Buy
IPN.FP	B0R7JF1	IPSEN	Health Care	France	10	17	9	EUR	49.105	NA
VCT.LN	929224	VICTREX PLC	Materials	UK	10	16	10	GBP	19.94	Neutral
DOM.LN	B1S49Q9	DOMINO'S PIZZA GROUP PLC	Consumer Disc.	UK	10	18	10	GBP	7.984998	NA
SMWH.LN	B2PDGW1	WH SMITH PLC	Consumer Disc.	UK	10	19	10	GBP	15.22	Sell
MPI.LN	3023231	MICHAEL PAGE INTERNATIONAL	Industrials	UK	10	19	10	GBP	5.505	Neutral
Japan										
2440.JT	B06WPV5	GURUNAVI INC	IT	Japan	10	18	6	JPY	1925	NA
4924.JT	6591940	DR CI:LABO CO LTD	Consumer Staples	Japan	10	13	10	JPY	3975	NA
2127.JT	B1DN466	NIHON M&A CENTER INC	Industrials	Japan	10	19	10	JPY	4785	NA
7716.JT	6271071	NAKANISHI INC	Health Care	Japan	10	19	10	JPY	4825	NA
9936.JT	6660936	OHSHO FOOD SERVICE CORP	Consumer Disc.	Japan	10	16	9	JPY	4150	NA
6961.JT	6250296	ENPLAS CORP	IT	Japan	10	16	8	JPY	4980	NA
4919.JT	6586117	MILBON CO LTD	Consumer Staples	Japan	10	16	10	JPY	3930	NA
3395.JT	B0SQYV8	SAINT MARC HOLDINGS CO LTD	Consumer Disc.	Japan	10	19	10	JPY	4105	NA
9746.JT	6892665	TKC CORP	IT	Japan	10	17	9	JPY	3260	NA
7447.JT	6623326	NAGAILEBEN CO LTD	Health Care	Japan	10	17	10	JPY	2408	NA

Source: Thomson Reuters, UBS

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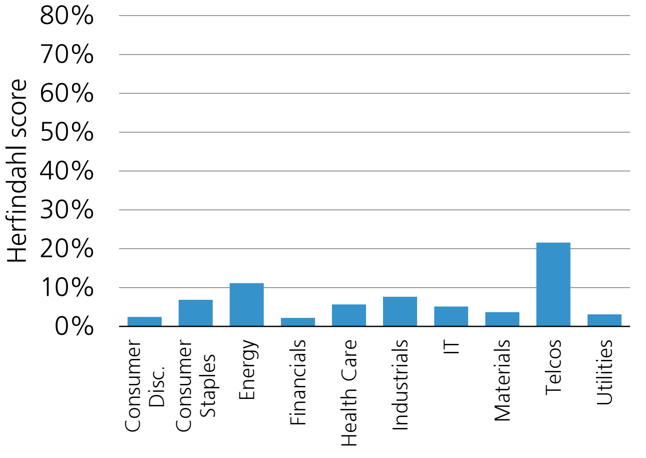
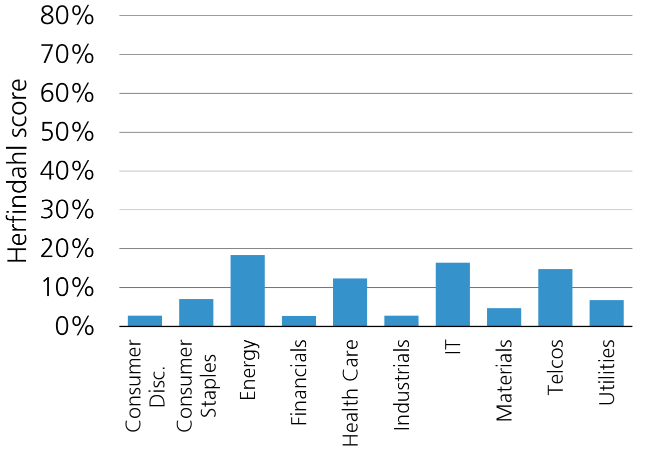
Appendix: Herfindahl scores by region

Figure 30: United States



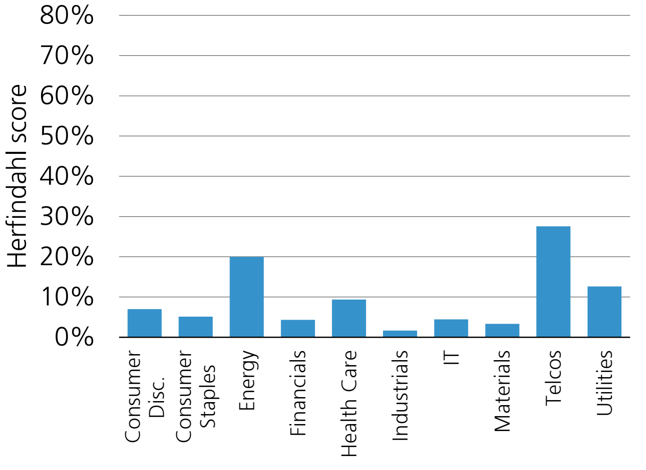
Source: Thomson Reuters, UBS

Figure 31: Europe



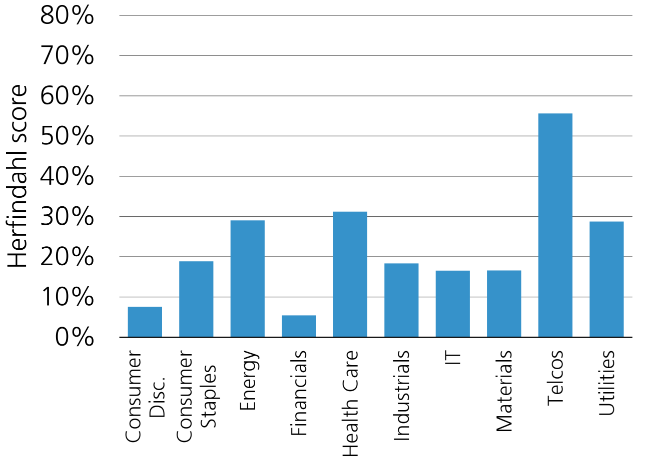
Source: Thomson Reuters, UBS

Figure 32: Japan



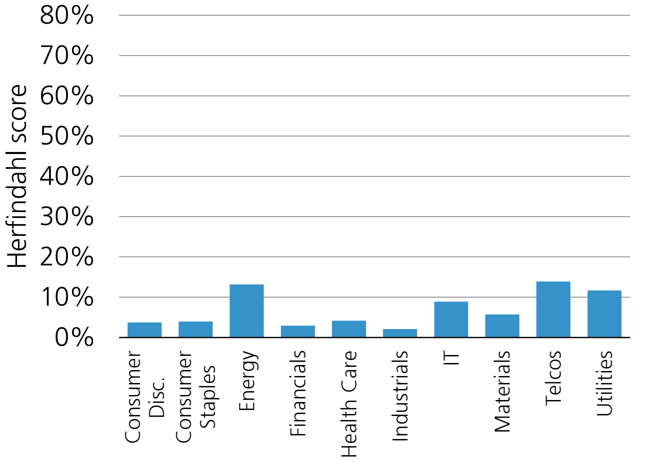
Source: Thomson Reuters, UBS

Figure 33: Asia (developed)



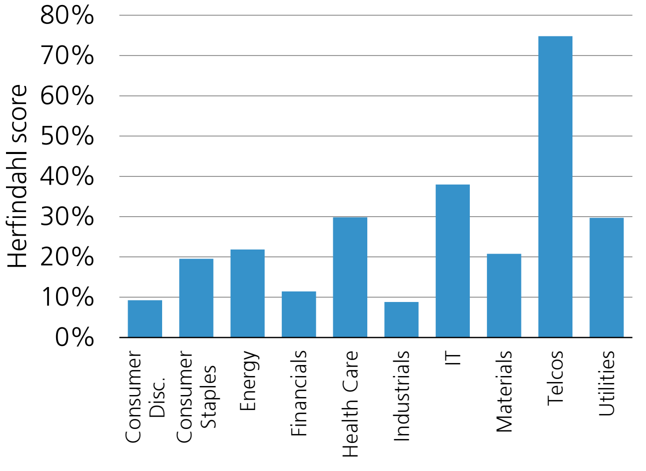
Source: Thomson Reuters, UBS

Figure 34: Asia (emerging)



Source: Thomson Reuters, UBS

Figure 35: Australia



Source: Thomson Reuters, UBS

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Source: UBS. Rating allocations are as of 31 March 2015.
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