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Rotation Strategies and Their Role in the Australian Market

Sector allocation is one of the main pillars in equity portfolio management. In this paper, we examine how the sector price momentum strategy and the cyclical and defensive sector rotation strategy performed in Australia based on the S&P/ASX 200 Global Industry Classification Standard (GICS®) sector indices.

EXECUTIVE SUMMARY

- As measured by the S&P/ASX 200, the Financials and Materials sectors have accounted for 50% of the Australian market since December 1989, but since sectors can fall in and out of favor, mimicking benchmark sector weighting may not be an optimal way to maximize portfolio returns.
- Our study on sector price momentum shows that strong momentum sectors in recent months tend to outperform in coming months, and the opposite holds for the weak momentum sectors, suggesting that sector price momentum can be exploited in sector allocation.
- An unoptimized portfolio with quarterly allocation to the top three sectors based on 12-month price momentum generated an annualized excess return of 4.5% compared with the market between December 1989 and June 2018.
- Cyclical sectors in Australia represented 80% of the total market, but they underperformed defensive sectors on average over the entire period studied, and they only outperformed defensive sectors in 7 of the past 28 years.
- Our study on cyclical and defensive sector performance across global and domestic economic cycles shows the global economic cycle is a stronger driver of relative performance of cyclical versus defensive sectors than the domestic economic cycle in Australia.
- A dynamic allocation strategy that equal weights cyclical sectors during global economic up cycles and rotates to defensive sectors during global economic down cycles achieved an excess return of 5.2% per year compared with the Australian market.

SECTOR DIVERSIFICATION IN THE AUSTRALIAN MARKET

In a previous paper, "Is There Value in Asia Ex-Japan Sector Rotation Strategies?", we examined how sector allocation based on price momentum and economic cycles performed in Asia, excluding Japan, and we concluded that these two strategies delivered better returns than the benchmark. In this paper, we will study how these two strategies performed in the context of Australian sectors.

Our study focuses on the 11 broad sectors classified by GICS®: Energy, Materials, Industrials, Consumer Discretionary, Consumer Staples, Health Care, Financials, Real Estate,[1] Information Technology, Telecommunication Services, and Utilities. The analysis covers the period between December 1989 and June 2018. We use the S&P/ASX 200 and S&P/ASX 200 GICS sector indices to represent the Australian market and sector performances, respectively, since March 2000, which is when the S&P/ASX 200 GICS sector returns data history begins. For dates before the beginning of the S&P/ASX 200 GICS sector index return data, we use S&P Australia BMI and S&P Australia BMI GICS sector index data.

Financials was the largest sector in the S&P/ASX 200 by weight, consisting of 26 stocks with a combined value of more than AUD 2.2 billion traded daily, while Utilities was the smallest.

As of month-end June 2018, the S&P/ASX 200 was diversified into 11 GICS sectors, and some of these sectors can be traded through exchange-traded funds (ETFs; see Appendix for full list of S&P/ASX sector ETFs). Financials was the largest sector in the index by weight (33.1%), consisting of 26 stocks with a combined value of more than AUD 2.2 billion traded daily. Utilities was the smallest sector in the index, weighing merely 2.0% and containing five stocks with a combined value of AUD 114 million traded daily (see Exhibit 1).

[1] Real Estate was moved out from under the Financials sector and promoted to its own sector effective after the market close on Aug. 31, 2016. In this research paper, Real Estate was treated as a sector for the entire period studied.

Exhibit 1: Number of Stocks, Aggregated Liquidity, Size, and Index Weight in Each S&P/ASX 200 Sector

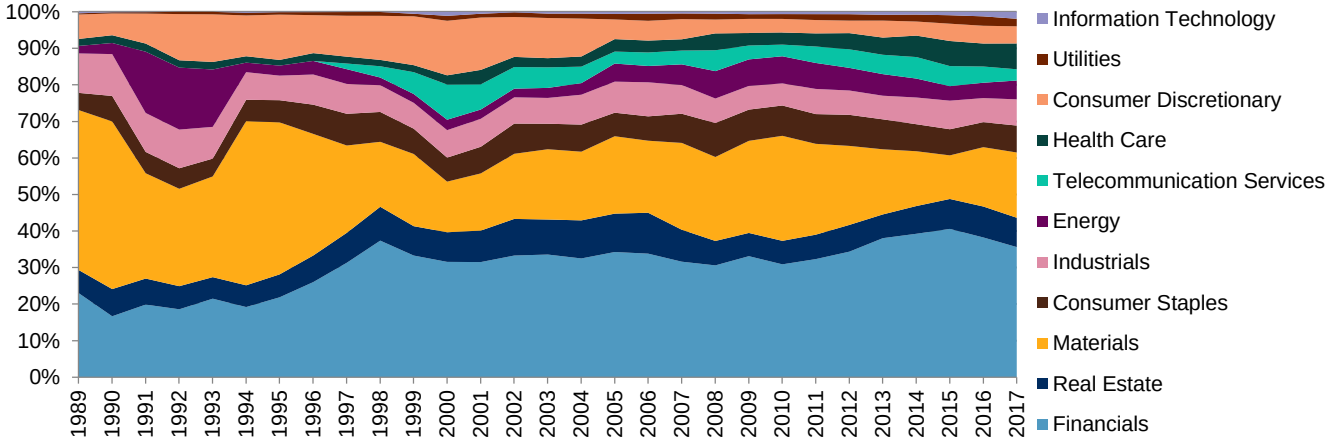
SECTOR	INDEX WEIGHT (%)	NUMBER OF STOCKS	TOTAL 3-MONTH ADTV (AUD MILLIONS)	TOTAL FLOAT-ADJUSTED MARKET CAP (AUD MILLIONS)
Energy	5.7	9	638	95,200
Materials	18.6	39	1,858	308,740
Industrials	7.1	19	371	117,503
Consumer Discretionary	4.8	32	420	79,169
Consumer Staples	8.1	13	674	133,897
Health Care	8.5	15	831	140,583
Financials	33.1	26	2,163	549,759
Real Estate	7.5	22	455	124,181
Information Technology	2.4	14	189	39,825
Telecommunications Services	2.3	6	191	37,372
Utilities	2.0	5	114	33,673
Total	100.0	200	7,904	1,659,902

Source: S&P Dow Jones Indices LLC and FactSet. Data based on S&P/ASX 200 universe as of June 30, 2018. Past performance is no guarantee of future results. Table is provided for illustrative purposes and reflects hypothetical historical performance. Please see the Performance Disclosure at the end of this document for more information regarding the inherent limitations associated with back-tested performance. Real Estate has been treated as a sector for the entire period studied in this table.

DO SECTOR ROTATION STRATEGIES WORK IN THE AUSTRALIAN EQUITY MARKET?

The Australian equity market is dominated by the Financials and Materials sectors. Together, these sectors have accounted for more than 50% of the market since December 1989 (see Exhibit 2). However, sector leaders and laggards rotate every year, and no single sector can outperform the others all the time. For instance, Utilities was the best-performing sector from year-end 1989 through December 2017, but its annual performance ranked within the top three in only 13 out of the 28 years (see Exhibit 3). Since sectors can fall in and out of favor, sector rotation and allocation strategies that attempt to identify future sector leaders and laggards can help market participants to allocate strategically.

Exhibit 2: Historical Sector Weighting of the S&P/ASX 200



Source: S&P Dow Jones Indices LLC. Data from Dec. 31, 1989, to Dec. 31, 2017. Data based on S&P/ASX 200 universe (between March 31, 2000, and Dec. 31, 2017) and S&P Australia BMI universe (prior to March 31, 2000). Chart is provided for illustrative purposes and reflects hypothetical historical performance. Please see the Performance Disclosure at the end of this document for more information regarding the inherent limitations associated with back-tested performance. Real Estate has been treated as a sector for the entire period studied in this chart.

Exhibit 3: Historical S&P/ASX 200 Sector Returns (Dec89 - Jun18)

YEAR	ENERGY	MATERIALS	INDUSTRIALS	CONS DISC	CONS STAPLES	HEALTH CARE	FINANCIALS	REAL ESTATE	I.T.	TELECOM	UTILITIES	MARKET
ABSOLUTE RETURNS (%, AUD)												
1990	0.6	-12.0	-6.0	-22.4	-16.5	0.5	-31.6	-2.5	N.A.	N.A.	19.4	-14.6
1991	5.4	26.5	30.3	77.7	38.7	57.5	54.9	29.9	N.A.	N.A.	89.9	36.4
1992	-0.1	-2.9	-8.6	25.2	-9.2	-18.0	-13.6	-5.0	N.A.	N.A.	-16.9	-3.0
1993	36.7	44.8	20.8	33.7	27.3	39.6	68.2	32.2	N.A.	N.A.	72.7	41.3
1994	0.7	-1.1	-17.6	-22.9	-21.5	-16.3	-9.3	-8.4	N.A.	N.A.	1.6	-8.6
1995	22.6	12.4	5.4	28.6	21.8	1.1	40.8	19.7	-19.2	N.A.	23.4	19.7
1996	55.3	0.9	36.7	6.4	14.0	38.5	30.6	18.8	4.4	N.A.	49.0	15.3
1997	13.7	-15.2	20.5	24.2	25.4	12.0	45.0	22.1	-18.9	N.A.	56.2	15.6
1998	-35.8	-9.6	9.2	22.2	12.3	14.2	19.5	28.3	-20.2	86.5	13.7	11.5
1999	27.3	43.3	11.8	30.7	-3.0	22.9	3.7	-2.4	499.2	23.8	-20.5	15.0
2000	25.7	-2.4	13.3	-2.5	12.8	41.0	26.9	13.5	-50.4	-24.5	23.4	3.7
2001	0.3	24.8	21.1	3.2	22.8	24.7	13.1	10.9	-58.0	-11.5	-18.1	10.4
2002	-0.2	7.6	-18.8	-21.2	-5.2	-41.4	-6.9	2.8	-61.0	-15.2	10.0	-8.8
2003	30.0	26.6	13.0	12.6	10.3	-0.6	11.7	8.4	45.4	16.1	16.2	14.6
2004	44.8	24.8	39.0	28.2	35.2	38.7	25.0	32.2	36.1	10.1	29.5	28.0
2005	62.7	42.9	16.7	-4.7	9.0	41.2	25.2	12.8	17.1	-9.5	34.0	22.8
2006	12.1	18.5	21.5	28.9	29.3	24.1	25.8	34.0	28.1	11.7	29.3	24.2
2007	31.4	44.6	8.2	1.9	23.6	26.8	7.8	-7.6	7.0	21.7	0.9	16.1
2008	-16.7	-40.7	-45.6	-53.9	-27.2	-9.1	-40.6	-55.2	-21.1	-17.5	-30.3	-38.4
2009	30.3	50.9	25.8	44.0	31.5	4.7	50.1	10.9	56.5	-1.2	8.0	37.0
2010	2.3	12.5	-3.4	-4.8	3.0	5.0	-4.5	-0.7	-1.2	-10.3	8.9	1.6
2011	-19.1	-23.9	-7.5	-17.9	-0.3	-8.0	-4.9	-2.6	-19.6	29.5	9.7	-10.5
2012	-0.2	4.0	10.7	20.1	26.9	49.6	29.0	32.6	24.4	42.3	22.6	20.3
2013	12.9	-0.8	16.2	41.0	17.7	26.3	34.9	8.2	28.2	28.9	8.1	20.2
2014	-12.0	-11.6	13.1	-0.9	-4.6	24.4	9.3	28.9	8.4	20.8	16.1	5.6
2015	-27.3	-15.7	16.5	18.0	0.2	15.8	4.9	12.7	6.6	1.8	23.3	2.6
2016	15.8	42.9	10.5	11.9	4.7	1.9	7.3	12.4	4.5	-7.1	19.4	11.8
2017	23.3	22.9	18.2	13.6	20.2	26.3	5.0	6.2	26.0	-21.3	9.0	11.8
2018 H1	11.8	7.9	1.7	6.2	12.3	24.5	-2.1	4.5	12.7	-23.2	2.1	4.3
ABSOLUTE RETURNS (%, AUD, PER YEAR)												
10-Year	-2.2	0.6	6.8	8.4	9.3	16.4	9.7	6.2	11.3	2.9	10.8	6.4
20-Year	9.5	10.8	8.3	4.6	10.6	15.1	9.9	6.9	8.1	3.3	9.6	8.6
1990-2018 H1	10.0	8.7	7.9	8.3	9.6	14.0	12.1	8.5	N.A.	N.A.	15.2	9.3

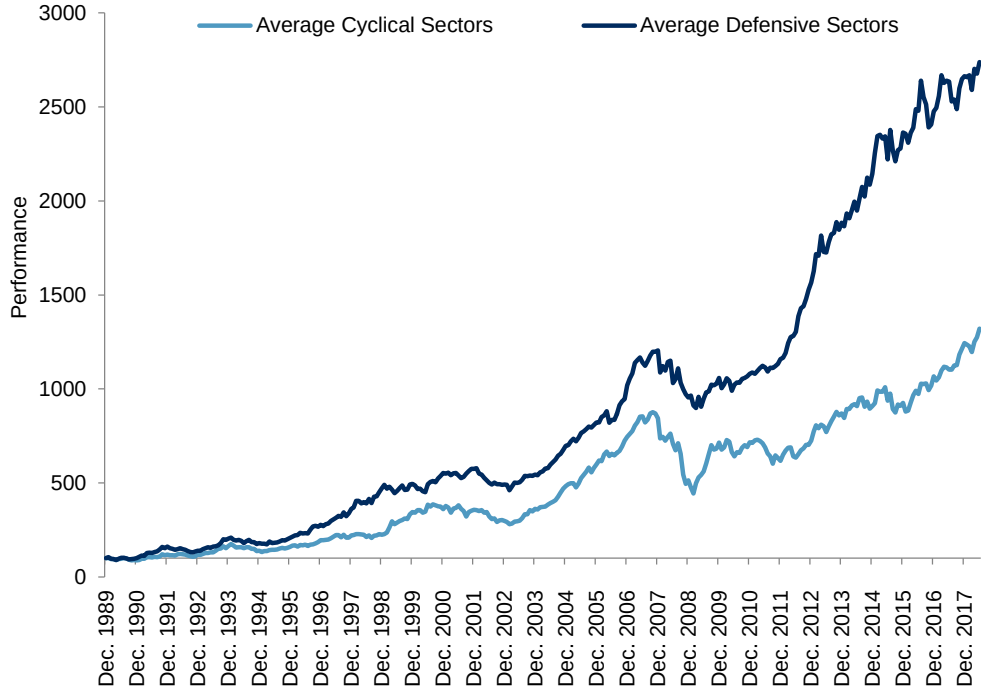
Source: S&P Dow Jones Indices LLC and FactSet. Data from December 1989 to June 2018. Cells highlighted in blue and yellow represent the three best- and worst-performing sectors, respectively, in each year. "I.T." refers to Information Technology, "Cons Disc" refers to Consumer Discretionary, "Cons Staples" refers to Consumer Staples, and "Telecom" refers to Telecommunication Services. Data based on S&P/ASX 200 universe (between March 31, 2000, and June 30, 2018) and S&P Australia BMI universe (prior to March 31, 2000). Performance is based on total return in AUD. Past performance is no guarantee of future results. Table is provided for illustrative purposes and reflects hypothetical historical performance. Please see the Performance Disclosure at the end of this document for more information regarding the inherent limitations associated with back-tested performance. Real Estate was treated as a sector for the entire period studied in this table.

Much like in Asia ex-Japan, cyclical sectors (Energy, Materials, Industrials, Consumer Discretionary, Financials, Real Estate, and Information Technology) represent 80% of the total Australian market. However, cyclical sectors underperformed defensive sectors on average over the entire period between December 1989 and December 2017 (see Exhibit 4), and they only outperformed defensive sectors in 10 of the past 28 years (see Exhibit 5).

These results could serve as further evidence that mimicking benchmark sector weighting may not be an optimal way to maximize portfolio returns. Rather, a rotation strategy that attempts to predict the outperformance of cyclical or defensive sectors could be a way to achieve better returns.

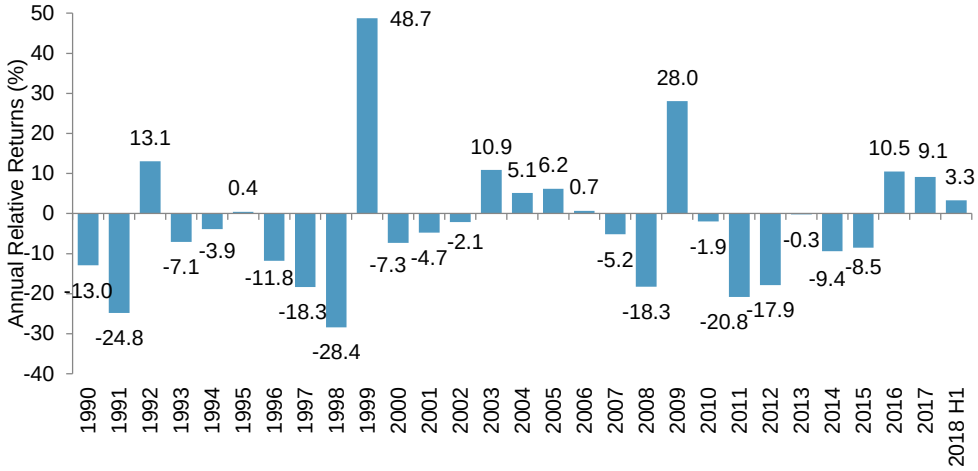
A rotation strategy that attempts to predict the outperformance of cyclical or defensive sectors could be a way to achieve better returns than mimicking benchmark sector weighting.

Exhibit 4: Average Cyclical and Defensive Sector Performance in Australia



Source: S&P Dow Jones Indices LLC and FactSet. Data from December 1989 to June 2018. Data based on S&P/ASX 200 universe (between March 31, 2000, and June 30, 2018) and S&P Australia BMI universe (prior to March 31, 2000). Performance of cyclical sectors and defensive sectors is equal weighted and stocks within each sector are market-cap weighted. Performance is based on total return in AUD. Past performance is no guarantee of future results. Chart is provided for illustrative purposes and reflects hypothetical historical performance. Please see the Performance Disclosure at the end of this document for more information regarding the inherent limitations associated with back-tested performance. Real Estate was treated as a sector for the entire period studied in this chart.

Exhibit 5: Annual Relative Return of Average Cyclical Versus Average Defensive Sectors in Australia

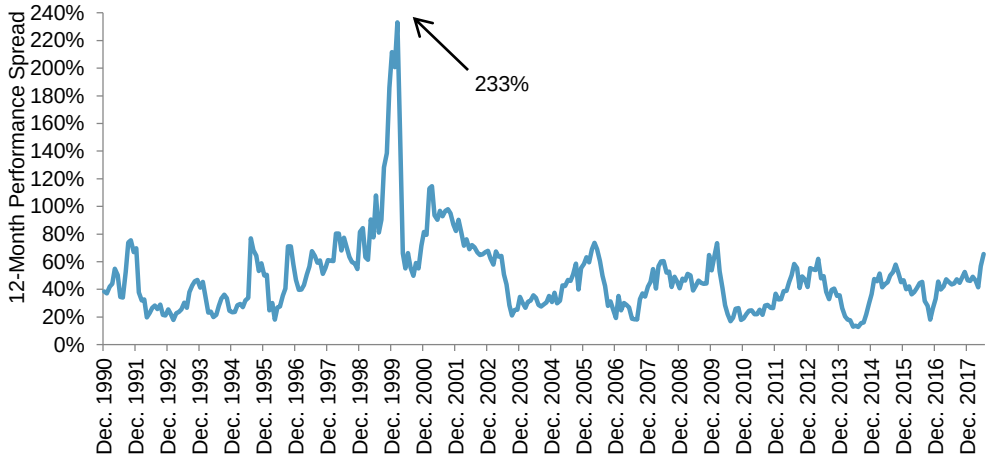


Source: S&P Dow Jones Indices LLC and FactSet. Data from December 1989 to June 2018. Data are based on S&P/ASX 200 universe (between March 31, 2000, and June 30, 2018) and S&P Australia BMI universe (prior to March 31, 2000). Performance of cyclical sectors and defensive sectors is equal weighted and stocks within each sector are market-cap weighted. Performance is based on total return in AUD. Past performance is no guarantee of future results. Chart is provided for illustrative purposes and reflects hypothetical historical performance. Please see the Performance Disclosure at the end of this document for more information regarding the inherent limitations associated with back-tested performance. Real Estate was treated as a sector for the entire period studied in this chart.

One main driver of sector rotation returns is the performance spread between sector leaders and laggards.

One main driver of sector rotation returns is the performance spread between sector leaders and laggards. In Australia, the 12-month performance spread between the three top- and bottom-performing sectors had a long-term median of 41%. This spread consistently stayed above 12%, reaching a maximum of 233% in February 2000 (see Exhibit 6). This data once again shows the potential benefits of a sector rotation strategy that attempts to identify future sector leaders and laggards.

Exhibit 6: 12-Month Performance Spread Between Three Top and Bottom Sectors in the S&P/ASX 200



Source: S&P Dow Jones Indices LLC and FactSet. Data from December 1990 to June 2018. Data based on S&P/ASX 200 universe (between March 31, 2000, and June 30, 2018) and S&P Australia BMI universe (prior to March 31, 2000). Performance is based on total return in AUD. Past performance is no guarantee of future results. Chart is provided for illustrative purposes and reflects hypothetical historical performance. Please see the Performance Disclosure at the end of this document for more information regarding the inherent limitations associated with back-tested performance. Real Estate was treated as a sector for the entire period studied in this chart.

SECTOR PRICE MOMENTUM STRATEGY: COULD PRICE MOMENTUM PREDICT AUSTRALIAN SECTOR RETURNS?

Following our previous analysis of sectors in Asia ex-Japan, we created "strong" and "weak" sector portfolios based on the past 1-, 3-, 6-, and 12-month sector price momentum values (price changes). At the end of each quarter, we ranked the 11 S&P/ASX 200 GICS sectors by their 1-, 3-, 6-, and 12-month price momentum values, and we then equal weighted the respective top and bottom three sectors to form strong and weak momentum sector portfolios. All portfolios were rebalanced quarterly. Strong momentum portfolios based on these price momentums are denoted as P(S1), P(S3), P(S6), and P(S12), and their respective weak momentum sector portfolios are denoted as P(W1), P(W3), P(W6), and P(W12).

Between December 1990 and June 2018, the S&P/ASX 200 recorded an annualized return of 10.3% and the strong momentum portfolios P(S1), P(S3), P(S6), and P(S12) generated excess returns of 2.5%, 4.0%, 1.7%, and 4.5% per year, respectively.

Between December 1990 and June 2018, the S&P/ASX 200 recorded an annualized return of 10.3% and the strong momentum portfolios P(S1), P(S3), P(S6), and P(S12) generated excess returns of 2.5%, 4.0%, 1.7%, and 4.5% per year, respectively (see Exhibit 7). Despite that all of the strong momentum portfolios had higher volatility than the S&P/ASX 200, they also had higher risk-adjusted returns than the S&P/ASX 200. Among all the strong momentum portfolios, the one based on a 12-month price momentum, P(S12), had the most significant excess return (4.5% per year), along with the highest win ratio (53.9%) and risk-adjusted return (0.96) (see Exhibit 8).

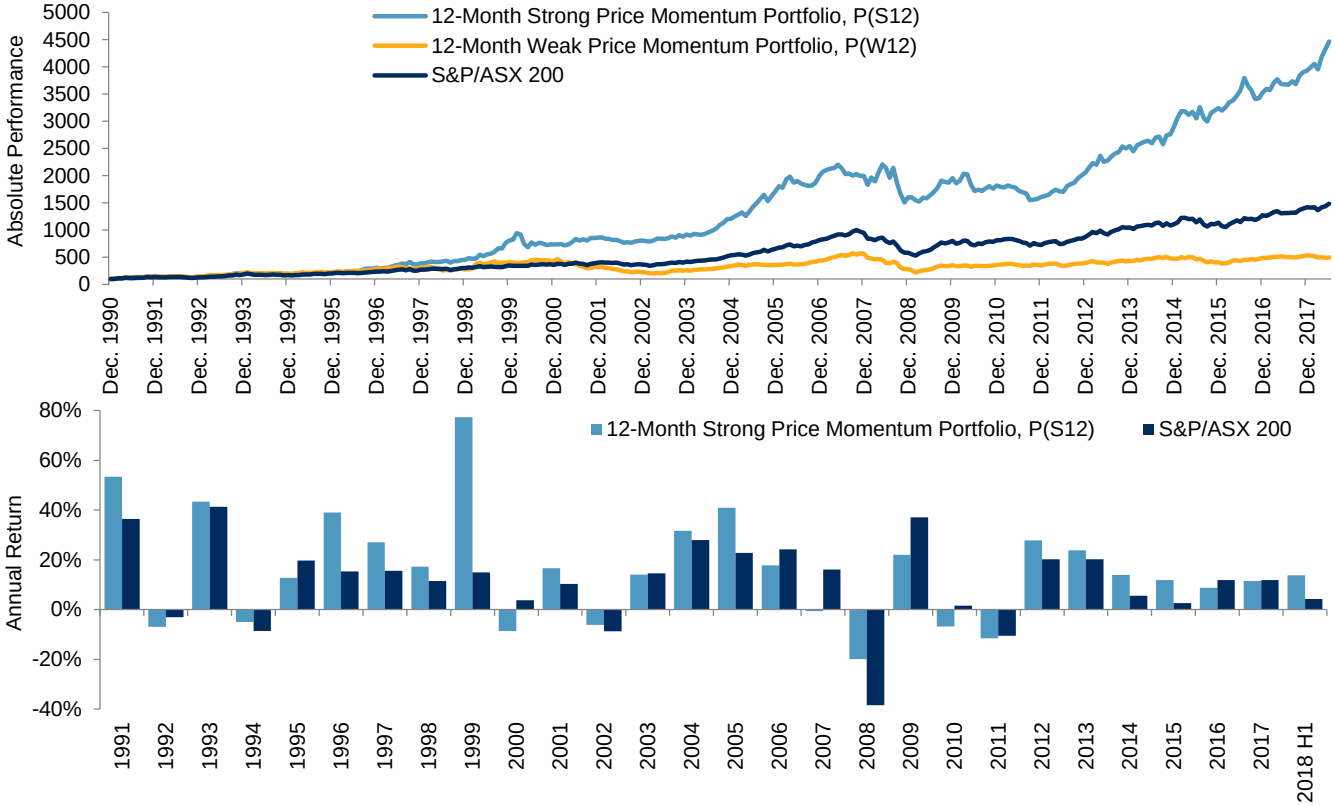
In contrast, all the weak momentum portfolios underperformed the market by more than 1%, and all of them exhibited higher beta and return volatility than their respective strong momentum portfolios. The results indicated that sectors with stronger price momentum in the recent months tended to outperform in the coming months, and the opposite held for the sectors with weaker price momentum. However, a simple momentum strategy without optimizations introduced high portfolio turnover. In our analysis, we found high portfolio turnover rates, ranging from 137% to 276% per year (one-way) for the strong momentum portfolios.

Exhibit 7: Performance Characteristics of Strong and Weak Price Momentum Sector Portfolios

CHARACTERISTIC	1-MONTH PRICE MOMENTUM		3-MONTH PRICE MOMENTUM		6-MONTH PRICE MOMENTUM		12-MONTH PRICE MOMENTUM		S&P/ASX 200
	WINNER P(S1)	LOSER P(W1)	WINNER P(S3)	LOSER P(W3)	WINNER P(S6)	LOSER P(W6)	WINNER P(S12)	LOSER P(W12)	
Annualized Return (%)	12.8	8.9	14.3	6.1	12.0	7.9	14.8	6.0	10.3
Annualized Volatility (%)	14.8	15.6	15.6	16.4	14.8	15.3	15.5	16.7	12.8
Risk-Adjusted Return	0.86	0.57	0.92	0.37	0.81	0.52	0.96	0.36	0.81
12-Month Maximum Drawdown (%)	-45.6	-33.8	-31.0	-46.5	-41.1	-46.9	-28.3	-53.8	-40.0
Beta (Relative to Market)	0.86	0.88	0.87	0.95	0.83	0.94	0.89	1.00	N.A.
Win Ratio (Relative to Market, %)	50.9	46.1	53.0	47.9	52.1	50.3	53.9	45.5	N.A.
Excess Return (Relative to Market, %)	2.5	-1.4	4.0	-4.2	1.7	-2.4	4.5	-4.3	N.A.
P-Value (One–Tail, %)	9.7	33.2	2.8	5.6	18.7	15.9	1.5	4.8	N.A.
Average Annualized Turnover (One-Way, %)	276	287	272	270	207	202	137	129	N.A.

Source: S&P Dow Jones Indices LLC and FactSet. Data from December 1990 to June 2018. Data based on S&P/ASX 200 universe (between March 31, 2000, and June 30, 2018) and S&P Australia BMI universe (prior to March 31, 2000). Sectors in portfolios are equal weighted and stocks within each sector are market-cap weighted. Performance is based on total return in AUD. Past performance is no guarantee of future results. Table is provided for illustrative purposes and reflects hypothetical historical performance. Please see the Performance Disclosure at the end of this document for more information regarding the inherent limitations associated with back-tested performance. Real Estate was treated as a sector for the entire period studied in this table.

Exhibit 8: Historical Performance and Annual Return of 12-Month Strong and Weak Price Momentum Portfolios



Source: S&P Dow Jones Indices LLC and FactSet. Data from December 1990 to June 2018. Data based on S&P/ASX 200 universe (between March 31, 2000, and June 30, 2018) and S&P Australia BMI universe (prior to March 31, 2000). Sectors in portfolios are equal weighted and stocks within each sector are market-cap weighted. Performance is based on total return in AUD. Charts are provided for illustrative purposes and reflect hypothetical historical performance. Please see the Performance Disclosure at the end of this document for more information regarding the inherent limitations associated with back-tested performance. Real Estate was treated as a sector for the entire period studied in these charts.

SECTOR ROTATION ACROSS ECONOMIC CYCLES

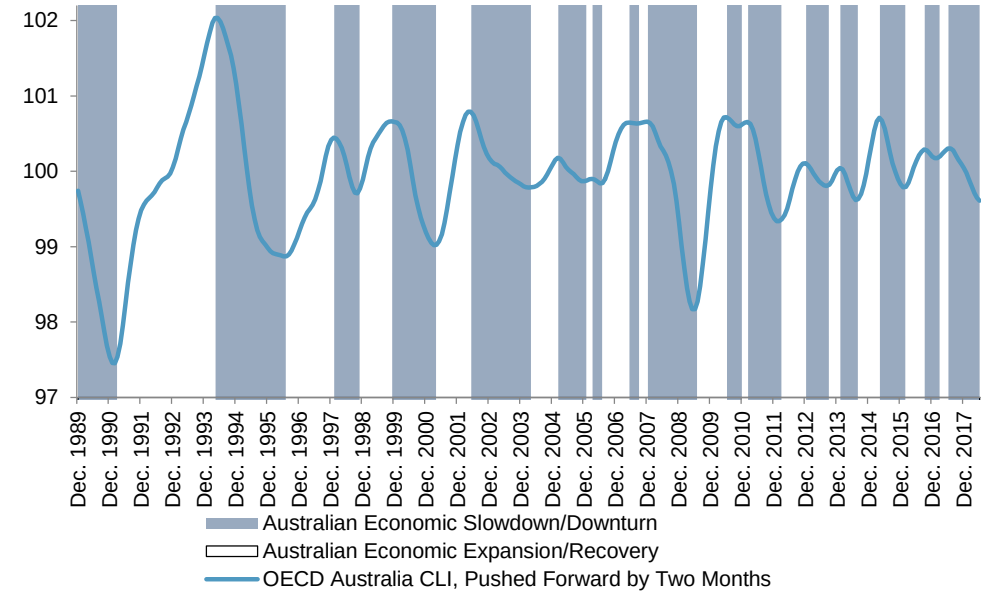
Do Australian Sectors Carry Cyclical and Defensive Characteristics?

Cyclical sectors (Energy, Materials, Industrials, Consumer Discretionary, Financials, Real Estate, and Information Technology) generally have outperformed the market during economic expansion and recovery and underperformed during economic downturns and slowdowns. The opposite holds for Consumer Staples, Health Care, Telecommunication Services, and Utilities, which are traditionally classified as defensive sectors.

Cyclical sectors generally have outperformed the market during economic expansion and recovery and underperformed during economic downturns and slowdowns.

In this study, we used the monthly Organisation for Economic Co-operation and Development (OECD) composite leading indicators (CLIs) to indicate different stages of economic cycles. CLIs are designed to provide early indications of turning points in economic cycles with a lead time of six to nine months. The CLIs are released on a monthly basis, and they are computed using selected economic and business survey data series that have historical leading relationships to turning points in GDP or industrial production. Since CLIs are released with a two-month delay, we pushed the data series forward by two months to generate real-time monthly signals (e.g., the CLI with a reference date as of April is released in early-June and is used to generate a real-time signal at the end of June). An increasing CLI (positive monthly change in indicator level) represents economic expansion and recovery (up cycle), whereas a decreasing CLI (negative monthly change in indicator level) signals economic downturn and slowdown (down cycle) (see Exhibit 9).

Exhibit 9: Australian Economic Up (Expansion/Recovery) and Down (Downturn/Slowdown) Cycles Based on Signals from OECD Australia CLI

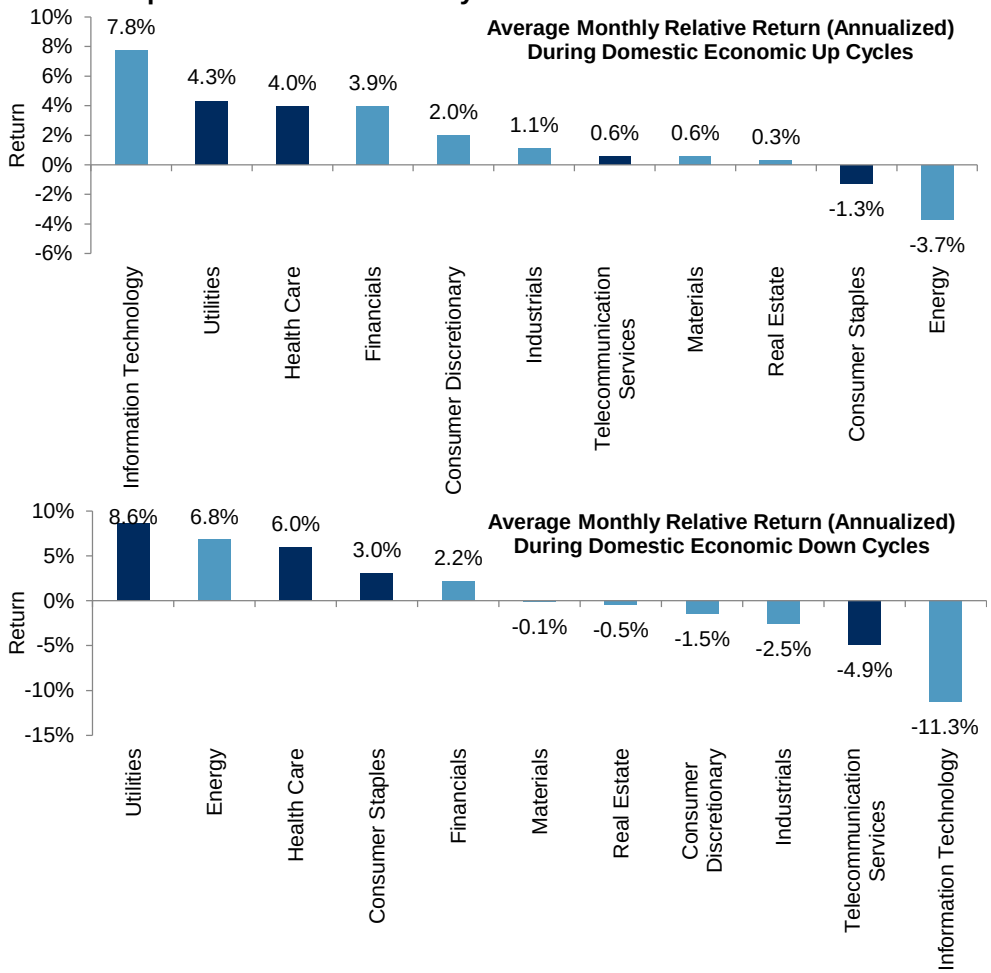


Source: S&P Dow Jones Indices LLC and OECD. Data from December 1989 to June 2018. Past performance is no guarantee of future results. Chart is provided for illustrative purposes.

We measured the average monthly market-relative return of each sector during domestic up and down cycles using signals generated by the OECD Australia CLI. The result showed that most Australian sectors did not perform with strong cyclical and defensive behavior across domestic economic cycles, especially during economic up cycles. Energy performed as a defensive sector that outperformed during down cycles and underperformed most during up cycles. In periods of economic upturn, the Utilities and Health Care sectors did not exhibit defensive behavior. Information Technology was the only sector that exhibited strong cyclical performance. It outperformed defensive sectors during up cycles and vice versa during down cycles (see Exhibit 10).

Information Technology was the only sector that exhibited strong cyclical performance, outperforming defensive sectors during up cycles and vice versa during down cycles.

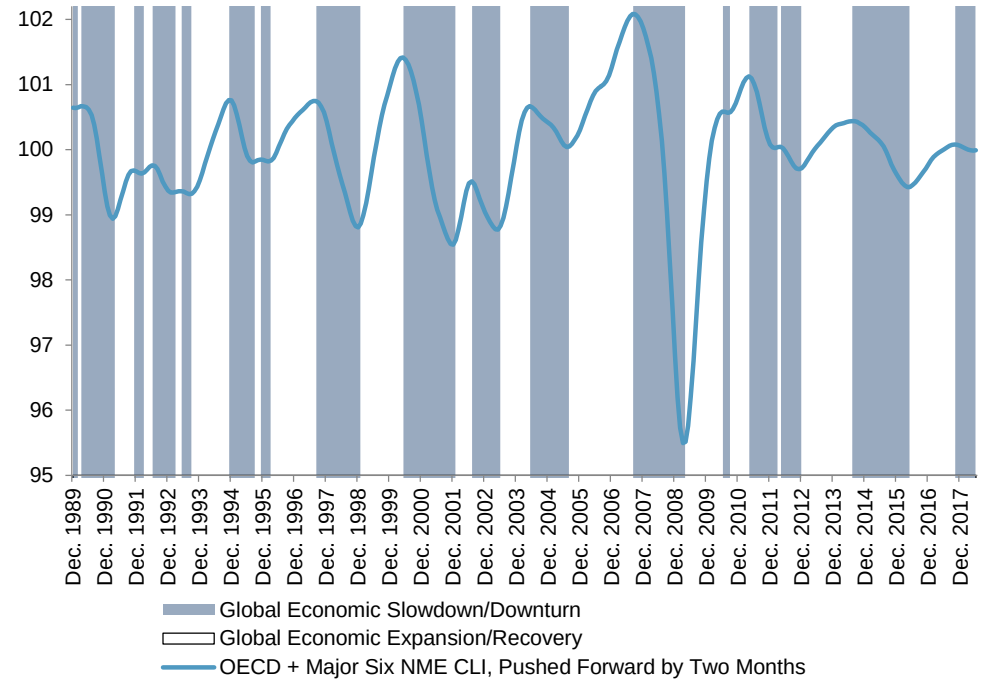
Exhibit 10: Average Market-Relative Returns of Australian Sectors During Domestic Up and Down Economic Cycles



Source: S&P Dow Jones Indices LLC, OECD and FactSet. Data from December 1989 to June 2018. Data are based on S&P/ASX 200 universe (between March 31, 2000, and June 30, 2018) and S&P Australia BMI universe (prior to March 31, 2000). Performance of cyclical sectors and defensive sectors is equal weighted and stocks within each sector are market-cap weighted. Performance is based on total return in AUD. Past performance is no guarantee of future results. Charts are provided for illustrative purposes and reflect hypothetical historical performance. Please see the Performance Disclosure at the end of this document for more information regarding the inherent limitations associated with back-tested performance. Real Estate was treated as a sector for the entire period studied in these charts.

We repeated the previous study using signals generated by the CLI for OECD plus Major Six non-member economies (OECD + Major Six NME CLI), which signals global economic up and down cycles (see Exhibit 11).

Exhibit 11: Global Economic Up (Expansion/Recovery) and Down (Downturn/ Slowdown) Cycles Based on Signals from OECD + Major Six NME CLI



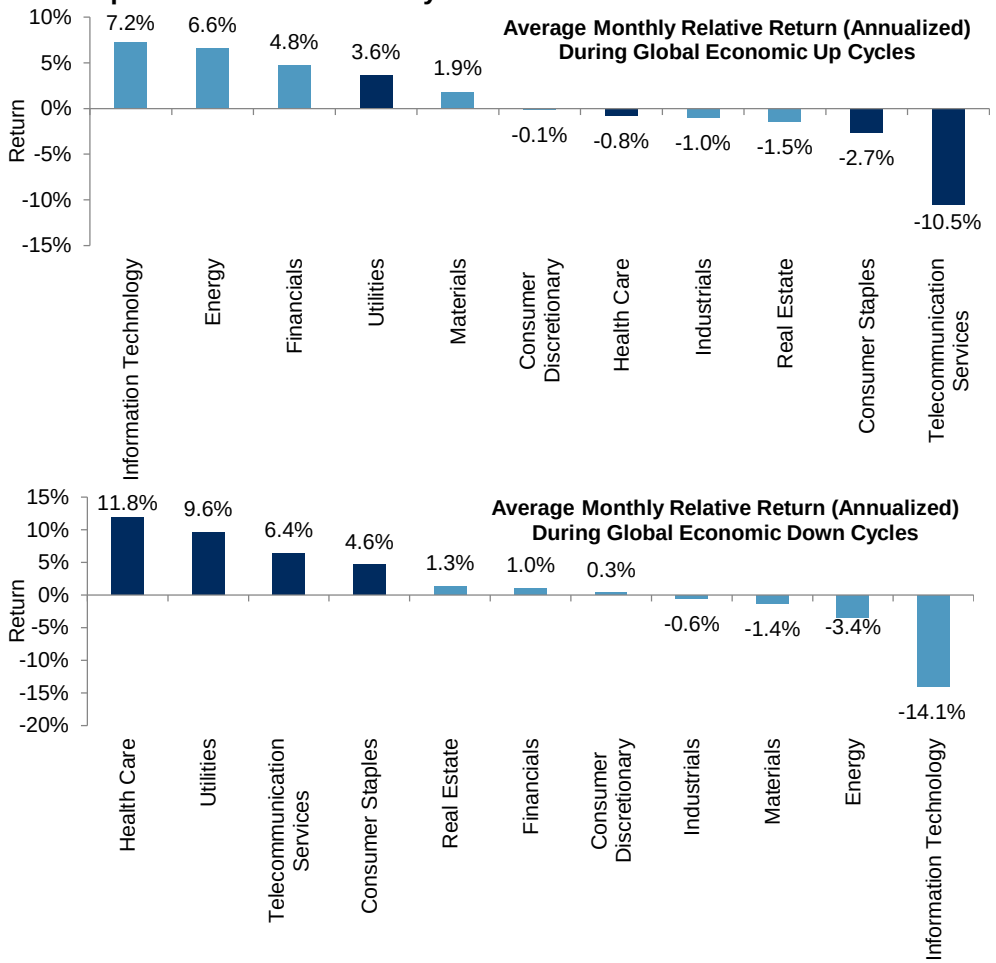
Source: S&P Dow Jones Indices LLC and OECD. OECD + Major Six NME CLI is the aggregated Composite Leading Indicator for 33 OECD economies and six major non-member economies. Data from December 1989 to June 2018. Past performance is no guarantee of future results. Chart is provided for illustrative purposes.

Most Australian sectors performed with cyclical and defensive characteristics in both up and down global economic cycles.

The results showed that most Australian sectors performed with cyclical and defensive characteristics in both up and down global economic cycles. Cyclical sectors broadly outperformed defensive sectors during global up cycles (excluding Utilities), and all defensive sectors outperformed cyclical sectors during global down cycles (see Exhibit 12).

This suggests that global economic cycles could be a stronger driver of cyclical versus defensive sector relative performances than domestic economic cycles in Australia.

Exhibit 12: Average Market-Relative Returns of Australian Sectors During Global Up and Down Economic Cycles



Global economic cycles could be a stronger driver of cyclical versus defensive sector relative performances than domestic economic cycles in Australia.

Source: S&P Dow Jones Indices LLC, OECD, and FactSet. Data from December 1989 to June 2018. Data based on S&P/ASX 200 universe (between March 31, 2000, and June 30, 2018) and S&P Australia BMI universe (prior to March 31, 2000). OECD + Major Six NME CLI is the aggregated Composite Leading Indicator for 33 OECD economies and six major non-member economies. Performance of cyclical sectors and defensive sectors is equal weighted and stocks within each sector are market-cap weighted. Performance is based on total return in AUD. Past performance is no guarantee of future results. Charts are provided for illustrative purposes and reflect hypothetical historical performance. Please see the Performance Disclosure at the end of this document for more information regarding the inherent limitations associated with back-tested performance. Real Estate was treated as a sector for the entire period studied in these charts.

Rotating Australian Cyclical and Defensive Sectors Over Global Economic Cycles

We set up a hypothetical sector rotation portfolio with alternative allocation to S&P/ASX 200 cyclical and defensive sectors based on signals from the OECD + Major Six NME CLI. The portfolio has equal-weighted allocation in S&P/ASX 200 cyclical sectors (Energy, Materials, Industrials, Consumer Discretionary, Financials, Real Estate, and Information Technology) when CLI is rising (signaling a global economic up cycle) and the allocation rotates to S&P/ASX 200 defensive sectors (Consumer Staples, Health Care, Telecommunication Services, and Utilities) when CLI is falling

(signaling a global economic down cycle). The portfolio is rebalanced at the end of each month according to changing signals generated by CLI.

In the period between December 1989 and June 2018, the S&P/ASX 200 had an annualized return of 9.3% and the cyclical and defensive sector rotation portfolio generated an annualized absolute return of 14.5%, outperforming the market by 5.2% per year (see Exhibit 13). During up cycles, when the market had an annualized return of 13.6%, the portfolio generated a return of 16.1% per year, slightly outperforming the Australian market by 2.5% per year. During down cycles, when the Australian market recorded an annualized return of 4.9%, the portfolio delivered a much stronger return of 12.8% per year, significantly outperforming the market by 7.9%.

As 80% of the Australian equity market is dominated by cyclical sectors, it is not surprising that the outperformance of this rotation strategy was mainly driven by turning to defensive sectors during global economic down cycles. As the OECD + Major Six NME CLI does not change direction as frequently as sector price trends, the cyclical and defensive sector rotation portfolio had a lower annual turnover (124%) than the sector price momentum portfolios.

The S&P/ASX 200 had an annualized return of 9.3% and the cyclical and defensive sector rotation portfolio generated an annualized absolute return of 14.5%, outperforming the market by 5.2% per year.

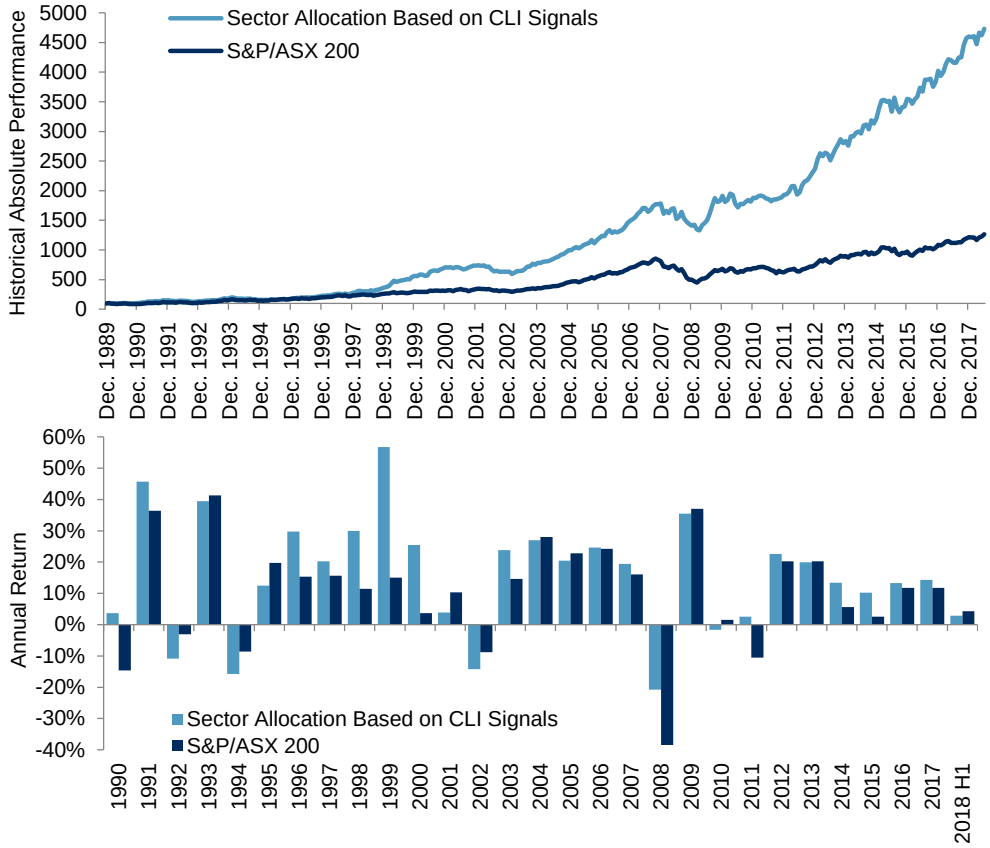
Exhibit 13: Performance Characteristics of Cyclical and Defensive Sector Rotation Strategy Based on Signals from OECD + Major Six NME CLI

CHARACTERISTIC	ALL PERIODS (342 MONTHS)		UP CYCLES (177 MONTHS)		DOWN CYCLES (165 MONTHS)	
	SECTOR ROTATION	MARKET	SECTOR ROTATION	MARKET	SECTOR ROTATION	MARKET
Annualized Return (%)	14.5	9.3	16.1	13.6	12.8	4.9
Annualized Volatility (%)	12.7	12.9	12.8	11.6	12.6	14.1
Risk-Adjusted Return	1.14	0.72	1.26	1.17	1.01	0.34
12-Month Maximum Drawdown (%)	-22.0	-40.0	-21.6	-28.9	-22.0	-40.0
Beta (Relative to Market)	0.79	N.A.	1.01	N.A.	0.63	N.A.
Win Ratio (Relative to Market)	55.0	N.A.	49.7	N.A.	60.6	N.A.
Excess Return (Relative to Market)	5.2	N.A.	2.5	N.A.	7.9	N.A.
P-Value (One–Tail, %)	0.1	N.A.	4.7	N.A.	0.6	N.A.
Annual Turnover (One-Way, %)	124	N.A.	N.A.	N.A.	N.A.	N.A.

Source: S&P Dow Jones Indices LLC, OECD, and FactSet. Data from December 1989 to June 2018. Data based on S&P/ASX 200 universe (between March 31, 2000, and June 30, 2018) and S&P Australia BMI universe (prior to March 31, 2000). Performance of cyclical sectors and defensive sectors is equal weighted and stocks within each sector are market-cap weighted. Performance is based on total return in AUD. OECD + Major Six NME CLI is the aggregated Composite Leading Indicator for 33 OECD economies and six major non-member economies. Past performance is no guarantee of future results. Table is provided for illustrative purposes and reflects hypothetical historical performance. Please see the Performance Disclosure at the end of this document for more information regarding the inherent limitations associated with back-tested performance. Real Estate was treated as a sector for the entire period studied in this table.

Like many other leading economic indicators, CLI may be revised after it is released, depending on revisions to underlying component data and the effects of de-trending and smoothing filters.

Exhibit 14: Historical Performance and Annual Return of Australian Cyclical and Defensive Sector Rotation Strategy Based on Signals from OECD + Major Six NME CLI



Source: S&P Dow Jones Indices LLC, OECD, and FactSet. Data from December 1989 to June 2018. Data based on S&P/ASX 200 universe (between March 31, 2000, and June 30, 2018) and S&P Australia BMI universe (prior to March 31, 2000). Performance of cyclical sectors and defensive sectors is equal weighted and stocks within each sector are market-cap weighted. OECD + Major Six NME CLI is the aggregated Composite Leading Indicator for 33 OECD economies and six major non-member economies. Performance is based on total return in AUD. Past performance is no guarantee of future results. Charts are provided for illustrative purposes and reflect hypothetical historical performance. Please see the Performance Disclosure at the end of this document for more information regarding the inherent limitations associated with back-tested performance. Real Estate was treated as a sector for the entire period studied in these charts.

Like many other leading economic indicators, CLI may be revised after it is released, depending on revisions to underlying component data and the effects of de-trending and smoothing filters. The available CLI data used in our study is likely to be different from the data originally published in real time. Admittedly, the benefit of the hindsight inherent in CLI data revisions may positively bias the results of back-testing compared with implementation in real time. However, this does not affect the purpose of our study, which is to illustrate the portfolio characteristics of a cyclical and defensive sector rotation strategy across global economic cycles in the Australian equity market.

CONCLUSION

Mirroring what we have seen in our study of sectors in Asia ex-Japan, both the sector price momentum and cyclical and defensive sector rotation strategies achieved better-than-market returns in Australia.

Our study on a sector price momentum strategy shows that sectors with stronger price momentum in recent months tend to outperform in coming months, and the opposite holds for the sectors with weaker price momentum. This suggests that sector price momentum can be exploited in sector allocation. An unoptimized portfolio with quarterly allocation to the top three sectors based on 12-month price momentum generated an annualized excess return of 4.5% compared with the market.

Mirroring what we have seen in our study of sectors in Asia ex-Japan, both the sector price momentum and cyclical and defensive sector rotation strategies achieved better-than-market returns in Australia.

The analysis of cyclical and defensive behavior among Australian sectors shows that Australian sectors perform with cyclical and defensive characteristics in global economic up and down cycles, respectively. The result shows that the global economic cycle is a stronger driver of the relative performance of cyclical versus defensive sectors than the domestic economic cycle in Australia. A dynamic allocation strategy that equal weights cyclical sectors during global economic up cycles and rotates to defensive sectors during global economic down cycles achieved better returns than the overall Australian market. This simple allocation approach generated an excess return of 5.2% per year. As 80% of the Australian equity market is dominated by cyclical sectors, outperformance of this allocation strategy was largely driven by favoring defensive sectors during global economic down cycles.

APPENDIX

Exhibit 15: Listed S&P/ASX Australian Sector ETFs

INDEX	EXCHANGE-TRADED FUNDS	EXCHANGE	TICKER
S&P/ASX 200 Financials Ex-A-REIT	BetaShares S&P/ASX 200 Financials Sector ETF	ASX	QFN
	SPDR S&P/ASX 200 Financial ex A-REIT Fund	ASX	OZF
	Smartshares AUS Financials Fund	NZX	ASF
S&P/ASX 200 Resources	BetaShares S&P/ASX 200 Resources Sector Fund	ASX	QRE
	SPDR S&P/ASX 200 Resources Fund	ASX	OZR
	Smartshares AUS Resources Fund	NZX	ASR
S&P/ASX 200 A-REIT	SPDR S&P/ASX 200 Listed Property Fund	ASX	SLF
S&P/ASX 200 A-REIT Equal Weight	Smartshares AUS Property Fund	NZX	ASP
S&P/ASX 300 A-REIT	Vanguard Australian Property Securities Index ETF	ASX	VAP

Source: ASX (https://www.asx.com.au/products/etf/managed-funds-etp-product-list.htm) and NZX (https://www.nzx.com/services/listing-on-nzx-markets/funds). This represents a complete list of all exchange-traded products linked to the indices noted above as of July 2018. While we have tried to include all exchange-traded products, we do not guarantee the completeness of such list. S&P Dow Jones Indices does not sponsor, promote, or sell any product linked to our indices. For situations where only one product is listed for an index, based on our analysis this was the only product currently linked to such index. S&P Dow Jones Indices does not recommend or provide any advice regarding such products. Table is provided for illustrative purposes.

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PERFORMANCE DISCLOSURE

The S&P/ASX 200 was launched on April 3, 2000. The S&P/ASX 200 Real Estate, S&P/ASX 200 Telecommunication Services, S&P/ASX 200 Utilities, S&P/ASX 200 Financials, S&P/ASX 200 Consumer Discretionary, S&P/ASX 200 Consumer Staples, S&P/ASX 200 Health Care, S&P/ASX 200 Industrials, S&P/ASX 200 Materials, S&P/ASX 200 Energy, and S&P/ASX 200 Information Technology were launched July 2, 2002. All information presented prior to an index's Launch Date is hypothetical (back-tested), not actual performance. The back-test calculations are based on the same methodology that was in effect on the index Launch Date. However, when creating back-tested history for periods of market anomalies or other periods that do not reflect the general current market environment, index methodology rules may be relaxed to capture a large enough universe of securities to simulate the target market the index is designed to measure or strategy the index is designed to capture. For example, market capitalization and liquidity thresholds may be reduced. Complete index methodology details are available at www.spdji.com. Past performance of the Index is not an indication of future results. Prospective application of the methodology used to construct the Index may not result in performance commensurate with the back-test returns shown.

S&P Dow Jones Indices defines various dates to assist our clients in providing transparency. The First Value Date is the first day for which there is a calculated value (either live or back-tested) for a given index. The Base Date is the date at which the Index is set at a fixed value for calculation purposes. The Launch Date designates the date upon which the values of an index are first considered live: index values provided for any date or time period prior to the index's Launch Date are considered back-tested. S&P Dow Jones Indices defines the Launch Date as the date by which the values of an index are known to have been released to the public, for example via the company's public website or its datafeed to external parties. For Dow Jones-branded indices introduced prior to May 31, 2013, the Launch Date (which prior to May 31, 2013, was termed "Date of introduction") is set at a date upon which no further changes were permitted to be made to the index methodology, but that may have been prior to the Index's public release date.

The back-test period does not necessarily correspond to the entire available history of the Index. Please refer to the methodology paper for the Index, available at www.spdji.com for more details about the index, including the manner in which it is rebalanced, the timing of such rebalancing, criteria for additions and deletions, as well as all index calculations.

Another limitation of using back-tested information is that the back-tested calculation is generally prepared with the benefit of hindsight. Back-tested information reflects the application of the index methodology and selection of index constituents in hindsight. No hypothetical record can completely account for the impact of financial risk in actual trading. For example, there are numerous factors related to the equities, fixed income, or commodities markets in general which cannot be, and have not been accounted for in the preparation of the index information set forth, all of which can affect actual performance.

The Index returns shown do not represent the results of actual trading of investable assets/securities. S&P Dow Jones Indices LLC maintains the Index and calculates the Index levels and performance shown or discussed, but does not manage actual assets. Index returns do not reflect payment of any sales charges or fees an investor may pay to purchase the securities underlying the Index or investment funds that are intended to track the performance of the Index. The imposition of these fees and charges would cause actual and back-tested performance of the securities/fund to be lower than the Index performance shown. As a simple example, if an index returned 10% on a US $100,000 investment for a 12-month period (or US $10,000) and an actual asset-based fee of 1.5% was imposed at the end of the period on the investment plus accrued interest (or US $1,650), the net return would be 8.35% (or US $8,350) for the year. Over a three year period, an annual 1.5% fee taken at year end with an assumed 10% return per year would result in a cumulative gross return of 33.10%, a total fee of US $5,375, and a cumulative net return of 27.2% (or US $27,200).

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