

# Value Stocks and the Macro Cycle

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*Value investing is a common investment strategy, but like all other strategies it has suffered during certain periods, such as the tech rally in the late nineties. This paper examines the Value cycle globally, as well as specifically for Asia Pacific, and considers the impact of possible drivers, including those involving the overall stock market and macroeconomic factors. It was found that the Value cycle was closely linked with the level of risk aversion and, among macroeconomic variables, was most associated with the interest rate cycle.*

## Introduction

The Value strategy is a common approach followed by both fundamental and quantitative investors. Since the 1930s, the Value style has received support from a number of famous advocates, including Benjamin Graham and his illustrious understudy Warren Buffet. In a number of prominent papers, Fama and French have documented the superior performance of Value stocks, among other styles; see Fama and French (1993, 1996). This research has generated widespread interest because it suggests that Value investing could indeed provide a source of active returns.

Like the overall stock market, the relative performance of Value stocks may go through cycles when it sometimes suffers from periods of underperformance. The tech rally in the late 1990s and the quant meltdown in 2007 are two episodes when these stocks experienced periods of relative decline. A better understanding of these cycles would therefore give equity investors a better handle on managing the risk of the Value strategy at different points in time.

In Barra models, the Value factor plays an important role in highlighting how this style impacts analyzing stock returns, and it provides a platform to investigate the evolution of the Value cycle. In addition, the Value factor provides a basis to examine possible drivers. These possibilities include various indicators involving the overall stock market, as well as macroeconomic factors, since these have been emphasized in recent literature explaining the Value premium; see Zhang (2005). By using the Barra Value factor, this paper attempts to shed light on these issues in the context of Barra models.

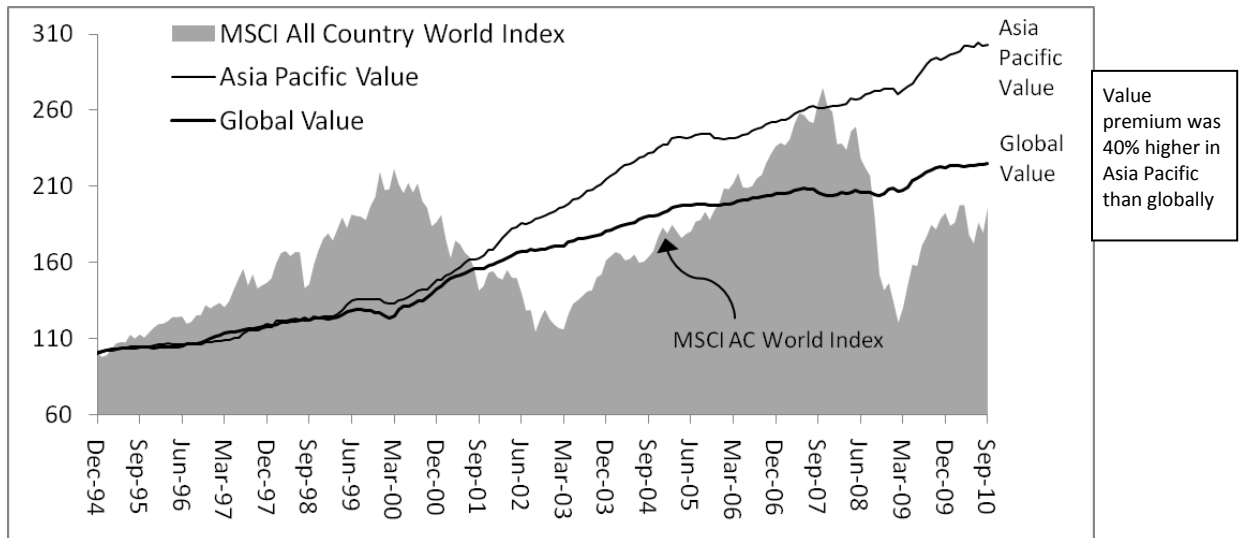
## Performance of Value Stocks

The Barra Value factor is one of the most important risk factors in the Barra Asia Pacific Equity Model (ASE1). Its cumulative performance in this model is shown in Exhibit 1, together with the corresponding factor in the Barra Global Equity Model (GEM2). The general uptrend displayed by both lines indicates that Value stocks compare favorably with the overall market during the sample period. This steady outperformance is consistent with the finding of a Value premium by Fama and French and other researchers. For Asia Pacific in particular, the outperformance of Value was even more apparent than the global universe in general. Based on these factors from the two models during the sample period, the Value premium for the Asia Pacific region was 40% higher than that for the global universe.

Because the Barra Value factors are shown in Exhibit 1, this chart does not reflect the actual performance of a Value portfolio in Asia Pacific or the global universe, but rather the net performance after filtering the influence of other factors in the respective Barra models. Therefore, to take this a step further, it is interesting to also compare the relative performance of the Barra Value factor to that of another major Barra factor: Momentum. The Momentum factor is chosen because, along with Value,

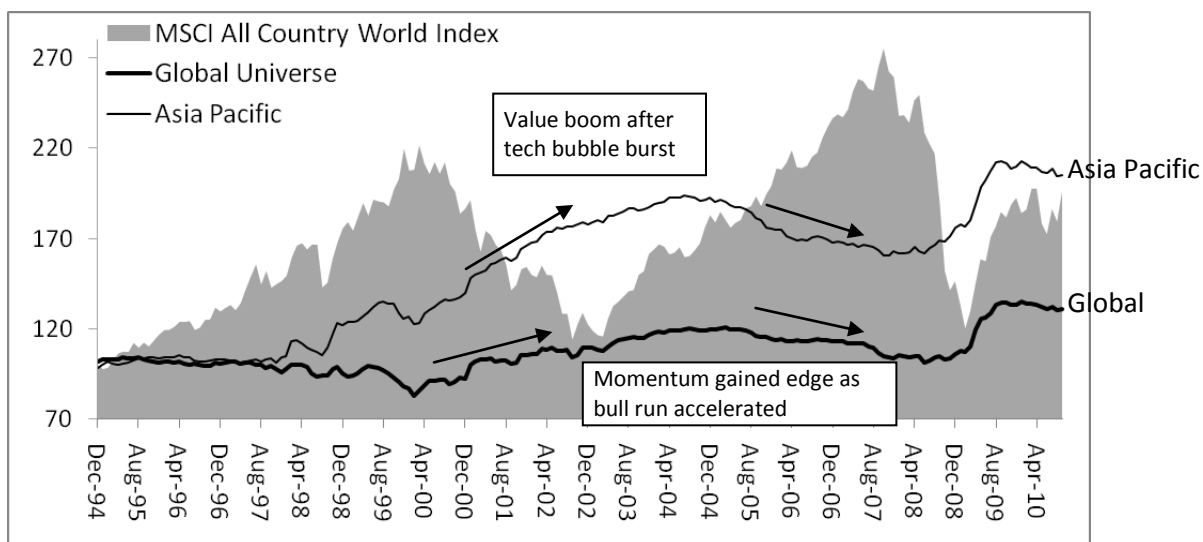
it is among the most widely known factors, whether in Asia Pacific or globally. The performance of the Barra Value factor relative to the Barra Momentum factor is therefore shown in Exhibit 2 below.

*Exhibit 1: Relative Performance of Value Stocks  
(1994 to 2010, December 1994 = 100)*



Source: Barra Models for Asia Pacific (ASE1) and Global Universe (GEM2).

*Exhibit 2: Performance of Value Relative to Momentum  
(1994 to 2010, December 1994 = 100)*



Source: Barra Risk Models for Asia Pacific (ASE1) and Global Universe (GEM2).

Exhibit 2 indicates that during the sample period, the Value factor performed significantly better than the Momentum factor in Asia Pacific when compared to global performance. This first became apparent during the Asian Financial Crisis in the late 1990s, when the two lines in the chart were moving in opposite directions. The relative performance in the two cases continued to diverge until 2004, when

the bull market began to take off and Momentum started to perform especially well. From 2004 to 2008, Value's performance relative to Momentum declined, which largely reflects the strength of Momentum during this bull run period. In addition, during 2004-2008, the steeper fall in the Asia Pacific line in Exhibit 2, as compared to the global universe, seems to suggest that Momentum outperformed Value by a larger extent in Asia Pacific than globally.

While over the long run Value stocks have performed well, they have suffered during cycles of underperformance. It is therefore useful to examine this cycle, which will be the focus of the next section.

## The Value Cycle

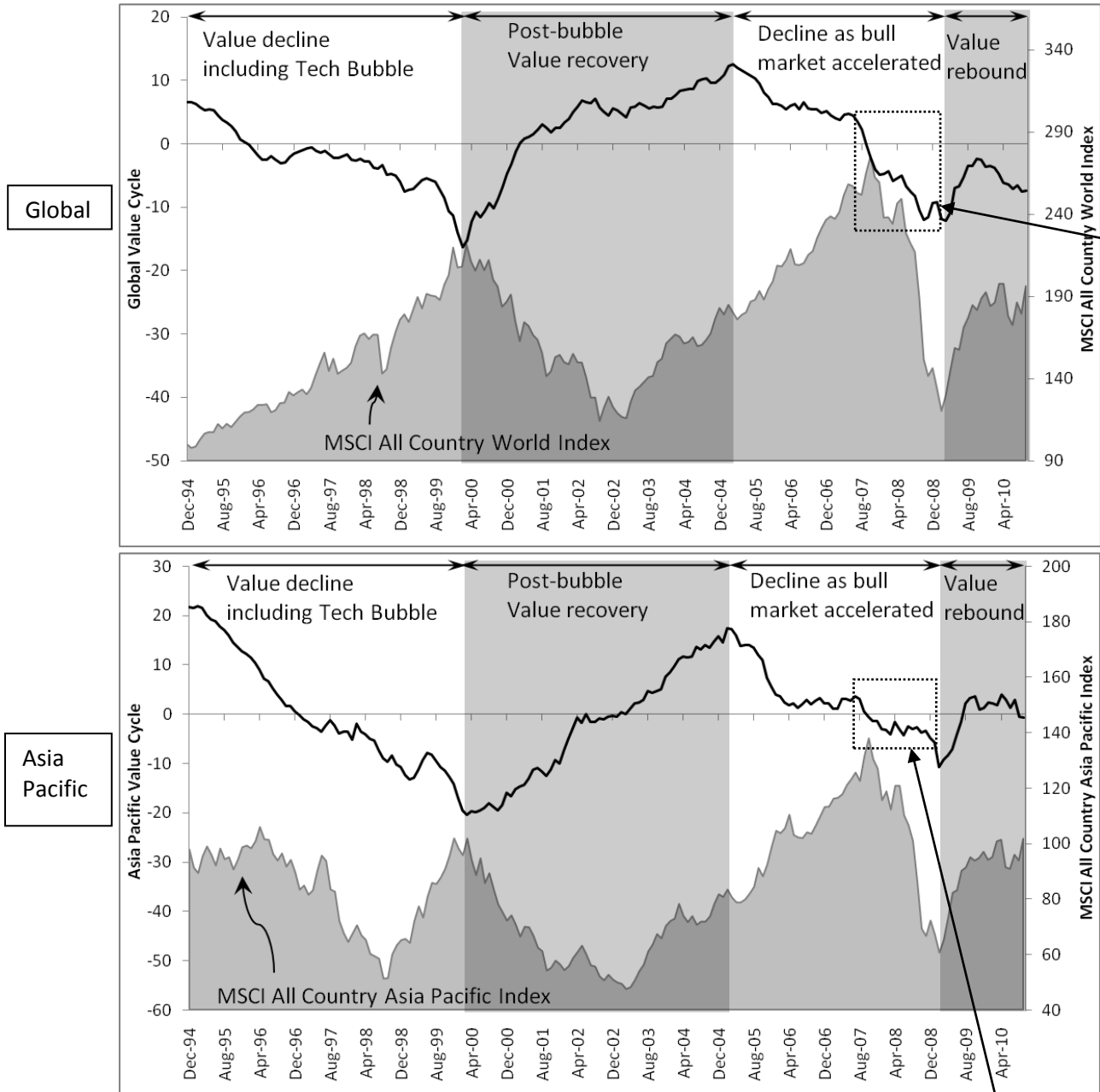
Value stocks go through cycles, as does the stock market in general. Value cycles, however, may not coincide with the cycles of the overall market. To analyze this further we will again utilize the Barra Value factors from the ASE1 and GEM2 models. In these models the market-wide effects, as well as those involving different styles and industries, have been accounted for separately. As mentioned before, we can view the returns of these Barra Value factors as a pure indication of the outperformance of Value stocks.

To trace the Value cycle, we subtract a fitted linear trend from the cumulative returns of the Barra Value factor. This is tantamount to taking the residuals from a regression of the cumulative returns on a time trend variable and an intercept term. By separating out the linear trend, this procedure allows us to focus on cyclical fluctuations and draw out the Value cycle. For comparison, both the Barra Value factors from the ASE1 model for Asia Pacific and the GEM2 model for the global universe are used to generate the Value cycles for the respective regions. These are illustrated in Exhibit 3, which covers the longest history possible given data availability.

The major trends of relative Value performance are broadly similar in Asia Pacific and the global universe, and the turning points largely coincide. Broadly speaking, the Value cycle has undergone four phases in the last fifteen years. The first period in the late nineties was one in which Growth stocks and particularly technology stocks performed well, while Value stocks experienced a period of relative decline. After the tech bubble burst in 2000, the rebound of Value stocks began and lasted for five years, until early 2005. From that time, the bull run in the overall stock market accelerated and, as Exhibit 2 illustrates, the Momentum strategy started to perform much better than Value. The underperformance of Value stocks in this third period culminated in the Quant Meltdown in August 2007, which triggered a rapid decline in the relative performance of Value stocks for about 18 months. The fourth and final period began with the recovery of the overall stock market in March 2009, with Value stocks playing a leading role in the market recovery.

There is no obvious link between the Value Cycle and that of the overall stock market. In Asia Pacific, the overall market fell quickly between mid-1996 and mid-1998, before recovering sharply from that point up to early 2000. However, Value stocks declined almost continuously throughout this period. The technology bubble had an important part to play in causing Value stocks to underperform at that time, but similar discrepancies can be found in other periods as well. For example, Value stocks surged during the bear market in 2000-2003, but fell sharply in the Global Financial Crisis in 2008.

Exhibit 3: Value Cycle in Global Universe and Asia Pacific  
(Cumulative Return of Barra Value Factor Net of Linear Trend)



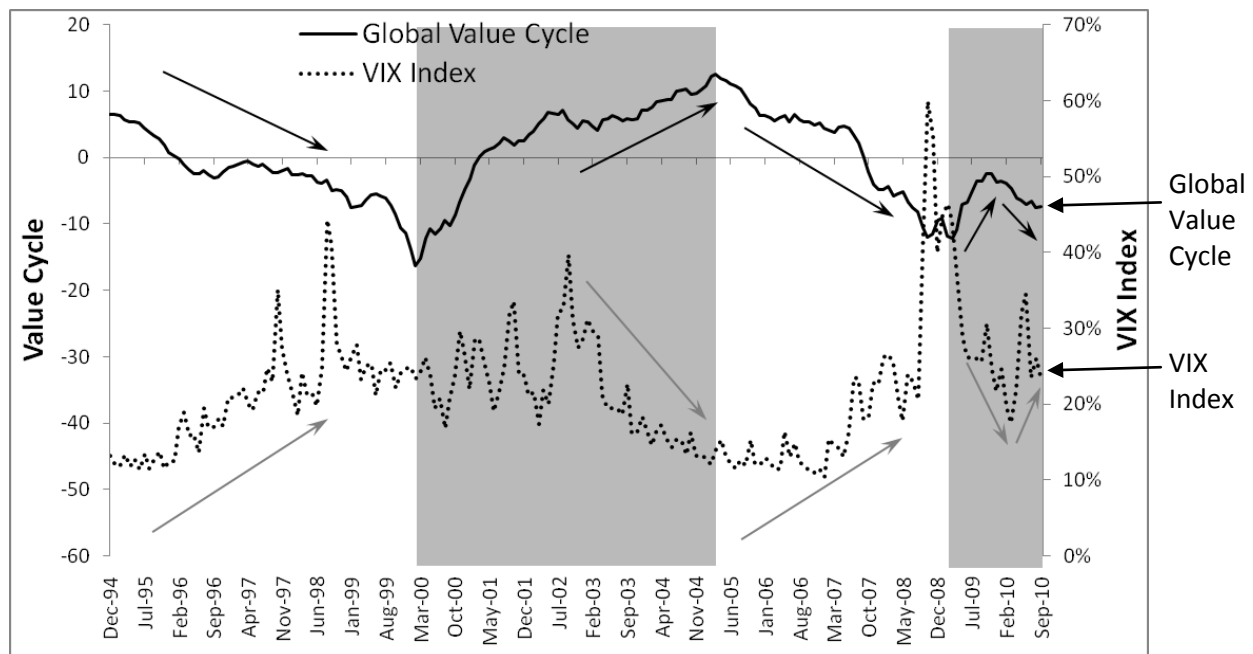
Source: Barra Models for Asia Pacific (ASE1) and Global Universe (GEM2).

The Quant Meltdown in August 2007 triggered a period of underperformance in Value stocks

For the global universe, similar discrepancies could also be found. For instance, Value stocks also outperformed during the bear market from 2000 to 2003, but underperformed during the Global Financial Crisis in 2008. In addition, the turning points of the global Value cycle did not necessarily coincide with those of the overall stock market.

In terms of possible drivers, there is reason to believe that the Value cycle is related to the market's risk appetite. Fama and French (1993, 1996) have argued that the Value premium is a measure of the risk associated with the level of financial distress in the economy, and is therefore the compensation for non-diversifiable risk borne by the holders of Value stocks. Based on this argument, the relative attractiveness of Value stocks would decline when risk aversion rises. This may be analyzed empirically in the current context because financial distress may be proxied by the VIX Index, which, as a measure of the implied volatility of US equities, captures the degree of market uncertainty and risk aversion in the US and also globally. This is shown graphically in Exhibit 4 below, where only the global Value cycle is shown given that it is qualitatively similar to that cycle in the Asia Pacific region.

Exhibit 4: Value Cycle versus Market Risk Aversion



Source: MSCI and CBOE.

The Value cycle generally moved in opposite direction to risk aversion.

The above chart shows the Value cycle with the two rising periods shaded in gray. In the first Value downtrend from 1994 to 2000, the movement of the VIX Index indicates that risk aversion was generally on the rise, which is consistent with our expectation that these stocks become less attractive as risk appetite falls. Similarly, the VIX Index generally rose in the second downtrend of the Value cycle from 2004 to 2008. On the other hand, during the uptrends of the Value cycle during 2000-2004 and after 2008, risk aversion was largely on the decline. Even if only on a graphical basis, this lends support to the

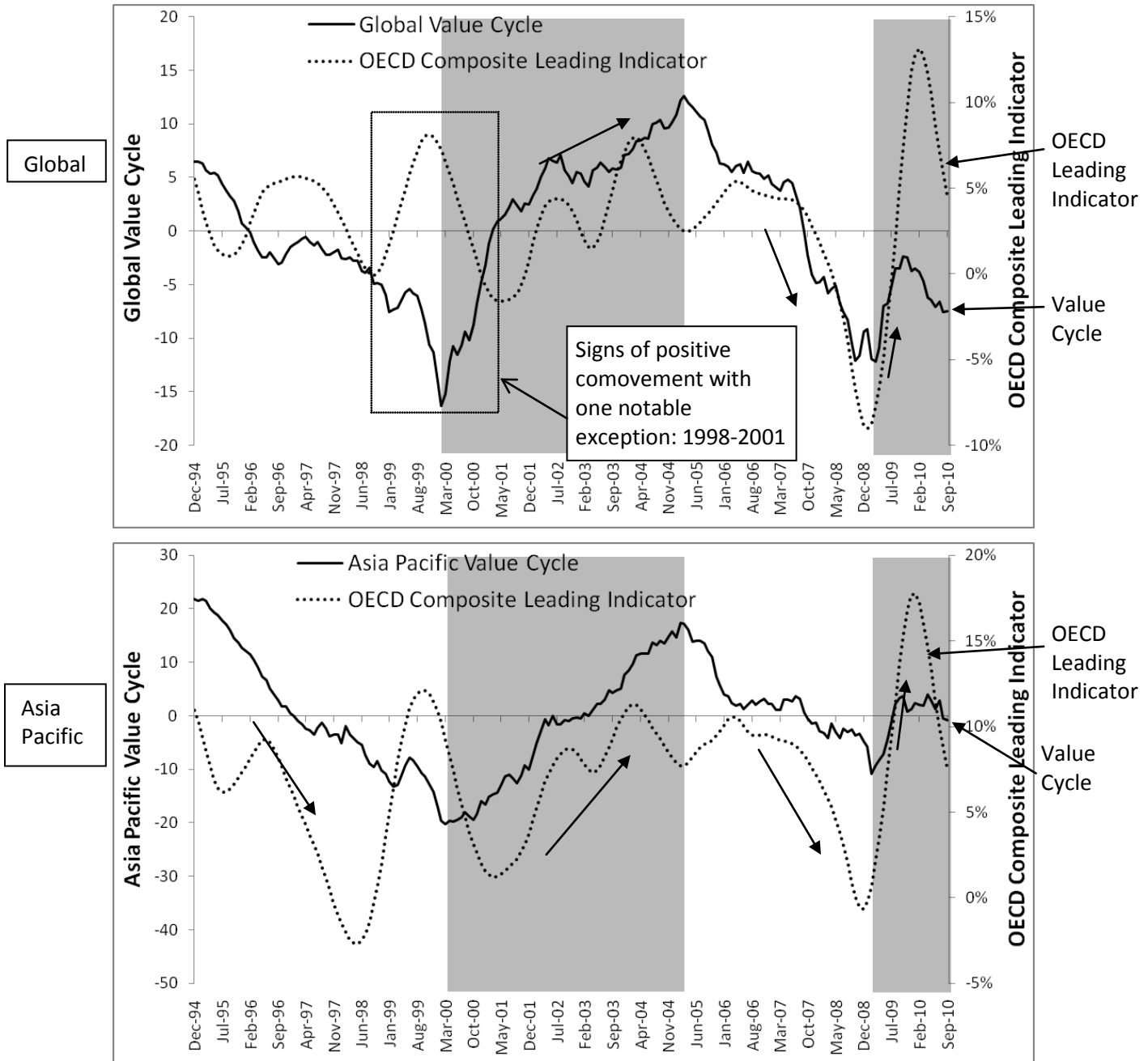
view that Value stocks become less attractive as market uncertainty increases, and vice versa. This observation will be tested with quantitative methods subsequently.

If the Value premium is a compensation for holders of Value stocks, then changes in macroeconomic risk should also affect the relative performance of Value stocks, since such risk would be higher in recessions than in economic booms. Zhang (2005) extended this further by arguing that the corresponding firms would also suffer by a greater extent during recessions because they are burdened with more unproductive capital, making their stocks relatively riskier to hold during such times. Value stocks would therefore become less attractive when the economy is doing poorly.

The analysis of macroeconomic factors is often complicated by issues related to the large number of macroeconomic time series, as well as cross-country consistency. In addition, there are also lead-lag effects since the stock market is a forward-looking indicator of the economy. To solve these problems, we turned to the Organisation for Economic Co-operation and Development (OECD) and its composite of leading indicators. Besides accounting explicitly for lead-lag differences, the OECD leading indicator composite puts together a wide array of different macroeconomic time series. While no variable can perfectly forecast future changes in economic activity, this indicator composite reflects the market's view of where the economy is heading, and these expectations do influence stock markets.

For the global universe, the corresponding OECD leading indicator used here is based on the largest grouping computed by OECD, which includes all OECD countries, plus Brazil, China, India, Russia, Indonesia, and South Africa. As for Asia Pacific, it is based on OECD's largest Asian grouping – Major Five Asia – which includes China, India, Indonesia, Japan, and Korea. These leading indicators are shown together with their respective Value cycles in Exhibit 5 over the page.

Exhibit 5: Value Cycle versus OECD's Composite Leading Indicator



Source: MSCI and OECD. Composite Leading Indicator from OECD used here is based on the 12-month rate of change, which removes seasonal effects.

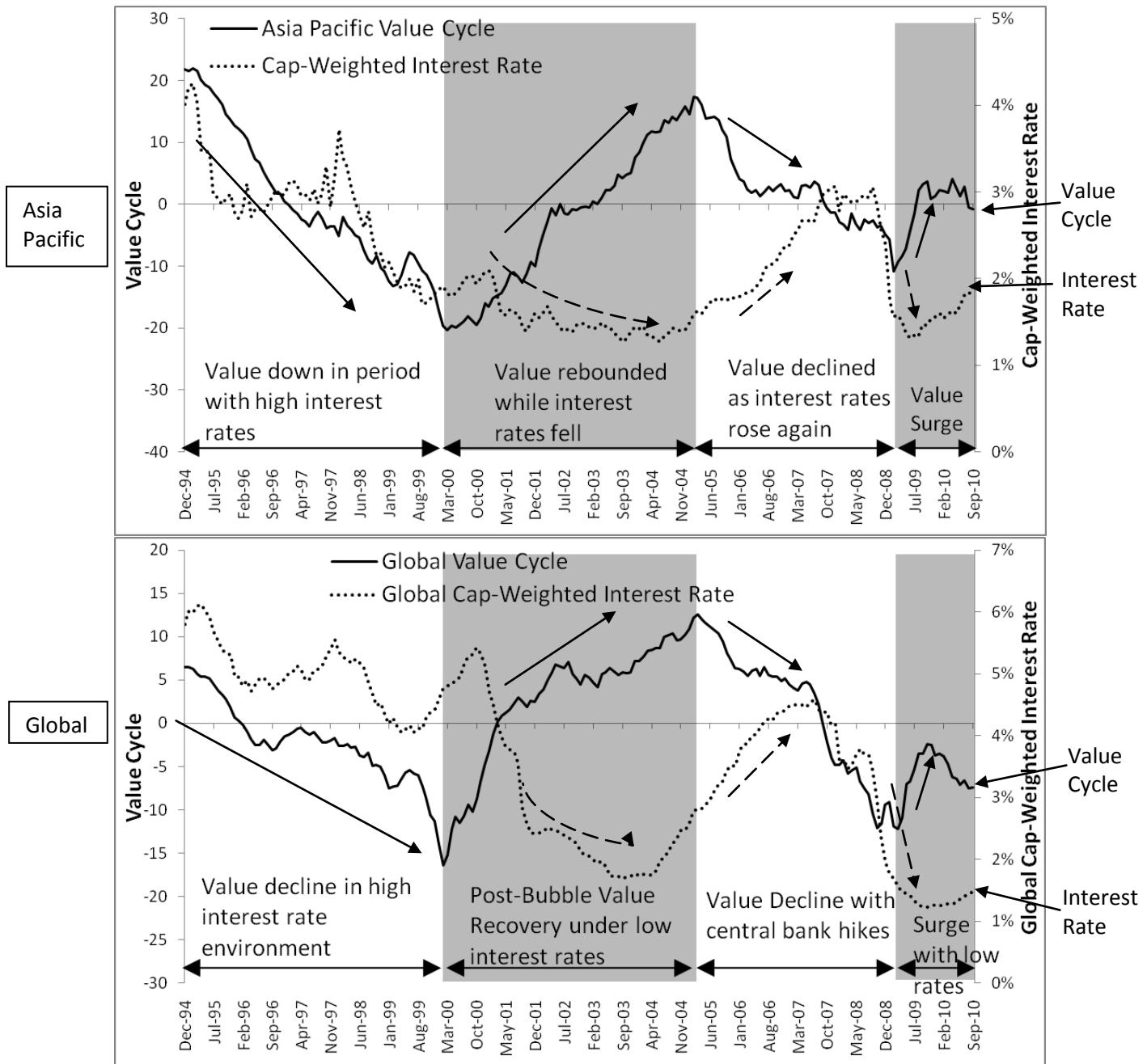
Whether for the Asia Pacific region or globally, the charts above suggest that the Value cycle moved in the same direction as macroeconomic expectations, particularly from 2001 onwards. This is in line with the expectation that Value stocks become relatively riskier and thus less attractive during economic downturns, and vice versa. However, there are periods in which this apparent co-movement did not seem to hold. This is rather obvious for the global universe from 1998 to 2001 (as highlighted in the

chart). During the tech boom, global Value stocks were underperforming despite strong global growth and the booming stock market. Of course, such a visual inspection may be misleading; more formal tools will be applied subsequently.

Instead of the level of economic activity, the relationship between financial markets and the macroeconomic cycle may also be captured by interest rates, since this macroeconomic variable is not only closely associated with the state of the economy but is also a key driver in financial markets. As the economy strengthens central banks raise interest rates to slow inflation, while they cut rates to boost the economy during recessions. Interest rates are therefore perceived to be a pro-cyclical variable. We will examine the impact of this key macroeconomic variable on the Value cycle subsequently.

Given that the geographical coverage considered here involves multiple countries, the relevant interest rate is derived from cap-weighting the respective risk-free rates from different countries, setting the weights to the country weights in the relevant MSCI index. For the Asia Pacific region and the global universe, these weights correspond to the country weights in the MSCI All Country Asia Pacific and MSCI All Country World Indices, respectively. The results are plotted in Exhibit 6 over the page.

Exhibit 6: Value Cycle versus Interest Rate Cycle



The Value cycle generally moved up when interest rates were low and vice versa.

As before, the Value cycle is superimposed and the uptrending periods are highlighted in gray. First we consider the case for the Asia Pacific region, which is shown in the upper chart. In the first downtrend of the Value cycle from 1994 to 2000, the region was generally experiencing high and rising interest rates. Initially, many of the

regional economies were overheating with real estate bubbles forming, and monetary authorities leaned towards higher rates to keep this speculative activity in check. When the Asian crisis began in 1997-98, currency values started to freefall and, despite worsening economic prospects, some governments in the region were forced to raise interest rates to protect their currencies from speculative attacks.

The same was true in the second downtrend of the Value cycle from 2005 to 2008. Interest rates were again on the rise during this period, partly due to Federal Reserve interest hikes that began in 2004. On the other hand, when the Value cycle was trending up during 2000-2004 and after 2008, interest rates were generally declining and were at relatively low levels. In total, these observations are consistent with expectations that the Value cycle tended to move up when interest rates were low.

For the global universe in the lower chart of Exhibit 6, a similar picture appears. In the late nineties, the Federal Reserve and other central banks in developed economies kept interest rates high to curtail inflation when economic growth was strong, but quickly cut interest rates after the tech bubble burst in 2000. These moves were accompanied by a relative decline in Value stocks before 2000 and a recovery thereafter. When the Federal Reserve started interest rate hikes in 2004, the Value cycle peaked within nine months and subsequently reversed. Some years later, when the Federal Reserve and other central banks cut rates to historically low levels after the Global Financial Crisis in 2008, Value stocks started to surge within three months, in early 2009.

So far, we have analyzed the relationship with the Value cycle separately for different factors; it is of interest to consider these factors simultaneously since, for example, the impact of interest rates may become insignificant after risk aversion has been accounted for. For this reason the Value cycle is regressed on the various possible drivers in a multi-variate regression. The results are first shown for Asia Pacific in Exhibit 7.

In regression (1), the VIX Index and the OECD composite leading indicator are the explanatory variables, and both are statistically significant. The coefficient of the VIX Index is negative, as expected, suggesting that the Value cycle tended to be below trend when risk aversion was high. The OECD leading indicator also has the expected sign (i.e. positive), implying that the Value cycle was above trend when strong economic growth was anticipated, and vice versa. In terms of interest rates, both the Fed funds rate (in regression (3)) and the Asia Pacific cap-weighted interest rate of the regional economies (in regression (2)) are used, since the Fed funds rate is often viewed as a leading indicator of regional interest rates. The Fed funds rate is negative and statistically significant, although the regional interest rate is not. This result could be because the Fed funds rate, besides being a leading indicator of regional rates, is also more representative of global liquidity than the regional interest rates. If we use the global cap-weighted interest rate instead of the Fed funds rate, the estimated coefficient is also negative and statistically significant. The negative sign of these interest rates is opposite to that for the OECD leading indicator, and suggests that for interest rates there was more behind the scenes than just being a pro-cyclical indicator that reflects the state of the economy; in that case, its sign should be positive. To investigate this further we include both these variables in regression (4).

Interestingly, the coefficient of the OECD leading indicator becomes statistically insignificant after the Fed funds rate is added, while the latter remains negative and statistically significant. Besides being an indicator for the state of the economy, the interest rate also reflects liquidity and the cost of capital, or in other words, the attractiveness of alternative use of funds. For central banks that also use interest rate policy to check asset inflation, such as house prices, the level of interest rate is directly linked to the attractiveness of these alternative assets. In the Asian crisis, interest rates were kept high to ward off attacks from currency speculators, even though economic fundamentals were clearly deteriorating. The high interest rate was therefore a reflection of the falling liquidity and capital outflows at that time.

Exhibit 7: Regressions of Asia Pacific Value Cycle (Jan 1995 – Sep 2010)

	Regressions			
	(1)	(2)	(3)	(4)
Intercept	8.66* (1.92)	10.72** (2.02)	23.55*** (6.05)	22.89*** (3.66)
VIX	-55.33*** (-3.23)	-63.13*** (-4.06)	-79.06*** (-5.02)	-77.94*** (-4.36)
Fed Funds Rate			-181.95*** (-3.76)	-178.29*** (-2.95)
Cap-weighted Risk-free Rate		131.59 (0.84)		
OECD Leading Indicator	45.80** (2.09)			4.14 (0.17)
Adjusted R-squared	0.32	0.30	0.43	0.42

Note: The Value cycle is represented by the deviation of the cumulative Barra Value factor returns from its linear trend. The t-statistics are in parentheses, with the associated standard errors adjusted using the Newey-West correction. The OECD Composite Leading Indicator is based on OECD's largest Asian grouping "Asia Major Five", which includes China, India, Indonesia, Japan and Korea. The asterisks \*, \*\* and \*\*\* refer to statistical significance at the 90%, 95% and 99% confidence levels respectively.

Moving to the global case, whose regression results are displayed in Exhibit 8, the conclusions are largely similar. In fact, the coefficient to the OECD leading indicator is not statistically significant, even when the interest rate variables were excluded. Changing the geographical coverage of the leading indicator did not affect the results qualitatively.

The Value cycle, whether in the case of Asia Pacific or globally, is shown to be most affected by the level of risk aversion and the interest rate cycle. The level of economic activity – as represented by the OECD leading indicator – did not feature as strongly, which suggests that the liquidity aspect of interest rates was more important than its role as a pro-cyclical economic indicator.

Exhibit 8: Regressions of Global Value Cycle (Jan 1995 – Sep 2010)

	Regressions			
	(1)	(2)	(3)	(4)
Intercept	0.1479*** (3.38)	0.1544*** (4.00)	0.2355*** (6.05)	0.2257*** (5.23)
VIX	-0.6700*** (-3.95)	-0.6988*** (-4.30)	-0.7906*** (-5.02)	-0.7304*** (-4.47)
Fed Fund Rate			-1.8195*** (-3.76)	
Cap-weighted Risk-free Rate				-1.8971** (-2.39)
OECD Leading Indicator (All OECD + 6)	-0.1220 (-0.38)			
OECD Leading Indicator (All OECD countries)		-0.2572 (-0.90)		
Adjusted R-squared	0.29	0.30	0.43	0.36

Note: The t-statistics are in parentheses with the associated standard errors adjusted using the Newey-West correction. Two versions of the OECD Composite Leading Indicator were used: one for all OECD countries only while the other – All OECD + 6 – also includes Brazil, China, India, Indonesia, Russia, and South Africa. The asterisks \*\* and \*\*\* refer to statistical significance at the 95% and 99% confidence levels, respectively.

## Conclusion

Value investing is a common investment strategy and, like all other strategies, it has suffered from periods of underperformance (for example, the tech rally in the late nineties). A better understanding of the Value cycle would enable investors to better manage the risk associated with this strategy. This paper examined the Value cycle globally, and specifically for Asia Pacific; and found that the turning points of this cycle did not necessarily coincide with that of the overall stock market. Motivated by the Fama-French assertion that Value stocks become less attractive in times of economic distress, various possible drivers were considered here, especially those related to the market's risk appetite and macroeconomic risk. It was found that risk aversion affected the relative performance of Value stocks adversely, while high interest rates were also non-conducive for these stocks. Conversely, Value stocks were found to thrive in environments with strong risk appetite and low interest rates.

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