

**What's New at Arrowstreet?**

We hope that you are enjoying the spring season (unless, of course, you're in the southern hemisphere). In this edition of the Journal, we feature two topics discussed at Arrowstreet's last Client Conference. John Capeci highlights two ways to incorporate small cap stocks into institutional portfolios. As many of you know, Arrowstreet began investing in small cap stocks in 2005. In the second article, Jim Thames discusses how tactical tilts, as opposed to systematic biases, can add value to investment strategies over time.

**Q1 2007 Review:**

**Investment Performance:**

The first quarter of 2007 was a very strong quarter for all of Arrowstreet's strategies, both on an absolute and a relative basis. All of our composites, including global, international (non-US), small cap, and emerging markets, added significant value versus their benchmarks. Both active basket and stock selection contributed to Arrowstreet's outperformance in the first quarter. Basket selection worked particularly well in emerging markets, while stock selection performed best in developed markets.

**Business Growth:**

During the 1<sup>st</sup> quarter, firm-wide assets under management grew to \$18.9 billion as we funded one new global mandate and received additional funds from existing clients.

**Team Members:**

In January, Arrowstreet welcomed Sam Thompson as its twelfth equity partner. Sam first started working with Arrowstreet's research team in 2005 and came on board full-time in 2006. During the first quarter, Arrowstreet also added four new employees to our Systems team, which is headed by Ken Martini, Arrowstreet's Chief Technology Officer. A profile on Ken can be found on page 3 of the Journal.

As always, we are interested in your views and encourage your feedback. Please email your thoughts to us at:

**info@arrowstreetcapital.com**

**Opportunities in Small Cap**  
By John Capeci, Ph.D. Arrowstreet Capital, L.P

Small cap stocks have gained increasing attention from institutional investors as their returns have outpaced large cap stocks in recent years. This paper addresses the question of whether small cap exposure is more appropriately exploited as a stand alone asset class or as part of an all cap mandate. To address this question, we focus on two related issues. Are the factors which drive successful equity management for small cap stocks and large cap stocks distinct? Second, is there a role for tactical selection between small and large cap?

The view that small cap equity management is a truly distinct process from large cap management is typically driven by the belief that the factors which help forecast

returns in the small cap segment of the market are distinct from those effective in the large cap segment. There are reasons for expecting such differences to arise. For example, small cap stocks as a group are less heavily monitored by investors than large cap stocks. This ought to create greater importance of informational signals (signals that help forecast returns by virtue of their information content being incorporated into price slowly) for small cap stocks. Arrowstreet's research confirms that many informational based factors are relatively more effective for small cap stocks than for large cap stocks.

**Adding Value Through Tactical Tilts**  
By Jim Thames, CFA Arrowstreet Capital, L.P.

Arrowstreet's investment process is designed to avoid systematic biases, for example towards small or large stocks, or towards growth or value stocks. However, the process does generate tactical tilts as a result of the changing opportunities that we perceive in the market. Since our inception in 1999, we have witnessed several noteworthy shifts in our portfolios. This paper reviews the history of our tilts and the positioning of the portfolios today.

Arrowstreet's investment philosophy is predicated on the belief that return opportunities present themselves at multiple levels of aggregation and across multiple investment concepts; hence the tag line: "a multi-dimensional approach to international investing." By simultaneously

monitoring such a broad array of opportunities, and doing so in an unbiased manner, Arrowstreet is able to add value to client portfolios without exposing them to extended periods of underperformance.

Genuine return opportunities are characterized as offering three key ingredients:

- return dispersion,
- forecasting skill of the dispersion, and
- cost effective vehicles for exploiting insights.

For the purposes of this paper, we will cover only the first two items; leaving the discussion of cost effective vehicles for a later day.

For a complete version of this article, please visit:  
[http://www.arrowstreetcapital.com/research\\_whitepaper.htm](http://www.arrowstreetcapital.com/research_whitepaper.htm)

## March 2007 Investment Outlook

### Global/International Equity Strategy

#### Developed Markets Performance: 1<sup>st</sup> Quarter 2007

The first quarter of 2007 was a strong quarter for Arrowstreet's developed markets strategies. Our international (non-U.S.) equity and global equity composites, respectively, added value above their benchmarks.

Both active country/sector basket and active stock selection added value to developed markets portfolios in the first quarter. Our overweight in German Materials added value through large positions in BASF and ThyssenKrupp. BASF performed particularly well through the end of March thanks to a series of analyst upgrades and an announced agreement to collaborate with Monsanto on genetically modified crops. Our stock selection was notably effective in the Japanese Industrials sector where our overweight in Mitsubishi Heavy Industries Ltd. was based on attractive earnings signals and book to price valuations.

In terms of country performance, European markets rose 3.9% in U.S. Dollar terms in the first quarter. The rise in Europe was led by gains in the Scandinavian region, including Finland (+10.4%), where retail sales growth accelerated to an 11 month high, Denmark (+8.0%), and Norway (+7.1%). Underperforming countries were Ireland (-0.9%) and Italy (+0.9%).

Asia gained 4.6% in U.S. Dollar terms during the first quarter of 2007, fueled by gains in Singapore (+10.3%) and Australia (+9.2%). Hong Kong equities were a drag on the region's performance, gaining only 0.5%. Shares in Singapore rose after the government lifted its 2007 economic growth forecast, leading banks higher on speculation that the improving economy will boost loan demand. The Information Technology and Telecommunication Services sectors pushed the Australian stock exchange to record levels during the quarter as company profits beat analyst expectations.

From a global sector standpoint, portfolios remained overweight the Materials sector during the first quarter. This sector was a major positive contributor to performance. The recovery of commodity prices on increased demand from Chinese growth helped drive up the prices of Materials. The Financials sector lagged other industries as investors became increasingly concerned that an already soft housing market in the U.S. might weaken further as the ill-effects from sub-prime mortgages permeate the broader market.

#### Developed Markets Overview

In early 2007, global equity markets continued the upward climb they had enjoyed in 2006. The MSCI World Index of developed countries rose 1.3% in January on the heels of strong performance in the Telecommunication and Industrials sectors. North American markets outperformed other developed regions as the U.S. Federal Reserve Bank chose to keep interest rates steady and reported a slight decrease in U.S. inflation data.

After a strong start in February, the gains of early 2007 were erased late in the month when world markets fell 2.8% in a single day of trading as measured by the MSCI All Country World Index. This sharp decline was triggered by a sell-off in China, where markets gave back more than 9% after the government threatened tighter controls on illegal investing, which was rumored to have pushed the Chinese market to a record high. The declines also came in the wake of uninspiring comments by former Federal Reserve Chairman Alan Greenspan during a private speech over satellite to investors in Hong Kong. This helped increase market volatility across the world.

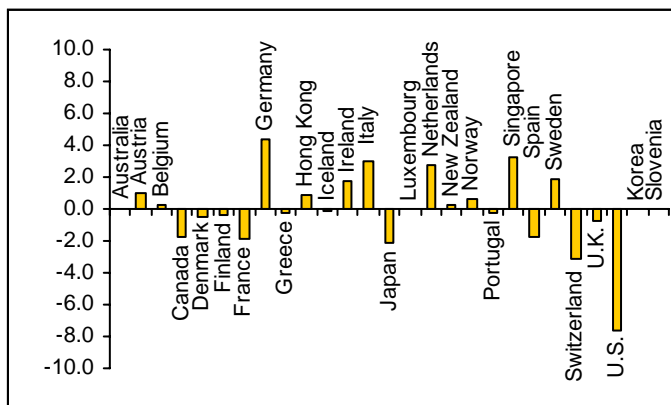
Despite an ominous start to the month, March saw a strong rebound from the panic experienced in late February. Buoyed by an unexpected rise in consumer confidence in Europe, which reached a 6-year high in March, as well as improved unemployment and industrial production data in the U.S., global markets were able to gain back much of what was lost in February. Over the entire quarter, the MSCI World Index rose 2.5% in USD terms.

#### Specific opportunities that we believe will offer attractive return potential include:

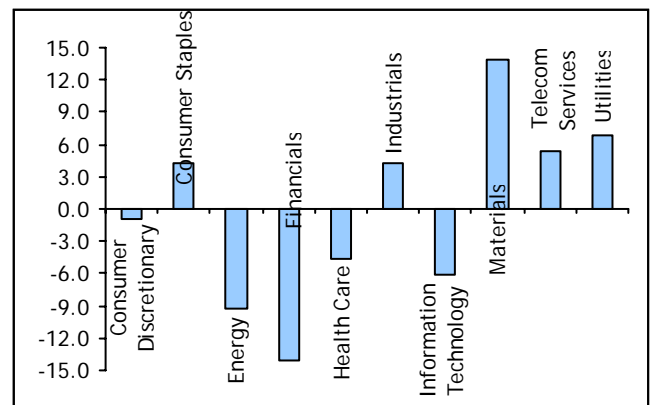
United Overseas Bank (Singapore Financials) - Singapore is among the most attractive countries in our developed markets universe. The country recently released GDP growth for Q1 2007 of +7.2%, beating analysts' estimates. We favor Singapore, and specifically the financials sector within this market, because of favorable basket-level momentum and earnings terms. United Overseas Bank, Singapore's second largest bank, is attractive in part due to favorable long-term growth measures.

Volvo (Sweden Industrials) – Volvo represents a good opportunity based on multiple investment signals. Volvo's basket (Sweden Industrials) has attractive earnings terms. At the stock level, it exhibits positive price momentum and a high dividend yield relative to its basket. As the world's second largest truck manufacturer, Volvo is benefiting from increasing heavy-truck demand from Eastern Europe as the region experiences continued growth.

**April 2007 Active Country Weights (%)**  
(Citigroup PMI World)



**April 2007 Active Sector Weights (%)**  
(Citigroup PMI World)



## March 2007 Investment Outlook Emerging Markets Equity Strategy

### Emerging Markets Performance: 1<sup>st</sup> Quarter 2007

The first quarter was a strong period for Arrowstreet's emerging markets strategy. We added significant value both from country/sector basket allocation and from stock selection within those baskets.

Our basket selection favored the global Materials sector. Arrowstreet's most successful basket allocation came in the Peruvian Materials basket, which is dominated by Southern Copper. Our overweight in Southern Copper added value as the stock outperformed the benchmark by over 34%. This company's success was mainly due to the resurgence of copper prices, which rose about 14% during the quarter. Our positioning in Southern Copper was motivated by its attractive value terms, including earnings and dividend yield.

Emerging markets portfolios also benefited from our overweight in the Brazilian Materials basket, which included a large position in steel producer Usinas Siderurgicas de Minas. The Brazilian steelmaker's shares rose on speculation that Asian economic growth might sustain demand for materials exports, even if the U.S. economy slows. Our position in Usinas was motivated by favorable valuation terms relative to its peers, as measured by its book, earnings, and dividend yields.

Our bullish position in Turkish Materials also contributed to value-added. We held an overweight position in Ereğli Demir ve Çelik Fabrikalari, which contributed to the majority of this gain. Ereğli shares rose as the company announced its pretax profit increased by 32% in 2006. Global demand for steel has remained firm as economic growth in Asia, and in particular China, has boosted consumption of the commodity. Our position in Ereğli was based on positive price momentum and upgrades of analysts' earnings estimates.

### Emerging Markets Overview

The first quarter of 2007 witnessed an up-tick in volatility among global equity markets, particularly in emerging markets. Many investors began questioning the sustainability of the current bull-market run, which began in 2003. Concerns surrounding a potential global recession drove emerging equities down over -10% in late February and early March. This short-lived plunge was led by a sell-off of equities in China. Nevertheless, the MSCI Emerging Markets Index posted a gain during the quarter, returning

+2.35% in USD terms. Overall index volatility rose towards the end of Q1, with the 100-day annualised daily volatility on the MSCI Emerging Market Index measuring over 16%.

In China, monetary policy continues to be hampered by rigid currency controls. In order to keep the Yuan artificially devalued against the U.S. dollar, China has kept its deposit and lending rates very low. China's GDP growth stands at over 10% as of year-end, while deposit rates measured at less than 3% as of March 2007. The divergence between China's low interest rates and high economic growth rate remains large, prompting investors to seek higher returns by buying equities and property. According to many economists, this has created asset-price bubbles in China, most recently witnessed in the Shanghai market.

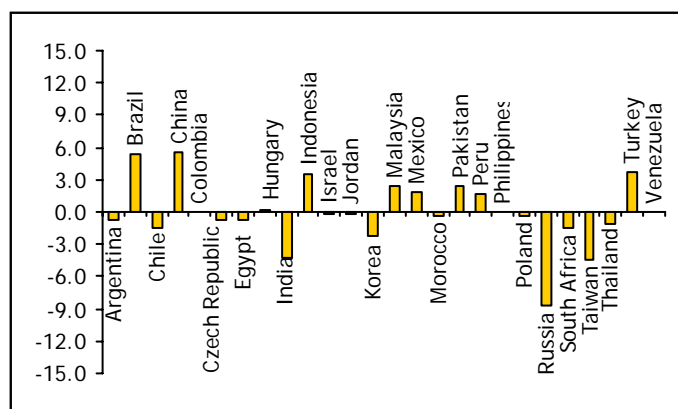
Another trend we are witnessing is an increased correlation between emerging and developed markets. During the past six months, the correlation between the MSCI Emerging Markets Index and the MSCI World Index measured at 0.77. This was based on 130 trading day observations between October 11, 2006 and April 10, 2007, with a t-statistic of 13.77 and a confidence level of 1%. By comparison, during the first six months of 2005 the correlation between these two indices stood at 0.57, based on 129 observations with a t-statistic of 7.84 and the same confidence level.

### Specific opportunities that we believe will offer attractive return potential include:

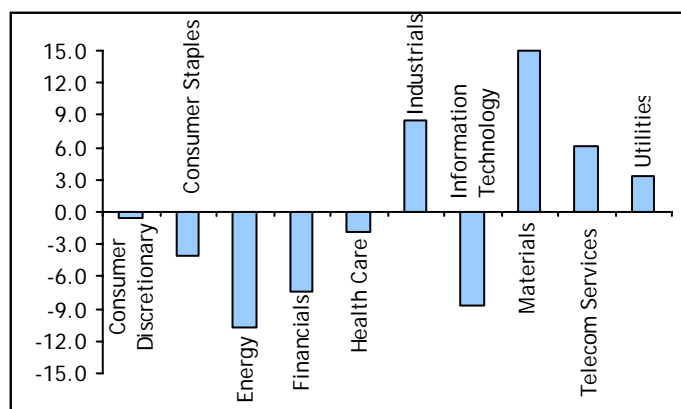
**Bursa Malaysia (Malaysia Financials)** - Malaysian Financials is a basket in which we have been establishing an overweight recently, based mainly on positive price momentum. Within this basket, Bursa Malaysia has positive earnings terms, including positive analyst estimate revisions and excess price momentum. The company, which operates Malaysia's stock exchange, has benefited from increased trading volumes. Malaysia's stock index rose 14% in the first quarter, its best quarterly gain in seven years.

**China Shipping Container Lines (China Industrials)** - China Shipping Container Lines represents a stock-level value opportunity. The stock offers and attractive earnings yield and book yield. The Baltic Dry Index, which measures freight rates, has climbed over 40% year-to-date, providing increased revenues to Asia's second largest carrier of sea-freight boxes. Positive momentum at the basket level also contributes to our bullish view of this stock.

**April 2007 Active Country Weights (%)  
(MSCI EM Index)**



**April 2007 Active Sector Weights (%)  
(MSCI EM Index)**



### Employee Profiles — Ken Martini Chief Technology Officer

Ken Martini has the overall responsibility for Arrowstreet's Systems Department, which includes setting Information Technology strategic direction, oversight of Production Operations and managing development initiatives.

Prior to joining Arrowstreet, Ken was a Systems Manager at Investors Bank and Trust from 2001 to 2006. His responsibilities included managing software development projects as well as managing the Interface Solutions Development Team. Ken was also involved in several bank wide infrastructure migration projects. From 1992 through 2000, Ken worked as a Software Consultant at several companies including Granitar, Linc System and Information Technologists Inc. Across various clients, Ken fulfilled the roles of Technical Lead, Architect and Engineer, where he designed, developed and then implemented large software systems for a variety of industries and technologies.

Ken received his B.S. in Computer Science with a concentration in Software Engineering in 1991 from Rochester Institute of Technology. In his spare time, Ken likes to spend time with his family (SookJin and Mathew), model shipwright and sail. He lives in Norton.

