Dividend Swap Indices
Access to equity income streams made easy
April 2008
The Barclays Capital Dividend Swap Index Family

Equity indices have been the most essential of measurement tools for all types of investors. From the intrepid retail investor, to the dedicated institutional devotees of modern portfolio theory, the benchmarks of the major stock markets have served as the gauge of collective company price performance for decades, and have been incorporated as underlying tradable reference instruments in countless financial products delivering stock market returns.

In most cases, equity indices are available as price return or total return, the latter being, broadly speaking, a blend of the return derived from stock price changes, as well as the receipt of dividends paid out to holders of the stock.

The last few years have seen the rapid growth of a market in stripping out the dividend return and trading it over the counter through dividend swaps – a market that has so far been open to only the most sophisticated investors, allowing them to express views on the future levels of dividend payments, hedge positions involving uncertainty of dividend receipts and implement trades that profit from the relative value between one stream of dividend payments and another.

The Barclays Capital Dividend Swap Index Family opens this market up to investors of all kinds. The indices in the family track the most liquid areas of the dividend swap market, thereby delivering unprecedented levels of transparency and access to a market that has grown to encompass the FTSE™, S&P 500, DJ Euro STOXX 50® and Nikkei 225 and in which the levels of liquidity that have been reached are estimated to be in the order of hundreds of millions of notional dollars per day.

Dividends deserve sole consideration; the dividend swap index returns represent an equity-style investment that tends to exhibit lower volatility and low correlation to cash equity index returns. In this guide, we seek to highlight the importance of analysing dividends on their own by including a number of research pieces by our equity derivatives and asset allocation teams, including a primer on the dividend swaps market and an important piece of analysis on the inflation-hedging characteristics of dividends.

We hope that the Dividend Swap Index Family rapidly becomes as useful and familiar a set of tools as traditional equity indices.

Waqas Samad,
Global Head of Index Products
April 2008
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Introduction

Marco Corsi

Employing a methodology that is similar in principle to that widely adopted for measuring the multi-billion dollar market in interest rates swaps, the dividend swap indices track the performance of a position in dividend swaps of a variety of yearly maturities. By following the rise and fall of the index levels, investors can therefore simply track the profitability of, for example, a long position in a two-year maturity dividend swap on the EuroStoxx50; a position that equates to buying the right to receive the dividends in two years time for a price that is fixed today.

For those investors that prefer to think of dividends in yield terms, the dividend swap yield indices are a parallel set that translate the daily movement in the index levels of the dividend swap indices into their corresponding implied yields.

In this guide, we present the details of the entire index family and the calculation methodology. By making these markets available in index form, our aim is to complement the toolbox for investors in the equity asset class, and to provide an effective, investable underlying reference for products that aim to deliver the benefits of access to dividend-investing and dividend-hedging strategies.

Barclays Capital Dividend Swap Indices

Investable

Excess Return

Total Return

Long

Short

Analytical

Yield

Europe

United States

United Kingdom

Japan

The following tenors are available: 2 years, 3 years, 4 years, 5 years

Source: Barclays Capital

Accessing the index

Index levels and analytics for the indices are available on the Barclays Capital Index Products website.

http://ecommerce.barcap.com/indices/

Index data on Bloomberg: BCIX <GO>
Dividends as an alternative equity exposure

Aaron Brask, Eamonn Long

Dividends can be regarded as investment opportunities per se, separately from the underlying stock or index, for the following reasons:

- The dividend of a company is arguably the most transparent and tangible measure of a company’s performance. Investors have noted that companies signal their confidence about the future by raising their dividends (and thereby essentially committing themselves to future payments at the new elevated levels), while companies in trouble are forced to merely maintain their dividends, or in severe cases, as a measure of last resort, to cut their dividends. In other words, when a company pays a dividend, investors know that it has the cash to do so.

- Dividends are particularly attractive to longer-term investors as they are much less volatile than earnings (and indeed stock prices) and have less exposure to the downside.

- Dividends can be seen to provide an insurance premium against tail events for longer-term investors (not least for investors in companies engaged in the management of financial risk), especially where the valuations of some low-yielding shares seem to be based on reputation and market confidence.

They provide the investor with some protection against inflation. Simply put, as more dollars are required to purchase a particular good or service, so more dollars are paid for that particular good and service; thus, more dividends should be passed along to the investor in a commensurate fashion, assuming that inflation is uniform and that the payout ratio is consistent. The topic is discussed in greater detail in the last section of this report Dividends: An alternative inflation hedge and separately, together with a history of dividends, in Global Speculations: Dividend Delights, 7 September 2005.

Dividends may also be looked at from the index level, also referred to as the index dividend level. The index dividend level is calculated as follows:

1) Compute the total dividends paid out by each company on the index

2) Sum up the total dividends of all the companies on the index to arrive at a figure for the total dividends paid out on the index

3) Divide the total dividends paid out on the index by the index divisor, so that a comparison can be made with the index price

In other words, the index dividend level corresponds to the dividend that an investor should receive were he/she to own all the shares in each of the companies on the index. Thus, the dividend yield on an index can be computed by dividing the index dividend level by the index price, analogous to the way that the dividend yield on a share is computed.

How to invest in dividends

Index dividends can be stripped from the index, in much the same way as coupons can be stripped from bonds. Indeed, since the early part of this decade, investors have bought and sold index dividends separately from the index to make directional and relative value trades, to hedge, as well as to manage cash flows generated by stock portfolios.
This can be done by using dividend swaps, which are OTC instruments that enable investors to purchase or sell the dividend paid by an underlying index or stock over a specified period. They are based on the actual dividends paid irrespective of the underlying price or index. Consequently, they constitute an investment that is very different from investing directly in cash equities/indices.

Nowadays, index (and stock) dividends are widely traded separately from the underlying via dividend swaps, with the array of investors growing to build upon the traditional base of structured product hedging and hedge funds.

Dividend swaps are OTC instruments

Given that dividend swaps are OTC instruments, the opportunity to invest in the dividend market is available only to sophisticated investors.

Figure 1: The market implied 2011 DJ Euro STOXX 50® dividends (divided by the spot) versus the 2011 1yr euro forward rate

![Graph showing market implied dividends and forward rates]

Note: Here, yields look low compared to the interest rates
Source: Bloomberg, Barclays Capital

Dividend swap specifications

Dividend swaps are similar to vanilla interest rate swaps in that they involve one fixed and one floating leg. However, the floating leg for a dividend swap is determined by the realised (or paid) dividends of the underlying. A typical dividend swap contract will include the following key specifications:

- **Underlying** – The stock or index whose dividends are being bought or sold
- **Valuation period(s)** – Window(s) within which paid dividends will qualify. Settlement typically occurs two business days after each period ends.
- **Fixed level(s)** – At inception, this can be viewed as the expected level of dividends (per share or index equivalent) priced into the swap over the valuation period(s). Fixed levels for multi-period swaps can be structured according to the dividend market-term structure, or flat across all periods.
- **Notional** – Stipulates the size of the trade and is generally indicated by specifying the number of shares.
Dividend swaps can be based on a single stock, basket, index, or a combination thereof. In the case of an index or basket, the paid dividends are the weighted sum of its constituents’ paid dividends. The dividend swap payout is determined solely by three factors: 1) the paid dividends of the underlying stock or index, 2) the fixed level set forth at the inception of the contract, and 3) the notional of the trade.

Specifically, at the end of each valuation period the long dividend swap counterparty will pay a fixed amount and receive the (qualifying) dividends paid by the underlying during the valuation period. Similarly, the short dividend swap counterparty will have the opposite exposure and cash flows.

Using dividend swaps

Dividend swaps allow investors to take a view on the dividend market. As such, they can be used as investment opportunities, or hedging tools.

Value investing

Some investors find that index dividends offer particularly good value: for example, as at early April 2008, 2009 dividends appear particularly attractive as market levels are pricing in a 6.4% cut in dividends, while analyst expectations imply a 12.9% rise in dividends (Figure 3).

Flows from the equity-linked/structured-products market apply upward pressure to synthetic forwards, thus allowing investors to purchase dividends at more attractive levels. Indeed, while IBES’ consensus estimates indicate DJ Euro STOXX 50® dividend growth to be more than 8% over the next three years, investors can purchase 2010 dividends at levels that indicate a flat to backwardated term structure. Moreover, dividend distributions have historically proven to be robust to market downturns (Figure 4), as corporates are generally reluctant to cut dividends except as a last resort.

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1 Basket weightings are agreed upon and included in the contract, whereas index weights are determined by the index provider’s “number of shares” and “index divisor” figures specified on the ex-dividend date.

2 Paid dividends are generally defined as 100% of the ordinary cash company declared dividends in the currency of the company announcement. These quantities are specifically defined so that they coincide with the dividend levels implied by the synthetic forward (options) as to be consistent with the hedge.

3 Equity forward fair values are generally calculated as [Forward] = [Spot] + [Carry] – [Borrow] – [Divs]. Thus upward pressure on a forward is downward pressure on the dividends.
Figure 3: DJ Euro STOXX 50® dividend swap market and analyst estimates

Figure 4: S&P 500 Index total return performance vs paid dividends

Note: The backwardated market and analyst expectations are widely divergent
Source: Markit, Barclays Capital

Note: S&P 500 Index used for its longer history. S&P 500 Index rebased to 100 as of January 1980. Remaining 2008 dividends estimate; dividends appear to be more stable than the equity indices
Source: Bloomberg, Barclays Capital

Hedging

Many investors are exposed, directly or indirectly, to dividend risk. Convertible bond portfolio managers are natural users of dividend swaps. Indeed, many convertibles (eg, higher delta and/or long-dated convertibles) with little or no dividend protection can involve significant dividend risk. Managers can hedge on a name-by-name basis, or use basket/index dividend swaps for a macro hedge.

Speculation

Some investors speculate on the outright direction of dividend levels, while others employ relative value strategies. Most notable among the relative value strategies are long/short dividend swap baskets and capital structure arbitrage strategies.

Flexibility

Investors holding equity positions can convert uncertain dividend streams into fixed cash flows. Moreover, once dividends are converted to fixed cash flows, they can quickly be monetised and re-allocated upfront to avoid future reinvestment risk.

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For detailed disclosure information on the companies mentioned herein, please contact Barclays Capital at: Research Production; Barclays Capital; 200 Park Avenue; New York; NY 10166; USA.
Dividend Swap Index Family details

Marco Corsi

The Barclays Capital Dividend Swap Investable Indices offer a broad range of investors the opportunity to invest in dividends in a transparent and direct way, without recourse to the OTC market.

The indices are designed to replicate the performance of investing in equity dividend swaps. Each index reflects the return of entering into a forward-starting dividend swap on an equity index, with a specific tenor \( T \) on the third Friday of December of each year. The swap position runs for a year, and then the position is unwound and a new swap position with a new dividend swap level is initiated. The new swap’s tenor is unchanged and equal to \( T \).

- Total Return (funded) and Excess Return (unfunded) indices are available. A Total Return Index assumes that the notional earns an overnight deposit rate.
- The indices are calculated for different underlyings: DJ Euro STOXX 50® (EU indices), FTSE™ 100 (UK indices), S&P 500 (US indices) and Nikkei 225 (JP indices).
- For each index, short and long versions are calculated.
- The indices are calculated for different tenors \( T \): two, three, four and five years.
- The position is rolled every year (on the third Friday of December).
- The indices are calculated daily and the history is available from 2005.

In addition, we calculate a set of non-investable indices (Dividend Swap Yield Indices) representing, for a given year and a given underlying, the dividend yield as implied from the current dividend swap level (referring to the same period and underlying).

Figure 5: Dividend Swap Index EU Long 3yr ER performance

Note: The performance of the Dividend Swap Index includes fees.
Source: Barclays Capital

Dividend Swap Investable Index methodology

Each of the Dividend Swap Indices reflects the return of entering into a forward-starting dividend swap on an equity index, with a specific Tenor \( T \) on the third Friday of December of each year. The swap position runs for a year, and then the position is unwound and a new swap position with a new dividend swap level is initiated. The new swap’s tenor is unchanged and equal to \( T \).
Let’s take, as an example, the Dividend Swap Index on the Eurostoxx 50 with a tenor of three years. In December 2005 one enters into a dividend swap on the DJ Euro STOXX 50, referring to the period December 2007 to December 2008. At the end of the year (third Friday of December 2006) the position is rolled into a dividend swap on the same underlying, referring to the period December 2008 to December 2009.

In Dec-05 one enters to a Div Swap for the year 2008, expiring on Dec-08

In Dec-06 one rolls the position to a Div Swap for the year 2009, expiring on Dec-09

Long Excess Return Index calculation

In the following we detail the methodology for the Dividend Swap Long Excess Return indices.

The index level starts at 100. Thereafter, on each index valuation date, the index level is calculated as:

$$I_t = I_p \times \left(1 + NPV_t\right) - \text{Index Cost},$$

Where:

- $I_t$ is the index level on day $t$
- $p$ is the previous Roll Day
- $I_p$ is the index level as of the previous Roll Day $p$
- $NPV_t$ is the Net Present Value of the dividend swap on day $t$, expressed as a percentage of $K_p$ and calculated as follows:

$$NPV_t = \left(\frac{K_t - K_p}{K_p}\right) \times D_{t,T}$$

Where:

- $K_p$ is the dividend swap level (expressed in index points) for the tenor $T$ as of the previous Roll Day $p$; this dividend swap refers to the period from $(p + T - 1)$ to $(p + T)$;
- $K_t$ is the current dividend swap level (expressed in index points) for the tenor $T$; this dividend swap refers to the period from $(p + T - 1)$ to $(p + T)$;
- $D_{t,T}$ is the discount factor on day $t$ for the maturity $T + p$;

The Index Cost is calculated as follows:

$$\text{Index Cost}_t = I_p \times \left(IF + RC_p\right) \times \frac{P_t}{365}$$
Where:

- $IF$ is the index fee, expressed in percentage points;
- $RC_p$ is the roll cost, expressed in percentage points;
- $P_t$ is the number of calendar days between day $t$ and the previous Roll Day $p$;

Note that according to the formula above, the exposure to the dividend swap is defined by the factor $I_p / K_p$.

All the index levels are rounded to the nearest four decimal places.

**Long Total Return Index calculation**

For the Total Return Index, the notional is assumed to earn an overnight deposit rate.

The Total Return Index is then calculated by using the Barclays Investable Cash Indices as follows:

$$TRI_t = TRI_p \times \left(1 + \left(R^E_t + R^C_t\right)\right)$$

Where:

- $TRI_p$ is the index level as of the previous Roll Day $p$
- $R^E_t$ is the return derived from investing in the Unfunded Excess Return Index calculated as:
  $$R^E_t = \frac{I_t}{I_p} - 1$$
- $R^C_t$ is the return derived from investing in the relevant Barclays Investable Cash Index, calculated as follows:
  $$R^C_t = \frac{B_t}{B_p} - 1$$

Where:

- $B_p$ is the index level of the relevant Barclays Investable Cash index as of the previous Roll Day $p$
- $B_t$ is the index level of the relevant Barclays Investable Cash index as of the current day $t$

**Short Version Index calculation**

We also have a version of the indices reflecting a short dividend swap position, which is calculated by suitably adjusting the calculation for the long version. More precisely, the NPV term will be calculated according to the following:

$$NPV_t = \left(\frac{K_p - K_t}{K_p}\right) \times D_{t,T}$$
Dividend Swap Yield Index methodology

The Barclays Capital Dividend Swap Yield Indices are non-investable indices designed to represent, for a given underlying and a given tenor, the forward dividend yield as implied from the dividend swap level. Each index refers to a specific underlying and a specific tenor. The dividend swap level used in the calculation is the same as in the corresponding Dividend Swap Investable Index, having the same tenor and the same underlying.

- The indices are calculated for different underlyings: DJ Euro STOXX 50® (EU Indices), FTSE™ 100 (UK indices), S&P 500 (US indices) and Nikkei 225 (JP indices)
- The indices are calculated for different maturities: two, three, four and five years
- The indices are calculated daily and the history is available from 2005

Index calculation

On each index valuation date, the index level is calculated as:

\[ I_t = K_t / F_{t,p+T-1} \]

Where:
- \( I_t \) is the index level on day \( t \)
- \( K_t \) is the current dividend swap level (expressed in index points) for the tenor \( T \); this dividend swap refers to the period from \( (p + T - 1) \) to \( (p + T) \);
- \( S \) is the underlying price at time \( t \)
- \( p \) is the previous roll date
- \( F_{t,p+T-1} \) is the forward price for the underlying index, having maturity \( p + T - 1 \), and calculated in \( t \)

The forward price is calculated according to the following formula:

\[ F_{t,p+T-1} = [S - \sum_{i \in \{r_t, \hat{i}, \hat{T}\}} DF(r^*;t,\hat{i})] \times DF^{-1}(r^* - r, \hat{i}, \hat{T}) \]

Where:
- \( \hat{i} \) is the settled start date (ie, \( t \) plus spot settlement period)
- \( T \) is the forward date
- \( \hat{T} \) is the settled forward date
- \( S \) is the spot at time \( t \)
• $d_i$ is the dividend $i$ (at time $i$)
• $r_a$ is the accrual rate
• $r_r$ is the repo rate
• $DF(r; t_0, t_1)$ is the discount factor for rate $r$ between times $t_0$ and $t_1$

Index performance

For illustrative purposes, we present the evolution of some of the EU and UK indices.

Figure 6: Dividend Swap EU Long ER Indices: performance and volatility

Note: The performance of the Div Swap Index includes fees. Source: Barclays Capital

Figure 7: Dividend Swap EU Long ER Indices summary statistics

Source: Barclays Capital

Figure 8: Dividend Swap EU 2yr and 3yr yield versus Dividend Swap EU Long 2yr and 3yr ER

Source: Barclays Capital
Figure 9: Dividend Swap UK Long TR indices: performance and volatility

- Dividend Swap UK Long 2yr TR
- Dividend Swap UK Long 3yr TR
- Dividend Swap UK Long 4yr TR
- Dividend Swap UK Long 5yr TR

Note: The performance of the Div Swap Index includes fees. Source: Barclays Capital

Figure 10: Dividend Swap UK Long TR indices summary statistics

<table>
<thead>
<tr>
<th></th>
<th>Tenor 2 years</th>
<th>Tenor 3 years</th>
<th>Tenor 4 years</th>
<th>Tenor 5 years</th>
</tr>
</thead>
<tbody>
<tr>
<td>Average daily return (annualised)</td>
<td>4.06%</td>
<td>4.72%</td>
<td>1.34%</td>
<td>4.54%</td>
</tr>
<tr>
<td>Realised volatility (annualised)</td>
<td>6.72%</td>
<td>7.70%</td>
<td>7.76%</td>
<td>8.09%</td>
</tr>
<tr>
<td>Return/volatility</td>
<td>0.60</td>
<td>0.61</td>
<td>0.17</td>
<td>0.56</td>
</tr>
<tr>
<td>Correlation vs FTSE™ 100</td>
<td>9%</td>
<td>9%</td>
<td>11%</td>
<td>17%</td>
</tr>
</tbody>
</table>

Source: Barclays Capital

Figure 11: Dividend Swap UK 2yr and 3yr yield versus Dividend Swap UK Long 2yr and 3yr TR

Source: Barclays Capital
Additional information

Index start dates

- EU and UK Indices, tenors 2yr, 3yr, 4yr: 01-Jun-2005
- US Indices, tenors 2yr and 3yr: 01-Jun-2005
- US Indices, tenor 4yr: 05-Jul-2006
- EU, UK and US Indices, tenor 5yr: 16-Dec-2005

Publication of the index

The indices are published on London Business days.

Accessing the index

Index levels and analytics for the indices are available on the Barclays Capital Index Products website.

http://ecommerce.barcap.com/indices/

Once given permission, clients can access the index data on Bloomberg BCIX <GO>

Please contact the Index Products desk to be set up for access.

Products linked to the index

The indices are used in connection with Barclays Capital products. Contact your usual sales person for information on these products.
Using the dividend swap indices

Marco Corsi, Eamonn Long

The Barclays Capital Dividend Swap Indices offer investors the opportunity to invest directly in dividends, just as they would in a standard index such as the DJ Euro STOXX 50® and the FTSE™ 100, and without recourse to the OTC market.

- Through dividend swap indices, investors have easy access to the full range of available dividend swap maturities. Thus, investors can switch from the safer nearer-term dividends to the higher beta longer-term dividends in bull markets, and vice versa in bear markets.

- Investors can also enact other hedge-fund strategies using dividend indices: for example, a steepener is easy to implement with the long and short indices. Also, to buy the 2010 to 2014 implied growth, one would buy the dividend index corresponding to the 2014 dividends and short, in an equal amount, the dividend corresponding to the 2010 dividends.

Another way for the investor to gauge value in a particular dividend index is to compare the implied yield with interest rates. Economic expectations are encoded in the forward interest rates, as well as in the implied dividend yields:

- The comparison is done using the relevant Dividend Swap Yield Index, which represents the forward dividend yield (obtained by dividing the implied dividend for a given year by the forward, with expiry at the start of that year).

- The forward yield will be compared with the one-year forward interest rate for that year, as both forward yield and forward interest rates would represent a return on separate assets in that year.

- The idea is that the forward yield is a useful metric in its own right to measure cheapness of dividends. For more on this, please see Investing in Dividend Yield, December 2007.

The dividend swap indices can also be used to improve the risk-return profile of a portfolio hedging against inflation:

- Historically it can be observed that equity performance deteriorates as inflation rises; on the other hand dividend returns tend to be more stable. For this reason dividends may provide strong inflation protection, as well as diversification benefits (see Dividends: An alternative inflation hedge, 6 March 2008– which is reproduced at the end of this document).

- The same characteristics are also exhibited by the dividend swap levels, which are deeply connected with the dividend market (especially for short tenors). Using a short tenor Dividend Swap Index, one can achieve a reasonable dividend exposure, providing inflation protection and diversification. As an example we build a portfolio including Commodities (GSCI Index), Inflation-linked Bonds (Barclays Capital Euro Govt Inflation-Linked Bond Index) and the Dividend Swap EU Long 2yr ER Index. As shown in Figure 12, this portfolio exhibits less volatility and more stable returns with respect to a portfolio that doesn’t include the Dividend Swap Index. Figure 13 shows the low levels of correlation of our Dividend Swap Index with respect to the other asset classes that are supposed to provide a good hedge against inflation (Commodities and Inflation-linked bonds).
Figure 12: Comparison between inflation hedge portfolios – eurozone

Portfolio 1 (70% Bond, 10% Comm, 20% Div)
Portfolio 2 (80% Bond, 20% Comm)
Inflation

Source: Bloomberg, Barclays Capital

Figure 13: Correlations between asset classes that are a good hedge against inflation

<table>
<thead>
<tr>
<th>Correlations (%)</th>
<th>Dividend swap</th>
<th>Index</th>
<th>Commodities</th>
<th>EURO Inflation linked bonds</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dividend swap</td>
<td>100</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Index</td>
<td>7.3</td>
<td>100</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Commodities</td>
<td>-1.7</td>
<td>-3.7</td>
<td>100</td>
<td></td>
</tr>
<tr>
<td>EURO Inflation linked bonds</td>
<td>-1.7</td>
<td>-3.7</td>
<td>100</td>
<td></td>
</tr>
</tbody>
</table>

Source: Bloomberg, Barclays Capital
Dividends: An alternative inflation hedge

Sreekala Kochugovindan

Inflationary fears have taken centre stage in recent weeks as commodity prices continue to surge and US inflation remains firmly above trend. Given that equity capital returns are likely to remain volatile in the coming months, we focus on the dividend income component as an alternative investment. We examine the relationship between dividend income and inflation over the past 30 years and find that dividends provided strong inflation protection during the stagflationary 1970s as well as the early 1990s, when the UK and US last experienced a bout of “stagflation-light”. This suggests that during years that inflation is primarily driven by resource scarcity, dividends may prove to be a strong alternative hedge.

Inflationary pressures have intensified as oil, gold and agricultural prices continue to surge. In previous articles we have examined the threat that a “stagflation light” scenario may pose for financial markets. We found that, historically, equities, nominal bonds and cash have posted weak returns during periods of above-trend inflation and below-trend growth. Commodities, on the other hand, have traditionally outperformed under such a scenario, posting double-digit average real returns. In this article we examine the role that corporate dividends can play in an inflationary environment. The theme of investing in dividend flows has been discussed in previous articles. In Dividend delights, 7 September 2005, Tim Bond finds that over the long run dividends provide strong inflation protection. Using data from the Barclays Capital Equity Gilt Study it is possible to examine UK dividend history from 1899 and US history since 1925. He finds that over the past century, dividends possessed a modest positive correlation with inflation. The correlation rises as the holding period is extended to 5-10 years. We focus on the short-run benefits to dividend income and examine whether particular industries can provide more protection during periods of above-trend inflation.

Figure 11 plots the relationship between the S&P500 dividend growth and the headline CPI rate. The left-hand chart focuses on the relationship during the 1970s, the correlation between dividend growth and inflation was almost 60% over the decade. Dividends and inflation moved in tandem during the 1973 oil crisis, while the second oil crisis was accompanied by elevated levels of dividend growth. Meanwhile, capital returns from equities were incredibly volatile throughout the 1970s, with the S&P500 falling almost 50% from the 1973 peak. This suggests that during the stagflation environment of the 1970s, dividends managed to provide very strong inflation protection, precisely at the time when equity capital returns disappointed. The right-hand chart focuses on the relationship from 1983 to date. As commodity prices and inflation stabilised during the 80s, the correlation with dividends becomes much weaker, at just 37% from 1983 to date. However, the chart suggests that dividend growth remained elevated during periods when inflation spiked above trend levels. To take the example of 1990-91, this is the last time the US experienced a phase of above-trend inflation and below-trend growth, or “stagflation-light”. Dividends per share rose by as much as 13% that year and closely followed the trend in inflation. In more recent years, with the resurgence of the commodity boom, dividend growth has persistently remained above 12%, providing decent inflation protection at a time when year on year headline CPI growth has moved above 4%.

Global Speculations, Stagflation: The risks, 7 January 2008-04-08
An alternative way of viewing dividend income could be to examine the payout ratios. The charts below examine the history of dividend payout ratios for the UK and US since the 1970. Payout ratios are computed from dividend and earnings yields in order to provide us with a long-run perspective. We focus on three key periods of inflation: stagflation in the 1974 and 1979, and finally the above-trend inflation, below-trend growth phase in 1990. History suggests that during these periods equity and bond returns are particularly volatile and vulnerable so these areas are highlighted in the charts below. The shaded areas show the periods of above-trend inflation in the UK and US around these three periods. In the UK payout ratios trended higher during all three periods, rising by 8% in total during the 70s, and 10% in the early 90s. Meanwhile in the US, payout ratios remained fairly stable during the seventies and rose just 4% in the 90s. The stability of dividends may at first glance appear dull, however in comparison to the wild swings in capital returns during these periods, the less volatile dividend component of equities become far more interesting.

These total market payout ratios mask significant divergences across sectors. Payout ratios for US consumer goods rise quite sharply during inflationary periods, increasing as much as 60% in the late 1970s, suggesting very strong inflation protection from dividends. Consumer services on the other hand provide mixed results with no clear trend in dividends when inflation spikes. Examining each sector in turn suggests that dividends from commodity related sectors may provide the best inflation protection. The charts below plot the payout ratios for commodity stocks. Payouts for the basic
materials sector in both the UK and US increase quite sharply during the three key periods of inflation. As mentioned earlier, commodities are the best performing asset during periods of above trend inflation. Our analysis here suggests that an alternative way of benefiting from the commodity boom and gaining an inflation hedge could be to invest in the dividend component of commodity stocks.

Figure 16: Commodity sector dividend payout ratios, 1969 to date

There is a risk that payout ratios may provide a misleading picture of dividends as an inflation hedge. Payout ratios can rise even while dividends are being cut, as there is always the risk that earnings may experience an even larger fall. An alternative method would be to examine just the dividend payments of the sectors as opposed to the payout ratios. The charts below plot the dividends paid in index points and highlight the more recent history since 1990. Focusing again on the commodity sectors we see that the S&P500 Energy and Materials dividend payments rose steadily during the 1990s, even during the years when commodity prices were fairly subdued. Dividends were stable and rising during the high inflation and slow growth years of 1990-1991. This was also the case during the equity market correction of 2000-2001. And finally the commodity boom since 2000 has been accompanied by a sharp increase in dividend payments from both the energy and the materials sectors.

Figure 17: Dividend index points of S&P500 sectors

Source: Thomson Financial Datastream, Barclays Capital

Source: Ecowin, Bloomberg
It is possible to trade dividend on a forward basis via dividend swaps. The market is currently discounting subdued dividend growth for the next few years. The chart below highlights the implied dividend growth rate for the S&P500. Firstly, the shaded areas represent the historical percentiles, and the current implied growth rates are in the bottom percentiles and are therefore low in comparison to the history of implied rates. Secondly, the current implied growth rates are low in comparison to realised dividends. The long run average dividend growth rate since 1871 is over 4%. During the bouts of stagflation in the 1970s dividend growth rate reached 10%. During the 1990-91 recession, headline CPI annual inflation exceeded 6% yet dividends grew by 10%. The bursting of the dot com bubble was followed by a negative dividend growth rate of 6%, however during this period, inflation was subdued and market attention had turned to risks of deflation. Annual dividend growth rates over the last four years have remained above 10% suggesting that rates implied by the dividend swap market are unrealistically low. Pessimistic near term expectations may be due to the current environment of risk aversion. However, it is difficult to justify depressed implied rates in the longer end.

Figure 18: S&P500 implied annual growth rates are low compared with implied growth rates

<table>
<thead>
<tr>
<th>Year</th>
<th>2008</th>
<th>2009</th>
<th>2010</th>
<th>2011</th>
<th>2012</th>
<th>2013</th>
<th>2014</th>
<th>2015</th>
</tr>
</thead>
<tbody>
<tr>
<td>2009</td>
<td>1.4%</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>2010</td>
<td>1.4%</td>
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<td></td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>2011</td>
<td>1.3%</td>
<td>1.2%</td>
<td>1.0%</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2012</td>
<td>1.4%</td>
<td>1.4%</td>
<td>1.4%</td>
<td>1.7%</td>
<td></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>2013</td>
<td>1.7%</td>
<td>1.8%</td>
<td>1.9%</td>
<td>2.4%</td>
<td>3.0%</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>2014</td>
<td>1.7%</td>
<td>2.2%</td>
<td>2.6%</td>
<td>2.8%</td>
<td>3.3%</td>
<td>3.6%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2015</td>
<td>2.3%</td>
<td>2.4%</td>
<td>2.6%</td>
<td>3.0%</td>
<td>3.5%</td>
<td>3.7%</td>
<td>3.8%</td>
<td></td>
</tr>
<tr>
<td>2016</td>
<td>2.5%</td>
<td>2.6%</td>
<td>2.9%</td>
<td>3.2%</td>
<td>3.6%</td>
<td>3.8%</td>
<td>3.9%</td>
<td>4.0%</td>
</tr>
</tbody>
</table>

Source: Barclays Capital Index Dividend Distiller, 5 March 2008

As inflationary pressures continue to build, we believe that the dividend component of equity returns may prove to be a useful inflation hedge, in the short and long run. Examining our three key periods of inflation, 1973, 1979 and the early 90s, we find that dividend income growth was particularly strong over 10%. We also find that dividends are quite stable during bouts of stagflation, precisely at a time that equity capital returns exhibit wild swings and heavy losses. Finally, dividends from commodity related sectors seem to provide the best performance and remain stable even during the 1990s when commodity prices were subdued. Given that the current economic environment is characterised by inflation primarily driven by resource scarcity, dividends may prove to be a strong alternative asset to provide inflation protection.

For a primer on dividend swaps please see The Dividend Swap Primer, 22 October 2004.