2011 PORTFOLIO
MANAGEMENT CONFERENCE

Risk Premia Strategies: Building Blocks for Active Management

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Systematic Strategies | IPRS

PLEASE SEE ANALYST CERTIFICATION(S) AND IMPORTANT DISCLOSURES STARTING AFTER PAGE 26

Agenda

1. Risk Premia Strategies – A Cross-Asset-Class Taxonomy
2. From Theory to Practice: Strategy Applications
3. Enhancing and Timing Risk Premia Strategies

Risk Premia Strategies –
A Cross-Asset-Class Taxonomy

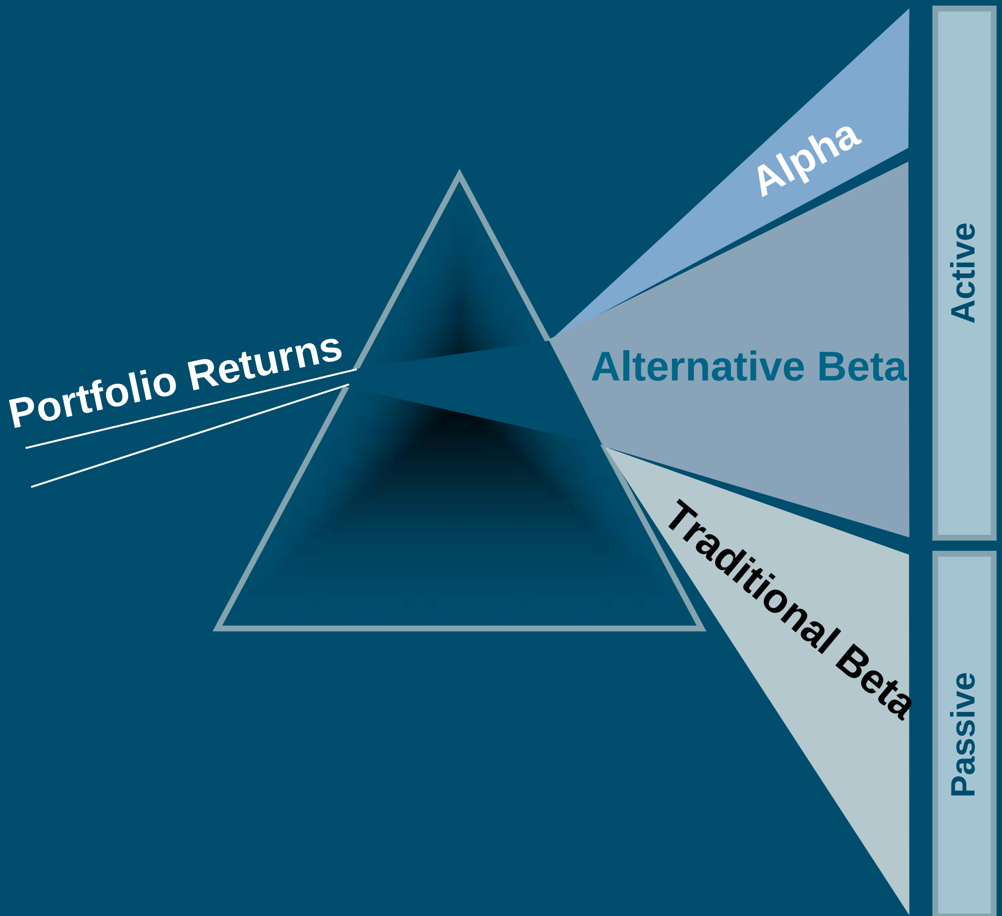
Introduction

- Risk premia strategies seek to capture excess compensation for taking exposure to risk factors beyond traditional market betas
- Expected to have positive excess returns over long horizons
- But experience sustained draw-downs when risks are realized
- **We present a systematic framework for identifying and analyzing risk premia strategies across asset classes**
- **And we show how they can be combined into portfolios with attractive profiles**

Understanding Sources of Active Returns

Alternative beta – associated with risk premia – rather than alpha

- Studies suggest that 65–85% of active returns can be attributed to alternative beta



Security selection, market timing or exploitation of market inefficiencies

Simple, systematic strategies targeting established risk premia and common factors

Long-only exposure in established markets. Captures traditional market-wide beta exposure

Source: Barclays Capital

Goal Is Not Hedge Fund Replication

Instead, we want to analyze and use the underlying risk premia strategies directly

Hedge Fund Replication – Top Down

1. Select index to replicate
2. Regress to find factors
3. Build replicating portfolio

Hedge Fund Index

β_1 β_2 β_3

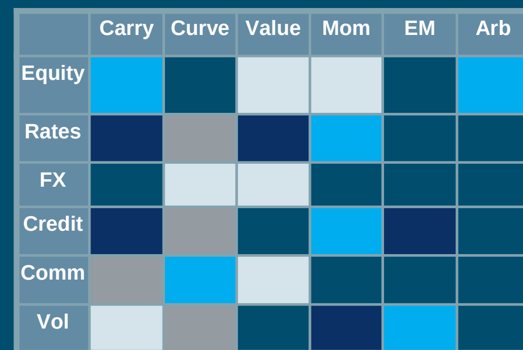
Factor 1 **Factor 2** **Factor 3**

Risk Premia Strategies – Bottom Up

2. Form portfolios with target properties

1. Identify, analyze and understand general risk premia factors

Portfolios of Risk Premia



Source: Barclays Capital

Identifying Risk Premia Strategies

We define categories of risk premia based on the following criteria

Identified Risk	Targeting an economically intuitive risk premium
Simple	Simple investment thesis, transparent, non-parametric, no optimization
Systematic	100% rules-based investment strategies
Established	Following a commonly used and established strategy
~~**Performance**~~	We do **not** include or exclude strategies based on past performance

Generic Risk Premia and Risk Factors I

	Generic Strategy	Example Strategy	Example Risk Factor
Carry	• Long higher-yielding short lower-yielding assets, from a pool of similar assets	• FX carry, top 3 minus bottom 3 of G10 by yield	• Investment currency crash risk
Curve	• Long maturity versus short maturity assets across a term structure	• Interest rates term premium	• Duration risk
Value	• Long “undervalued” short “overvalued” assets according to valuation model	• High minus low book-to-market stocks	• Short the “call option” in growth stocks
Momentum	• Long recent relative winners and short recent relative losers	• Commodity futures momentum	• Reversal risk

Source: Barclays Capital

Generic Risk Premia and Risk Factors II

	Generic Strategy	Example Strategy	Example Risk Factor
Volatility	• Short volatility strategies trying to capture realized – implied premium	• Short equity variance swaps	• Spikes in realized volatility
Emerging Markets (EM)	• Long emerging market assets versus developed market equivalents	• Long EM money markets versus dollar	• Currency and credit risk
Arbitrage[1]	• Strategy between assets with prices that should converge in the future	• Merger Arbitrage earning deal spread	• Deal failure or change in terms
Liquidity	• Long illiquid assets versus liquid ones with other similar properties	• Off-the-run vs on-the-run Treasuries	• Liquidity collapse

1. "Arbitrage" is the conventional name given to these kinds of strategies (merger arbitrage, convertible arbitrage, cap-structure arbitrage) even though it is of course a misnomer, if not an a outright oxymoron, to call a risk premia strategy an arbitrage strategy. Source: Barclays Capital

Bringing It All Together – The Risk Premia Strategy Grid

We apply the generic risk premia strategy concepts to create a cross-asset grid

	Carry	Curve	Value	Momentum	EM	Arbitrage	Liquidity
Equities	Dividend Yield	–	Book-to-Market	Stock Momentum	Various	Merger Arbitrage	Firm Size
Rates	Short-Dated Eurodollar	Term Premium	Futures Mean Reversion	Futures momentum	EM Money Markets	Bonds vs. Futures	On-the-Run vs. Off-the-Run
Currencies	G10 FX Carry	–	PPP Value	G10 Momentum	EM FX Carry	NDF vs. Cash	–
Credit	High Yield vs. High Grade	Credit Term Premium	Ratings Value	Single-name Momentum	EM Credit	Negative Basis	Debt Outstanding
Commodities	–	Deferred vs. Nearby	Scarcity/ Backwardation	Futures Momentum	–	Physical vs. Futures	–
Volatility	Short Straddles/ Variance	Volatility Term Structure	Implied vs. Realized	Various	–	Convertible Arbitrage	–

Source: Barclays Capital

- Each cell represents an individual strategy
- We consider volatility as an asset class (row)
- Blank cells do not necessarily indicate no strategy exists – just that we haven't thought of one yet!

From Theory to Practice: Strategy Applications

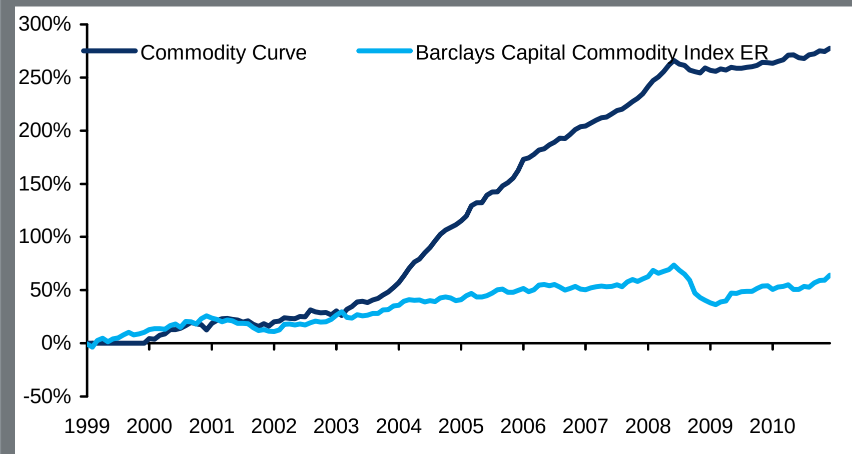
Identifying a Liquid Subset

For accurate analysis we identify a subs

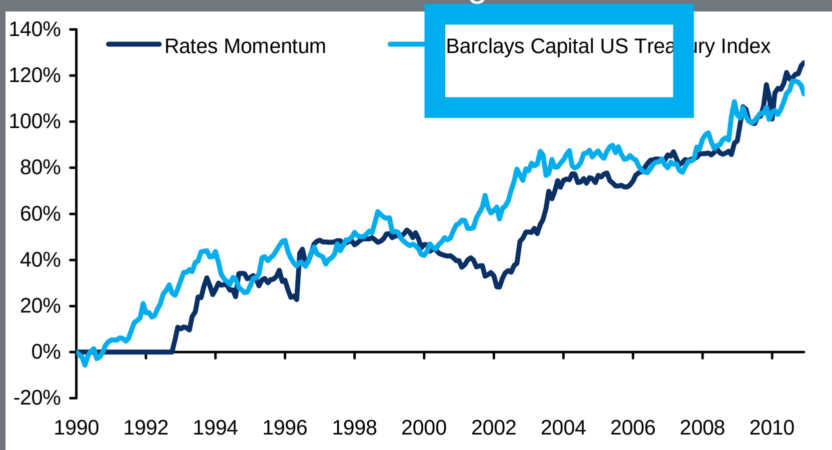
	Carry	Curve	Value	y
Equities	**Dividend Yield**	–	**Book-to-Ma**	e
Rates	**Short-Dated Eurodollar**	**Term Premium**	**Futures Me Reversio**	ın ın

e	**G10 Momentum**	**EM FX Carry**	NDF vs. Cash	–
ıe	Single-name Momentum	EM Credit	Negative Basis	Debt Outstanding
on	**Futures Momentum**	–	Physical vs. Futures	–
	Various	–	Convertible Arbitrage	–

Commodities Curve: Long 3M deferred and short beta-weighted nearby futures on basket of 23 liquid commodities (supply shock risk)(1)



Rates Momentum: Long past one year winner and short loser from 2y, 5y, 10y and Long Bond futures, duration-weighted(1)



nstruments, avoid shorting cash

volatility around 10%

ıat, **net of estimated transaction costs**

1. For ease of comparison, all graphical comparisons with respective traditional beta indices (S&P 500, etc.) are using excess return versions of those indices also statically scaled to an annual volatility around 10%. Source: Bloomberg, Barclays Capital

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Historical Performance of Liquid Strategies I

Individual risk premia strategies have positive Sharpe ratios, over long samples

Strategy Sharpe Ratios – January 1990[(1)] to December 2010

	Carry	Curve	Value	Momentum	EM	Arbitrage
Equities	Dividend Yield	–	Book-to-Market	Stock Mom.	–	Merger Arbitrage*
	0.2		0.3	0.3		1.1
Rates	Eurodollar Futures	10y-2y Futures	Long-Term MR	Futures Mom.	EM Money Mkts*	–
	0.9	0.5	0.6	0.7	1.0	
FX	G10 FX Carry	–	PPP Value	G10 Mom.	EM FX Carry*	–
	0.4		0.3	0.3	1.1	
Credit	CDX HY vs. IG*	10yr-5yr CDX IG*	–	–	–	–
	0.5	0.0				
Commodities	–	3M Def. vs. Nearby*	Backwardation*	Futures Mom.*	–	–
		2.5	1.2	0.5		
Volatility	Short Variance*	VIX Term Structure*	–	–	–	–
	0.6	1.3				

1. Sharpe ratios shown for maximum available data set for each strategy. Asterisked (*) strategies start from January 1999 or later. Source: Barclays Capital

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Historical Performance of Liquid Strategies II

But, as expected, drawdowns are significant

Maximum Drawdowns – Jan 1990[1] to December 2010

	Carry	Curve	Value	Momentum	EM	Arbitrage
Equities	Dividend Yield	–	Book-to-Market	Stock Mom.	–	Merger Arbitrage*
	25%		29%	23%		16%
Rates	Eurodollar Futures	10y-2y Futures	Long-Term MR	Futures Mom.	EM Money Mkts*	–
	27%	17%	23%	22%	22%	
FX	G10 FX Carry	–	PPP Value	G10 Mom.	EM FX Carry*	–
	30%		26%	25%	25%	
Credit	CDX HY vs. IG*	10yr-5yr CDX IG*	–	–	–	–
	18%	32%				
Commodities	–	3M Def. vs. Nearby*	Backwardation*	Futures Mom.*	–	–
		11%	13%	15%		
Volatility	Short Variance*	VIX Term Structure*	–	–	–	–
	30%	11%				

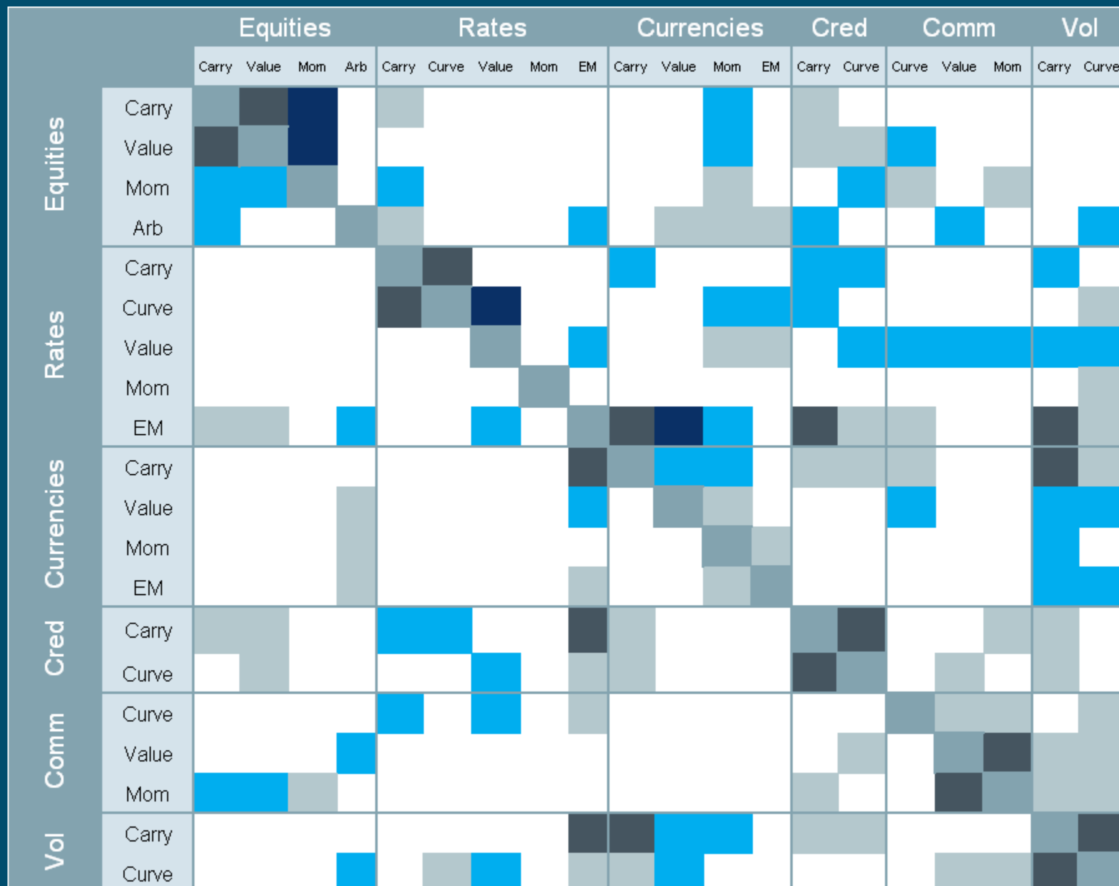
1. Maximum drawdowns shown for maximum available data set for each strategy. Asterisked (*) strategies start from January 1999 or later. Source: Barclays Capital

Historical Performance of Liquid Strategies III

Correlations are generally low – and surprisingly stable

Monthly Correlations on Pair-Wise Maximal Data-Sets

Key:	< -50%	-50% to -20%	-20% to +20%	+20% to +50%	> +50%



Full Period

- Below the diagonal – full sample, January 1990 to December 2010

Credit Crisis

- Above the diagonal – crisis period, June 2007 to March 2009

Source: Barclays Capital

Correlation of Risk Premia with Traditional Beta

Carry and curve show high correlations; others are low; all are consistent

Monthly Correlations on Pair-Wise Maximal Data-Sets of Risk Premia Strategy with Respective Traditional Beta[1]

Key:	< -50%	-50% to -20%	-20% to +20%	+20% to +50%	> +50%

Full Period: Jan-1990 to Dec-2010

	Carry	Curve	Value	Momentum	EM	Arbitrage
Equities	5%		12%	-6%		-22%
Rates	84%	96%	-4%	2%	1%	
Currencies	39%		-38%	-13%	54%	
Credit	52%	67%				
Commodities		33%	17%	29%		
Volatility	55%	35%				

Credit Crisis: Jun-07 to Mar-09

	Carry	Curve	Value	Momentum	EM	Arbitrage
Equities	16%		23%	-12%		-25%
Rates	74%	95%	-50%	15%	0%	
Currencies	69%		-67%	-21%	68%	
Credit	53%	67%				
Commodities		55%	17%	20%		
Volatility	57%	36%				

1. Traditional beta are the following: **S&P 500 Index** (SPTR including dividends) excess return over 1M USD Libor, **Barclays Capital US Treasury Index** excess return over 1M USD Libor, **Barclays Capital Dollar Diversification Index** excess return – trade-weighted G10 currencies versus the dollar, **Barclays Capital US Corporate Index** excess return over duration matched treasuries, **Barclays Capital Commodity Index (BCI)** excess return and **S&P 500 Short-Term VIX Futures Index** inverse excess return (-1x daily) as short volatility beta. Source: Bloomberg, Barclays Capital.

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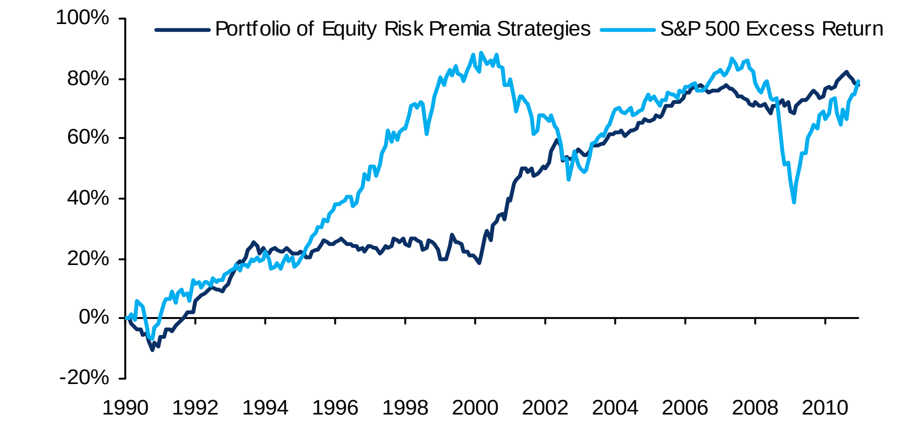
Portfolios of Risk Premia I: By Asset Class

The real power comes in diversified portfolios of risk premia strategies

	Carry	Curve	Value	Mom	EM	Arb
Eq						
Rates						
Curr						
Credit						
Comm						
Vol						

Portfolio of Equity Risk Premia

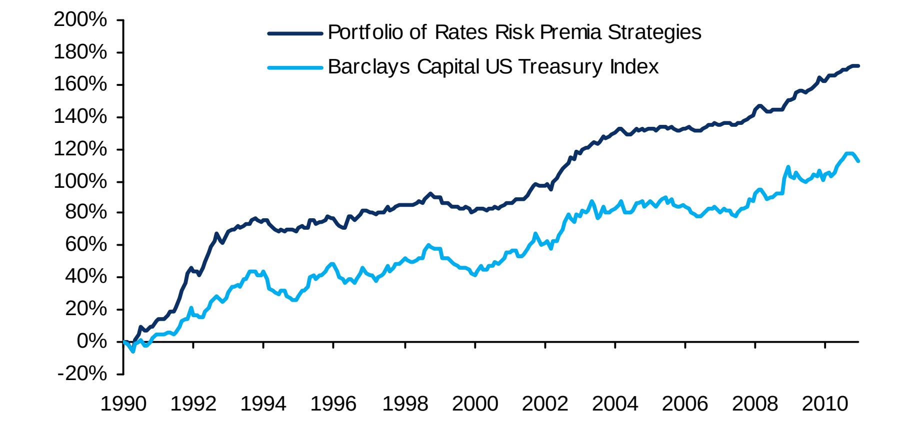


Source: Barclays Capital.

Asset Class Risk Premia Portfolios

	Equities	Rates	Currencies	Credit	Commod	Volatility
Ann. Exc. Return	3.6%	8.2%	4.0%	2.1%	14.8%	6.9%
Ann. Sharpe Ratio	0.7	1.3	0.8	0.2	1.8	1.0
Maximum Drawdown	10%	11%	9%	23%	11%	19%
Correlation w/ traditional beta	2%	68%	19%	66%	28%	53%

Portfolio of Rates Risk Premia



Source: Barclays Capital.

Note: For ease of comparison, graphical comparisons with respective traditional beta indices (S&P 500, etc.) are using excess return versions of those indices statically scaled to an annual volatility around 10%. In these examples, however, note that the portfolio of risk premia have volatilities lower than 10% since they benefit from diversification across strategies. Source: Barclays Capital

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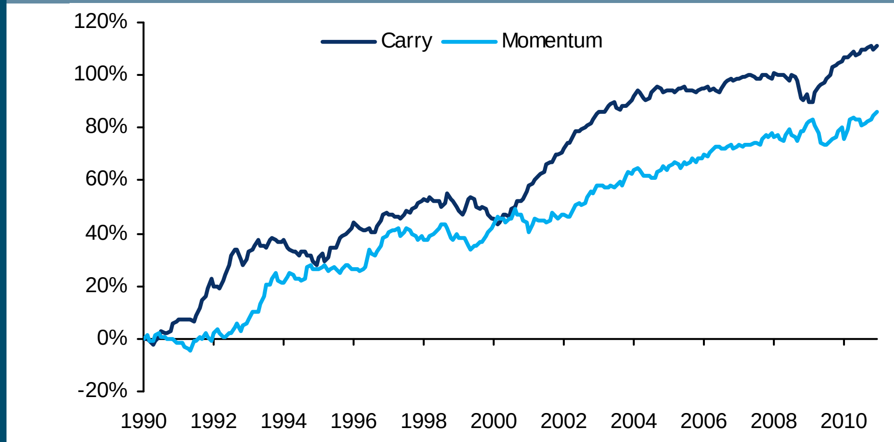
Portfolios of Risk Premia II: By Strategy

The real power comes in diversified portfolios of risk premia strategies

	Carry	Curve	Value	Mom	EM	Arb
Eq						
Rates						
Curr						
Credit						
Comm						
Vol						

Risk Premia Portfolios (Cross-Asset-Class)



Source: Barclays Capital.

Historical Performance

	Carry	Curve	Value	Momentum	EM	Arbitrage
Ann. Exc. Return	5.2%	9.8%	4.7%	4.0%	10.3%	12.0%
Ann. Sharpe Ratio	1.0	1.5	0.9	0.7	1.1	1.1
Maximum Drawdown	11%	16%	14%	10%	23%	16%

Source: Barclays Capital

Monthly Correlation Matrix

	Carry	Curve	Value	Momentum	EM	Arbitrage
Carry	100%					
Curve	43%	100%				
Value	12%	-5%	100%			
Momentum	-15%	2%	0%	100%		
EM	59%	32%	-19%	-12%	100%	
Arbitrage	-22%	-10%	-1%	6%	-25%	100%

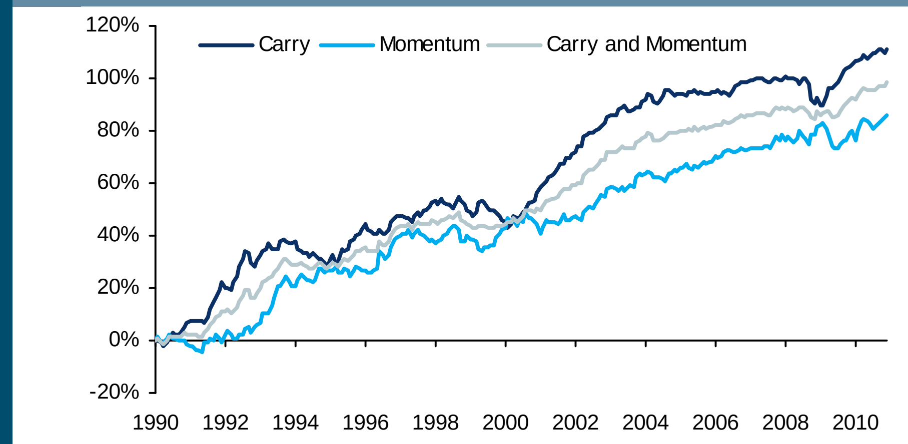
Source: Barclays Capital

Portfolios of Risk Premia III: Combining Strategies

Certain risk premia have complementary profiles

	Carry	Curve	Value	Mom	EM	Arb
Eq						
Rates						
Curr						
Credit						
Comm						
Vol						

Carry and Momentum Combined



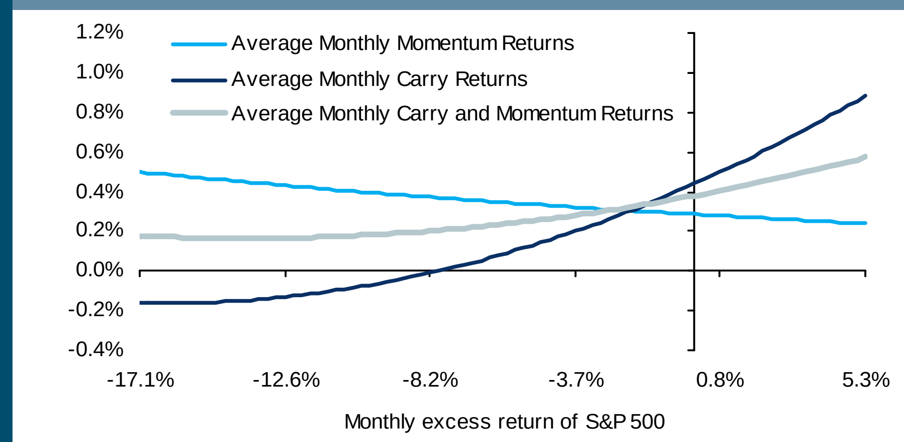
Source: Barclays Capital

Historical Performance

	Carry	Momentum	Carry and Momentum Combined
Ann. Exc. Return	5.2%	4.0%	4.6%
Ann. Sharpe Ratio	1.0	0.7	1.3
Maximum Drawdown	11%	10%	6%

Source: Barclays Capital

Complementary Payoff Profiles



Source: Barclays Capital

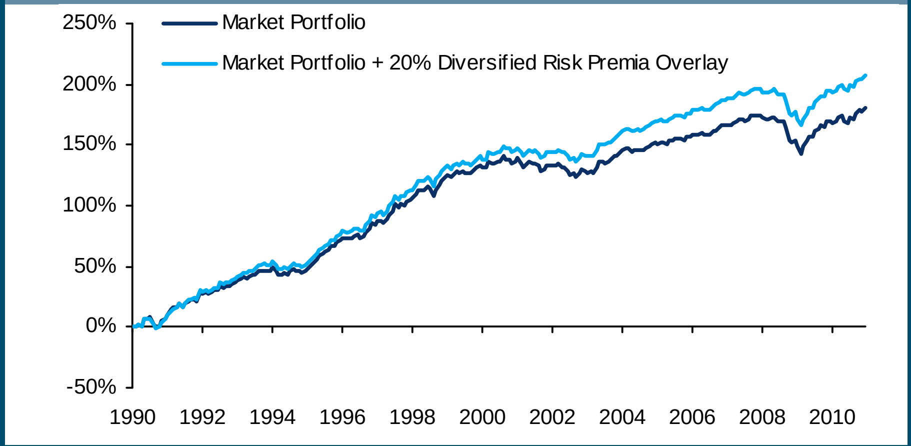
Portfolios of Risk Premia IV: “Fund of Risk Premia”

Ultimate application: Dynamic multi-asset funds of risk premia strategies

- As a total return portfolio, or as an overlay to a traditional market portfolio
- Discretionary or quantitatively or both
- Build in strategy views (“carry is in favor, value is out of favor”)
- Use relatively reliable covariance structures for portfolio optimization

	Carry	Curve	Value	Mom	EM	Arb
Equity						
Rates						
FX						
Credit						
Comm						
Vol						

Fund of Risk-Premia as Portfolio Overlay



Source: Barclays Capital

Enhancing and Timing Risk Premia Strategies

Enhancing and Timing Risk Premia: FX Carry Example

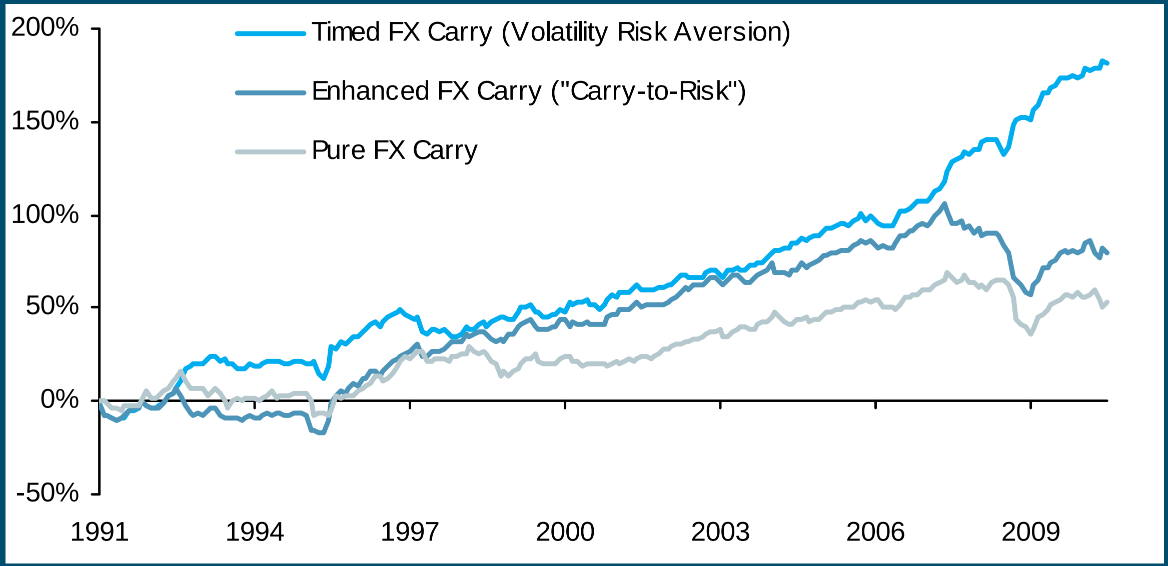
So far we've considered only the simplest implementations of risk premia – in many cases, there is scope to enhance, or even time strategies

Stronger Expected Performance

Pure Risk Premia	***Enhanced Risk Premia***	***Timed Risk Premia***

Simplicity, Robustness

Example – Pure, Enhanced and Timed FX Carry



Note: See ***The G10 FX Carry Premium***, 7 October 2010, Systematic Strategies Research for further details. Source: Barclays Capital

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Barclays Capital Tradable Strategy Indices

Many live, tradable Barclays Capital Strategy Indices can be classified as pure, enhanced or timed risk premia

Pure Risk Premia	Enhanced Risk Premia	Timed Risk Premia

	Carry	Curve	Value	Momentum	EM	Arbitrage
Equities	-	-	*Q-True Value* *Q-BES* [1]	*Q-GSP* [1]	*Advanced EM*	*Q-MA*
Rates	*Exceed Family*	*TrendStar+*	*Targeted Exposure Value* [2]	*Targeted Exposure Momentum* [2]	*GEMS* *Dynamic GEMS*	-
Currencies	*Intelligent Carry Index (ICI)*	-	*Value Convergence*	*EM FX Momentum* [3] *Adaptive Trend*	*EM FX Carry* [3]	-
Commods	-	*Roll Yield*	*Backwardation*	*ComBATS 6* *Voyager*	-	-
Volatility	*Enhanced BuyWrite* [3]	*Q-VOLTAS*	-	-	-	-

1. Q-BES and Q-GSP have value and momentum features, respectively, in their construction but included other factors (earnings surprise and earnings growth, respectively).
2. The Targeted Exposure Futures family of indices are available individually (2yr, 5yr, 10yr and Long Bond) and can be used to easily construct the simple value and simple momentum strategies described. The full family of Targeted Exposure Futures indices are directly tradable via the respective iPath® exchange-traded notes.
3. EM FX Momentum, EM FX Carry and Enhanced Buy-Write strategies are currently in the process of being converted to official Barclays Capital Indices but are only available currently as custom strategies. Source: Barclays Capital

Conclusions

- Risk premia strategies combine appealing long-run performance with identifiable risk profiles and stable characteristics
- The Barclays Capital Risk Premia family is a systematic approach to identifying risk premia strategies across asset classes
- Portfolios benefit from diversification across asset classes and/or risk premia
- Enhancing and timing risk premia offer further potential to improve performance

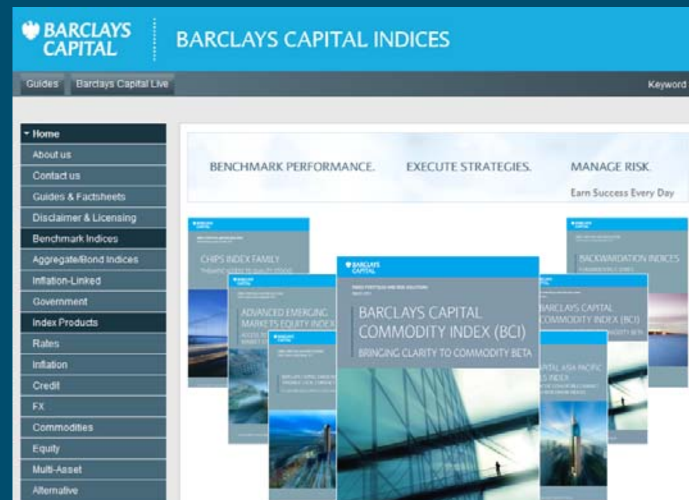
Further Information

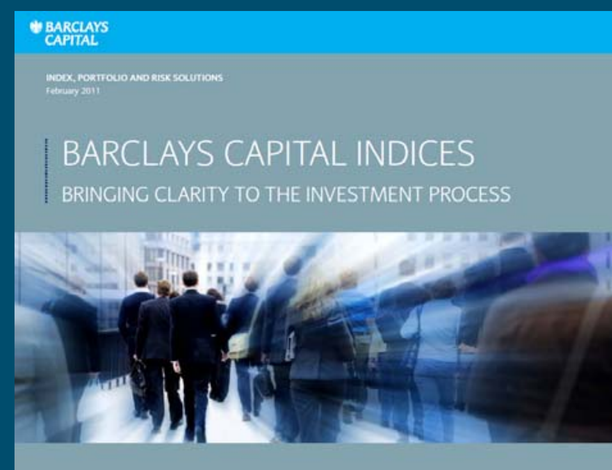
Systematic Strategies Research Series

Barclays Capital Live Keyword: **SYSPUBS**

Barclays Capital Strategy Indices

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





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