



building
shock resistant
portfolios

[Markets]

I've been thinking about...

... how to kill a black swan

David Owyong

Head of Quantitative Research

MSCI Barra (Hong Kong)

John Coombe

Head of Consulting, JANA



CONFERENCE

The MSCI logo consists of the letters "MSCI" in a white, serif font, centered within a dark blue rectangular box.

MSCI

How to Kill a Black Swan

August 2010

Introduction

- Experience of market shocks highlights several shortfalls in risk management and asset allocation practices
- The consequences of contagion and risk regime shifts have been overlooked
- Previously well-diversified portfolios became much less so when crises came as asset correlations rose
- Liquidity crisis led to cash flow problems
- Non-market risks such as counterparty and operational risk were not sufficiently well-managed

New Investment Practices Expected

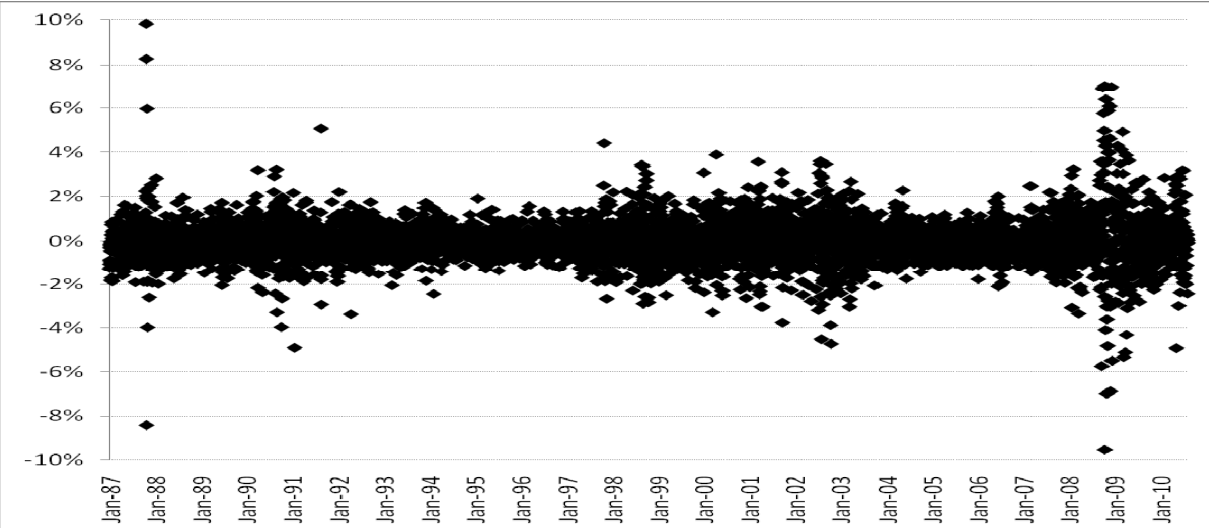
- Management of Extreme Events: BCP plans for portfolio management
- Risk-based Asset Allocation: Ensuring that investor's risk horizon is compatible with portfolio's downside risk, and accounting explicitly for cash-flow requirements
- Integrated Risk Management: Understanding sources of risk in addition to level or risk, as well as integrating risk management across different asset classes and different risk types (e.g. counterparty risk, operational risk, etc).

Managing Extreme Events

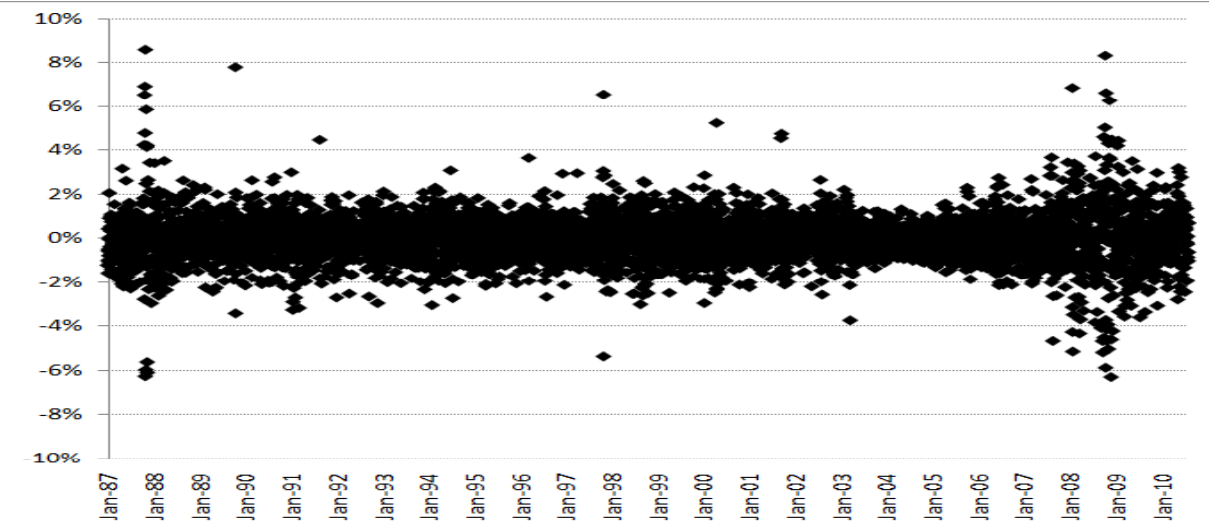
- Extreme events happen more frequently than is commonly perceived
- From 1987 to 2008, around one major crisis every two years: *Black Monday (1987), Gulf War (1990), European ERM Crisis (1992), Mexican Crisis (1994), Asian Crisis (1997), LTCM (1998), Tech Bubble Crisis (2000), September 11 (2001), Quant Crisis (2007), Credit Crisis (2008)*.
- Are crises becoming more frequent and trends shorter?
- Global financial integration increases correlation across markets
- Volatility spikes and clusters through time, and sudden shifts create problems for risk management

One-Day Losses (1987-2010)

MSCI World Index



MSCI Australia Index



Global Asset Returns During Crises

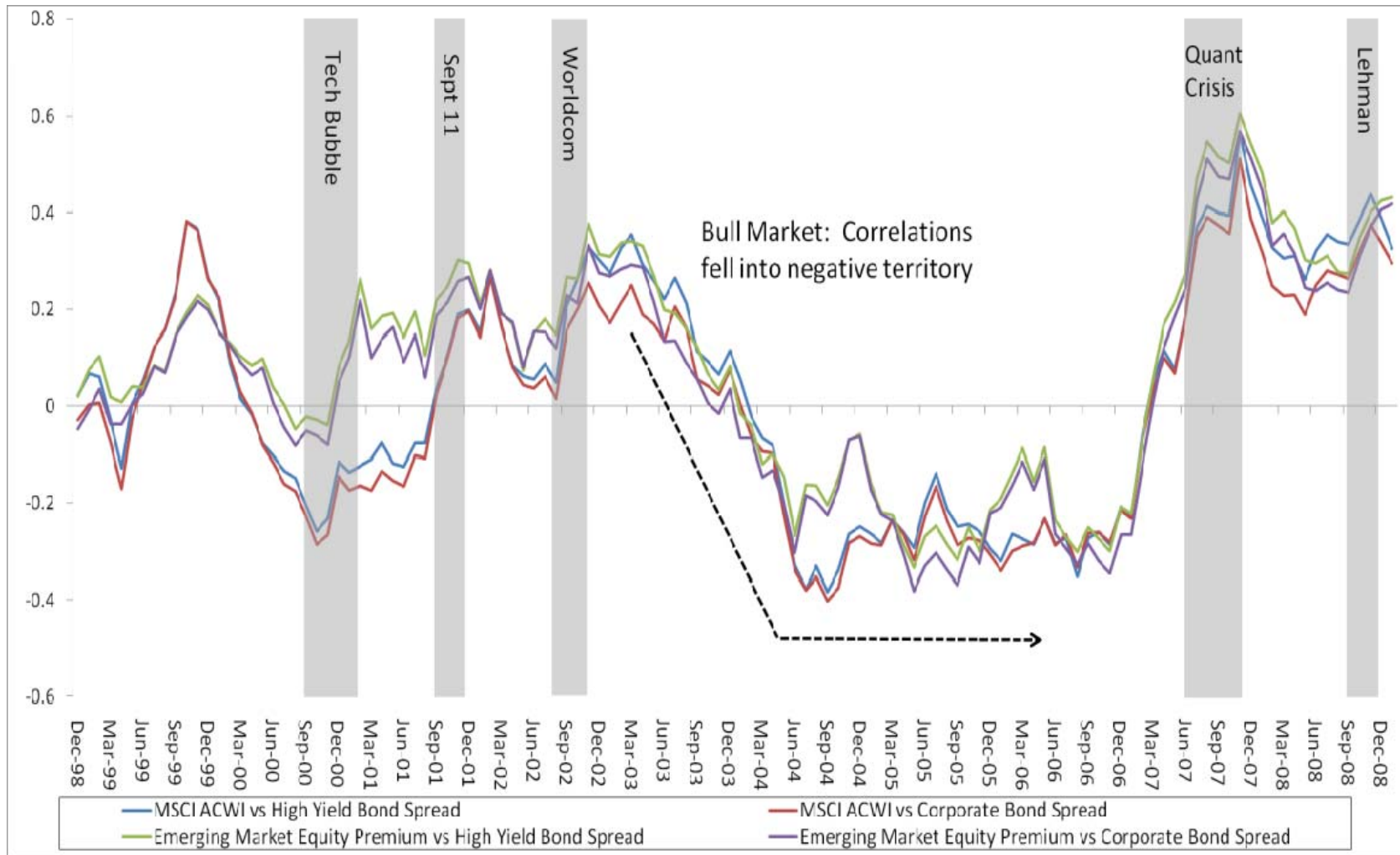
	Month	Global Equities			US T-Bills	Global Bonds			MSCI EM Currency Index
		MSCI ACWI	MSCI World(DM)	MSCI EM		Sovereign	High-Yield Premium	Corporate Premium	
LTCM	Aug-1998	-14.2%	-13.5%	-29.3%	0.9%	2.5%	-2.2%	-1.5%	-2.0%
Tech Bubble	Nov-2000	-6.2%	-6.1%	-8.8%	0.7%	2.0%	-1.3%	-0.7%	-0.2%
Sept 11	Sep-2001	-9.1%	-8.8%	-15.5%	1.0%	0.8%	-1.4%	-0.7%	-2.0%
Quant Crisis	Aug-2007	-0.2%	0.0%	-2.1%	0.7%	1.6%	-0.8%	-0.9%	-0.8%
Lehman	Oct-2008	-19.8%	-18.9%	-27.4%	0.7%	-1.9%	-7.4%	-6.3%	-6.3%

Note: The bond indices are sourced from Merrill Lynch, the T-bill data from Federal Reserve and the rest are from MSCI. All returns are based in US dollars. The MSCI EM Currency Index measures the strength of emerging market currencies relative to the US dollar. The high-yield and corporate bond premia are based on the differential in returns between the high-yield or corporate bond index and the sovereign bond index.

Traditional Asset Allocation Inadequate

- Categorization of asset classes has an influence on the approaches chosen for diversification
- Most pension plans use three buckets: equities, fixed income, alternatives
- Problem 1: Higher-yielding bonds such as corporate and emerging market bonds are prone to be correlated with equities in crises → reduced diversification effect
- Problem 2: Due to illiquidity, alternatives give illusion of independence with equities and bonds

Risk Regime Shifts: Correlations Rise in Crises



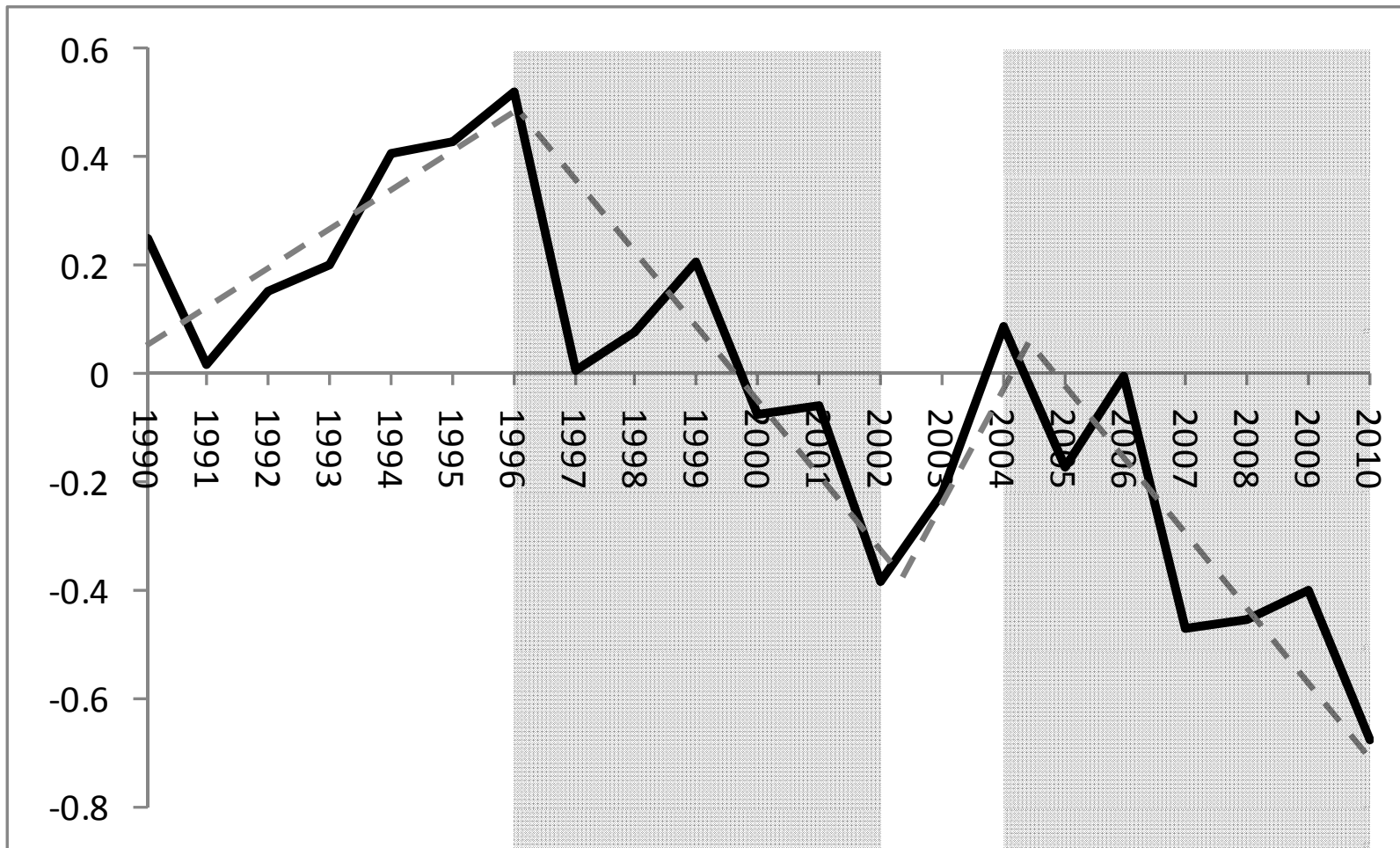
Australia: Biggest One-Month Losses

- To understand extreme risk, need to examine biggest losses historically (from Dec 1985)

MSCI Australia		Australian Govt Bonds	
% Loss	Month	% Loss	Month
-41.5%	Oct-87	-4.0%	Oct-87
-11.3%	Oct-97	-3.4%	Jul-86
-11.0%	Oct-08	-3.2%	Aug-92
-10.7%	Jan-08	-3.1%	Jun-94
-10.3%	Sep-08	-2.9%	Sep-94
-8.5%	Nov-88	-2.9%	Mar-94
-8.4%	Aug-98	-2.7%	May-88
-7.9%	May-10	-2.5%	Jan-92
-7.5%	Sep-90	-2.4%	May-09
-7.3%	Nov-94	-2.4%	Feb-94

Correlation Between Australian Equities and Government Bonds

MSCI Australia and ML Australia Government Bond Indices



Correlation Between Australia Equities and Government Bonds During Crises

Correlation between MSCI Australia and ML Government Bond Indices

Crisis Month	Correlation: Equities vs Govt Bonds		
	Present month	Average, prev 3 mths	Average, prev 6 mths
Oct 97	-0.42	0.15	0.31
Oct 08	-0.30	-0.52	-0.42
Jan 08	-0.77	-0.45	-0.54
Sep 08	-0.71	-0.35	-0.37
Aug 98	0.08	0.17	0.14

→ *Correlation tends to fall during crises.*

How to Determine Likely Co-movement During Crises?

Industry

Country

Asset Class

Company-Specific

Macroeconomic

Liquidity

Style

Instrument Type

Bubble Similarities

Investor Groups

Liquidity Risk During Crises

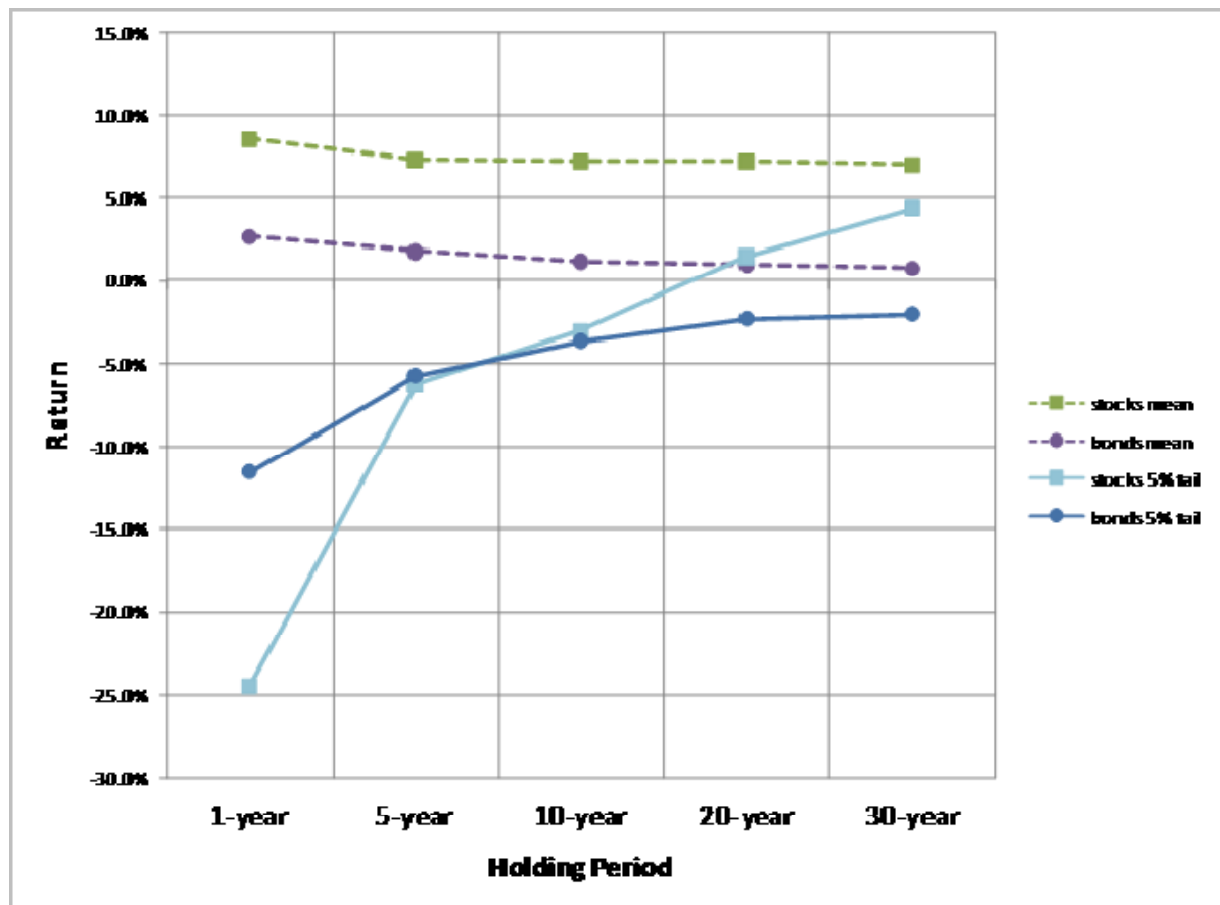
Example: The Impact of a Crisis on Bid-Ask Spreads (in bps)

Asset Category	Representative Index	Jan-Aug 2008	Sep-Dec 2008	Increase
Developed Market Equities	MSCI World	43.9	53.1	9.2
Emerging Market Equities	MSCI Emerging Market Index	63.5	92.0	28.5
US 10y Treasury Bonds	Barclays Treasury 10-year Term Index	16.4	25.8	9.4
Emerging Market Govt Bonds	JP Morgan USD Emerging Market Bond Index	66.1	188.0	121.8
Developed Market Corp Bonds	iBoxx USD Liquid Investment Grade Top 30 Index	69.9	181.4	111.6

Source: London Stock Exchange (The asset groups are represented by iShares ETFs traded on the London Stock Exchange).

Investment Horizon Matters

- Investment horizon: mismatch between investor and portfolio
- An investor may have multiple investment horizons



Risk-Based Asset Allocation

- Asset class categories to be set according to its purpose
- Four broad segments: equities, real assets, liability hedging and absolute return strategies
- Equities to provide the highest long-term real returns available
- Real assets provide protection against inflation
- Liability hedging assets (mainly low-risk government bonds) to provide downside protection near the pay-out phase
- Absolute return strategies capture additional sources of returns or risk premia (e.g. small cap stocks, high-yield bonds, etc)

Managing Tail Risk

- BCP is a standard risk control practice for organizations, keeping key processes in operation even after disaster
- Analogous BCP plan for portfolio:
 - Extreme events to be defined
 - Probability and severity of these events to be quantified
 - Scenarios to cover extreme events to be constructed
 - Portfolio trades in response to events to be predetermined
 - Stress testing and rehearsals

Conclusion

- Assets behave differently in crises
- How to detect crisis risk? Indicators of likely co-movement during crises
- Investment horizon matters
- Asset Class correlation and asset allocation
- Need a BCP plan to handle future crises

MSCI 24 Hour Global Client Service

Americas

Americas	1.888.588.4567 (toll free)
Atlanta	+1.404.551.3212
Boston	+1.617.532.0920
Chicago	+1.312.706.4999
Monterrey	+52.81.1253.4020
Montreal	+1.514.847.7506
New York	+1.212.804.3901
San Francisco	+1.415.836.8800
São Paulo	+55.11.3706.1360
Stamford	+1.203.325.5630
Toronto	+1.416.628.1007

Europe, Middle East & Africa

Amsterdam	+31.20.462.1382
Cape Town	+27.21.673.0100
Frankfurt	+49.69.133.859.00
Geneva	+41.22.817.9777
London	+44.20.7618.2222
Madrid	+34.91.700.7275
Milan	+39.02.5849.0415
Paris	0800.91.59.17 (toll free)
Zurich	+41.44.220.9300

Asia Pacific

China North	10800.852.1032 (toll free)
China South	10800.152.1032 (toll free)
Hong Kong	+852.2844.9333
Seoul	+827.07688.8984
Singapore	800.852.3749 (toll free)
Sydney	+61.2.9033.9333
Tokyo	+81.3.5226.8222

clientservice@msci.com

www.msci.com | www.riskmetrics.com

Barra Knowledge Base – Online Answers to Barra Questions: www.barra.com/support



© 2010. All rights reserved.

Notice and Disclaimer

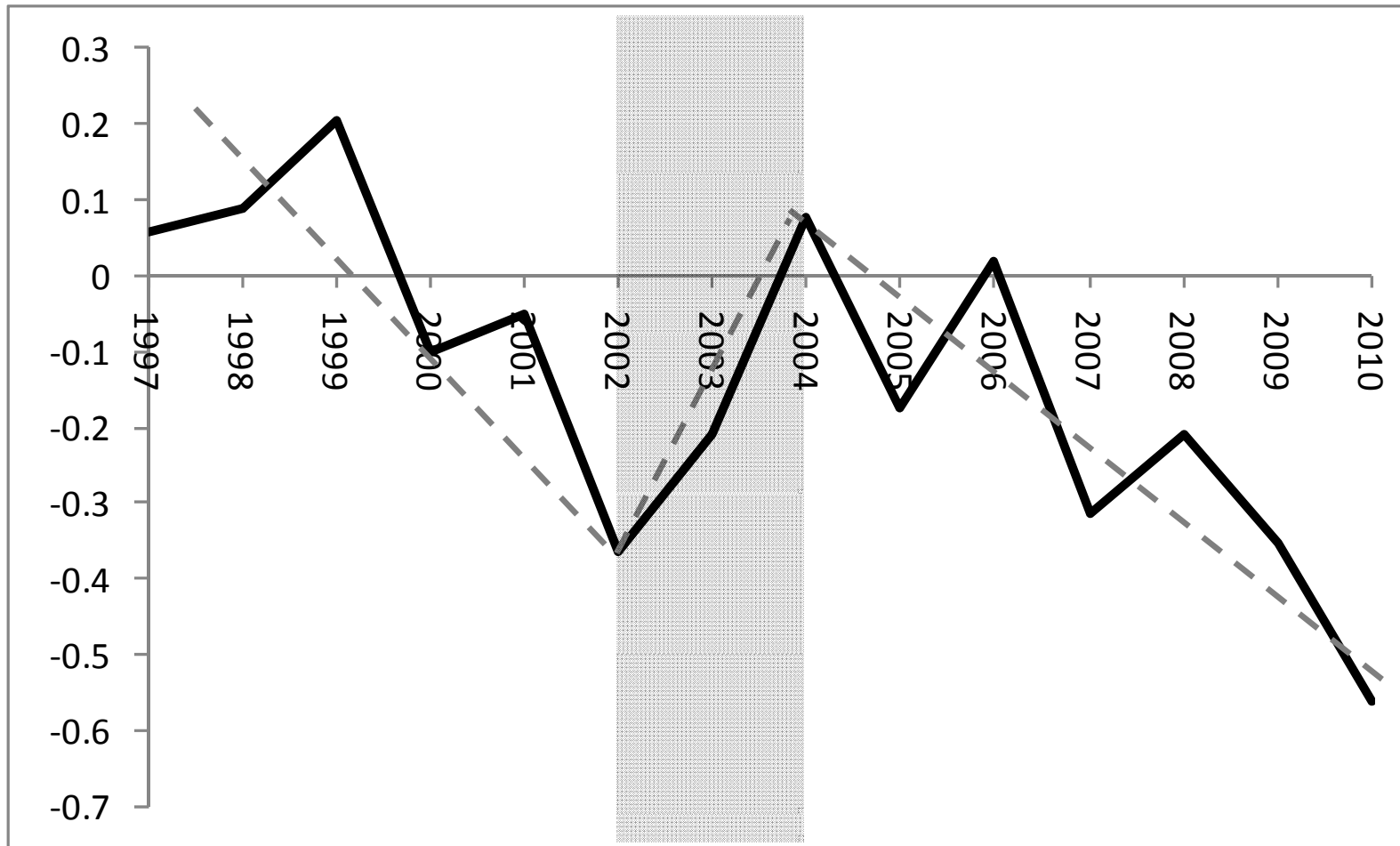
- This document and all of the information contained in it, including without limitation all text, data, graphs, charts (collectively, the "Information") is the property of MSCI Inc., its subsidiaries (including without limitation Barra, Inc. and the RiskMetrics Group, Inc.) and/or their subsidiaries (including without limitation the FEA, ISS, and CFRA companies) (alone or with one or more of them, "MSCI"), or their direct or indirect suppliers or any third party involved in the making or compiling of the Information (collectively (including MSCI), the "MSCI Parties" or individually, an "MSCI Party"), as applicable, and is provided for informational purposes only. The Information may not be reproduced or redisseminated in whole or in part without prior written permission from the applicable MSCI Party.
- The Information may not be used to verify or correct other data, to create indices, risk models or analytics, or in connection with issuing, offering, sponsoring, managing or marketing any securities, portfolios, financial products or other investment vehicles based on, linked to, tracking or otherwise derived from any MSCI products or data.
- **Historical data and analysis should not be taken as an indication or guarantee of any future performance, analysis, forecast or prediction.**
- **None of the Information constitutes an offer to sell (or a solicitation of an offer to buy), or a promotion or recommendation of, any security, financial product or other investment vehicle or any trading strategy, and none of the MSCI Parties endorses, approves or otherwise expresses any opinion regarding any issuer, securities, financial products or instruments or trading strategies. None of the Information, MSCI indices, models or other products or services is intended to constitute investment advice or a recommendation to make (or refrain from making) any kind of investment decision and may not be relied on as such.**
- The user of the Information assumes the entire risk of any use it may make or permit to be made of the Information.
- NONE OF THE MSCI PARTIES MAKES ANY EXPRESS OR IMPLIED WARRANTIES OR REPRESENTATIONS WITH RESPECT TO THE INFORMATION (OR THE RESULTS TO BE OBTAINED BY THE USE THEREOF), AND TO THE MAXIMUM EXTENT PERMITTED BY LAW, MSCI, ON ITS BEHALF AND ON THE BEHALF OF EACH MSCI PARTY, HEREBY EXPRESSLY DISCLAIMS ALL IMPLIED WARRANTIES (INCLUDING, WITHOUT LIMITATION, ANY IMPLIED WARRANTIES OF ORIGINALITY, ACCURACY, TIMELINESS, NON-INFRINGEMENT, COMPLETENESS, MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE) WITH RESPECT TO ANY OF THE INFORMATION.
- **Without limiting any of the foregoing and to the maximum extent permitted by law, in no event shall any of the MSCI Parties have any liability regarding any of the Information for any direct, indirect, special, punitive, consequential (including lost profits) or any other damages even if notified of the possibility of such damages. The foregoing shall not exclude or limit any liability that may not by applicable law be excluded or limited, including without limitation (as applicable), any liability for death or personal injury to the extent that such injury results from the negligence or willful default of itself, its servants, agents or sub-contractors.**
- Any use of or access to products, services or information of MSCI requires a license from MSCI. MSCI, Barra, RiskMetrics, ISS, CFRA, FEA, EAFE, Aegis, Cosmos, BarraOne, and all other MSCI product names are the trademarks, registered trademarks, or service marks of MSCI in the United States and other jurisdictions. The Global Industry Classification Standard (GICS) was developed by and is the exclusive property of MSCI and Standard & Poor's. "Global Industry Classification Standard (GICS)" is a service mark of MSCI and Standard & Poor's.

The MSCI logo is centered on a dark blue rectangular background. The letters 'MSCI' are rendered in a white, serif, all-caps font. The background of the entire image is a soft-focus photograph of a sky with wispy white clouds and a faint rainbow arc in the upper right quadrant.

MSCI

Correlation Between Australian Equities and Corporate Bonds

MSCI Australia and ML Australia Corporate Bond Indices





building
shock resistant
portfolios