

MSCI Minimum Volatility Indices

- Transition to the new Barra GEM2 Model
- Potential enhancements to the existing methodology

October 2009

Overview

- The MSCI Minimum Volatility Indices will begin using the new Barra Global Equity Model (GEM2) as of the close of November 30, 2009.
- As part of this change, MSCI proposes to introduce certain enhancements to the existing Minimum Volatility Methodology, and is seeking feedback on these proposed enhancements.
- Please note, this consultation may or may not lead to the adoption, in whole or in part, of the proposed enhancements described herein.



Proposed enhancements to the Minimum Volatility Methodology

- No constraints on the GEM2 Volatility risk index exposure
- Additional country weight constraints
- Additional security level weight constraints



Highlights of the Transition to GEM2

- MSCI Minimum Volatility Indices will transition to using the new Barra Equity Model (GEM2) in one phase as of the close of November 30, 2009, coinciding with the November 2009 Semi-Annual Index Review
- A transition analysis, based on data as of July 31 2009, shows that:
 - Total risk of the MSCI World Minimum Volatility Index reduced from 24 43% to 19 95%
 - Volatility Exposure improved from -0.46 to -0.94
 - One-off transition turnover was 67.9%
- The transition of the current MSCI Minimum Volatility Indices would be done without applying a turnover constraint, using the GEM2 model, with a goal to achieve a similar number of securities as the current MSCI Minimum Volatility Indices



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Highlights of GEM2

- Weekly observations for more responsive risk forecasts
- Improved factor structure
 - Industry factors based on Global Industry Classification Scheme (GICS[®])
 - Expanded & improved set of style factors
 - World factor provides symmetric treatment of industry/country
- Improved currency covariance matrix based on EWMA
- Broader estimation universe based on MSCI ACWI IMI



Factor Structure: GEM vs. GEM2

GEM	GEM2
	1 world Factor
56 country factors (48 GIMI countries plus Sri Lanka, Venezuela,	55 country factors with (0,1) exposure: (48 GIMI
Nigeria, Slovakia, Zimbabwe, Saudi, Oman, and Bahrain). Country	countries, plus China Domestic, six GCC), China and GCC
exposures based on 60 month regression (country beta)	are down-weighted in regression.
38 industry factors: (0,1) exposure	34 GICS-based industry factors: (0,1) exposure
4 style factors (variability, value, size, momentum)	8 Style Factors (volatility, momentum, size, value,
	growth, leverage, liquidity, non-linear size)
One currency per country factor	One currency per country factor



Current MSCI Minimum Volatility Indices

- The MSCI World and MSCI USA Minimum Volatility Indices are calculated by optimizing a parent MSCI Index by using an estimated security co-variance matrix to produce an index that has the lowest absolute volatility for a given set of constraints
- The index is rebalanced semi-annually and a number of rules are imposed that aim to ensure investability and replicability under certain realistic assumptions
 - The index is unhedged and constructed from a US dollar perspective
 - The maximum weight of an index constituent is constrained to 1.5%
 - The minimum weight of an index constituent is constrained to 0.05%
 - The GICS sector weights of the Minimum Volatility index are constrained to ± 5% around the GICS sector weights of the MSCI World and MSCI USA Index
 - The country weights of the Minimum Volatility index are constrained to \pm 5% around the country weights of the MSCI World Index.
 - The risk exposures of the Minimum Volatility index are constrained to ± 0.25 standard deviations around the Barra risk index exposures of the MSCI World and MSCI USA Index
 - The one-way index turnover is constrained to a maximum of 10% per semi-annual rebalancing





Proposed Enhancements



Proposal: No Constraint on Volatility Risk Index

- In GEM2, the Volatility factor is typically the most important style factor and historical beta is by far the most important descriptor within the Volatility factor.
- In GEM, historical beta is captured as the exposure of individual stocks to the country index. The Volatility factor captures only residual risk.
- With an aim to ensure that the Minimum Volatility Index based on GEM2 will have comparable Beta exposure to the current index, we propose to put no constraint around this risk index factor.



Proposal: Additional Country Weight Constraint on Low Parent Index Weight Countries

- Currently, in the minimum volatility indices methodology, country weights are constrained to be within +/-5% of the country weights of the Parent index
- To further enhance the investability of the minimum volatility indices, MSCI proposes to impose an additional country weight constraint for countries with less than 2.5% in the Parent index
 - At each semi-annual index review, we propose that countries with less than 2.5% weight in the Parent index would be capped at 3 times their weight in the Parent index



Proposal: Additional Security Level Weight Constraint

- The current Minimum Volatility Index methodology constrains the maximum weight of a security to 1.5%
- To further enhance the replicability of the minimum volatility indices, MSCI proposes to impose an additional security level weight constraint
 - At each semi-annual index review, we propose that the maximum weight of a security would be restricted to the lower of 1.5% or 20 times the weight of the security in the Parent Index



MSCI World Minimum Volatility Index – Summary Results

Summary	MSCI World Index	GEM Current constraints without Turnover	GEM2 Current constraints	GEM2 Proposed Methodology without Turnover	GEM2 Proposed Methodology with Turnover
Return	1.1%	3.9%	4.3%	4.6%	4.7%
Risk (Ex Post)	16.8%	12.2%	14.2%	11.4%	11.7%
Risk Reduction		27.2%	15.0%	32.3%	30.5%
Return/Risk	0.06	0.32	0.30	0.41	0.40
Ex Post Tracking Error		6.4%	4.3%	7.7%	7.3%
Average Ex Ante Total Risk		11.6%	12.3%	10.0%	10.4%
Avg Volatility Exposure		-0.57	-0.25	-0.88	-0.79
Avg Number of Stocks	1723	319	549	333	334
Average Beta	1.00	0.80	0.88	0.72	0.74
One way Semi Annual Turnover		68.3%	10.0%	71.6%	10.0%

Statistics based on simulations from June 2002 – May 2009 All results in USD



MSCI World Minimum Volatility Index – Performance Results



Results based on simulations from June 2002 - May 2009



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MSCI World Minimum Volatility Index – Exposures







Results based on simulations from June 2002 – May 2009

MSCI World Minimum Volatility Index – Risk Exposures

GEM Current constraints without Turnover

Date	Size	Size Non Linear	Value	Growth	Liquidity	Leverage	Momentum	Volatility
Jun-02	-0.11	0.12	0.15	-0.13	-0.10	0.16	0.15	-0.62
Dec-02	-0.11	0.11	0.11	-0.15	-0.10	0.14	0.17	-0.67
Jun-03	-0.10	0.11	0.05	-0.14	-0.05	0.15	0.10	-0.74
Dec-03	-0.11	0.11	0.06	-0.06	-0.06	0.16	0.01	-0.68
Jun-04	-0.11	0.11	-0.05	-0.04	-0.08	0.13	0.18	-0.57
Dec-04	-0.13	0.12	-0.12	-0.03	-0.13	0.11	0.24	-0.49
Jun-05	-0.13	0.12	-0.14	-0.05	-0.13	0.13	0.22	-0.38
Dec-05	-0.14	0.13	-0.13	-0.03	-0.17	0.16	0.02	-0.40
Jun-06	-0.16	0.15	-0.16	-0.13	-0.20	0.19	-0.10	-0.50
Dec-06	-0.17	0.15	-0.20	-0.15	-0.21	0.12	0.11	-0.51
Jun-07	-0.16	0.14	-0.20	-0.13	-0.18	0.07	0.11	-0.51
Dec-07	-0.16	0.13	-0.15	-0.16	-0.27	0.03	0.00	-0.51
Jun-08	-0.14	0.12	-0.12	-0.22	-0.25	-0.01	0.08	-0.53
Dec-08	-0.14	0.11	-0.19	-0.11	-0.11	0.08	0.13	-0.32
Average	-0.13	0.12	-0.08	-0.11	-0.14	0.12	0.10	-0.53

GEM2 Current constraints

GEM2 Proposed Methodology with Turnover

Date	Size	Size Non Linear	Value	Growth	Liquidity	Leverage	Momentum	Volatility
Jun-02	-0.11	0.12	0.15	-0.13	-0.10	0.16	0.15	-0.62
Dec-02	-0.12	0.12	0.09	-0.14	-0.09	0.15	0.19	-0.71
Jun-03	-0.10	0.11	0.03	-0.12	-0.05	0.15	0.13	-0.78
Dec-03	-0.12	0.11	0.05	-0.02	-0.05	0.12	0.04	-0.70
Jun-04	-0.11	0.11	-0.07	-0.01	-0.09	0.09	0.21	-0.55
Dec-04	-0.13	0.12	-0.12	-0.01	-0.14	0.09	0.24	-0.51
Jun-05	-0.13	0.12	-0.13	-0.02	-0.12	0.12	0.21	-0.38
Dec-05	-0.14	0.14	-0.13	-0.01	-0.17	0.14	0.02	-0.41
Jun-06	-0.18	0.16	-0.18	-0.12	-0.19	0.16	-0.10	-0.56
Dec-06	-0.17	0.15	-0.20	-0.15	-0.20	0.05	0.10	-0.55
Jun-07	-0.16	0.14	-0.18	-0.11	-0.17	0.03	0.13	-0.53
Dec-07	-0.16	0.12	-0.19	-0.15	-0.34	0.00	0.01	-0.57
Jun-08	-0.14	0.11	-0.12	-0.21	-0.31	0.09	0.11	-0.70
Dec-08	-0.17	0.13	-0.18	-0.25	-0.13	0.24	0.17	-0.45
Average	-0.14	0.13	-0.08	-0.10	-0.15	0.11	0.12	-0.57

GEM2 Proposed Methodology without Turnover

Date	Size	Size Non Linear	Value	Growth	Liquidity	Leverage	Momentum	Volatility
Jun-02	-0.25	0.23	0.06	-0.25	-0.23	0.03	0.18	-0.84
Dec-02	-0.25	0.23	-0.03	-0.24	-0.22	-0.01	0.25	-0.94
Jun-03	-0.25	0.22	-0.05	-0.22	-0.16	0.02	0.24	-1.02
Dec-03	-0.25	0.22	-0.05	-0.13	-0.19	-0.07	0.05	-0.97
Jun-04	-0.25	0.21	-0.09	-0.13	-0.22	-0.05	0.11	-0.90
Dec-04	-0.25	0.22	-0.10	-0.20	-0.25	0.03	0.25	-0.83
Jun-05	-0.25	0.20	-0.18	-0.22	-0.25	0.09	0.13	-0.77
Dec-05	-0.25	0.21	-0.13	-0.19	-0.25	0.07	-0.06	-0.82
Jun-06	-0.25	0.21	-0.14	-0.20	-0.25	0.07	-0.21	-0.87
Dec-06	-0.25	0.21	-0.12	-0.24	-0.25	0.06	0.06	-0.83
Jun-07	-0.25	0.21	-0.12	-0.23	-0.25	0.01	-0.02	-0.90
Dec-07	-0.25	0.20	-0.13	-0.24	-0.25	-0.04	-0.09	-0.92
Jun-08	-0.25	0.20	-0.19	-0.22	-0.25	-0.09	0.12	-0.93
Dec-08	-0.25	0.20	-0.25	-0.18	-0.25	-0.19	0.25	-0.81
Average	-0.25	0.21	-0.11	-0.21	-0.23	-0.01	0.09	-0.88

Date Size Size Non Linear Value Growth Liquidity Leverage Momentum Volatility -0.25 -0.25 -0.23 0.03 -0.84 Jun-02 0.23 0.06 0.18 -0.25 -0.23 0.25 Dec-02 0.23 0.00 -0.23 0.01 -0.91 Jun-03 -0.25 0.22 -0.02 -0.24 -0.20 0.00 0.15 -0.97 -0.25 0.22 -0.01 -0.17 -0.20 -0.05 0.04 -0.94 Dec-03 0.22 Jun-04 -0.25 -0.10 -0.15 -0.22 -0.07 0.13 -0.84 -0.25 0.22 -0.17 -0.25 -0.03 0.25 Dec-04 -0.16 -0.76 -0.25 0.21 -0.23 -0.20 -0.25 0.04 0.17 Jun-05 -0.66 -0.72 Dec-05 -0.25 0.21 -0.14 -0.19 -0.25 0.10 -0.06 Jun-06 -0.25 0.20 -0.18 -0.25 -0.25 0.07 -0.16 -0.75 Dec-06 -0.25 0.21 -0.21 -0.25 -0.25 0.07 0.11 -0.72 Jun-07 -0.25 0.20 -0.16 -0.24 -0.25 0.04 0.02 -0.76 Dec-07 -0.25 0.19 -0.13 -0.24 -0.25 0.06 -0.11 -0.78 Jun-08 -0.25 0.20 -0.13 -0.24 -0.25 0.03 0.02 -0.79 -0.15 -0.23 0.24 Dec-08 0.13 -0.25 -0.11 -0.01 -0.66 -0.24 0.21 -0.12 -0.21 -0.24 0.02 0.09 -0.79 Average

Results based on simulations from June 2002 - May 2009



MSCI World Minimum Volatility Index – Country Exposures

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As of Dec 2008 GEM Current co	onstraints wi	thout Turnc	over	As of Dec 2008 GEM2 Current constraints					
Country	Managed	Benchmark	Relative	Country	Managed	Benchmark	Relative		
Australia		2.65%	-2.65%	Australia		2.65%	-2.65%		
Austria		0.14%	-0.14%	Austria	0.13%	0.14%	-0.01%		
Belgium	3.79%	0.32%	3.47%	Belgium	1.81%	0.32%	1.48%		
Canada	9.11%	4.11%	5.00%	Canada	0.05%	4.11%	-4.06%		
Switzerland	6.76%	3.70%	3.06%	Switzerland	4.68%	3.70%	0.98%		
Germany	0.21%	3.71%	-3.50%	Germany	0.44%	3.71%	-3.27%		
Denmark	1.18%	0.39%	0.79%	Denmark	0.96%	0.39%	0.57%		
Spain		1.92%	-1.92%	Spain	3.53%	1.92%	1.61%		
Finland		0.63%	-0.63%	Finland	0.38%	0.63%	-0.24%		
France	1.93%	4.81%	-2.88%	France	1.44%	4.81%	-3.37%		
United Kingdom	8.76%	9.79%	-1.03%	United Kingdom	5.25%	9.79%	-4.54%		
Greece		0.22%	-0.22%	Greece	1.20%	0.22%	0.98%		
Hong Kong	2.34%	0.93%	1.41%	Hong Kong	5.93%	0.93%	5.00%		
Ireland	0.23%	0.15%	0.08%	Ireland	0.41%	0.15%	0.26%		
Italy	1.48%	1.64%	-0.16%	Italy	0.91%	1.64%	-0.73%		
Japan	16.16%	11.16%	5.00%	Japan	16.15%	11.16%	4.99%		
Netherlands		1.07%	-1.07%	Netherlands	0.13%	1.07%	-0.94%		
Norway		0.28%	-0.28%	Norway		0.28%	-0.28%		
New Zealand		0.04%	-0.04%	New Zealand		0.04%	-0.04%		
Portugal	0.25%	0.15%	0.10%	Portugal Portugal	2.59%	0.15%	2.45%		
Singapore		0.47%	-0.47%	Singapore	2.14%	0.47%	1.67%		
Sweden		0.91%	-0.91%	Sweden		0.91%	-0.91%		
USA	47.82%	50.82%	-3.01%	USA	51.85%	50.82%	1.02%		

As of Dec 2008

GEM2 Proposed Methodology without Turnover

As of Dec 2008

GEM2 Proposed Methodology with Turnover

Country	Managed	Benchmark	Relative	Country	Managed	Benchmark	Relative
Australia	0.19%	2.65%	-2.46%	Australia	1.63%	2.65%	-1.23%
Austria		0.14%	-0.14%	Austria	0.10%	0.14%	-0.01%
Belgium	0.97%	0.32%	0.65%	Belgium	0.97%	0.32%	0.65%
Canada	0.88%	4.11%	-3.23%	Canada	4.85%	4.11%	0.26%
Switzerland	7.69%	3.70%	3.99%	Switzerland	4.22%	3.70%	0.62%
Germany	0.50%	3.71%	-3.21%	Germany	0.90%	3.71%	-2.75%
Denmark	0.10%	0.39%	-0.29%	Denmark	0.46%	0.39%	0.19%
Spain	5.76%	1.92%	3.84%	Spain	3.58%	1.92%	1.84%
Finland	1.47%	0.63%	0.84%	Finland	0.52%	0.63%	-0.05%
France	3.46%	4.81%	-1.34%	France	2.25%	4.81%	-2.39%
United Kingdom	4.79%	9.79%	-5.00%	United Kingdom	5.77%	9.79%	-4.03%
Greece	0.67%	0.22%	0.45%	Greece	0.67%	0.22%	0.45%
Hong Kong	2.78%	0.93%	1.85%	Hong Kong	2.78%	0.93%	1.85%
Ireland	0.27%	0.15%	0.12%	Ireland		0.15%	-0.10%
Italy	4.92%	1.64%	3.28%	Italy	3.29%	1.64%	1.64%
Japan	16.15%	11.16%	5.00%	Japan	16.15%	11.16%	5.00%
Netherlands	0.07%	1.07%	-1.00%	Netherlands	0.24%	1.07%	-0.55%
Norway		0.28%	-0.28%	Norway		0.28%	-0.28%
New Zealand	0.13%	0.04%	0.08%	New Zealand	0.13%	0.04%	0.08%
Portugal	0.44%	0.15%	0.29%	Portugal	0.44%	0.15%	0.29%
Singapore	1.42%	0.47%	0.94%	Singapore	1.42%	0.47%	0.94%
Sweden	0.05%	0.91%	-0.86%	Sweden		0.91%	-0.91%
USA	47.28%	50.82%	-3.54%	USA	49.63%	50.82%	-1.55%



MSCI World Minimum Volatility Index – Top Active Weights

As of Dec 2008 GEM2 Current constraints

Name	Country	Benchmark	Optimal	Active
SINGAPORE AIRLINES	Singapore	0.02%	1.04%	1.02%
CATHAY PACIFIC AIRWAYS	Hong Kong	0.01%	0.76%	0.75%
BRISA	Portugal	0.01%	0.72%	0.71%
TFS FINANCIAL	USA	0.01%	0.68%	0.67%
BAXTER INTERNATIONAL	USA	0.20%	0.82%	0.62%
LINDT & SPRUENGLI PART	Switzerland	0.01%	0.61%	0.60%
COVIDIEN	USA	0.11%	0.68%	0.56%
IBERIA LINEA AEREAS	Spain	0.01%	0.57%	0.56%
SOUTHERN CO	USA	0.17%	0.70%	0.53%
NEWMONT MINING HLDG	USA	0.09%	0.60%	0.51%
BOC HONG KONG HOLDINGS	Hong Kong	0.03%	0.51%	0.48%
GDF-SUEZ	France	0.27%	0.75%	0.48%
BANCO DE VALENCIA	Spain	0.01%	0.47%	0.46%
KIMBERLY-CLARK CORP	USA	0.15%	0.60%	0.45%
SOUTHWEST AIRLINES CO	USA	0.01%	0.44%	0.43%
BECTON DICKINSON	USA	0.10%	0.51%	0.42%
MOBISTAR	Belgium	0.01%	0.42%	0.41%
KUEHNE & NAGEL INT'L	Switzerland	0.02%	0.42%	0.40%
MCDONALD'S CORP	USA	0.41%	0.79%	0.38%
HANG SENG BANK	Hong Kong	0.06%	0.44%	0.38%
EDP ENERGIAS DE PORTUGAL	Portugal	0.04%	0.41%	0.37%
BELGACOM	Belgium	0.04%	0.41%	0.37%
RECKITT BENCKISER GROUP	United Kingdom	0.16%	0.53%	0.37%
PG&E CORP	USA	0.09%	0.44%	0.36%
	1154	0.60%	0.96%	0.36%

As of Dec 2008 GEM2 Proposed Methodology without Turnover

Name	Country	Benchmark	Optimal	Active
NTT DOCOMO	Japan	0.16%	1.50%	1.34%
ASSICURAZIONI GENERALI	Italy	0.16%	1.39%	1.24%
SOUTHERN CO	USA	0.17%	1.34%	1.17%
CONSOLIDATED EDISON	USA	0.07%	1.20%	1.13%
GENZYME GENERAL DIVISION	USA	0.11%	1.23%	1.13%
REPSOL YPF	Spain	0.09%	1.12%	1.03%
KIMBERLY-CLARK CORP	USA	0.15%	1.16%	1.01%
BARD (C.R.)	USA	0.05%	1.00%	0.95%
NTT CORP	Japan	0.14%	1.07%	0.93%
WEST JAPAN RAILWAY CO	Japan	0.05%	0.93%	0.89%
SWISSCOM	Switzerland	0.04%	0.85%	0.80%
SYNTHES	Switzerland	0.04%	0.85%	0.80%
BECTON DICKINSON	USA	0.10%	0.88%	0.79%
UNION FENOSA	Spain	0.05%	0.81%	0.76%
KINTETSU CORP	Japan	0.04%	0.80%	0.76%
ABBOTT LABORATORIES	USA	0.50%	1.26%	0.76%
GENUINE PARTS CO	USA	0.04%	0.78%	0.74%
XCEL ENERGY	USA	0.05%	0.78%	0.73%
BANCO SABADELL	Spain	0.04%	0.75%	0.71%
DUKE ENERGY CORP	USA	0.12%	0.82%	0.70%
BELGACOM	Belgium	0.04%	0.71%	0.68%
HONGKONG ELECTRIC HLDGS	Hong Kong	0.05%	0.71%	0.67%
REYNOLDS AMERICAN	USA	0.04%	0.71%	0.66%
GENENTECH	USA	0.22%	0.86%	0.64%
AON CORP	USA	0.07%	0.69%	0.62%

As of Dec 2008 GEM2 Proposed Methodology with Turnover

Name	Country	Benchmark	Optimal	Active
SOUTHERN CO	USA	0.17%	1.48%	1.30%
UNITED PARCEL SERVICE B	USA	0.24%	1.11%	0.87%
SWISSCOM	Switzerland	0.04%	0.85%	0.80%
TRANSCANADA CORP	Canada	0.10%	0.89%	0.79%
HEINZ (H.J) CO	USA	0.07%	0.85%	0.78%
KELLOGG CO	USA	0.07%	0.84%	0.77%
CONSOLIDATED EDISON	USA	0.07%	0.82%	0.75%
EAST JAPAN RAILWAY CO	Japan	0.16%	0.91%	0.75%
TELSTRA CORP	Australia	0.07%	0.81%	0.74%
AUTOMATIC DATA PROCESS	USA	0.13%	0.84%	0.71%
SYNTHES	Switzerland	0.04%	0.74%	0.70%
ROYAL BANK OF CANADA	Canada	0.29%	0.92%	0.64%
HANG SENG BANK	Hong Kong	0.06%	0.69%	0.63%
LOCKHEED MARTIN CORP	USA	0.16%	0.79%	0.63%
REPSOL YPF	Spain	0.09%	0.72%	0.63%
HONGKONG ELECTRIC HLDGS	Hong Kong	0.05%	0.63%	0.58%
NIKE B	USA	0.12%	0.70%	0.58%
PEPSICO	USA	0.55%	1.12%	0.58%
BELGACOM	Belgium	0.04%	0.61%	0.57%
DIAGEO	United Kingdom	0.22%	0.77%	0.55%
GENERAL MILLS	USA	0.13%	0.67%	0.54%
BARD (C.R.)	USA	0.05%	0.59%	0.54%
ESSILOR INTERNATIONAL	France	0.05%	0.57%	0.52%
CLP HOLDINGS	Hong Kong	0.09%	0.60%	0.51%
GENZYME GENERAL DIVISION	USA	0.11%	0.61%	0.50%





Transition Analysis



Transition Analysis – MSCI World Minimum Volatility Index

	Current MSCI Minimum Volatility Index	GEM2 Proposed Methodology
Active Risk	6.76	11.88
Benchmark Risk	29.87	29.87
Total Risk	24.43	19.95
Number of stocks	285	285
Active Volatility exposure	-0.46	-0.94
Turnover		67.9%

Analysis as of July 31 2009

Risk Exposures

Current MSCI Minimum Volatility Index

GEM2 Proposed Methodology

Risk Index	Managed	Benchmark	Relative
Momentum	-0.19	-0.11	-0.08
Volatility	-0.54	-0.08	-0.46
Value	0.05	0.03	0.02
Size	0.1	0.3	-0.2
Size Nonlinearity	0.08	-0.09	0.17
Growth	-0.05	-0.03	-0.02
Liquidity	-0.23	0.04	-0.26
Financial Leverage	0.01	0.01	0

Risk	Managed	Benchmark	Relative
Momentum	-0.04	-0.11	0.08
Volatility	-1.02	-0.08	-0.94
Value	0.01	0.03	-0.02
Size	0.05	0.3	-0.25
Size Nonlinearity	0.12	-0.09	0.21
Growth	-0.02	-0.03	0.01
Liquidity	-0.21	0.04	-0.25
Financial Leverage	-0.22	0.01	-0.23

Analysis as of July 31 2009



Transition Analysis – MSCI World Minimum Volatility Index

Top 20 constituents

Current MSCI Minimum Volatility Index : Portfolio as of July 31 2009

Name	Country	Optimal	Benchmark	Active
BANK NOVA SCOTIA HALIFAX	CANADA	1.54%	0.22%	1.32%
HANG SENG BANK	HONGKONG	1.44%	0.06%	1.38%
PEPSICO INC	USA	1.43%	0.46%	0.97%
SWISSCOM N	SWITZERLAND	1.42%	0.04%	1.38%
JOHNSON & JOHNSON	USA	1.37%	0.88%	0.50%
BANK OF AMERICA CORPORATI	USA	1.36%	0.66%	0.69%
SOUTHERN CO	USA	1.29%	0.13%	1.16%
GENERAL MLS INC	USA	1.27%	0.10%	1.17%
PROCTER & GAMBLE CO	USA	1.27%	0.85%	0.42%
ABBOTT LABS	USA	1.24%	0.36%	0.88%
WAL MART STORES INC	USA	1.23%	0.61%	0.62%
CLP HOLDINGS LTD	HONGKONG	1.22%	0.07%	1.14%
MEDTRONIC INC	USA	1.21%	0.21%	1.01%
ROYAL BK CDA MONTREAL QUE	CANADA	1.16%	0.35%	0.82%
KINDER MORGAN MANAGEMENT	USA	1.15%	0.02%	1.13%
HONG KONG ELECTRIC	HONGKONG	1.12%	0.04%	1.08%
QUEST DIAGNOSTICS INC	USA	1.11%	0.05%	1.06%
GLAXOSMITHKLINE	UK	1.08%	0.51%	0.56%
KELLOGG CO	USA	1.04%	0.07%	0.97%
BERKSHIRE HATHAWAY [B]	USA	1.00%	0.18%	0.82%

GEM2 Proposed Methodology : Portfolio as of July 31 2009

Name	Country	Optimal	Benchmark	Active
NTT DOCOMO	JAPAN	1.50%	0.12%	1.38%
JOHNSON & JOHNSON	USA	1.50%	0.88%	0.62%
TELEFONICA SA (EUR1)	SPAIN	1.50%	0.55%	0.95%
WYETH	USA	1.50%	0.32%	1.18%
NESTLE R	SWITZERLAND	1.50%	0.77%	0.73%
MCDONALDS CORP	USA	1.50%	0.32%	1.18%
RECKITT BENCKISER	UK	1.50%	0.15%	1.35%
EXXON MOBIL CORP	USA	1.50%	1.81%	-0.31%
QUALCOMM INC	USA	1.48%	0.40%	1.09%
WAL MART STORES INC	USA	1.40%	0.61%	0.79%
CLP HOLDINGS LTD	HONGKONG	1.38%	0.07%	1.31%
ORACLE CORP	USA	1.28%	0.46%	0.81%
ROCHE HOLDINGS DRC	SWITZERLAND	1.18%	0.57%	0.61%
LORILLARD INC	USA	1.17%	0.06%	1.10%
ABBOTT LABS	USA	1.16%	0.36%	0.80%
VERIZON COMMUNICATIONS IN	USA	1.14%	0.47%	0.67%
SOUTHERN CO	USA	1.12%	0.13%	0.99%
COCA COLA CO	USA	1.03%	0.54%	0.49%
GILEAD SCIENCES INC	USA	1.01%	0.23%	0.78%
AUTOMATIC DATA PROCESSING	USA	1.00%	0.10%	0.90%

Transition Analysis – MSCI World Minimum Volatility Index

Country Exposures

Current MSCI Minimum Valatility Index

Current wisch winning in volatinty muck					
	Managed	Benchmark	Relative	1	
AUSTRALIA	0.96%	3.52%	-2.56%	AUS	
AUSTRIA	0.25%	0.15%	0.10%	AUST	
BELGIUM	1.09%	0.43%	0.66%	BELG	
CANADA	10.10%	4.84%	5.26%	CAN	
DENMARK	0.42%	0.43%	-0.01%	DEN	
FINLAND	0.13%	0.55%	-0.42%	FINL	
FRANCE	0.43%	4.92%	-4.49%	FRAM	
GERMANY	0.05%	3.74%	-3.68%	GERI	
GREECE	0.05%	0.28%	-0.23%	GREE	
HONGKONG	5.52%	1.19%	4.33%	HON	
IRELAND	0.08%	0.13%	-0.05%	IREL	
ITALY	0.73%	1.65%	-0.91%	ITAL	
JAPAN	16.01%	10.88%	5.13%	JAPA	
NETHERLAND	0.96%	1.14%	-0.18%	NETH	
NEWZEALAND	0.26%	0.05%	0.21%	NEW	
NORWAY		0.32%	-0.32%	NOR	
PORTUGAL	0.90%	0.15%	0.76%	POR	
SINGAPORE	1.70%	0.67%	1.02%	SING	
SPAIN	0.85%	2.19%	-1.34%	SPAI	
SWEDEN	0.33%	1.21%	-0.88%	SWE	
SWITZERLAND	5.55%	3.58%	1.97%	swi	
υк	6.30%	9.91%	-3.61%	υк	
USA	47.33%	48.09%	-0.76%	USA	

	•	61	
	Managed	Benchmark	Relative
AUSTRALIA	0.19%	3.52%	-3.33%
AUSTRIA	0.00%	0.15%	-0.15%
BELGIUM	1.29%	0.43%	0.86%
CANADA	5.13%	4.84%	0.29%
DENMARK	0.44%	0.43%	0.01%
FINLAND	0.21%	0.55%	-0.34%
FRANCE	1.66%	4.92%	-3.27%
GERMANY	0.00%	3.74%	-3.74%
GREECE	0.13%	0.28%	-0.15%
HONGKONG	3.57%	1.19%	2.38%
IRELAND	0.07%	0.13%	-0.06%
ITALY	1.15%	1.65%	-0.49%
JAPAN	15.88%	10.88%	5.00%
NETHERLAND	0.55%	1.14%	-0.59%
NEWZEALAND	0.06%	0.05%	0.01%
NORWAY	0.00%	0.32%	-0.32%
PORTUGAL	0.44%	0.15%	0.29%
SINGAPORE	2.02%	0.67%	1.34%
SPAIN	3.81%	2.19%	1.62%
SWEDEN	0.00%	1.21%	-1.21%
SWITZERLAND	6.33%	3.58%	2.75%
UK	6.73%	9.91%	-3.18%

50.36%

48.09%

2.27%

Analysis as of July 31 2009



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GEM2 Proposed Methodology

Consultation Points

- Is the application of the following enhancements to the existing Minimum Volatility methodology appropriate?
 - No optimization constraint around Volatility risk index
 - Additional country weight constraints on smaller markets
 - Additional security level constraints





Appendix



MSCI USA Minimum Volatility Index – Summary Results

Summary	MSCI USA Index	GEM Current constraints without Turnover	GEM2 Current constraints	GEM2 Proposed Methodology without Turnover	GEM2 Proposed Methodology with Turnover
Return	-0.8%	0.6%	1.8%	1.6%	1.9%
Risk (Ex Post)	16.0%	13.0%	14.1%	11.9%	12.1%
Risk Reduction		18.3%	11.9%	25.7%	24.0%
Return/Risk	-0.05	0.05	0.13	0.14	0.16
Ex Post Tracking Error		5.0%	3.8%	6.1%	5.9%
Average Ex Ante Total Risk		13.9%	14.1%	12.5%	12.7%
Avg Volatility Exposure		-0.38	-0.25	-0.67	-0.62
Avg Number of Stocks	545	174	296	176	173
Average Beta	0.99	0.82	0.84	0.72	0.73
One way Semi Annual Turnover		52.4%	10.0%	58.1%	10.0%

Statistics based on Simulations from June 2002 – May 2009 All results in USD

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MSCI USA Minimum Volatility Index – Performance Results



Results based on simulations from June 2002 - May 2009

MSCI USA Minimum Volatility Index – Exposures







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Results based on simulations from June 2002 – May 2009

MSCI USA Minimum Volatility Index – Risk Exposures

GEM Current constraints without Turnover

Date	Size	Size Non Linear	Value	Growth	Liquidity	Leverage	Momentum	Volatility
Jun-02	-0.08	0.08	0.16	-0.17	-0.07	0.19	0.15	-0.56
Dec-02	-0.10	0.09	0.16	-0.15	-0.08	0.19	0.14	-0.50
Jun-03	-0.08	0.08	0.08	-0.11	0.00	0.18	0.04	-0.53
Dec-03	-0.10	0.09	0.06	-0.03	0.00	0.18	-0.03	-0.48
Jun-04	-0.10	0.09	-0.03	-0.02	-0.03	0.12	0.11	-0.38
Dec-04	-0.10	0.09	-0.06	-0.04	-0.05	0.13	0.15	-0.35
Jun-05	-0.11	0.10	-0.07	-0.05	-0.02	0.11	0.20	-0.30
Dec-05	-0.12	0.10	-0.04	-0.02	-0.04	0.08	0.12	-0.24
Jun-06	-0.14	0.11	-0.12	-0.06	-0.08	0.12	-0.02	-0.26
Dec-06	-0.12	0.10	-0.16	-0.08	-0.11	0.07	0.05	-0.31
Jun-07	-0.12	0.10	-0.19	-0.06	-0.12	0.02	0.05	-0.33
Dec-07	-0.13	0.11	-0.15	0.00	-0.21	-0.07	0.10	-0.37
Jun-08	-0.14	0.11	-0.07	-0.13	-0.24	0.01	0.11	-0.53
Dec-08	-0.11	0.09	-0.07	-0.19	-0.11	0.05	0.09	-0.25
Average	-0.11	0.09	-0.04	-0.08	-0.08	0.10	0.09	-0.38

GEM2 Current constraints

GEM2 Proposed Methodology with Turnover

Date	Size	Size Non Linear	Value	Growth	Liquidity	Leverage	Momentum	Volatility
Jun-02	-0.25	0.21	0.06	-0.19	-0.07	0.07	0.23	-0.25
Dec-02	-0.25	0.22	0.05	-0.16	-0.08	0.08	0.17	-0.25
Jun-03	-0.25	0.21	0.04	-0.21	-0.03	0.07	0.14	-0.25
Dec-03	-0.25	0.21	-0.02	-0.17	-0.03	0.07	0.22	-0.25
Jun-04	-0.25	0.21	-0.05	-0.18	-0.08	0.04	0.23	-0.25
Dec-04	-0.25	0.21	-0.09	-0.25	-0.09	0.02	0.25	-0.25
Jun-05	-0.25	0.20	-0.14	-0.25	-0.15	0.04	0.25	-0.25
Dec-05	-0.25	0.21	-0.11	-0.24	-0.14	0.05	0.12	-0.25
Jun-06	-0.25	0.20	-0.19	-0.25	-0.14	0.05	0.08	-0.25
Dec-06	-0.25	0.20	-0.19	-0.21	-0.14	0.06	0.20	-0.25
Jun-07	-0.25	0.20	-0.19	-0.16	-0.14	0.01	0.12	-0.25
Dec-07	-0.25	0.20	-0.18	-0.14	-0.22	-0.04	0.06	-0.25
Jun-08	-0.25	0.20	-0.15	-0.13	-0.18	-0.06	0.16	-0.25
Dec-08	-0.25	0.20	-0.13	-0.07	-0.19	-0.10	0.12	-0.25
Average	-0.25	0.21	-0.09	-0.19	-0.12	0.03	0.17	-0.25

GEM2 Proposed Methodology without Turnover

Date Size Size Non Linear Value Growth Liquidity Leverage Momentum Volatility Date Size Size Non Linear Value Growth Liquidity Leverage Momentum Volatility -0.25 0.22 0.12 -0.25 -0.07 0.18 0.23 Jun-02 -0.25 0.22 0.12 -0.25 -0.07 0.18 0.23 -0.75 Jun-02 -0.75 Dec-02 -0.25 0.22 0.07 -0.07 0.15 0.23 -0.68 -0.25 0.22 0.07 -0.17 -0.04 0.14 0.25 -0.70 -0.16 Dec-02 -0.25 0.22 0.08 0.18 Jun-03 -0.25 0.21 0.11 -0.23 -0.04 0.16 0.03 -0.69 Jun-03 -0.23 0.03 0.11 -0.72 Dec-03 -0.25 0.21 0.08 -0.20 -0.05 0.13 0.00 -0.70 -0.25 0.21 0.03 -0.20 -0.02 0.10 0.05 -0.71 Dec-03 -0.25 0.22 -0.04 -0.21 -0.08 0.03 0.08 -0.62 Jun-04 -0.25 0.22 -0.02 -0.23 -0.09 0.07 0.07 -0.60 Jun-04 Dec-04 -0.25 0.21 -0.08 -0.25 -0.08 0.08 0.21 -0.58 -0.05 Dec-04 -0.25 0.21 -0.25 -0.11 0.14 0.23 -0.61 Jun-05 -0.25 0.21 -0.17 -0.25 -0.12 0.13 0.13 -0.53 -0.15 -0.21 0.09 -0.59 Jun-05 -0.25 0.21 -0.25 0.12 0.22 -0.14 -0.25 -0.21 0.13 -0.05 -0.55 Dec-05 -0.25 0.21 -0.12 -0.25 -0.25 0.09 -0.03 -0.61 Dec-05 -0.25 -0.19 -0.25 -0.25 Jun-06 -0.25 0.20 -0.15 -0.25 -0.25 0.10 -0.10 -0.65 Jun-06 -0.25 0.21 0.13 -0.11 -0.58 -0.25 0.20 -0.09 -0.23 -0.25 0.13 0.13 -0.66 Dec-06 -0.25 0.20 -0.17 -0.24 -0.25 0.12 0.16 -0.59 Dec-06 -0.25 0.20 -0.12 -0.22 -0.25 0.07 0.04 -0.58 -0.25 0.19 -0.10 -0.18 -0.25 0.01 0.04 -0.65 Jun-07 Jun-07 Dec-07 -0.25 0.19 -0.11 -0.21 -0.25 0.02 -0.05 -0.63 -0.25 0.19 -0.12 -0.16 -0.25 -0.06 0.00 -0.71 Dec-07 Jun-08 -0.25 0.19 -0.08 -0.23 -0.25 -0.02 0.08 -0.66 Jun-08 -0.25 0.19 -0.09 -0.20 -0.25 -0.13 0.15 -0.74 Dec-08 -0.21 0.18 -0.16 -0.09 -0.15 -0.05 0.18 -0.53 -0.25 0.20 -0.18 -0.14 -0.17 0.25 -0.71 Dec-08 -0.16 -0.16 Average -0.25 0.21 -0.06 -0.22 -0.15 0.09 0.08 -0.62 Average -0.25 0.21 -0.06 -0.21 0.06 0.10 -0.67

Results based on simulations from June 2002 - May 2009



MSCI USA Minimum Volatility Index – Top Active Weights

As of Dec 2008 **GEM2** Current constraints

Name	Country	Benchmark	Optimal	Active
TFS FINANCIAL	USA	0.02%	1.50%	1.48%
NEWMONT MINING HLDG	USA	0.18%	1.48%	1.30%
COVIDIEN	USA	0.22%	1.23%	1.00%
SOUTHWEST AIRLINES CO	USA	0.02%	0.94%	0.92%
BAXTER INTERNATIONAL	USA	0.40%	1.25%	0.85%
AUTOMATIC DATA PROCESS	USA	0.26%	0.99%	0.73%
BECTON DICKINSON	USA	0.19%	0.88%	0.70%
GENERAL MILLS	USA	0.26%	0.92%	0.66%
KELLOGG CO	USA	0.14%	0.80%	0.66%
BARD (C.R.)	USA	0.10%	0.75%	0.65%
KIMBERLY-CLARK CORP	USA	0.29%	0.93%	0.64%
SOUTHERN CO	USA	0.34%	0.94%	0.60%
STRYKER CORP	USA	0.14%	0.73%	0.59%
CAMPBELL SOUP CO (US)	USA	0.09%	0.65%	0.56%
KINDER MORGAN MANAGEMEN	l' USA	0.03%	0.58%	0.54%
GENENTECH	USA	0.44%	0.97%	0.53%
ACCENTURE A	USA	0.23%	0.71%	0.48%
AMERICAN TOWER CORP A	USA	0.13%	0.59%	0.46%
FIRSTENERGY CORP	USA	0.22%	0.65%	0.43%
PEOPLES UNITED FINANCIAL	USA	0.08%	0.49%	0.41%
FPL GROUP	USA	0.23%	0.61%	0.38%
DISNEY (WALT)	USA	0.49%	0.86%	0.38%
MEDCO HEALTH SOLUTIONS	USA	0.26%	0.63%	0.37%
VERIZON COMMUNICATIONS	USA	1.13%	1.50%	0.37%
TELEPHONE & DATA SYSTEMS	USA	0.02%	0.39%	0.37%

As of Dec 2008

GEM2 Proposed Methodology without Turnover

Name	Country	Benchmark	Optimal	Active
GENUINE PARTS CO	USA	0.08%	1.50%	1.42%
BARD (C.R.)	USA	0.10%	1.50%	1.40%
CONSOLIDATED EDISON	USA	0.13%	1.50%	1.37%
BECTON DICKINSON	USA	0.19%	1.50%	1.31%
GENZYME GENERAL DIVISION	USA	0.21%	1.50%	1.29%
RAYTHEON	USA	0.25%	1.50%	1.25%
AUTOMATIC DATA PROCESS	USA	0.26%	1.50%	1.24%
AON CORP	USA	0.14%	1.37%	1.23%
SPECTRA ENERGY	USA	0.12%	1.32%	1.20%
SOUTHERN CO	USA	0.34%	1.50%	1.16%
BURLINGTON NTHN SANTA FE	USA	0.32%	1.47%	1.15%
KIMBERLY-CLARK CORP	USA	0.29%	1.42%	1.13%
PAYCHEX	USA	0.11%	1.24%	1.12%
XCEL ENERGY	USA	0.10%	1.17%	1.08%
GENENTECH	USA	0.44%	1.50%	1.06%
UNITED PARCEL SERVICE B	USA	0.48%	1.50%	1.02%
DUN & BRADSTREET CORP	USA	0.05%	1.06%	1.01%
DUKE ENERGY CORP	USA	0.24%	1.23%	1.00%
3M CO	USA	0.54%	1.50%	0.96%
SHERWIN-WILLIAMS CO	USA	0.07%	0.99%	0.92%
CHURCH & DWIGHT CO	USA	0.05%	0.96%	0.91%
CEPHALON	USA	0.06%	0.95%	0.89%
INTUIT	USA	0.08%	0.94%	0.86%
BAXTER INTERNATIONAL	USA	0.40%	1.24%	0.84%
PROGRESS ENERGY	USA	0.12%	0.94%	0.82%

As of Dec 2008 **GEM2** Proposed Methodology with Turnover

Name	Country	Benchmark	Optimal	Active
CONSOLIDATED EDISON	USA	0.13%	1.50%	1.37%
KELLOGG CO	USA	0.14%	1.50%	1.36%
NEWMONT MINING HLDG	USA	0.18%	1.50%	1.32%
GENERAL MILLS	USA	0.26%	1.50%	1.24%
AUTOMATIC DATA PROCESS	USA	0.26%	1.50%	1.24%
SOUTHERN CO	USA	0.34%	1.50%	1.16%
BARD (C.R.)	USA	0.10%	1.25%	1.15%
LOCKHEED MARTIN CORP	USA	0.31%	1.45%	1.14%
KIMBERLY-CLARK CORP	USA	0.29%	1.41%	1.12%
BAXTER INTERNATIONAL	USA	0.40%	1.50%	1.10%
AMEREN CORP	USA	0.09%	1.12%	1.03%
GENZYME GENERAL DIVISION	USA	0.21%	1.19%	0.98%
FPL GROUP	USA	0.23%	1.15%	0.92%
GENENTECH	USA	0.44%	1.35%	0.91%
BECTON DICKINSON	USA	0.19%	1.09%	0.90%
UNITED PARCEL SERVICE B	USA	0.48%	1.32%	0.85%
SPECTRA ENERGY	USA	0.12%	0.96%	0.83%
TIM HORTONS	USA	0.06%	0.88%	0.83%
NORTHROP GRUMMAN CORP	USA	0.16%	0.98%	0.82%
HEINZ (H.J) CO	USA	0.15%	0.92%	0.77%
SAIC	USA	0.04%	0.79%	0.75%
CLOROX CO	USA	0.10%	0.84%	0.74%
CHURCH & DWIGHT CO	USA	0.05%	0.77%	0.72%
ENTERGY CORP	USA	0.20%	0.92%	0.72%
QUEST DIAGNOSTICS	USA	0.09%	0.80%	0.70%



Transition Analysis – MSCI USA Minimum Volatility Index

	Current MSCI Minimum Volatility Index	GEM2 Proposed Methodology Portfolio
Active Risk	4.64	9.38
Benchmark Risk	30.88	30.88
Total Risk	27.84	23.65
Number of stocks	162	160
Active Volatility exposure	-0.33	-0.8
Turnover		53%
Analysis as of July 31 2009		

Risk Exposures

Current MSCI Minimum Volatility Index

Risk	Managed	Benchmark	Relative
Momentum	-0.16	-0.08	-0.09
Volatility	-0.39	-0.06	-0.33
Value	0.04	0.03	0.01
Size	0.15	0.32	-0.17
Size Nonlinearity	0.04	-0.1	0.14
Growth	-0.08	-0.04	-0.04
Liquidity	-0.24	-0.06	-0.18
Financial Leverage	-0.01	-0.01	0

GEM2 Proposed Methodology Portfolio

Risk	Managed	Benchmark	Relative	
Momentum	0	-0.08	0.08	
Volatility	-0.86	-0.06	-0.8	
Value	0.03	0.03	-0.01	
Size	0.07	0.32	-0.25	
Size Nonlinearity	0.11	-0.1	0.21	
Growth	-0.02	-0.04	0.02	
Liquidity	-0.21	-0.06	-0.15	
Financial Leverage	-0.26	-0.01	-0.25	

Analysis as of July 31 2009



Transition Analysis – MSCI USA Minimum Volatility Index

Top 20 constituents

Current MSCI Minimum Volatility Index : Portfolio as of July 31 2009

GEM2 Proposed Methodology : Portfolio as of July 31 2009

Name	Country	Optimal	Benchmark	Active
TJX COS INC NEW	USA	1.64%	0.16%	1.48%
COLGATE PALMOLIVE CO	USA	1.53%	0.40%	1.14%
BANK OF AMERICA CORPORATI	USA	1.51%	1.38%	0.12%
KINDER MORGAN MANAGEMENT	USA	1.48%	0.04%	1.45%
GENERAL MLS INC	USA	1.48%	0.21%	1.27%
PEPSICO INC	USA	1.48%	0.96%	0.52%
JOHNSON & JOHNSON	USA	1.48%	1.82%	-0.34%
INTERNATIONAL BUSINESS MA	USA	1.45%	1.71%	-0.26%
HORMEL FOODS CORP	USA	1.44%	0.03%	1.41%
MICROSOFT CORP	USA	1.44%	2.04%	-0.60%
KELLOGG CO	USA	1.42%	0.14%	1.29%
JPMORGAN CHASE & CO	USA	1.40%	1.56%	-0.16%
ECOLAB INC	USA	1.40%	0.11%	1.29%
TIME WARNER CABLE INC	USA	1.38%	0.13%	1.25%
EXXON MOBIL CORP	USA	1.34%	3.76%	-2.43%
RAYTHEON CO	USA	1.33%	0.20%	1.13%
AUTOMATIC DATA PROCESSING	USA	1.33%	0.20%	1.13%
SOUTHERN CO	USA	1.33%	0.26%	1.06%
LILLY ELI & CO	USA	1.32%	0.39%	0.94%
PROCTER & GAMBLE CO	USA	1.31%	1.76%	-0.45%



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