Revision of the Total Fund Benchmarks Policy

Asset Allocation

June 17, 2013

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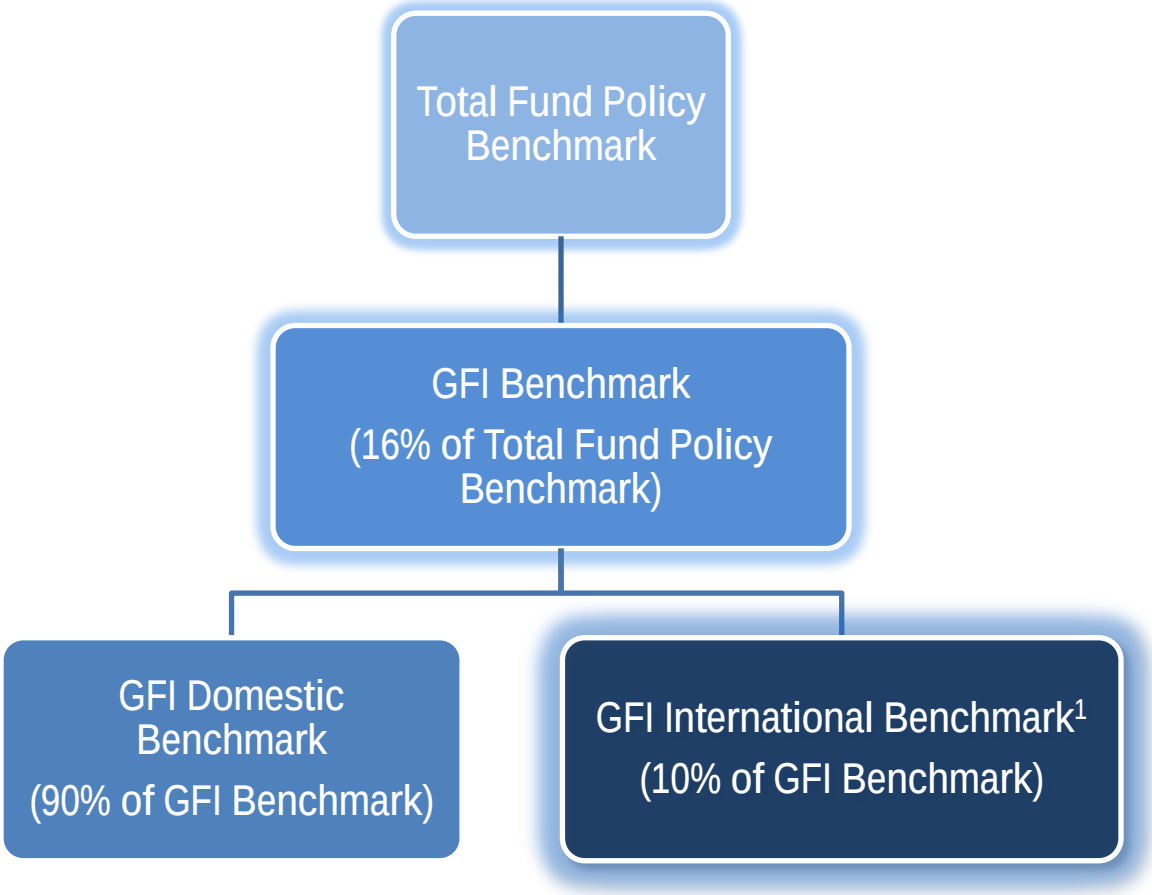
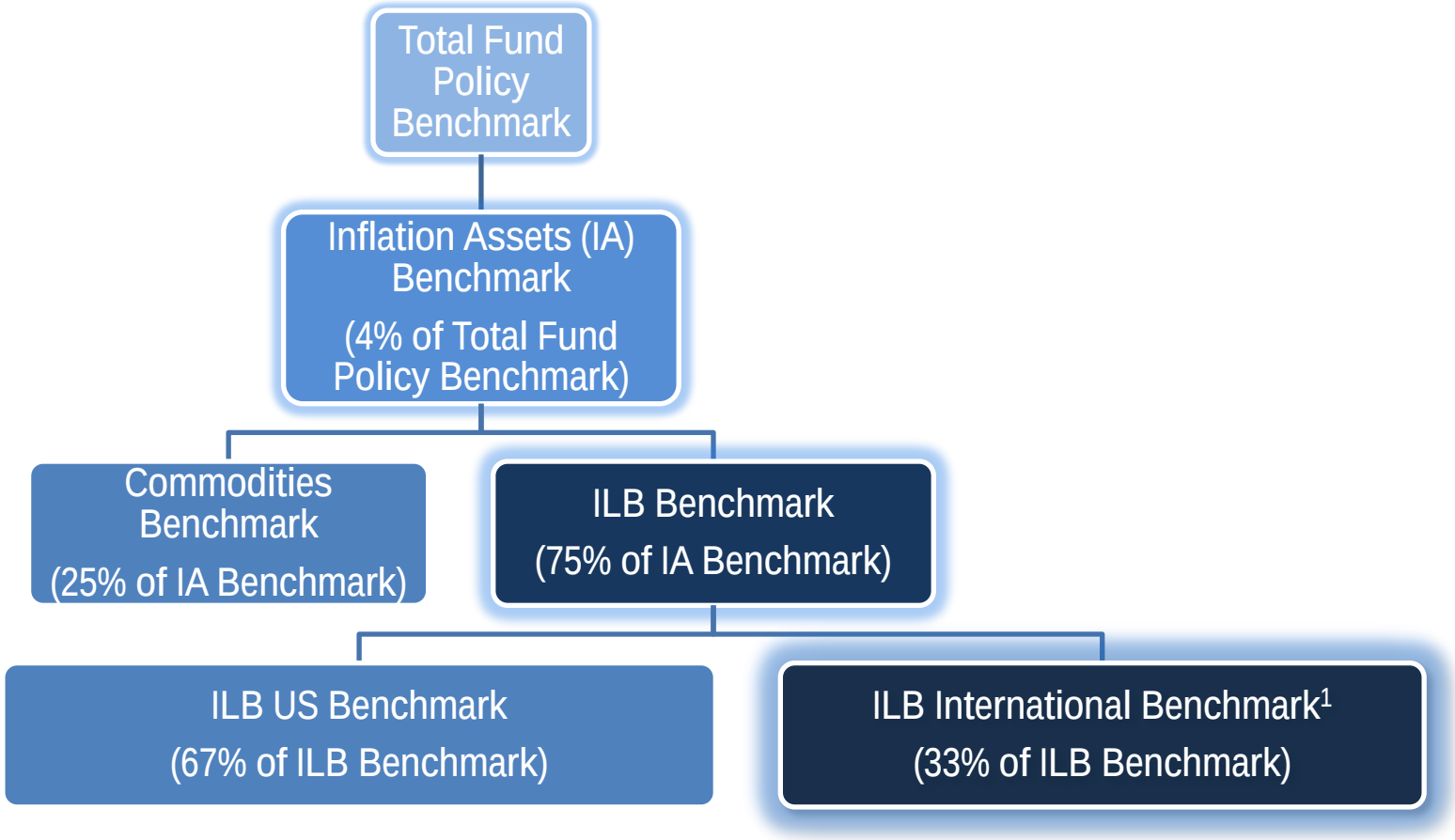
Asset Allocation

Proposed Global Fixed Income (GFI) International Benchmark Change has a 1.6% impact on the Total Fund Policy Benchmark Composition



[1] Proposed change from Barclays International Fixed Income Index to Barclays International Fixed Income Index GDP-Weighted ex-US.

Proposed Inflation Linked Bond (ILB) International Benchmark Change has a 1% impact on the Total Fund Policy Benchmark Composition

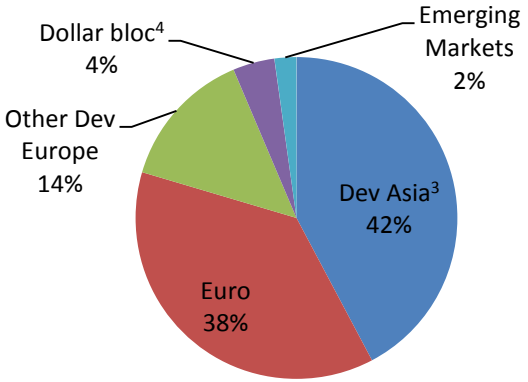


[1] Proposed change from Barclays Global Inflation Linked United Kingdom, France, Italy, Germany, and Canada only, un-hedged, to Barclays Universal Government Inflation Linked Bond Index ex-US.

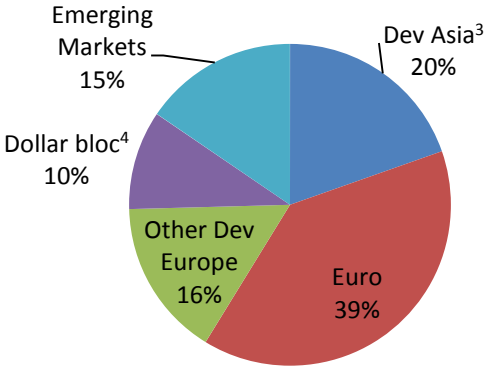
GFI International Benchmark – Existing vs. Proposed

Country[1,2]	Existing GFI International Benchmark (%)	Proposed GFI International Benchmark (%)
Australia	1.37	4.27
Austria	1.57	1.29
Belgium	2.41	1.59
Canada	2.51	5.22
Chile	0.04	0.72
Croatia		0.20
Czech Rep	0.30	0.66
Denmark	0.73	1.03
Finland	0.56	0.81
France	8.85	8.67
Germany	8.02	11.17
Hong Kong	0.03	0.74
Ireland	0.69	0.70
Israel	0.31	0.73
Italy	8.55	6.91
Japan	41.81	18.08
Luxembourg	0.03	0.21
Malta	0.01	0.08
Mexico	0.77	3.45
Netherlands	2.45	2.63
New Zealand	0.31	0.47
Norway	0.25	1.44
Peru		0.52
Poland	0.70	1.57
Russia		5.24
S.Africa	0.57	1.20
Singapore	0.39	0.77
Slovakia	0.20	0.30
Slovenia	0.09	0.16
Spain	3.93	4.67
Sweden	0.57	1.60
Switzerland	0.61	1.93
Thailand	0.51	1.04
Turkey		2.37
United Kingdom	10.87	7.55
Total	100	100

Regional Weights: Current Benchmark



Regional Weights: Proposed Benchmark



Source: Barclays

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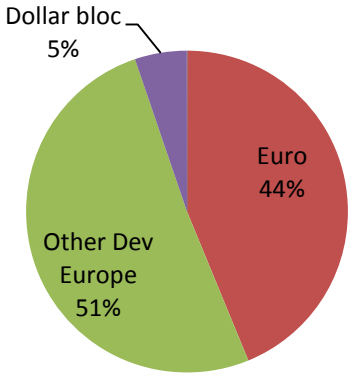
1. Following countries are excluded as they are below investment grade: Argentina, Egypt, Philippines, Hungary
2. Following countries are excluded due to tax and capital control restrictions: Brazil, China, Columbia, India, Indonesia, South Korea, Malaysia, Taiwan
3. Developed Asia includes Japan, Hong Kong and Singapore
4. Dollar Bloc includes Australia, New Zealand and Canada

ILB International Benchmark – Existing vs. Proposed

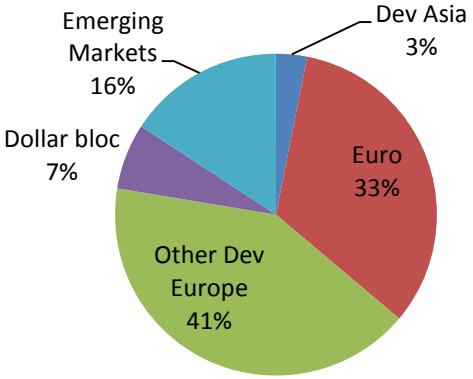
Country	Existing ILB International Benchmark (%)	Proposed ILB International Benchmark (%)
Japan		3.11
France	22.17	17.12
Germany	6.83	5.00
Italy	14.77	10.93
Sweden		2.59
UK	51.00	38.72
Denmark		0.13
Australia		1.94
Canada	5.23	4.67
Chile		1.00
Mexico		4.50
Poland		0.58
South Africa		2.49
Turkey		3.61
Israel		3.35
Thailand		0.24
Total	100	100

Source: Barclays

Regional Weights: Current Benchmark



Regional Weights: Proposed Benchmark



Impact of Adapting the Proposed GFI & ILB International Benchmarks using six years of historical data[1]

6 Year Annualized		With Existing GFI & ILB International Benchmarks	With Both Proposed GFI & ILB International Benchmarks
Total Fund Policy Benchmark[2]	Average Return	4.58%	4.60%
	Volatility	11.07%	11.10%
GFI Benchmark	Average Return	7.54%	7.62%
	Volatility	6.01%	5.98%
IA Benchmark	Average Return	6.55%	6.69%
	Volatility	7.98%	7.79%

- Increases the returns for GFI, IA and Total Fund Policy Benchmarks
- Reduces the volatility for GFI and IA Benchmarks, but increases it for the Total Fund Policy Benchmark[3].

[1] Historical Data for the Proposed ILB International Benchmark were only available for the past six years, due to unavailability of issues from Emerging Markets.
[2] The FTSE All World Total Market Index was used as a proxy for the Public Equity Return Series.
[3] While the historical volatility of the GFI and IA Benchmarks are lower with the Proposed Benchmarks, volatility at the Total Fund Policy Benchmark is higher because the historical correlations with the Total Fund Policy Benchmark are higher for the Proposed Benchmarks than the Existing Benchmarks. The Proposed Benchmarks' higher correlations with the Total Fund Policy Benchmark is due to their inclusion of emerging markets. In general, emerging markets have a higher factor exposure to growth risks, which drives much of the return of the Total Fund Policy Benchmark.

Impact of Adapting the Proposed GFI International Benchmark, using ten years of historical data

10 Year Annualized		With Existing GFI International Benchmark	With Proposed GFI International Benchmark only
Total Fund Policy Benchmark	Average Return	9.28%	9.29%
	Volatility	9.16%	9.18%
GFI Benchmark	Average Return	6.66%	6.77%
	Volatility	5.72%	5.70%

- Improves the historical return of GFI and Total Fund Policy Benchmarks but worsens the Total Fund Policy Benchmark Volatility over 10 year horizon[1].

[1] While the historical volatility of the GFI Benchmark is the same with the Proposed and Existing GFI International Benchmarks, volatility at the Total Fund Policy Benchmark is higher because the historical correlation with the Total Fund Policy Benchmark is higher for the Proposed GFI International Benchmark than the Existing GFI International Benchmark. The Proposed GFI Benchmark's higher correlation with the Total Fund Policy Benchmark is due to its inclusion of emerging markets. In general, emerging markets have a higher factor exposure to growth risks, which drives much of the return of the Total Fund Policy Benchmark.

Impact of Adapting the Proposed IA International Benchmark using six years of historical data[1]

6 Year Annualized		With Existing ILB International Benchmark	With Proposed ILB International Benchmark
Total Fund Policy Benchmark	Average Return	4.58%	4.59%
	Volatility	11.07%	11.07%
IA Benchmark	Average Return	6.55%	6.69%
	Volatility	7.98%	7.79%

- Improves the historical return of IA and Total Fund Policy Benchmarks horizon and improves the IA Benchmark Volatility over six year[2].

[1] Historical Data for the Proposed ILB International Benchmark were only available for the past six years, due to unavailability of issues from Emerging Markets.
[2] While the historical volatility of the IA Benchmark is lower with the Proposed ILB International Benchmark, volatility at the Total Fund Policy Benchmark is unchanged because the historical correlation with the Total Fund Policy Benchmark is higher for the Proposed ILB International Benchmark than the Existing ILB International Benchmark. The Proposed ILB Benchmark's higher correlation with the Total Fund Policy Benchmark is due to its inclusion of emerging markets. In general, emerging markets have a higher factor exposure to growth risks, which drives much of the return of the Total Fund Policy Benchmark.

Forecasted Risk Impact of Adapting Both Benchmarks

Total Risk	With Existing GFI & ILB International Benchmarks	With Both Proposed GFI & ILB International Benchmarks
Total Fund Policy Benchmark	12.16%	12.20%
GFI Benchmark	5.89%	5.84%
IA Benchmark	5.21%	5.07%

- Barra Risk Estimates are higher for the Total Fund Policy Benchmark and lower for GFI and IA Benchmarks. This is due to the higher projected correlation between the proposed benchmarks and the Total Fund Policy Benchmark compared to the existing benchmarks and the Total Fund Policy Benchmark.

Forecasted Risk Impact of Adapting the Proposed GFI International Benchmark Only

Total Risk	With Existing GFI International Benchmark	With Proposed GFI International Benchmark
Total Fund Policy Benchmark	12.16%	12.19%
GFI Benchmark	5.89%	5.84%

- Barra Risk Estimates are higher for the Total Fund Policy Benchmark and lower for GFI Benchmark. This is due to the higher projected correlation between the proposed benchmarks and the Total Fund Policy Benchmark compared to the existing benchmarks and the Total Fund Policy Benchmark.

Forecasted Risk Impact of Adapting the Proposed IA International Benchmark Only

Total Risk	With Existing ILB International Benchmark	With Proposed ILB International Benchmark
Total Fund Policy Benchmark	12.16%	12.16%
IA Benchmark	5.21%	5.07%

- Barra Risk Estimates are the same for the Total Fund Policy Benchmark and lower for IA Benchmark. This is due to the higher projected correlation between the proposed benchmarks and the Total Fund Policy Benchmark compared to the existing benchmarks and the Total Fund Policy Benchmark.