

FOURTH QUARTER 2018 PERFORMANCE & RISK- MONITORING REPORT

For CPFIS-Included Unit Trusts & Investment-Linked
Insurance Products



DECEMBER 2018

Lipper

Contents

1	INTRODUCTION	3
2	UPDATE ON CPFIS-INCLUDED FUNDS	4
3	MARKET DEVELOPMENTS IN Q4 2018	6
3.1	Equity Markets	6
3.2	Bond Markets.....	7
3.3	The Outlook.....	7
4	PERFORMANCE OF WORLDWIDE INDICES IN SGD.....	9
5	SUMMARY OF PERFORMANCE OF CPFIS-INCLUDED FUNDS	10
6	SUMMARY OF RISK-ADJUSTED PERFORMANCE.....	16
6.1	Lipper Leader Rating for CPFIS-Included Unit Trusts	17
6.2	Lipper Leader Rating for CPFIS-Included ILPs.....	21
7	Appendices	26
7.1	Complete List of Funds	26
7.1.1	Full List of CPFIS-Included Unit Trusts.....	26
7.1.2	Full List of CPFIS–Included ILPs	31
7.2	Investment Terminology Definitions.....	40

1 INTRODUCTION

Lipper has been appointed by Investment Management Association of Singapore (IMAS) and Life Insurance Association of Singapore (LIAS) to monitor the performance of all unit trusts and investment-linked insurance products included under the Central Provident Fund Investment Scheme (CPFIS). This report shows Lipper's findings for the three months ended December 31, 2018.

Important Disclaimers:

The data shown in this report is information for investors and is not a solicitation to buy, sell, or hold any fund. Past performance is not an indicator of future performance. Past performance is no guarantee of future return. This report should not be used as the sole basis for any investment decision. Before investing in any fund, investors should carefully read the prospectus or other necessary information about the fund. Lipper has used reasonable efforts in preparing this report based on data collected from the contributing asset management companies. However, Lipper doesn't guarantee the accuracy of the data contained herein and will not bear any responsibility for investment decisions of investors or for any loss arising from using the data presented in this report.

2 UPDATE ON CPFIS-INCLUDED FUNDS

As of December 31, 2018, there were 85 unit trusts and 156 investment-linked insurance products (ILPs) included under the CPFIS¹, for a total of 241 funds.

Table 1 Number of CPFIS-Included Funds

	As of End Q4-2018	As of End Q3-2018
Unit Trust	85	86
ILP	156	168
Total	241	254

Source: Central Provident Fund Board

Table 2 Newly Listed Products

	Risk Classification	CPFIS Focus	Detail	Lipper Classification
UT				
United Global Quality Growth Fund – Class C SGD Acc (Hedged)	HIGHER RISK	BROADLY DIVERSIFIED	N/A	Equity Global

Table 3 Delisted Products

	Risk Classification	CPFIS Focus	Detail	Lipper Classification
UT				
Franklin Templeton Investment Funds – Templeton European Fund A(acc) SGD	HIGHER RISK	NARROWLY FOCUSED	Europe	Equity Europe
United International Growth Fund	HIGHER RISK	Broadly Diversified	N/A	Equity Global
ILP				
John Hancock European Equity Fund	HIGHER RISK	NARROWLY FOCUSED	Europe	Equity Europe
John Hancock Adventurous Portfolio	Medium to High Risk	Broadly Diversified	N/A	Mixed Asset SGD Aggressive
John Hancock Balanced Portfolio	Medium to High Risk	Broadly Diversified	N/A	Mixed Asset SGD Balanced
John Hancock Cautious Portfolio	Medium to High Risk	Broadly Diversified	N/A	Mixed Asset SGD Conservative
John Hancock Greater China Fund	HIGHER RISK	NARROWLY FOCUSED	Greater China	Equity China
John Hancock Japan Growth Fund	HIGHER RISK	NARROWLY FOCUSED	Japan	Equity Japan
John Hancock Pacific Equity Fund	HIGHER RISK	NARROWLY FOCUSED	Asia	Equity Asia Pacific ex Japan
John Hancock Worldwide Equities Fund	HIGHER RISK	Broadly Diversified	N/A	Equity Global
John Hancock Global Balanced Fund	Medium to High Risk	Broadly Diversified	N/A	Mixed Asset SGD Balanced

¹ Find more information about unit trusts and investment-linked insurance products (ILPs) included under the CPF Investment Scheme at <https://www.cpf.gov.sg/Members/Schemes/schemes/optimising-my-cpf/cpf-investment-schemes>

FOURTH QUARTER 2018 PERFORMANCE & RISK-MONITORING REPORT

John Hancock Pacific Harvest Fund	Medium to High Risk	NARROWLY FOCUSED	Asia	Mixed Asset SGD Aggressive
John Hancock Worldwide Bond Fund	Low to Medium Risk	Broadly Diversified	N/A	Bond Global
John Hancock Singapore Cash Fund	Low to Medium Risk	NARROWLY FOCUSED	Singapore	Money Market SGD

Source: Central Provident Fund Board

3 MARKET DEVELOPMENTS IN Q4 2018²

3.1 Equity Markets

Most of global equity markets plunged for Q4 2018. The MSCI World Index slid by 13.31% (in U.S.-dollar terms) for Q4 2018, while it soared 5.01% for Q3 2018. Brazil BOVESPA (Ibovespa) TR, Indonesia Jakarta SE Composite Index and Philippine PSE Composite CR index soared for 10.77%, 3.65% and 2.60%, respectively and took the lead among most of the global major markets while Japan Nikkei 225 CR and NASDAQ Composite CR Index slid over 17% for Q4 2018.

Table 4 Major Stock Market Indices (all return figures are in the respective local currencies)

Name	Price	Period ended 31-Dec-2018				
	2018/12/31	3 Months	6 Months	9 Months	1 Year	3 Years
BOVESPA (Ibovespa) TR	87,887.26	10.77	20.79	2.95	15.03	102.74
Jakarta SE Composite Index	6,194.50	3.65	6.82	0.09	-2.54	34.87
Philippine PSE Composite CR	7,466.02	2.60	3.79	-6.44	-12.76	7.39
S&P BSE SENSEX	36,068.33	-0.44	1.82	9.40	5.91	38.10
FTSE Bursa Malaysia KLCI CR	1,690.58	-5.72	-0.05	-9.28	-5.91	-0.11
Singapore Straits Times CR	3,068.76	-5.78	-6.12	-10.48	-9.82	6.45
Hang Seng CR	25,845.70	-6.99	-10.74	-14.11	-13.61	17.94
Swiss Market Index CR	8,429.30	-7.25	-2.09	-3.57	-10.15	-4.41
S&P/ASX 200 CR AUD	5,646.37	-9.04	-8.85	-1.96	-6.90	6.62
FTSE 100 CR	6,728.13	-10.41	-11.90	-4.65	-12.48	7.78
RTS CR	1,066.13	-10.56	-7.63	-14.67	-7.65	40.83
Thailand SET CR	1,563.88	-10.96	-1.99	-11.96	-10.82	21.42
Shanghai Composite CR	2,493.90	-11.61	-12.42	-21.30	-24.59	-29.53
TAIEX CR	9,727.41	-11.62	-10.24	-10.92	-8.60	16.66
Dow Jones Industrial Average CR	23,327.46	-11.83	-3.89	-3.22	-5.63	33.87
KOSPI Composite CR	2,041.04	-12.89	-12.26	-16.55	-17.28	4.07
Xetra DAX TR	10,558.96	-13.78	-14.20	-12.71	-18.26	-1.71
CAC 40 CR	4,730.69	-13.89	-11.14	-8.45	-10.95	2.02
S&P 500 CR	2,506.85	-13.97	-7.78	-5.07	-6.24	22.65
Nikkei 225 CR	20,014.77	-17.02	-10.27	-6.71	-12.08	5.15
NASDAQ Composite CR	6,635.28	-17.54	-11.65	-6.06	-3.88	32.51

Source: Lipper

² Since the Singapore fund universe is not domestically focused and invests in a host of regions, currencies, and asset classes, discussion of global macroeconomic trends is imperative to understand fund performance. Furthermore, to avoid confusion from counter-directional currency movements (against the Singapore dollar) in the discussion of market trends, all index/average performance figures in this section are expressed in local-currency or U.S.-dollar terms.

3.2 Bond Markets

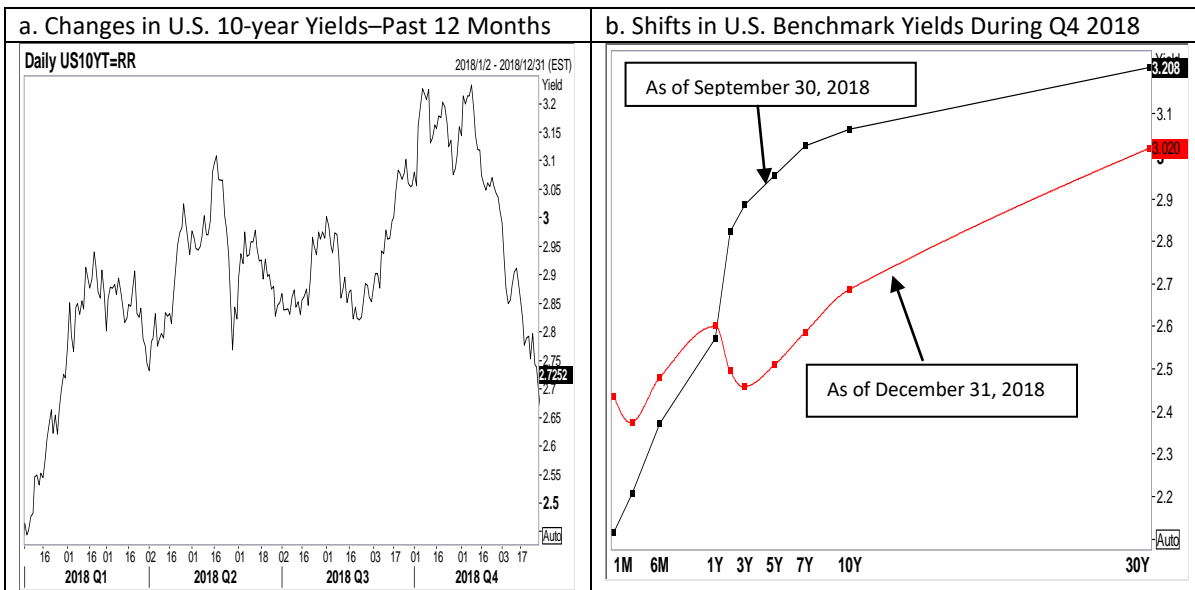
The FTSE WGBI slid 1.62% for the quarter (in USD). The ten-year Treasury yield ended at 2.691% for the fourth quarter of 2018 versus 3.056% at the end of Q3 2018.

3.3 The Outlook

The U.S Fed left the target Fed fund rate unchanged at 2.25%-2.50% and repeated that the labour market has continued to strengthen and that economic activity has been raising at a 'solid' (instead of strong) pace. However, the Fed indicated that it could alter the current run-off of its balance sheet. Fed chairman Powell claimed that the Fed can remain patient on any further changes to monetary policy. The U.S Fed signals that it would be prepared to adjust the details of completing balance sheet normalisation in the light of recent financial and economic developments.

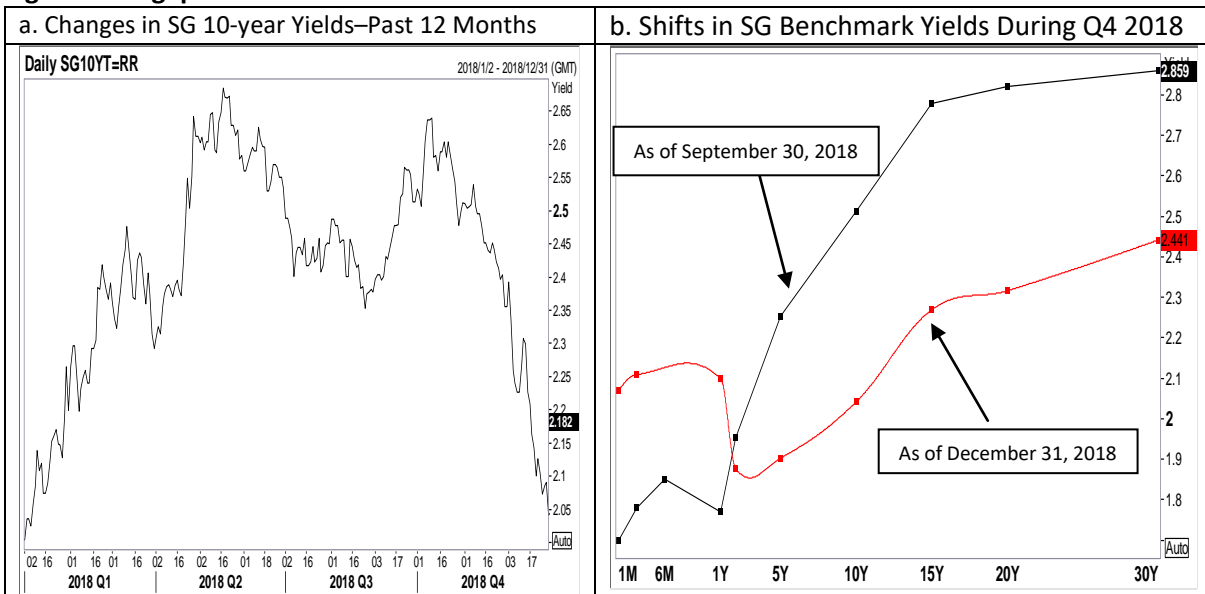
The U.S and China's 90-day trade war truce which made on last November is ending this March 2nd. The two sides are seeking ways to suspend the punitive tariffs and make promises on other issues before March 1st so that they can start to move to further negotiations on more technical issues. However, no deal was reached during recent Jan's new round of high-level trade negotiations. Investors should continue watching out for further progress and potential market volatility.

Figure 1 U.S. Government Bond Market Movements



Source: Refinitiv

Figure 2 Singapore Government Bond Market Movements



Source: Refinitiv

4 PERFORMANCE OF WORLDWIDE INDICES IN SGD

Table 5 Worldwide Indices' Performance in SGD

Name	Period ended 31-Dec-2018				
	3 Months	6 Months	9 Months	1 Year	3 Years
Thomson Reuters/SGX SFI	2.45	3.23	2.91	1.73	9.20
FTSE WGBI TR USD	1.50	0.07	0.56	1.13	4.05
SIBOR SGD 3 Month	0.44	0.85	1.23	1.55	3.66
Singapore Straits Times CR	-5.78	-6.12	-10.48	-9.82	6.45
MSCI EM (Emerging Markets) TR USD	-7.62	-8.30	-12.14	-12.53	26.68
MSCI AC Asia ex Japan TR USD	-8.83	-9.96	-11.35	-12.41	23.99
STOXX Europe 50 CR EUR	-11.67	-11.22	-10.08	-15.67	-9.98
MSCI World TR USD	-13.52	-8.92	-3.47	-6.38	17.40

Source: Lipper

The above indices represent the benchmarks for various major financial markets, as follows:

Indices

FTSE WGBI TR
 MSCI AC Asia ex Japan TR
 MSCI EM (Emerging Markets) TR
 MSCI World TR
 SIBOR SGD 3 Months
 Singapore Straits Times CR
 Stoxx Europe 50 CR
 Thomson Reuters/SGX SFI

Financial Markets

Global bond markets
 Asian ex-Japan equities
 Emerging markets equities
 Global equities
 Singapore money markets
 Singapore equities
 European equities
 Singapore bond markets

The minimum annual interest rate paid by the CPF Board for the various accounts is as follows:

- Ordinary: 2.5%
- Special: 4.0%
- Medisave: 4.0%
- Retirement: 4.0%

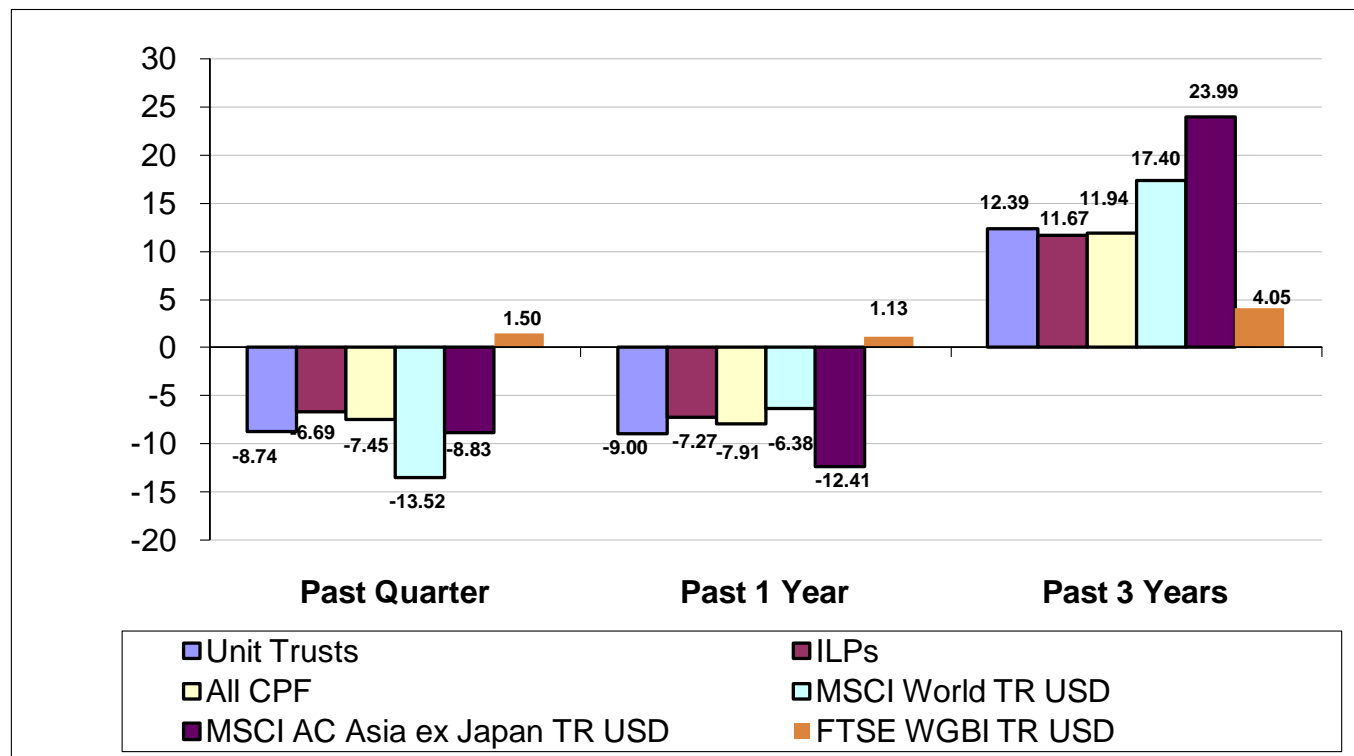
For more information about CPF interest rates please visit:

<https://www.cpf.gov.sg/Members/AboutUs/about-us-info/cpf-interest-rates>

5 SUMMARY OF PERFORMANCE OF CPFIS-INCLUDED FUNDS

The average returns³ of CPFIS-included unit trusts and ILPs are shown below:

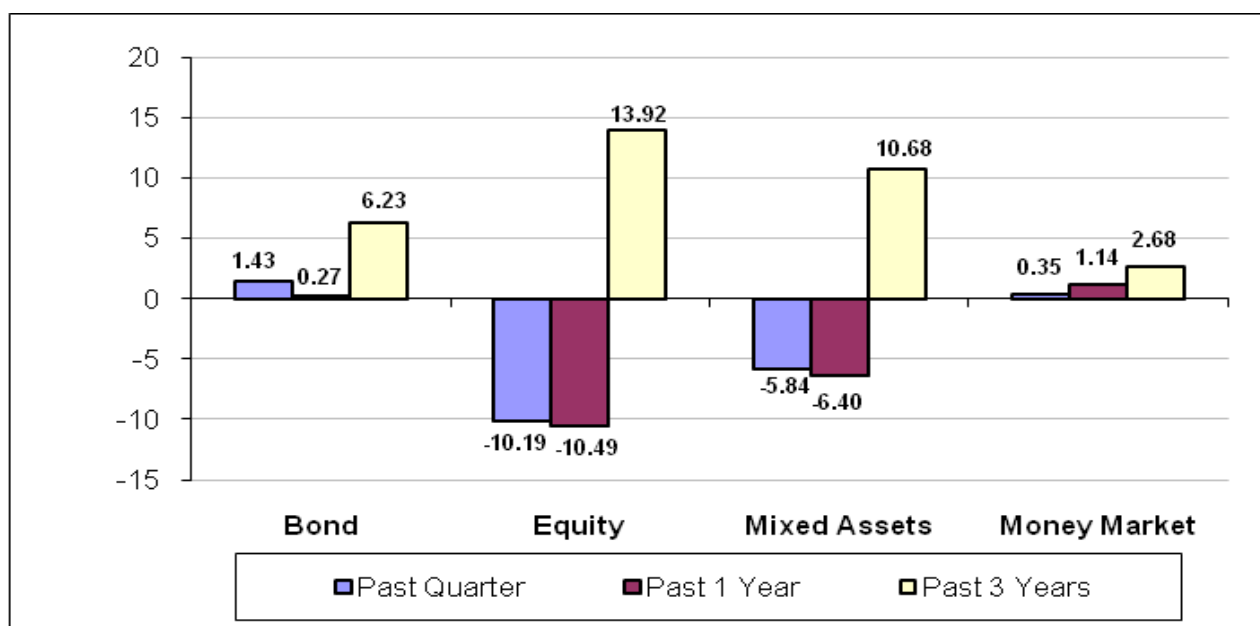
Figure 3 Average Performance of CPFIS-Included Funds at End Q4 2018 (% in SGD)



Source: Lipper

³ Average performance is calculated by a summation of all returns of funds in the group, divided by the number of funds.

Figure 4 Average Performance of CPFIS-Included Funds at End Q4 2018 by Asset Class (% in SGD)



Source: Lipper

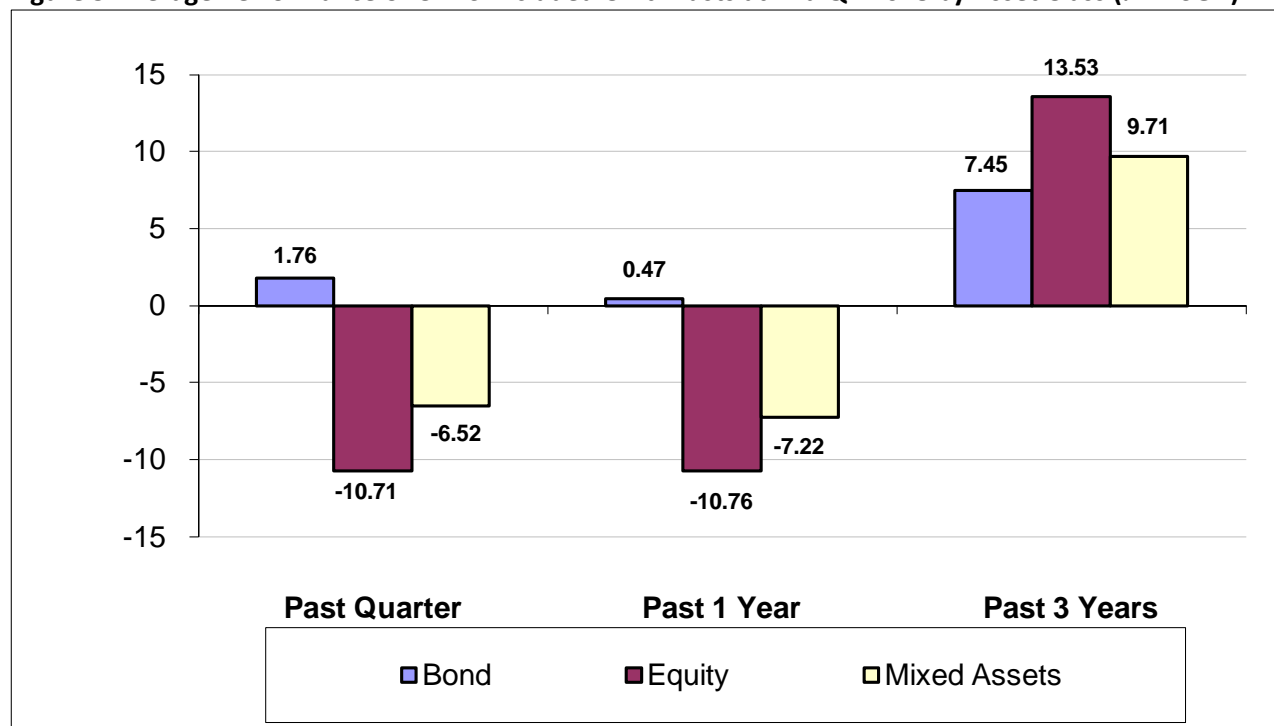
For the fourth quarter of 2018, the overall performance of CPFIS-included funds (unit trusts and ILPs combined) posted negative returns of 7.45% on average, given a negative return of 8.74% on average among CPFIS-included unit trusts and a negative return of 6.69% among CPFIS-included ILPs. For all the CPFIS-included funds, Equity and mixed-asset funds posted negative return of 10.19% and 5.84%, respectively, while bond and money market funds posted positive return of 1.43% and 0.35%, respectively for the quarter. MSCI World TR USD and MSCI AC Asia ex Japan plunged 13.52% and 8.83%, respectively, while FTSE WGBI Index rose 1.5% for Q4 2018.

For the one-year period, the overall performance of CPFIS-included funds posted a negative return of 7.91% on average. CPFIS-included unit trusts slid 9.0% on the year, and CPFIS-included ILPs plunged 7.27% on average. During the same period, the key benchmark MSCI World TR USD plunged 6.38% and MSCI AC Asia ex Japan Index slid 12.41% respectively, while the FTSE WGBI TR rose 1.13%. For the one-year period, money market (+1.14%) fund outperformed the bond (+0.27% on average), equity (-10.49% on average) and mixed-asset (-6.40% on average) fund offering.

For the three-year period, CPFIS-included funds achieved 11.94% growth on average, accounted for a gain of 12.39% on average from CPFIS-included unit trusts and 11.67% on average from CPFIS-included ILPs. During the same period, MSCI World TR USD and MSCI AC Asia ex Japan Index rallied 17.40% and 23.99% respectively, while the FTSE WGBI TR achieved 4.05%. Equity type was the leading gainers (+13.92%) and bond portfolio posted 6.23% return on average for the period.

The average returns of CPFIS-included unit trusts by asset class⁴ are shown below:

Figure 5 Average Performance of CPFIS-Included Unit Trusts at End Q4-2018 by Asset Class (% in SGD)



Source: Lipper

For the fourth quarter of 2018, equity and mixed-asset of UT portfolios posted negative returns of 10.71%, and 6.52% on average respectively, while bond fund posted positive return of 1.76%.

On average for the one-year period, equity and mixed-asset type posted negative return of 10.76% and 7.22% on average respectively, while bond type of UT portfolios posted positive return of 0.47%.

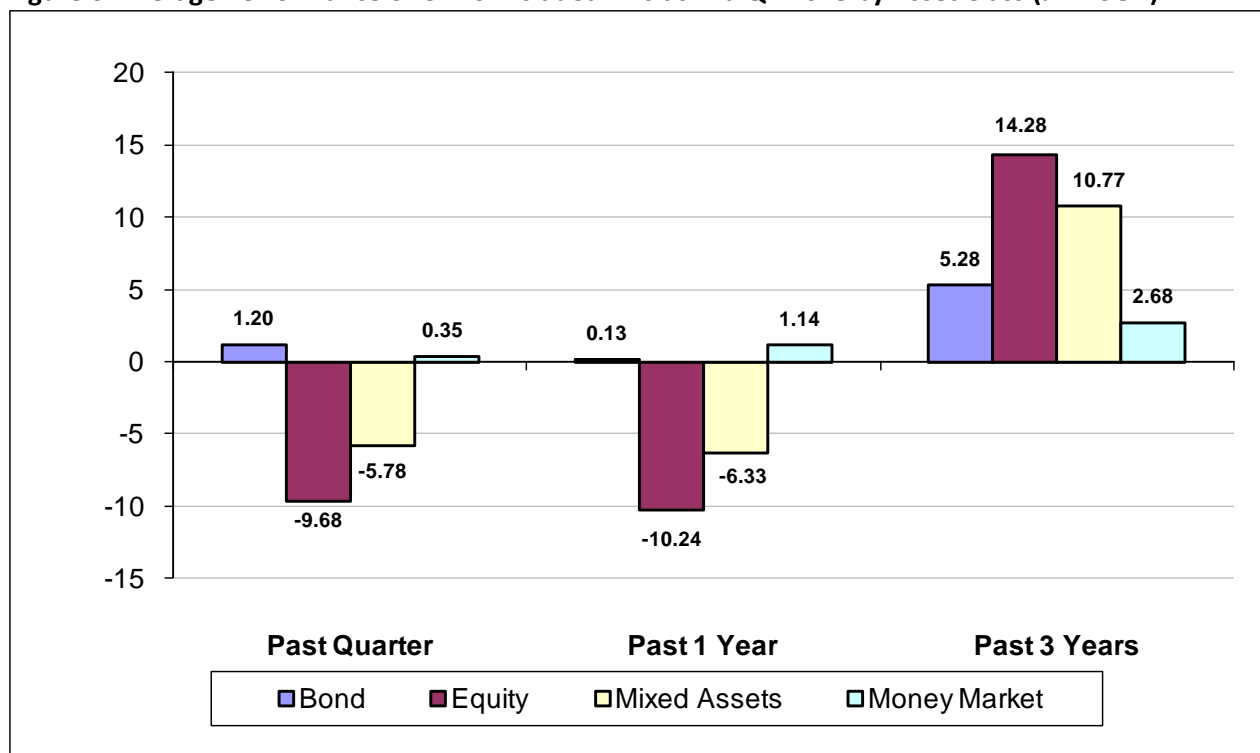
Equity fund (+13.53%) outperformed the other asset class offerings over the three-year period (through December 2018), with mixed-asset and bond fund posting gains of 9.71% and 7.45% on average respectively.

⁴ Definitions of asset types are as follows:

- Equity: Funds with the primary investment objective of investing in stock markets
- Bond: Funds with the primary investment objective of investing in fixed income markets with an average maturity > 1 year
- Mixed-asset: Funds with the primary investment objective of investing in a strategic mix of equities and fixed income securities
- Money market: Funds with the primary investment objective of investing in fixed income markets with an average residual life to maturity < 12 months

The average returns of CPFIS-included investment-linked insurance products by asset class are shown below:

Figure 6 Average Performance of CPFIS-Included ILPs at End Q4-2018 by Asset Class (% in SGD)



Source: Lipper

For the fourth quarter of 2018, equity and mixed-asset types of ILP portfolios posted negative returns of 9.68% and 5.78%, respectively, while bond and money market funds posted positive return of 1.20% and 0.35% on average respectively.

For the one-year period, money market fund (+1.14% on average) and bond (+0.13% on average) outperformed the equity (-10.24%) and mixed-asset funds (-6.33% on average) respectively. For the three-year period, equity funds were the leading gainers (+14.28%). Bond, mixed-asset and money market funds delivered 5.28%, 10.77% and 2.68% growth on average respectively.

The average returns of CPFIS-included unit trusts by Lipper Global Classification⁵ are shown below:

Table 6 Average Performance of CPFIS-Included Unit Trusts by Lipper Global Classification (% Growth in SGD)

Name	% Growth	% Growth	% Growth	% Growth	% Growth
	3M 30/09/2018	6M 30/06/2018	9M 31/03/2018	1Y 31/12/2017	3Y 31/12/2015
	To 31/12/2018	To 31/12/2018	To 31/12/2018	To 31/12/2018	To 31/12/2018
Bond Global (3)	0.82	0.88	0.82	0.53	4.43
Bond SGD (9)	2.29	2.55	2.12	0.85	9.15
Equity ASEAN (1)	-6.18	-5.37	-10.14	-11.69	-4.21
Equity Asia Pacific (2)	-14.29	-15.93	-18.18	-20.42	0.30
Equity Asia Pacific ex Japan (11)	-8.43	-9.69	-9.98	-11.59	19.25
Equity Asia Pacific Sm&Mid Cap (1)	-6.08	-8.84	-12.09	-10.78	6.00
Equity China (2)	-10.56	-13.01	-11.84	-11.70	22.71
Equity Emerging Mkts Asia (1)	-4.54	-8.55	-7.37	-10.87	24.82
Equity Emerging Mkts Global (4)	-8.14	-9.76	-14.65	-15.57	18.28
Equity Europe (5)	-15.73	-14.93	-9.78	-13.24	2.60
Equity Global (5)	-14.54	-13.25	-10.65	-13.69	3.62
Equity Global Income (5)	-10.69	-7.45	-4.95	-7.91	2.50
Equity Greater China (5)	-11.01	-13.95	-11.76	-10.92	24.15
Equity India (3)	3.51	-3.12	-0.21	-8.54	16.83
Equity Indonesia (1)	5.84	6.27	-1.02	-7.91	11.42
Equity Japan (4)	-17.08	-12.70	-13.24	-17.11	6.03
Equity Malaysia (1)	-8.28	-9.10	-11.33	-9.60	-1.17
Equity Malaysia/Singapore (1)	-8.12	-7.44	-12.77	-10.97	3.66
Equity Sector Biotechnology (1)	-22.40	-18.53	-12.83	-14.69	-22.74
Equity Sector Information Tech (1)	-17.33	-13.04	-3.95	-4.91	36.87
Equity Sector Real Est Global (1)	-7.63	-8.17	-1.56	-7.76	-4.86
Equity Singapore (6)	-6.86	-5.76	-11.15	-9.23	17.50
Equity Thailand (3)	-12.51	-0.71	-10.52	-6.35	41.67
Mixed Asset SGD Balanced (4)	-5.72	-5.81	-4.59	-6.80	11.30
Mixed Asset USD Bal - Global (1)	-9.73	-7.94	-6.50	-8.92	3.34
Equity US (7)	-14.46	-8.89	-3.29	-5.99	13.57
Equity Sector Healthcare (2)	-13.64	-4.35	2.82	1.51	8.55
Equity Sector Financials (1)	-13.12	-10.76	-10.67	-13.28	13.02
Bond Asia Pacific LC (2)	1.03	1.14	0.31	-1.12	4.32
Equity Japan Income (2)	-15.16	-11.55	-11.16	-13.89	8.25
Grand Total (95)	-8.74	-7.62	-7.25	-9.00	12.39

Source: Lipper

Remark: The average calculation includes the different share classes of the funds.

⁵ For more information please go to Section 7.2—Investment Terminology Definitions.

The average returns of CPFIS-included ILPs by Lipper Global Classification are shown below:

Table 7 Average Performance of CPFIS-Included ILPs by Lipper Global Classification (% Growth in SGD)

Name	% Growth	% Growth	% Growth	% Growth	% Growth
	3M 30/09/2018 To 31/12/2018	6M 30/06/2018 To 31/12/2018	9M 31/03/2018 To 31/12/2018	1Y 31/12/2017 To 31/12/2018	3Y 31/12/2015 To 31/12/2018
Bond Global (10)	0.79	0.32	-0.04	-0.22	2.46
Bond SGD (8)	1.69	2.14	2.00	0.64	9.29
Equity ASEAN (2)	-5.36	-4.56	-9.38	-10.98	-3.65
Equity Asia Pacific (1)	-13.67	-17.43	-18.92	-22.99	-5.64
Equity Asia Pacific ex Japan (13)	-8.43	-9.49	-10.77	-12.22	18.10
Equity Asia Pacific Sm&Mid Cap (1)	-11.98	-19.96	-21.82	-23.34	-2.72
Equity China (2)	-11.08	-15.60	-15.72	-15.56	15.89
Equity Emerging Mkts Asia (1)	-4.55	-8.57	-7.39	-10.90	24.82
Equity Emerging Mkts Global (6)	-8.08	-10.84	-15.24	-15.74	17.27
Equity Europe (3)	-14.91	-14.52	-11.88	-15.18	-0.65
Equity Global (14)	-12.82	-9.91	-6.35	-8.92	11.14
Equity Global Income (2)	-9.36	-6.02	-3.35	-6.68	8.71
Equity Greater China (4)	-11.08	-14.34	-12.88	-12.08	27.39
Equity India (5)	2.72	-2.35	3.62	-2.87	20.63
Equity Japan (4)	-16.66	-12.69	-13.01	-16.34	5.51
Equity Sector Information Tech (4)	-16.67	-12.04	-4.51	-2.37	37.82
Equity Sector Real Est Global (2)	-6.10	-6.38	1.58	-4.96	-3.01
Equity Singapore (10)	-6.54	-6.17	-11.01	-9.16	14.96
Mixed Asset SGD Aggressive (11)	-7.79	-6.45	-5.99	-7.45	13.20
Mixed Asset SGD Balanced (30)	-5.64	-5.25	-4.92	-6.61	11.32
Mixed Asset SGD Conservative (9)	-2.59	-2.21	-1.78	-3.21	7.36
Mixed Asset USD Bal - Global (2)	-9.65	-7.98	-6.79	-8.20	4.19
Money Market SGD (4)	0.35	0.66	0.92	1.14	2.68
Target Maturity Other (5)	-6.39	-6.08	-5.36	-7.01	11.29
Equity US (1)	-12.23	-6.27	0.19	-4.88	7.65
Equity Sector Healthcare (2)	-13.60	-4.38	2.86	1.56	8.82
Bond Asia Pacific LC (1)	1.43	1.60	0.86	-0.47	5.42
Grand Total (157)	-6.69	-6.39	-5.88	-7.27	11.67

Source: Lipper

6 SUMMARY OF RISK-ADJUSTED PERFORMANCE

The Lipper Leader rating methodology consists of four metrics that rate funds' success in meeting certain goals:

- **Total Return: Ability of a fund to provide superior total return compared to its peers**
- **Consistent Return: Ability of a fund to provide relatively superior consistency and risk-adjusted return compared to its peers**
- **Preservation: Ability of a fund to demonstrate superior preservation of capital in a variety of markets compared with other funds in its asset class**
- **Expense: Ability of a fund to successfully manage to keep its expenses low relative to its peers and within its load structure**

Funds are ranked against their Lipper peer group classifications for a three-year period. In other words, if a fund doesn't have at least three years of historical performance and it is not in a group with more than five funds, it is not rated by Lipper. The rating is based on an equal-weighted average of percentile ranks of the four Lipper Leader metrics.

For each metric:

The top 20% of funds receive a rating of "5" and are named **Lipper Leaders**.

The next 20% of funds receive a rating of "4."

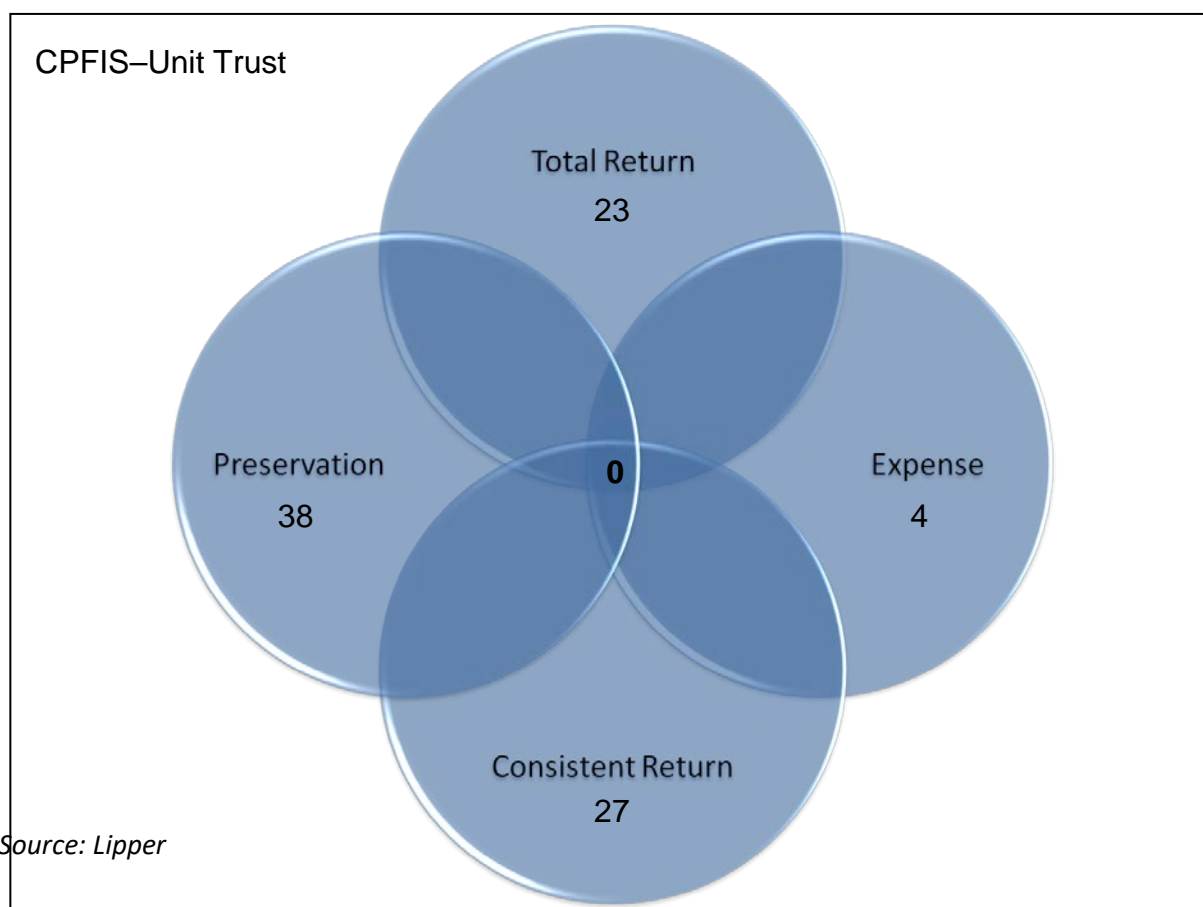
The middle 20% of funds receive a rating of "3."

The next 20% of funds receive a rating of "2."

The lowest 20% of funds receive a rating of "1."

6.1 Lipper Leader Rating for CPFIS-Included Unit Trusts

Figure 6 Venn Diagram of CPFIS–Included Unit Trusts With a Lipper Leader Rating (Rating of “5”)



As at end December 2018, the number of CPFIS-included unit trusts in the top 20% of funds, receiving a rating of “5” and named Lipper Leaders in each metric, was as follows:

- Total Return: 23 funds
- Consistent Return: 27 funds
- Preservation: 38 funds
- Expense: 4 funds

There’s no CPFIS-included UT which had received a rating of “5” (Lipper Leader) across all four metrics.

Table 8 Full List of CPFIS-Included Unit Trusts with a Lipper Leader Rating

S/N	Name	Lipper Global Classification	3 Years Lipper Rating			
			Consistent Return	Expense	Total Return	Preservation
1	AB SICAV I-International Health Care Portfolio (Class A) - SGD	Equity Sector Healthcare	Leader	2	Leader	3
2	Aberdeen Standard Asian Smaller Standard Companies Fund	Equity Asia Pacific Sm&Mid Cap	3	3	3	Leader
3	Aberdeen Standard China Opportunities Fund	Equity Greater China	1	4	1	3
4	Aberdeen Standard European Opportunities Fund	Equity Europe	Leader	3	Leader	3
5	Aberdeen Standard Global Emerging Markets Fund	Equity Emerging Mkts Global	2	3	2	3
6	Aberdeen Standard Global Opportunities Fund	Equity Global	3	2	3	Leader
7	Aberdeen Standard India Opportunities Fund	Equity India	4	3	4	1
8	Aberdeen Standard Indonesia Equity Fund	Equity Indonesia	3	4	3	4
9	Aberdeen Standard Malaysian Equity Fund	Equity Malaysia	2	3	2	Leader
10	Aberdeen Standard Pacific Equity Fund	Equity Asia Pacific ex Japan	4	3	4	Leader
11	Aberdeen Standard Singapore Equity Fund	Equity Singapore	4	2	Leader	Leader
12	Aberdeen Standard Thailand Equity Fund	Equity Thailand	1	4	1	Leader
13	Allianz Europe Equity Growth - Class AT (H2-SGD)	Equity Europe	4	2	3	2
14	Allianz Global Investors Premier Funds – Allianz Global High Payout Fund - SGD	Equity Global Income	2	3	2	Leader
15	Allianz Global Investors Premier Funds – Allianz Global High Payout Fund (USD Share Class)	Equity Global Income	2	3	2	Leader
16	Allianz Oriental Income - Class AT (SGD)	Equity Asia Pacific	3	3	2	3
17	Amundi Opportunities-Amundi Singapore Dividend Growth (AS-D Class)	Equity Singapore	Leader	3	Leader	4
18	Eastspring Investments - Japan Dynamic Fund Class As (hedged)	Equity Japan	2	3	3	1
19	Eastspring Investments Unit Trusts – Asian Balanced Fund	Mixed Asset SGD Balanced	2	4	2	4
20	Eastspring Investments Unit Trusts-Dragon Peacock Fund Class A	Equity Emerging Mkts Asia	4	4	4	2
21	Eastspring Investments Unit Trusts – Global Technology Fund	Equity Sector Information Tech	3	4	3	2
22	Eastspring Investments Unit Trusts – Pan European Fund	Equity Europe	4	3	4	2
23	Eastspring Investments Unit Trusts – Singapore ASEAN Equity Fund	Equity Singapore	2	2	4	Leader
24	Eastspring Investments Unit Trusts – Singapore Select Bond Fund Class A	Bond SGD	Leader	4	Leader	Leader
25	Eastspring Investments Unit Trusts – Singapore Select Bond Fund Class AD	Bond SGD	Leader	4	4	Leader
26	Eastspring Investments-Asian Equity Income Fund Class as Hedged	Equity Asia Pacific ex Japan	3	4	2	3
27	Fidelity Funds – America Fund SR-ACC-SGD	Equity US	1	3	2	4
28	Fidelity Funds – America Fund SR-ACC-USD	Equity US	1	3	2	4
29	Fidelity Funds – Asia Focus Fund SR-ACC-SGD	Equity Asia Pacific ex Japan	Leader	3	Leader	4
30	Fidelity Funds - Asian Special Situations Fund SR-ACC-SGD	Equity Asia Pacific ex Japan	Leader	3	Leader	Leader
31	Fidelity Funds – European Growth Fund SR-ACC-Euro	Equity Europe	Leader	3	Leader	3
32	Fidelity Funds – European Growth Fund SR-ACC-SGD	Equity Europe	Leader	3	Leader	3
33	Fidelity Funds - Greater China Fund SR-ACC-SGD	Equity Greater China	Leader	4	Leader	3
34	Fidelity Funds-America Fund SR-ACC-SGD (Hedged)	Equity US	2	3	2	4
35	Fidelity Funds-China Focus Fund SR-ACC-SGD	Equity China	4	3	Leader	2
36	Fidelity Funds-Emerging Markets Fund SR-ACC-SGD	Equity Emerging Mkts Global	2	3	1	3
37	First State Asian Growth Fund	Equity Asia Pacific ex Japan	1	3	2	Leader
38	First State Bridge – Class A (Semi-Annually Distributing)	Mixed Asset SGD Balanced	Leader	4	Leader	Leader
39	First State Dividend Advantage	Equity Asia Pacific ex Japan	Leader	3	Leader	Leader
40	First State Regional China Fund	Equity Greater China	Leader	4	4	3
41	Franklin Templeton Investment Funds - Templeton Emerging Markets Fund A(acc)SGD	Equity Emerging Mkts Global	Leader	1	Leader	Leader
42	Franklin Templeton Investment Funds – Franklin Biotechnology Discovery Fund A(acc)SGD	Equity Sector Biotechnology	2	3	2	1
43	Franklin Templeton Investment Funds – Franklin India Fund AS (acc)SGD	Equity India	2	3	2	1
44	Franklin Templeton Investment Funds – Franklin U.S. Opportunities Fund AS (acc)SGD	Equity US	3	3	3	3
45	Franklin Templeton Investment Funds – Templeton Asian Growth Fund A(acc)SGD	Equity Asia Pacific ex Japan	3	1	4	4

FOURTH QUARTER 2018 PERFORMANCE & RISK-MONITORING REPORT

S/N	Name	Lipper Global Classification	3 Years Lipper Rating			
			Consistent Return	Expense	Total Return	Preservation
46	Franklin Templeton Investment Funds – Templeton China Fund A(acc)SGD	Equity Greater China	4	1	4	3
47	Franklin Templeton Investment Funds – Templeton Global Balanced Fund AS (acc)SGD	Mixed Asset USD Bal - Global	3	4	3	2
48	Franklin Templeton Investment Funds – Templeton Global Equity Income Fund AS (Mdis)SGD	Equity Global Income	1	3	2	3
49	Franklin Templeton Investment Funds – Templeton Global Fund AS (acc)SGD	Equity Global	1	3	1	3
50	Franklin Templeton Investment Funds – Templeton Thailand Fund A(acc)SGD	Equity Thailand	Leader	2	Leader	Leader
51	Franklin Templeton Shariah Funds – Templeton Shariah Global Equity Fund AS (acc)SGD	Equity Global	2	2	2	Leader
52	Legg Mason Martin Currie Southeast Asia Trust (Class A (SGD) Accumulating)	Equity ASEAN	1	3	1	4
53	Legg Mason Western Asset Global Bond Trust (Class A (SGD) Accumulating)	Bond Global	3	4	3	Leader
54	Legg Mason Western Asset Singapore Bond Fund (Class A (SGD) Accumulating)	Bond SGD	3	2	3	Leader
55	LionGlobal Japan Growth Fund (SGD)	Equity Japan	Leader	3	Leader	4
56	LionGlobal Japan Growth Fund SGD-Hedged Class	Equity Japan	Leader	3	4	1
57	LionGlobal Short Duration Bond Fund Class A (SGD) (Dist)	Bond Global	Leader	Leader	4	Leader
58	LionGlobal Singapore / Malaysia Fund (SGD)	Equity Malaysia/Singapore	N/A	N/A	N/A	Leader
59	LionGlobal TEAM - Singapore Fixed Income Investment (Class A)	Bond SGD	Leader	3	Leader	Leader
60	LionGlobal Thailand Fund (SGD)	Equity Thailand	Leader	Leader	Leader	4
61	Manulife Asia Pacific Investment Grade Bond Fund Class A	Bond Asia Pacific LC	4	4	3	Leader
62	Manulife Singapore Bond Fund (Class A)	Bond SGD	4	1	4	Leader
63	Natixis International Funds (LUX) I - Harris Associates Global Equity Fund P/A (SGD)	Equity Global	1	2	1	2
64	Natixis International Funds (LUX) I - Harris Associates U.S. Equity Fund H-P/A (SGD)	Equity US	2	2	3	3
65	Nikko AM Asia Investment Funds - Nikko AM Shenton Global Property Securities Fund S\$ Class	Equity Sector Real Est Global	2	2	2	4
66	Nikko AM Japan Dividend Equity Fund-SGD Hedged Class Units	Equity Japan Income	N/A	N/A	N/A	2
67	Nikko AM Shenton Japan Fund (S\$) Class	Equity Japan	Leader	4	4	2
68	Nikko AM Shenton Short Term Bond Funds - Nikko AM Shenton Short Term Bond Fund (S\$) Class	Bond Global	Leader	Leader	4	Leader
69	Nikko AM Shenton Thrift Fund	Equity Singapore	2	Leader	2	Leader
70	PineBridge Asia Ex Japan Small Cap Equity Fund - Class A5CP	Equity Asia Pacific ex Japan	4	3	3	Leader
71	PineBridge Asia Ex Japan Small Cap Equity Fund - Class Y	Equity Asia Pacific ex Japan	4	4	3	Leader
72	Pinebridge India Equity Fund - Class A5CP	Equity India	2	3	2	2
73	PineBridge International Funds - Acorns of Asia Balanced Fund	Mixed Asset SGD Balanced	Leader	4	Leader	3
74	PineBridge International Funds – Singapore Bond Fund	Bond SGD	3	2	3	Leader
75	Pinebridge US Large Cap Research Enhanced Fund - Class A5CP	Equity US	4	3	4	Leader
76	Pinebridge US Large Cap Research Enhanced Fund - Class Y	Equity US	4	3	4	Leader
77	Schroder Asian Equity Yield Fund	Equity Asia Pacific ex Japan	3	3	2	Leader
78	Schroder Asian Growth Fund	Equity Asia Pacific ex Japan	Leader	4	Leader	3
79	Schroder Asian Investment Grade Credit	Bond Asia Pacific LC	3	4	2	Leader
80	Schroder China Opportunities Fund	Equity China	4	3	Leader	2
81	Schroder Global Emerging Market Opportunities Fund	Equity Emerging Mkts Global	4	3	4	4
82	Schroder International Selection Fund Greater China Class F	Equity Greater China	Leader	4	Leader	3



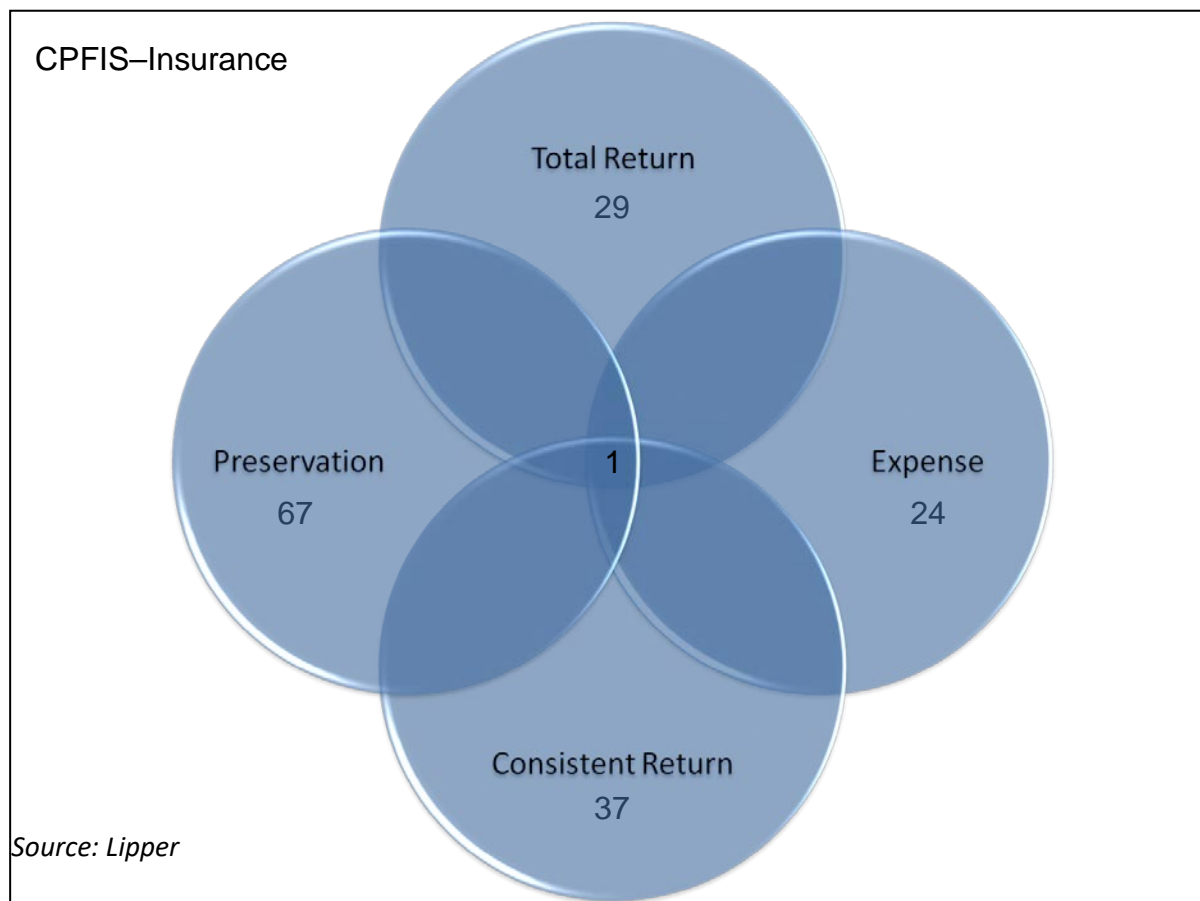
FOURTH QUARTER 2018 PERFORMANCE & RISK-MONITORING REPORT

S/N	Name	Lipper Global Classification	3 Years Lipper Rating			
			Consistent Return	Expense	Total Return	Preservation
83	Schroder Multi-Asset Revolution Class A	Mixed Asset SGD Balanced	2	3	2	4
84	Schroder Singapore Fixed Income Fund Class A	Bond SGD	3	3	2	Leader
85	Schroder Singapore Trust Class A	Equity Singapore	3	4	3	Leader
86	United Asia Top-50 Fund	Equity Asia Pacific	1	1	1	3
87	United Global Financials Fund	Equity Sector Financials	Leader	1	4	3
88	United Global Healthcare Fund	Equity Sector Healthcare	2	2	2	1
89	United SGD Fund - Class A (ACC) SGD	Bond SGD	1	3	1	Leader
83	United Singapore Bond Fund	Bond SGD	Leader	2	Leader	Leader
84	United Singapore Growth Fund	Equity Singapore	4	4	4	4

Source: Lipper

6.2 Lipper Leader Rating for CPFIS-Included ILPs

Figure 7 Venn Diagram of CPFIS-Included ILPs With a Lipper Leader Rating (Rating of “5”)



As at end December 2018, the number of CPFIS-included ILPs in the top 20% of funds, receiving a rating of “5” and named Lipper Leaders, in each metric was as follows:

- Total Return: 29 funds
- Consistent Return: 37 funds
- Preservation: 67 funds
- Expense: 24 funds

NTUC Prime Fund is one and the only ILP received a rating of “5” (Lipper Leader) across all four metrics.

Table 9 Full List of CPFIS-Included ILPs with a Lipper Leader Rating

S/N	Name	Lipper Global Classification	3 Years Lipper Rating			
			Consistent Return	Expense	Total Return	Preservation
1	AIA Acorns of Asia Fund	Mixed Asset SGD Balanced	Leader	3	Leader	3
2	AIA Emerging Markets Balanced Fund	Mixed Asset SGD Balanced	Leader	3	Leader	4
3	AIA Emerging Markets Equity Fund	Equity Emerging Mkts Global	4	3	4	4
4	AIA Global Balanced Fund	Mixed Asset SGD Balanced	3	3	3	Leader
5	AIA Global Bond Fund	Bond Global	2	3	3	Leader
6	AIA Global Technology Fund	Equity Sector Information Tech	Leader	3	4	3
7	AIA Greater China Balanced Fund	Mixed Asset SGD Balanced	Leader	3	Leader	2
8	AIA Greater China Equity Fund	Equity Greater China	Leader	4	4	3
9	AIA Growth Fund	Mixed Asset SGD Aggressive	4	Leader	Leader	2
10	AIA India Balanced Fund	Mixed Asset SGD Balanced	Leader	3	Leader	1
11	AIA India Opportunities Fund	Equity India	4	3	4	1
12	AIA International Health Care Fund	Equity Sector Healthcare	Leader	2	Leader	3
13	AIA Japan Balanced Fund	Mixed Asset SGD Balanced	2	3	2	2
14	AIA Japan Equity Fund	Equity Japan	4	3	3	2
15	AIA Portfolio 100	Equity Global Income	2	2	2	Leader
16	AIA Portfolio 30	Mixed Asset SGD Conservative	2	Leader	2	Leader
17	AIA Portfolio 50	Mixed Asset SGD Balanced	2	3	1	Leader
18	AIA Portfolio 70	Mixed Asset SGD Aggressive	2	3	2	3
19	AIA Regional Equity Fund	Equity Asia Pacific ex Japan	Leader	4	Leader	Leader
20	AIA Regional Fixed Income Fund	Bond SGD	4	2	4	Leader
21	Aviva Aberdeen Pacific Equity (SP)	Equity Asia Pacific ex Japan	3	1	2	3
22	Aviva Balanced Growth (SP)	Mixed Asset SGD Balanced	Leader	1	Leader	2
23	Aviva Capital Growth (SP)	Equity Asia Pacific ex Japan	Leader	1	Leader	4
24	Aviva Income Growth (SP)	Mixed Asset SGD Conservative	4	2	3	Leader
25	Aviva Legg Mason Western Asset Global Bond Trust (SP)	Bond Global	2	1	2	Leader
26	Aviva LionGlobal Japan Growth (SP)	Equity Japan	Leader	1	4	3
27	Aviva MM Balanced Growth	Mixed Asset SGD Balanced	Leader	3	Leader	3
28	Aviva MM Capital Growth	Equity Asia Pacific ex Japan	Leader	4	Leader	4
29	Aviva MM Income Growth	Mixed Asset SGD Conservative	Leader	2	4	Leader
30	Aviva Nikko AM Shenton Short Term Bond (SP)	Bond Global	3	1	2	Leader
31	Aviva Schroder Multi Asset Revolution	Mixed Asset SGD Balanced	2	3	1	3
32	Aviva Templeton Global Balanced (SP) - CPF	Mixed Asset SGD Balanced	1	1	1	1
33	AXA Asian Balanced Fund	Mixed Asset SGD Balanced	Leader	3	Leader	3
34	AXA Asian Growth Fund	Equity Asia Pacific ex Japan	4	3	4	4
35	AXA China Growth Fund	Equity Greater China	Leader	4	4	3
36	AXA Fortress Fund A	Equity Singapore	1	2	1	Leader
37	AXA Fortress Fund B	Equity Singapore	1	2	1	Leader
38	AXA Global Balanced Fund	Mixed Asset SGD Balanced	2	3	1	Leader
39	AXA Global Defensive Fund	Bond Global	2	3	3	Leader
40	AXA Global Emerging Markets Equity Fund	Equity Emerging Mkts Global	4	3	4	4
41	AXA Global Equity Blend	Equity Global	Leader	2	Leader	4
42	AXA Global Growth Fund	Mixed Asset SGD Aggressive	2	3	2	3
43	AXA Global High Growth Fund	Equity Global	3	2	3	4
44	AXA Global Secure Fund	Mixed Asset SGD Conservative	2	Leader	2	Leader
45	AXA India Fund	Equity India	3	3	4	1

FOURTH QUARTER 2018 PERFORMANCE & RISK-MONITORING REPORT

S/N	Name	Lipper Global Classification	3 Years Lipper Rating			
			Consistent Return	Expense	Total Return	Preservation
46	AXA Pacific Equity Fund	Equity Asia Pacific ex Japan	4	3	3	Leader
47	AXA Shariah Global Equity Fund	Equity Global	2	2	2	Leader
48	AXA Singapore Balanced Fund	Mixed Asset SGD Balanced	4	3	4	4
49	AXA Singapore Bond Fund	Bond SGD	4	1	4	Leader
50	AXA Singapore Equity Fund	Equity Singapore	Leader	2	Leader	Leader
51	AXA South East Asia Special Situations Fund	Equity ASEAN	1	3	1	3
52	AXA Value Growth Fund	Equity Asia Pacific ex Japan	4	3	4	Leader
53	GreatLink Asia Pacific Equity Fund	Equity Asia Pacific ex Japan	4	4	4	Leader
54	GreatLink China Growth Fund	Equity Greater China	Leader	4	Leader	3
55	GreatLink European Equity Fund	Equity Europe	3	3	2	2
56	GreatLink Global Bond Fund	Bond Global	Leader	4	4	Leader
57	GreatLink Global Emerging Markets Equity Fund	Equity Emerging Mkts Global	2	3	1	3
58	GreatLink Global Equity Alpha Fund	Equity Global	3	3	3	4
59	GreatLink Global Opportunities Fund	Equity Global	3	3	3	Leader
60	GreatLink Global Real Estate Securities Fund	Equity Sector Real Est Global	3	4	4	Leader
61	GreatLink Global Supreme Fund	Mixed Asset SGD Balanced	3	Leader	3	Leader
62	GreatLink Global Technology Fund	Equity Sector Information Tech	3	4	2	3
63	GreatLink Lifestyle Balanced Portfolio	Mixed Asset SGD Balanced	4	Leader	3	Leader
64	GreatLink LifeStyle Dynamic Portfolio	Equity Global	4	3	3	Leader
65	GreatLink LifeStyle Progressive Portfolio	Mixed Asset SGD Aggressive	3	4	3	3
66	GreatLink Lifestyle Secure Portfolio	Mixed Asset SGD Conservative	3	4	3	Leader
67	GreatLink Lifestyle Steady Portfolio	Mixed Asset SGD Balanced	3	Leader	3	Leader
68	GreatLink Lion Asian Balanced Fund	Mixed Asset SGD Balanced	4	Leader	4	Leader
69	GreatLink Lion Japan Growth Fund	Equity Japan	4	3	4	1
70	GreatLink Short Duration Bond Fund	Bond Global	Leader	Leader	4	Leader
71	GreatLink Singapore Equities Fund	Equity Singapore	4	2	4	Leader
72	HSBC Insurance Ethical Global Equity Fund	Equity Global	2	3	2	4
73	HSBC Insurance Global Bond Fund	Bond Global	3	3	3	Leader
74	HSBC Insurance Pacific Equity Fund	Equity Asia Pacific ex Japan	4	3	4	4
75	Manulife Asian Small-Cap Equity Fund	Equity Asia Pacific Sm&Mid Cap	3	3	3	1
76	Manulife European Equity Fund	Equity Europe	Leader	3	Leader	3
77	Manulife Global Emerging Markets Fund	Equity Emerging Mkts Global	2	3	2	3
78	Manulife Golden Asia Growth Fund	Equity Asia Pacific ex Japan	4	3	3	4
79	Manulife Golden Balanced Growth Fund	Mixed Asset SGD Balanced	4	Leader	4	4
80	Manulife Golden Global Balanced Fund	Mixed Asset SGD Balanced	2	Leader	2	Leader
81	Manulife Golden International Bond Fund	Bond Global	3	4	3	Leader
82	Manulife Golden Regional China Fund	Equity China	3	3	2	1
83	Manulife Golden S.E.A Special Situations Fund	Equity ASEAN	1	3	1	4
84	Manulife Golden Singapore Growth Fund	Equity Singapore	2	2	2	4
85	Manulife Golden Worldwide Equity Fund	Equity Global	3	3	2	Leader
86	Manulife Income Series - Asia Pacific Investment Grade Bond Fund	Bond Asia Pacific LC	4	4	3	Leader
87	Manulife Income Series – Asian Balanced Fund	Mixed Asset SGD Balanced	3	3	3	Leader
88	Manulife Income Series - Global Balanced Fund	Mixed Asset USD Bal - Global	3	4	3	2
89	Manulife India Equity Fund	Equity India	4	3	4	2
90	Manulife Japan Growth Fund	Equity Japan	4	3	4	2

FOURTH QUARTER 2018 PERFORMANCE & RISK-MONITORING REPORT

S/N	Name	Lipper Global Classification	3 Years Lipper Rating			
			Consistent Return	Expense	Total Return	Preservation
91	Manulife Lifestyle Portfolios - Aggressive	Equity Global	3	3	2	Leader
92	Manulife Lifestyle Portfolios - Conservative	Mixed Asset SGD Conservative	2	4	2	Leader
93	Manulife Lifestyle Portfolios - Growth	Mixed Asset SGD Aggressive	3	3	3	3
94	Manulife Lifestyle Portfolios - Moderate	Mixed Asset SGD Balanced	3	Leader	3	Leader
95	Manulife Lifestyle Portfolios - Secure	Mixed Asset SGD Balanced	2	Leader	2	Leader
96	Manulife Pacific Equity Fund	Equity Asia Pacific ex Japan	3	3	3	Leader
97	Manulife Singapore Bond Fund	Bond SGD	4	1	3	Leader
98	NTUC AIM 2025	Target Maturity Other	3	Leader	3	Leader
99	NTUC AIM 2035	Target Maturity Other	Leader	Leader	Leader	4
100	NTUC AIM 2045	Target Maturity Other	4	Leader	4	3
101	NTUC AIM NOW	Mixed Asset SGD Conservative	3	Leader	3	Leader
102	NTUC Asia Managed Fund	Mixed Asset SGD Aggressive	Leader	4	Leader	2
103	NTUC Global Bond Fund	Bond Global	3	4	4	Leader
104	NTUC Global Equity Fund	Equity Global	Leader	3	4	Leader
105	NTUC Global Managed Fund (Balanced)	Mixed Asset SGD Balanced	4	Leader	4	Leader
106	NTUC Global Managed Fund (Conservative)	Mixed Asset SGD Conservative	4	4	4	Leader
107	NTUC Global Managed Fund (Growth)	Mixed Asset SGD Aggressive	4	Leader	4	Leader
108	NTUC Global Technology Fund	Equity Sector Information Tech	3	4	2	2
109	NTUC Prime Fund	Mixed Asset SGD Balanced	Leader	Leader	Leader	Leader
110	NTUC Singapore Bond Fund	Bond SGD	Leader	4	Leader	Leader
111	NTUC Singapore Equity Fund	Equity Singapore	3	Leader	3	4
112	NTUC Singapore Managed Fund	Mixed Asset SGD Balanced	Leader	Leader	Leader	4
113	NTUC Takaful Fund	Equity Global	Leader	3	Leader	Leader
114	PruLink Adapt 2025	Target Maturity Other	2	4	1	Leader
115	PruLink Adapt 2035	Target Maturity Other	2	3	2	4
116	PruLink America Fund	Equity US	1	3	2	4
117	PruLink Asian American Managed Fund	Mixed Asset SGD Balanced	3	4	2	4
118	PruLink Asian Equity Fund	Equity Asia Pacific ex Japan	2	4	2	4
119	PruLink Asian Income and Growth Fund	Mixed Asset SGD Balanced	Leader	4	Leader	4
120	PruLink China-India Fund	Equity Emerging Mkts Asia	4	4	4	2
121	PruLink Emerging Markets Fund	Equity Emerging Mkts Global	Leader	3	Leader	4
122	PruLink Global Bond Fund	Bond Global	4	4	4	Leader
123	PruLink Global Equity Fund	Equity Global Income	Leader	3	Leader	Leader
124	PruLink Global Managed Fund	Mixed Asset SGD Balanced	2	3	2	4
125	PruLink Global Property Securities Fund	Equity Sector Real Est Global	2	2	2	4
126	PruLink Global Technology Fund	Equity Sector Information Tech	3	4	3	2
127	PruLink Greater China Fund	Equity Greater China	Leader	4	Leader	3
128	PruLink Pan European Fund	Equity Europe	4	3	4	3
129	PruLink Singapore ASEAN Managed Fund	Mixed Asset SGD Aggressive	Leader	Leader	Leader	4
130	PruLink Singapore Dynamic Bond Fund	Bond SGD	Leader	4	Leader	Leader
131	PruLink Singapore Growth Fund	Equity Singapore	Leader	3	Leader	Leader
132	PruLink Singapore Managed Fund	Mixed Asset SGD Aggressive	Leader	Leader	4	3
133	TMLS Asian Equity Fund	Equity Asia Pacific ex Japan	4	4	4	Leader
134	TMLS China Equity Fund	Equity China	4	3	4	2



FOURTH QUARTER 2018 PERFORMANCE & RISK-MONITORING REPORT

S/N	Name	Lipper Global Classification	3 Years Lipper Rating			
			Consistent Return	Expense	Total Return	Preservation
135	TMLS Global Balanced Fund	Mixed Asset USD Bal - Global	2	Leader	2	Leader
136	TMLS Global Emerging Markets Equity Fund	Equity Emerging Mkts Global	2	3	1	3
137	TMLS Global Equity Fund	Equity Global	3	3	3	Leader
138	TMLS India Equity Fund	Equity India	3	3	4	2
139	TMLS Singapore Bond Fund	Bond SGD	3	2	3	Leader
140	TMLS Singapore Equity Fund	Equity Singapore	3	2	4	Leader
141	UOB Life FOF Asia Top 50 Fund	Equity Asia Pacific	1	1	1	3
142	UOB Life FOF Global Healthcare Fund	Equity Sector Healthcare	2	2	2	1
143	UOB Life FOF Growth Fund	Equity Singapore	1	4	1	4
144	UOB Life FOF International Growth Fund	Equity Global	4	3	4	Leader
145	UOB LifeLink Global Fund	Equity Global	4	3	4	Leader

Source: Lipper

7 Appendices

7.1 Complete List of Funds ⁶

7.1.1 Full List of CPFIS-Included Unit Trusts

S/N	Name	Lipper Global	CPFIS Risk	CPF Focus	TER Date	Expense Ratio
1	Franklin Templeton Investment Funds – Templeton Thailand Fund A(acc)SGD	Equity Thailand	Higher Risk	Narrowly Focused	30/06/2018	2.50
2	United Asia Top-50 Fund	Equity Asia Pacific	Higher Risk	Narrowly Focused	30/06/2018	2.48
3	Franklin Templeton Investment Funds - Templeton Emerging Markets Fund A(acc)SGD	Equity Emerging Mkts Global	Higher Risk	Narrowly Focused	30/06/2018	2.46
4	Franklin Templeton Investment Funds – Templeton China Fund A(acc)SGD	Equity Greater China	Higher Risk	Narrowly Focused	30/06/2018	2.45
5	United Global Healthcare Fund	Equity Sector Healthcare	Higher Risk	Narrowly Focused	30/06/2018	2.24
6	Franklin Templeton Investment Funds – Templeton Asian Growth Fund A(acc)SGD	Equity Asia Pacific ex Japan	Higher Risk	Narrowly Focused	30/06/2018	2.22
7	United Global Financials Fund	Equity Sector Financials	Higher Risk	Narrowly Focused	30/06/2018	2.22
8	Nikko AM Asia Investment Funds - Nikko AM Shenton Global Property Securities Fund S\$ Class	Equity Sector Real Est Global	Higher Risk	Narrowly Focused	30/06/2018	2.14
9	AB SICAV I-International Health Care Portfolio (Class A) - SGD	Equity Sector Healthcare	Higher Risk	Narrowly Focused	31/05/2018	2.06
10	Allianz Europe Equity Growth - Class AT (H2-SGD)	Equity Europe	Higher Risk	Narrowly Focused	31/03/2018	1.84
11	Allianz Oriental Income - Class AT (SGD)	Equity Asia Pacific	Higher Risk	Narrowly Focused	31/03/2018	1.84
12	Franklin Templeton Investment Funds – Franklin Biotechnology Discovery Fund A(acc)SGD	Equity Sector Biotechnology	Higher Risk	Narrowly Focused	30/06/2018	1.82
13	Aberdeen Standard Asian Smaller Companies Fund	Equity Asia Pacific Sm&Mid Cap	Higher Risk	Narrowly Focused	30/09/2018	1.75
14	Aberdeen Standard China Opportunities Fund	Equity Greater China	Higher Risk	Narrowly Focused	30/09/2018	1.75
15	Aberdeen Standard European Opportunities Fund	Equity Europe	Higher Risk	Narrowly Focused	30/09/2018	1.75
16	Aberdeen Standard Global Emerging Markets Fund	Equity Emerging Mkts Global	Higher Risk	Narrowly Focused	30/09/2018	1.75
17	Aberdeen Standard Global Opportunities Fund	Equity Global	Higher Risk	Broadly Diversified	30/09/2018	1.75
18	Aberdeen Standard India Opportunities Fund	Equity India	Higher Risk	Narrowly Focused	30/09/2018	1.75
19	Aberdeen Standard Malaysian Equity Fund	Equity Malaysia	Higher Risk	Narrowly Focused	30/09/2018	1.75

⁶ These expense ratios may not be up to end of December 2018 but already represent the most up-to-date information (which may include unaudited expense ratio) submitted by the FMCs/Insurers. Some funds which are newly launched or have newly launched share classes have no available data.

FOURTH QUARTER 2018 PERFORMANCE & RISK-MONITORING REPORT

S/N	Name	Lipper Global	CPFIS Risk	CPF Focus	TER Date	Expense Ratio
20	First State Asian Growth Fund	Equity Asia Pacific ex Japan	Higher Risk	Narrowly Focused	30/06/2018	1.75
21	Franklin Templeton Shariah Funds – Templeton Shariah Global Equity Fund AS (acc)SGD	Equity Global	Higher Risk	Broadly Diversified	30/06/2018	1.75
22	Natixis International Funds (LUX) I - Harris Associates Global Equity Fund P/A (SGD)	Equity Global	Higher Risk	Broadly Diversified	30/06/2018	1.75
23	Natixis International Funds (LUX) I - Harris Associates U.S. Equity Fund H-P/A (SGD)	Equity US	HIGHER RISK	NARROWLY FOCUSED	30/06/2018	1.75
24	Nikko AM Japan Dividend Equity Fund-SGD Class Units	Equity Japan Income	HIGHER RISK	NARROWLY FOCUSED	30/06/2018	1.75
25	Nikko AM Japan Dividend Equity Fund-SGD Hedged Class Units	Equity Japan Income	HIGHER RISK	NARROWLY FOCUSED	30/06/2018	1.75
26	Franklin Templeton Investment Funds – Franklin India Fund AS (acc)SGD	Equity India	HIGHER RISK	NARROWLY FOCUSED	30/06/2018	1.74
27	Eastspring Investments Unit Trusts – Pan European Fund	Equity Europe	HIGHER RISK	NARROWLY FOCUSED	30/06/2018	1.73
28	Fidelity Funds – Asia Focus Fund SR-ACC-SGD	Equity Asia Pacific ex Japan	HIGHER RISK	NARROWLY FOCUSED	31/10/2018	1.73
29	Fidelity Funds - Greater China Fund SR-ACC-SGD	Equity Greater China	HIGHER RISK	NARROWLY FOCUSED	31/10/2018	1.73
30	Franklin Templeton Investment Funds – Templeton Global Equity Income Fund AS (Mdis)SGD	Equity Global Income	HIGHER RISK	BROADLY DIVERSIFIED	30/06/2018	1.73
31	Franklin Templeton Investment Funds – Templeton Global Fund AS (acc)SGD	Equity Global	HIGHER RISK	BROADLY DIVERSIFIED	30/06/2018	1.73
32	PineBridge Asia Ex Japan Small Cap Equity Fund - Class A5CP	Equity Asia Pacific ex Japan	HIGHER RISK	NARROWLY FOCUSED	31/12/2017	1.73
33	Pinebridge India Equity Fund - Class A5CP	Equity India	HIGHER RISK	NARROWLY FOCUSED	31/12/2017	1.73
34	Aberdeen Standard Indonesia Equity Fund	Equity Indonesia	HIGHER RISK	NARROWLY FOCUSED	30/09/2018	1.72
35	Fidelity Funds - Asian Special Situations Fund SR-ACC-SGD	Equity Asia Pacific ex Japan	HIGHER RISK	NARROWLY FOCUSED	31/10/2018	1.72
36	Fidelity Funds-Emerging Markets Fund SR-ACC-SGD	Equity Emerging Mkts Global	HIGHER RISK	NARROWLY FOCUSED	31/10/2018	1.72
37	Franklin Templeton Investment Funds – Franklin U.S. Opportunities Fund AS (acc)SGD	Equity US	HIGHER RISK	NARROWLY FOCUSED	30/06/2018	1.72
38	Aberdeen Standard Thailand Equity Fund	Equity Thailand	HIGHER RISK	NARROWLY FOCUSED	30/09/2018	1.71
39	Fidelity Funds-China Focus Fund SR-ACC-SGD	Equity China	HIGHER RISK	NARROWLY FOCUSED	31/10/2018	1.71
40	First State Regional China Fund	Equity Greater China	HIGHER RISK	NARROWLY FOCUSED	30/06/2018	1.71
41	Schroder Asian Equity Yield Fund	Equity Asia Pacific ex Japan	HIGHER RISK	NARROWLY FOCUSED	30/06/2018	1.71

FOURTH QUARTER 2018 PERFORMANCE & RISK-MONITORING REPORT

S/N	Name	Lipper Global	CPFIS Risk	CPF Focus	TER Date	Expense Ratio
42	Schroder International Selection Fund Greater China Class F	Equity Greater China	HIGHER RISK	NARROWLY FOCUSED	30/06/2018	1.71
43	Aberdeen Standard Pacific Equity Fund	Equity Asia Pacific ex Japan	HIGHER RISK	NARROWLY FOCUSED	30/09/2018	1.70
44	Fidelity Funds-Global Dividend Fund SR-MINCOME(G)-SGD	Equity Global Income	HIGHER RISK	BROADLY DIVERSIFIED	31/10/2018	1.70
45	First State Dividend Advantage	Equity Asia Pacific ex Japan	HIGHER RISK	NARROWLY FOCUSED	30/06/2018	1.70
46	Pinebridge US Large Cap Research Enhanced Fund - Class A5CP	Equity US	HIGHER RISK	NARROWLY FOCUSED	31/12/2017	1.70
47	Eastspring Investments Unit Trusts – Global Technology Fund	Equity Sector Information Tech	HIGHER RISK	NARROWLY FOCUSED	30/06/2018	1.69
48	Fidelity Funds – America Fund SR-ACC-SGD	Equity US	HIGHER RISK	NARROWLY FOCUSED	31/10/2018	1.69
49	Fidelity Funds – America Fund SR-ACC-USD	Equity US	HIGHER RISK	NARROWLY FOCUSED	31/10/2018	1.69
50	Fidelity Funds – European Growth Fund SR-ACC-Euro	Equity Europe	HIGHER RISK	NARROWLY FOCUSED	31/10/2018	1.69
51	Fidelity Funds – European Growth Fund SR-ACC-SGD	Equity Europe	HIGHER RISK	NARROWLY FOCUSED	31/10/2018	1.69
52	Fidelity Funds-America Fund SR-ACC-SGD (Hedged)	Equity US	HIGHER RISK	NARROWLY FOCUSED	31/10/2018	1.69
53	Fidelity Funds-Global Dividend Fund SR-ACC-SGD	Equity Global Income	HIGHER RISK	BROADLY DIVERSIFIED	31/10/2018	1.69
54	Legg Mason Martin Currie Southeast Asia Trust (Class A (SGD) Accumulating)	Equity ASEAN	HIGHER RISK	NARROWLY FOCUSED	30/09/2018	1.69
55	Schroder China Opportunities Fund	Equity China	HIGHER RISK	NARROWLY FOCUSED	30/06/2018	1.68
56	Schroder Global Emerging Market Opportunities Fund	Equity Emerging Mkts Global	HIGHER RISK	NARROWLY FOCUSED	30/06/2018	1.66
57	Eastspring Investments Unit Trusts - Dragon Peacock Fund	Equity Emerging Mkts Asia	HIGHER RISK	NARROWLY FOCUSED	30/06/2018	1.65
58	Allianz Global Investors Premier Funds – Allianz Global High Payout Fund - SGD	Equity Global Income	HIGHER RISK	BROADLY DIVERSIFIED	30/06/2018	1.64
59	Allianz Global Investors Premier Funds – Allianz Global High Payout Fund (USD Share Class)	Equity Global Income	HIGHER RISK	BROADLY DIVERSIFIED	30/06/2018	1.64
60	Eastspring Investments Unit Trusts – Singapore ASEAN Equity Fund	Equity Singapore	HIGHER RISK	NARROWLY FOCUSED	30/06/2018	1.64
61	Aberdeen Standard Singapore Equity Fund	Equity Singapore	HIGHER RISK	NARROWLY FOCUSED	30/09/2018	1.63
62	Eastspring Investments-Asian Equity Income Fund Class as Hedged	Equity Asia Pacific ex Japan	HIGHER RISK	NARROWLY FOCUSED	30/06/2018	1.63
63	Eastspring Investments - Japan Dynamic Fund Class As (hedged)	Equity Japan	HIGHER RISK	NARROWLY FOCUSED	30/06/2018	1.59
64	LionGlobal Japan Growth Fund (SGD)	Equity Japan	HIGHER RISK	NARROWLY FOCUSED	30/06/2018	1.59
65	LionGlobal Japan Growth Fund SGD-Hedged Class	Equity Japan	HIGHER RISK	NARROWLY FOCUSED	30/06/2018	1.59



FOURTH QUARTER 2018 PERFORMANCE & RISK-MONITORING REPORT

S/N	Name	Lipper Global	CPFIS Risk	CPF Focus	TER Date	Expense Ratio
66	Amundi Opportunities-Amundi Singapore Dividend Growth (AS-D Class)	Equity Singapore	HIGHER RISK	NARROWLY FOCUSED	31/05/2018	1.53
67	LionGlobal Singapore / Malaysia Fund (SGD)	Equity Malaysia/Singapore	HIGHER RISK	NARROWLY FOCUSED	30/06/2018	1.49
68	LionGlobal Thailand Fund (SGD)	Equity Thailand	HIGHER RISK	NARROWLY FOCUSED	30/06/2018	1.45
69	United Singapore Growth Fund	Equity Singapore	HIGHER RISK	NARROWLY FOCUSED	30/06/2018	1.37
70	Schroder Asian Growth Fund	Equity Asia Pacific ex Japan	HIGHER RISK	NARROWLY FOCUSED	30/06/2018	1.35
71	Schroder Singapore Trust Class A	Equity Singapore	HIGHER RISK	NARROWLY FOCUSED	30/06/2018	1.33
72	PineBridge Asia Ex Japan Small Cap Equity Fund - Class Y	Equity Asia Pacific ex Japan	HIGHER RISK	NARROWLY FOCUSED	31/12/2017	1.29
73	Pinebridge US Large Cap Research Enhanced Fund - Class Y	Equity US	HIGHER RISK	NARROWLY FOCUSED	31/12/2017	1.20
74	Nikko AM Shenton Japan Fund (S\$) Class	Equity Japan	HIGHER RISK	NARROWLY FOCUSED	30/06/2018	1.14
75	Nikko AM Shenton Thrift Fund	Equity Singapore	HIGHER RISK	NARROWLY FOCUSED	30/06/2018	0.91
76	United Global Quality Growth Fund – Class C SGD Acc (Hedged)	Equity Global	HIGHER RISK	BROADLY DIVERSIFIED	N/A	N/A
77	Franklin Templeton Investment Funds – Templeton Global Balanced Fund AS (acc)SGD	Mixed Asset USD Bal - Global	MEDIUM TO HIGH RISK	BROADLY DIVERSIFIED	30/06/2018	1.53
78	Schroder Multi-Asset Revolution Class A	Mixed Asset SGD Balanced	MEDIUM TO HIGH RISK	BROADLY DIVERSIFIED	30/06/2018	1.52
79	Eastspring Investments Unit Trusts – Asian Balanced Fund	Mixed Asset SGD Balanced	MEDIUM TO HIGH RISK	NARROWLY FOCUSED	30/06/2018	1.48
80	PineBridge International Funds - Acorns of Asia Balanced Fund	Mixed Asset SGD Balanced	MEDIUM TO HIGH RISK	NARROWLY FOCUSED	30/06/2018	1.47
81	First State Bridge – Class A (Semi-Annually Distributing)	Mixed Asset SGD Balanced	MEDIUM TO HIGH RISK	NARROWLY FOCUSED	30/06/2018	1.44
82	Manulife Singapore Bond Fund (Class A)	Bond SGD	LOW TO MEDIUM RISK	NARROWLY FOCUSED	30/06/2018	1.13
83	Manulife Asia Pacific Investment Grade Bond Fund Class A	Bond Asia Pacific LC	LOW TO MEDIUM RISK	NARROWLY FOCUSED	30/06/2018	0.93
84	Legg Mason Western Asset Singapore Bond Fund (Class A (SGD) Accumulating)	Bond SGD	LOW TO MEDIUM RISK	NARROWLY FOCUSED	30/09/2018	0.90
85	Schroder Asian Investment Grade Credit	Bond Asia Pacific LC	LOW TO MEDIUM RISK	NARROWLY FOCUSED	30/06/2018	0.90
86	PineBridge International Funds – Singapore Bond Fund	Bond SGD	LOW TO MEDIUM RISK	NARROWLY FOCUSED	30/06/2018	0.86
87	Legg Mason Western Asset Global Bond Trust (Class A (SGD) Accumulating)	Bond Global	LOW TO MEDIUM RISK	BROADLY DIVERSIFIED	30/09/2018	0.85
88	United Singapore Bond Fund	Bond SGD	LOW TO MEDIUM RISK	NARROWLY FOCUSED	30/06/2018	0.82

FOURTH QUARTER 2018 PERFORMANCE & RISK-MONITORING REPORT

	Name	Lipper Global	CPFIS Risk	CPF Focus	TER Date	Expense Ratio
89	Schroder Singapore Fixed Income Fund Class A	Bond SGD	LOW TO MEDIUM RISK	NARROWLY FOCUSED	30/06/2018	0.70
90	United SGD Fund - Class A (ACC) SGD	Bond SGD	LOW TO MEDIUM RISK	BROADLY DIVERSIFIED	30/06/2018	0.69
91	LionGlobal TEAM - Singapore Fixed Income Investment (Class A)	Bond SGD	LOW TO MEDIUM RISK	NARROWLY FOCUSED	30/06/2018	0.67
92	Eastspring Investments Unit Trusts – Singapore Select Bond Fund Class A	Bond SGD	LOW TO MEDIUM RISK	NARROWLY FOCUSED	30/06/2018	0.62
93	Eastspring Investments Unit Trusts – Singapore Select Bond Fund Class AD	Bond SGD	LOW TO MEDIUM RISK	NARROWLY FOCUSED	30/06/2018	0.62
94	LionGlobal Short Duration Bond Fund Class A (SGD) (Dist)	Bond Global	LOW TO MEDIUM RISK	NARROWLY FOCUSED	30/06/2018	0.61
95	Nikko AM Shenton Short Term Bond Funds - Nikko AM Shenton Short Term Bond Fund (S\$) Class	Bond Global	LOW TO MEDIUM RISK	BROADLY DIVERSIFIED	30/06/2018	0.51

Source: Central Provident Fund Board and Lipper

7.1.2 Full List of CPFIS-Included ILPs

	Name (CPF)	Lipper Global	CPFIS Risk	CPF Focus	Detail	TER Date	Expense Ratio
1	Aviva Aberdeen Pacific Equity (SP)	Equity Asia Pacific ex Japan	Higher Risk	Narrowly Focused	Asia	30/06/2018	2.94
2	Aviva LionGlobal Japan Growth (SP)	Equity Japan	Higher Risk	Narrowly Focused	Japan	30/06/2018	2.92
3	UOB Life FOF Asia Top 50 Fund	Equity Asia Pacific	Higher Risk	Narrowly Focused	Asia	30/06/2018	2.48
4	Aviva Capital Growth (SP)	Equity Asia Pacific ex Japan	Higher Risk	Narrowly Focused	Asia	30/06/2018	2.29
5	UOB Life FOF Global Healthcare Fund	Equity Sector Healthcare	Higher Risk	Narrowly Focused	Healthcare	30/06/2018	2.24
6	PruLink Global Property Securities Fund	Equity Sector Real Est Global	Higher Risk	Narrowly Focused	Sector - Others	30/06/2018	2.11
7	AIA International Health Care Fund	Equity Sector Healthcare	Higher Risk	Narrowly Focused	Healthcare	30/06/2018	2.06
8	AIA Emerging Markets Equity Fund	Equity Emerging Mkts Global	Higher Risk	Narrowly Focused	Emerging Markets	30/06/2018	1.75
9	AIA India Opportunities Fund	Equity India	Higher Risk	Narrowly Focused	Country - Others	30/06/2018	1.75
10	AIA Portfolio 100	Equity Global Income	Higher Risk	Broadly Diversified	N/A	30/06/2018	1.75
11	AXA Asian Growth Fund	Equity Asia Pacific ex Japan	Higher Risk	Narrowly Focused	Asia	30/06/2018	1.75
12	AXA China Growth Fund	Equity Greater China	Higher Risk	Narrowly Focused	Greater China	30/06/2018	1.75
13	AXA Fortress Fund A	Equity Singapore	Higher Risk	Narrowly Focused	Singapore	30/06/2018	1.75
14	AXA Fortress Fund B	Equity Singapore	Higher Risk	Narrowly Focused	Singapore	30/06/2018	1.75
15	AXA Global Emerging Markets Equity Fund	Equity Emerging Mkts Global	Higher Risk	Narrowly Focused	Emerging Markets	30/06/2018	1.75
16	AXA Global Equity Blend	Equity Global	Higher Risk	Broadly Diversified	N/A	30/06/2018	1.75
17	AXA Global High Growth Fund	Equity Global	Higher Risk	Broadly Diversified	N/A	30/06/2018	1.75
18	AXA India Fund	Equity India	Higher Risk	Narrowly Focused	Country - Others	30/06/2018	1.75
19	AXA Pacific Equity Fund	Equity Asia Pacific ex Japan	Higher Risk	Narrowly Focused	Asia	30/06/2018	1.75
20	AXA Shariah Global Equity Fund	Equity Global	Higher Risk	Broadly Diversified	N/A	30/06/2018	1.75
21	AXA Singapore Equity Fund	Equity Singapore	Higher Risk	Narrowly Focused	Singapore	30/06/2018	1.75
22	AXA South East Asia Special Situations Fund	Equity ASEAN	Higher Risk	Narrowly Focused	Asia	30/06/2018	1.75

FOURTH QUARTER 2018 PERFORMANCE & RISK-MONITORING REPORT

	Name (CPF)	Lipper Global	CPFIS Risk	CPF Focus	Detail	TER Date	Expense Ratio
23	AXA Value Growth Fund	Equity Asia Pacific ex Japan	Higher Risk	Narrowly Focused	Asia	30/06/2018	1.75
24	Manulife Global Emerging Markets Fund	Equity Emerging Mkts Global	Higher Risk	Narrowly Focused	Emerging Markets	30/06/2018	1.75
25	Manulife Golden Asia Growth Fund	Equity Asia Pacific ex Japan	Higher Risk	Narrowly Focused	Asia	30/06/2018	1.75
26	Manulife Golden S.E.A Special Situations Fund	Equity ASEAN	Higher Risk	Narrowly Focused	Asia	30/06/2018	1.75
27	Manulife Golden Singapore Growth Fund	Equity Singapore	Higher Risk	Narrowly Focused	Singapore	30/06/2018	1.75
28	Manulife India Equity Fund	Equity India	Higher Risk	Narrowly Focused	Country - Others	30/06/2018	1.75
29	Manulife Pacific Equity Fund	Equity Asia Pacific ex Japan	Higher Risk	Narrowly Focused	Asia	30/06/2018	1.75
30	PruLink Emerging Markets Fund	Equity Emerging Mkts Global	Higher Risk	Narrowly Focused	Emerging Markets	30/06/2018	1.75
31	AIA Global Technology Fund	Equity Sector Information Tech	Higher Risk	Narrowly Focused	Technology	30/06/2018	1.74
32	GreatLink Global Emerging Markets Equity Fund	Equity Emerging Mkts Global	Higher Risk	Narrowly Focused	Emerging Markets	30/06/2018	1.74
33	Manulife European Equity Fund	Equity Europe	Higher Risk	Narrowly Focused	Europe	30/06/2018	1.74
34	TMLS Global Emerging Markets Equity Fund	Equity Emerging Mkts Global	Higher Risk	Narrowly Focused	Emerging Markets	30/06/2018	1.74
35	AIA Greater China Equity Fund	Equity Greater China	Higher Risk	Narrowly Focused	Greater China	30/06/2018	1.73
36	GreatLink Global Opportunities Fund	Equity Global	Higher Risk	Broadly Diversified	N/A	30/06/2018	1.73
37	Manulife Golden Regional China Fund	Equity China	Higher Risk	Narrowly Focused	Greater China	30/06/2018	1.73
38	PruLink Pan European Fund	Equity Europe	Higher Risk	Narrowly Focused	Europe	30/06/2018	1.73
39	TMLS India Equity Fund	Equity India	Higher Risk	Narrowly Focused	Country - Others	30/06/2018	1.73
40	HSBC Insurance Ethical Global Equity Fund	Equity Global	Higher Risk	Broadly Diversified	N/A	30/06/2018	1.72
41	PruLink America Fund	Equity US	Higher Risk	Narrowly Focused	North America	30/06/2018	1.72
42	PRUlink India Equity Fund	Equity India	Higher Risk	Narrowly Focused	Country - Others	30/06/2018	1.72
43	TMLS China Equity Fund	Equity China	Higher Risk	Narrowly Focused	Greater China	30/06/2018	1.72
44	HSBC Insurance Pacific Equity Fund	Equity Asia Pacific ex Japan	Higher Risk	Narrowly Focused	Asia	30/06/2018	1.71
45	PruLink Greater China Fund	Equity Greater China	Higher Risk	Narrowly Focused	Greater China	30/06/2018	1.71
46	AIA Japan Equity Fund	Equity Japan	Higher Risk	Narrowly Focused	Japan	30/06/2018	1.70
47	TMLS Singapore Equity Fund	Equity Singapore	Higher Risk	Narrowly Focused	Singapore	30/06/2018	1.70



FOURTH QUARTER 2018 PERFORMANCE & RISK-MONITORING REPORT

	Name (CPF)	Lipper Global	CPFIS Risk	CPF Focus	Detail	TER Date	Expense Ratio
48	PruLink Global Equity Fund	Equity Global Income	Higher Risk	Broadly Diversified	N/A	30/06/2018	1.68
49	PruLink Global Technology Fund	Equity Sector Information Tech	Higher Risk	Narrowly Focused	Technology	30/06/2018	1.68
50	Manulife Golden Worldwide Equity Fund	Equity Global	Higher Risk	Broadly Diversified	N/A	30/06/2018	1.67
51	AIA Regional Equity Fund	Equity Asia Pacific ex Japan	Higher Risk	Narrowly Focused	Asia	30/06/2018	1.66
52	GreatLink China Growth Fund	Equity Greater China	Higher Risk	Narrowly Focused	Greater China	30/06/2018	1.66
53	GreatLink Global Real Estate Securities Fund	Equity Sector Real Est Global	Higher Risk	Narrowly Focused	Sector - Others	30/06/2018	1.65
54	GreatLink Singapore Equities Fund	Equity Singapore	Higher Risk	Narrowly Focused	Singapore	30/06/2018	1.65
55	Prulink China-India Fund	Equity Emerging Mkts Asia	Higher Risk	Narrowly Focused	Country - Others	30/06/2018	1.64
56	GreatLink Global Technology Fund	Equity Sector Information Tech	Higher Risk	Narrowly Focused	Technology	30/06/2018	1.63
57	Manulife Lifestyle Portfolios - Aggressive	Equity Global	Higher Risk	Broadly Diversified	N/A	30/06/2018	1.63
58	Manulife Lifestyle Portfolios - Growth	Mixed Asset SGD Aggressive	Higher Risk	Broadly Diversified	N/A	30/06/2018	1.63
59	GreatLink Asia Pacific Equity Fund	Equity Asia Pacific ex Japan	Higher Risk	Narrowly Focused	Asia	30/06/2018	1.61
60	GreatLink Lion Japan Growth Fund	Equity Japan	Higher Risk	Narrowly Focused	Japan	30/06/2018	1.60
61	TMLS Global Equity Fund	Equity Global	Higher Risk	Broadly Diversified	N/A	30/06/2018	1.59
62	GreatLink LifeStyle Dynamic Portfolio	Equity Global	Higher Risk	Broadly Diversified	N/A	30/06/2018	1.58
63	GreatLink Global Equity Alpha Fund	Equity Global	Higher Risk	Broadly Diversified	N/A	30/06/2018	1.56
64	Manulife Asian Small-Cap Equity Fund	Equity Asia Pacific Sm&Mid Cap	Higher Risk	Narrowly Focused	Asia	30/06/2018	1.55
65	PruLink Asian Equity Fund	Equity Asia Pacific ex Japan	Higher Risk	Narrowly Focused	Asia	30/06/2018	1.53
66	TMLS Multi-Asset 90 Fund	Mixed Asset SGD Aggressive	Higher Risk	Broadly Diversified	N/A	30/06/2018	1.53
67	GreatLink LifeStyle Progressive Portfolio	Mixed Asset SGD Aggressive	Higher Risk	Broadly Diversified	N/A	30/06/2018	1.51
68	GreatLink European Equity Fund	Equity Europe	Higher Risk	Narrowly Focused	Europe	30/06/2018	1.47
69	TMLS Asian Equity Fund	Equity Asia Pacific ex Japan	Higher Risk	Narrowly Focused	Asia	30/06/2018	1.44
70	Manulife Japan Growth Fund	Equity Japan	Higher Risk	Narrowly Focused	Japan	30/06/2018	1.43
71	Aviva MM Capital Growth	Equity Asia Pacific ex Japan	Higher Risk	Narrowly Focused	Asia	30/06/2018	1.42



FOURTH QUARTER 2018 PERFORMANCE & RISK-MONITORING REPORT

	Name (CPF)	Lipper Global	CPFIS Risk	CPF Focus	Detail	TER Date	Expense Ratio
72	PruLink Singapore Growth Fund	Equity Singapore	Higher Risk	Narrowly Focused	Singapore	30/06/2018	1.42
73	UOB LifeLink Global Fund	Equity Global	Higher Risk	Broadly Diversified	N/A	30/06/2018	1.40
74	UOB LifeLink Growth Fund	Equity Singapore	Higher Risk	Narrowly Focused	Singapore	30/06/2018	1.40
75	UOB Life FOF International Growth Fund	Equity Global	Higher Risk	Broadly Diversified	N/A	30/06/2018	1.39
76	UOB Life FOF Growth Fund	Equity Singapore	Higher Risk	Narrowly Focused	Singapore	30/06/2018	1.37
77	NTUC Global Technology Fund	Equity Sector Information Tech	Higher Risk	Narrowly Focused	Technology	30/06/2018	1.31
78	NTUC Global Equity Fund	Equity Global	Higher Risk	Broadly Diversified	N/A	30/06/2018	1.28
79	NTUC AIM 2035	Target Maturity Other	Higher Risk	Broadly Diversified	N/A	30/06/2018	1.24
80	NTUC AIM 2045	Target Maturity Other	Higher Risk	Broadly Diversified	N/A	30/06/2018	1.24
81	NTUC Takaful Fund	Equity Global	Higher Risk	Broadly Diversified	N/A	30/06/2018	1.24
82	NTUC Singapore Equity Fund	Equity Singapore	Higher Risk	Narrowly Focused	Singapore	30/06/2018	0.73
83	Aviva Income Growth (SP)	Mixed Asset SGD Conservative	Medium To High Risk	Narrowly Focused	Asia	30/06/2018	2.47
84	Aviva Balanced Growth (SP)	Mixed Asset SGD Balanced	Medium To High Risk	Narrowly Focused	Asia	30/06/2018	2.37
85	Aviva Templeton Global Balanced (SP) - CPF	Mixed Asset SGD Balanced	Medium To High Risk	Broadly Diversified	N/A	30/06/2018	2.20
86	PruLink Adapt 2035	Target Maturity Other	Medium To High Risk	Broadly Diversified	N/A	30/06/2018	1.67
87	Aviva MM Income Growth	Mixed Asset SGD Conservative	Medium To High Risk	Narrowly Focused	Asia	30/06/2018	1.60
88	AIA Emerging Markets Balanced Fund	Mixed Asset SGD Balanced	Medium To High Risk	Narrowly Focused	Regional - Others	30/06/2018	1.55
89	AIA Japan Balanced Fund	Mixed Asset SGD Balanced	Medium To High Risk	Narrowly Focused	Country - Others	30/06/2018	1.55
90	AIA Portfolio 50	Mixed Asset SGD Balanced	Medium To High Risk	Broadly Diversified	N/A	30/06/2018	1.55
91	AIA Portfolio 70	Mixed Asset SGD Aggressive	Medium To High Risk	Broadly Diversified	N/A	30/06/2018	1.55
92	AXA Asian Balanced Fund	Mixed Asset SGD Balanced	Medium To High Risk	Narrowly Focused	Asia	30/06/2018	1.55
93	AXA Global Balanced Fund	Mixed Asset SGD Balanced	Medium To High Risk	Broadly Diversified	N/A	30/06/2018	1.55
94	AXA Global Growth Fund	Mixed Asset SGD Aggressive	Medium To High Risk	Broadly Diversified	N/A	30/06/2018	1.55
95	AXA Singapore Balanced Fund	Mixed Asset SGD Balanced	Medium To High Risk	Narrowly Focused	Singapore	30/06/2018	1.55
96	Manulife Income Series – Asian Balanced Fund	Mixed Asset SGD Balanced	Medium To High Risk	Narrowly Focused	Asia	30/06/2018	1.55
97	Manulife Income Series - Global Balanced Fund	Mixed Asset USD Bal - Global	Medium To High Risk	Broadly Diversified	N/A	30/06/2018	1.55



FOURTH QUARTER 2018 PERFORMANCE & RISK-MONITORING REPORT

S/N	Name (CPF)	Lipper Global	CPFIS Risk	CPF Focus	Detail	TER Date	Expense Ratio
98	AIA Global Balanced Fund	Mixed Asset SGD Balanced	Medium To High Risk	Broadly Diversified	N/A	30/06/2018	1.54
99	AIA Greater China Balanced Fund	Mixed Asset SGD Balanced	Medium To High Risk	Narrowly Focused	Greater China	30/06/2018	1.54
100	AIA India Balanced Fund	Mixed Asset SGD Balanced	Medium To High Risk	Narrowly Focused	Country - Others	30/06/2018	1.54
101	Aviva Schroder Multi Asset Revolution	Mixed Asset SGD Balanced	Medium To High Risk	Broadly Diversified	N/A	30/06/2018	1.54
102	AIA Acorns of Asia Fund	Mixed Asset SGD Balanced	Medium To High Risk	Narrowly Focused	Asia	30/06/2018	1.53
103	PruLink Adapt 2025	Target Maturity Other	Medium To High Risk	Broadly Diversified	N/A	30/06/2018	1.53
104	TMLS Multi-Asset 50 Fund	Mixed Asset SGD Balanced	Medium To High Risk	Broadly Diversified	N/A	30/06/2018	1.53
105	TMLS Multi-Asset 70 Fund	Mixed Asset SGD Aggressive	Medium To High Risk	Broadly Diversified	N/A	30/06/2018	1.53
106	TMLS Multi-Asset 30 Fund	Mixed Asset SGD Conservative	Medium To High Risk	Broadly Diversified	N/A	30/06/2018	1.52
107	Aviva MM Balanced Growth	Mixed Asset SGD Balanced	Medium To High Risk	Narrowly Focused	Asia	30/06/2018	1.50
108	PruLink Global Managed Fund	Mixed Asset SGD Balanced	Medium To High Risk	Broadly Diversified	N/A	30/06/2018	1.50
109	PruLink Asian American Managed Fund	Mixed Asset SGD Balanced	Medium To High Risk	Narrowly Focused	Asia	30/06/2018	1.48
110	PruLink Asian Income and Growth Fund	Mixed Asset SGD Balanced	Medium To High Risk	Narrowly Focused	Asia	30/06/2018	1.45
111	Manulife Golden Global Balanced Fund	Mixed Asset SGD Balanced	Medium To High Risk	Broadly Diversified	N/A	30/06/2018	1.43
112	Manulife Lifestyle Portfolios - Moderate	Mixed Asset SGD Balanced	Medium To High Risk	Broadly Diversified	N/A	30/06/2018	1.43
113	NTUC Asia Managed Fund	Mixed Asset SGD Aggressive	Medium To High Risk	Narrowly Focused	Asia	30/06/2018	1.38
114	GreatLink Global Supreme Fund	Mixed Asset SGD Balanced	Medium To High Risk	Broadly Diversified	N/A	30/06/2018	1.37
115	Manulife Lifestyle Portfolios - Secure	Mixed Asset SGD Balanced	Medium To High Risk	Broadly Diversified	N/A	30/06/2018	1.36
116	GreatLink Lifestyle Balanced Portfolio	Mixed Asset SGD Balanced	Medium To High Risk	Broadly Diversified	N/A	30/06/2018	1.35
117	GreatLink Lion Asian Balanced Fund	Mixed Asset SGD Balanced	Medium To High Risk	Narrowly Focused	Asia	30/06/2018	1.35
118	PruLink Singapore ASEAN Managed Fund	Mixed Asset SGD Aggressive	Medium To High Risk	Narrowly Focused	Asia	30/06/2018	1.35
119	Manulife Golden Balanced Growth Fund	Mixed Asset SGD Balanced	Medium To High Risk	Narrowly Focused	Singapore	30/06/2018	1.33
120	PruLink Singapore Managed Fund	Mixed Asset SGD Aggressive	Medium To High Risk	Narrowly Focused	Singapore	30/06/2018	1.33
121	AIA Growth Fund	Mixed Asset SGD Aggressive	Medium To High Risk	Narrowly Focused	Singapore	30/06/2018	1.28

FOURTH QUARTER 2018 PERFORMANCE & RISK-MONITORING REPORT

S/N	Name (CPF)	Lipper Global	CPFIS Risk	CPF Focus	Detail	TER Date	Expense Ratio
122	Manulife Lifestyle Portfolios - Conservative	Mixed Asset SGD Conservative	Medium To High Risk	Broadly Diversified	N/A	30/06/2018	1.22
123	NTUC AIM 2025	Target Maturity Other	Medium To High Risk	Broadly Diversified	N/A	30/06/2018	1.20
124	NTUC Global Managed Fund (Growth)	Mixed Asset SGD Aggressive	Medium To High Risk	Broadly Diversified	N/A	30/06/2018	1.17
125	GreatLink Lifestyle Steady Portfolio	Mixed Asset SGD Balanced	Medium To High Risk	Broadly Diversified	N/A	30/06/2018	1.16
126	NTUC Global Managed Fund (Balanced)	Mixed Asset SGD Balanced	Medium To High Risk	Broadly Diversified	N/A	30/06/2018	1.14
127	NTUC Singapore Managed Fund	Mixed Asset SGD Balanced	Medium To High Risk	Narrowly Focused	Singapore	30/06/2018	1.07
128	NTUC Prime Fund	Mixed Asset SGD Balanced	Medium To High Risk	Narrowly Focused	Asia	30/06/2018	1.06
129	NTUC Global Managed Fund (Conservative)	Mixed Asset SGD Conservative	Medium To High Risk	Broadly Diversified	N/A	30/06/2018	1.05
130	GreatLink Lifestyle Secure Portfolio	Mixed Asset SGD Conservative	Medium To High Risk	Broadly Diversified	N/A	30/06/2018	1.00
131	TMLS Global Balanced Fund	Mixed Asset USD Bal - Global	Medium To High Risk	Broadly Diversified	N/A	30/06/2018	0.84
132	Aviva Legg Mason Western Asset Global Bond Trust (SP)	Bond Global	Low To Medium Risk	Broadly Diversified	N/A	30/06/2018	2.37
133	Aviva Nikko AM Shenton Short Term Bond (SP)	Bond Global	Low To Medium Risk	Broadly Diversified	N/A	30/06/2018	2.04
134	AIA Portfolio 30	Mixed Asset SGD Conservative	Low To Medium Risk	Broadly Diversified	N/A	30/06/2018	0.95
135	AXA Global Defensive Fund	Bond Global	Low To Medium Risk	Broadly Diversified	N/A	30/06/2018	0.95
136	AXA Global Secure Fund	Mixed Asset SGD Conservative	Low To Medium Risk	Broadly Diversified	N/A	30/06/2018	0.95
137	AXA Short Duration Bond Fund	Bond SGD	Low To Medium Risk	Broadly Diversified	N/A	30/06/2018	0.95
138	AXA Singapore Bond Fund	Bond SGD	Low To Medium Risk	Narrowly Focused	Singapore	30/06/2018	0.95
139	Manulife Singapore Bond Fund	Bond SGD	Low To Medium Risk	Narrowly Focused	Singapore	30/06/2018	0.95
140	HSBC Insurance Global Bond Fund	Bond Global	Low To Medium Risk	Broadly Diversified	N/A	30/06/2018	0.94
141	NTUC AIM NOW	Mixed Asset SGD Conservative	Low To Medium Risk	Broadly Diversified	N/A	30/06/2018	0.94
142	TMLS Global Bond Fund	Bond SGD	Low To Medium Risk	Broadly Diversified	N/A	30/06/2018	0.93
143	Manulife Income Series - Asia Pacific Investment Grade Bond Fund	Bond Asia Pacific LC	Low To Medium Risk	Narrowly Focused	Asia	30/06/2018	0.92

FOURTH QUARTER 2018 PERFORMANCE & RISK-MONITORING REPORT

S/N	Name (CPF)	Lipper Global	CPFIS Risk	CPF Focus	Detail	TER Date	Expense Ratio
144	TMLS Singapore Bond Fund	Bond SGD	Low To Medium Risk	Narrowly Focused	Singapore	30/06/2018	0.92
145	AIA Global Bond Fund	Bond Global	Low To Medium Risk	Broadly Diversified	N/A	30/06/2018	0.91
146	Manulife Golden International Bond Fund	Bond Global	Low To Medium Risk	Broadly Diversified	N/A	30/06/2018	0.90
147	GreatLink Global Bond Fund	Bond Global	Low To Medium Risk	Broadly Diversified	N/A	30/06/2018	0.88
148	NTUC Global Bond Fund	Bond Global	Low To Medium Risk	Broadly Diversified	N/A	30/06/2018	0.88
149	AIA Regional Fixed Income Fund	Bond SGD	Low To Medium Risk	Narrowly Focused	Singapore	30/06/2018	0.87
150	PruLink Global Bond Fund	Bond Global	Low To Medium Risk	Broadly Diversified	N/A	30/06/2018	0.77
151	GreatLink Short Duration Bond Fund	Bond Global	Low To Medium Risk	Narrowly Focused	Asia	30/06/2018	0.63
152	PruLink Singapore Dynamic Bond Fund	Bond SGD	Low To Medium Risk	Narrowly Focused	Singapore	30/06/2018	0.62
153	NTUC Singapore Bond Fund	Bond SGD	Low To Medium Risk	Narrowly Focused	Singapore	30/06/2018	0.52
154	Manulife Singapore Cash Fund	Money Market SGD	Lower Risk	Narrowly Focused	Singapore	30/06/2018	0.75
155	GreatLink Cash Fund	Money Market SGD	Lower Risk	Broadly Diversified	N/A	30/06/2018	0.32
156	PruLink Singapore Cash Fund	Money Market SGD	Lower Risk	Broadly Diversified	N/A	30/06/2018	0.32
157	AIA S\$ Money Market Fund	Money Market SGD	Lower Risk	Narrowly Focused	Singapore	30/06/2018	0.31

Source: Central Provident Fund Board and Lipper

Lipper Leader Rating Methodology

Unlike many competing quantitative measures, the strength of the Lipper Leader rating system is that it uses investor-centered criteria and not asset- or style/strategy-based criteria. These investor-centered criteria deliver clear, straightforward descriptions of a fund's success in meeting certain goals, such as preserving capital or building wealth through consistent, strong returns.

Investor-centered measures of fund performance and suitability

The Lipper Leader rating system consists of four metrics that provide clear, straightforward descriptions of a fund's success in meeting certain goals for constructing individualized portfolios.

 **Total Return**

 **Consistent Return**






 **Preservation**

 **Expense**

Determine whether you are investing in funds that fit your investment goals

Lipper Leaders provide context and perspective for making informed investment decisions but do not predict future performance. Funds are ranked against their Lipper peer group classifications each month for three-, five-, and ten-year periods and for the overall period. These ratings are based on an equal-weighted average of percentile ranks of the four Lipper Leader metrics.

For each metric:

-  The top 20% of funds receive a rating of "5" and are named **Lipper Leaders**.
-  The next 20% of funds receive a rating of "4."
-  The middle 20% of funds receive a rating of "3."
-  The next 20% of funds receive a rating of "2."
-  The lowest 20% of funds receive a rating of "1."



Lipper Leader Metrics

Total Return

The Lipper Leader rating for Total Return denotes a fund that has provided superior total return (income from dividends and interest as well as capital appreciation) compared to a group of similar funds. A Lipper Leader for Total Return may be the best fit for investors who want the best historical return, without looking at risk. This measure alone may not be suitable for investors who want to avoid downside risk. For more risk-averse investors the Total Return rating can be used with the Preservation and/or Consistent Return ratings to make an appropriate selection that balances risk and return.

Expense

The Lipper Leader rating for Expense identifies a fund that has successfully managed to keep its expenses low relative to its peers and within its load structure. A Lipper Leader for Expense may be the best fit for investors who want to minimize their total costs. This measure can be used in conjunction with Total Return or Consistent Return to identify funds with above-average performance and lower-than-average cost.

Consistent Return

The Lipper Leader rating for Consistent Return identifies a fund that has provided relatively superior consistency and risk-adjusted returns compared to a group of similar funds. Funds that achieve high ratings for Consistent Return may be the best fit for investors who value a fund's year-to-year consistency relative to other funds in a particular peer group.

Investors are cautioned that some peer groups are inherently more volatile than others, and even Lipper Leaders for Consistent Return in the most volatile groups may not be well suited to shorter-term goals or less risk-tolerant investors.

Preservation

The Lipper Leader rating for Preservation is for a fund that has demonstrated a superior ability to preserve capital in a variety of markets compared with other funds in its asset class.

Choosing a Lipper Leader for Preservation may help to minimize downside risk relative to other fund choices in the same asset class. Investors are cautioned that equity funds have historically been more volatile than mixed-equity or fixed income funds, and that even a Lipper Leader for Preservation in more volatile asset classes may not be well suited to shorter-term goals or less risk-tolerant investors.

7.2 Investment Terminology Definitions

Lipper Global Classification

The Lipper Global Classification (LGC) is the unique fund classification system developed by Lipper to assist fund information users in comparing fund performance within a reasonable peer group. Its purpose is to create homogeneous groups of funds with comparable investment objectives. We refine our existing classifications to ensure meaningful peer groups and add new classifications in response to client requests and market trends.

For more information please visit <http://www.lipperweb.com/Research/ClassMethodology.aspx>

Quantitative Analysis

- **Return**

All returns are calculated on a NAV-to-NAV basis in Singapore dollars with dividends reinvested. The gain or loss of a particular fund in a particular period is calculated with the following formula:

Performance

$$\text{Percentage Growth} = \frac{\text{NAV}_t - \text{NAV}_{t-1}}{\text{NAV}_{t-1}}$$

For simple return:

$$\text{Performance Annualized} = \left(1 + \text{Percentage Growth}\right)^{\frac{\text{Number of Time Units Per Year}}{\text{Number of Time Units in Period}}} - 1$$

For log returns:

- **Return Relative to Benchmark**

$$\text{Performance Annualized} = \frac{\text{Number of Time Units Per Year}}{\text{Number of Time Units in Period}} \times \text{Percentage Growth}$$

Relative return is a measure of fund performance relative to its benchmark's performance. It is calculated as the difference between the fund's return and the benchmark's return over a given period. Higher relative return means better fund performance relative to the benchmark's performance.

Formula:

$$\text{Relative Return} = \text{Fund Return} - \text{Benchmark Return}$$

For simple return:

$$\text{Relative Return Annualized} = \left(1 + \text{Relative Return}\right)^{\frac{\text{Number of Time Units Per Year}}{\text{Number of Time Units in Period}}} - 1$$

For log returns:

$$\text{Relative Return Annualized} = \frac{\text{Number of Time Units Per Year}}{\text{Number of Time Units in Period}} \times \text{Relative Return}$$

▪ Expense Ratio

Expense ratio expresses the management, trustee, and certain other expenses of a managed fund as a proportion of the net asset value of the fund. The expense ratio expresses the sum of all operating expenses charged on an ongoing basis to the fund's assets as a percentage of the fund's average net asset value and is calculated using the following formula:

$$\text{Total Expense Ratio (\%)} = \frac{\text{Total Operating Expenses}}{\text{Average Net Asset Value}} \times 100$$

▪ Information Ratio

Information ratio is a risk-adjusted measure of a fund's performance relative to its benchmark's performance. (The fund's benchmark can be found in the supplementary document Return Performance Review.) The information ratio is given by the ratio of average relative return (excess return) and tracking error. Tracking error or tracking risk refers to the volatility or standard deviation of the investment manager's excess return over the benchmark's return. A higher information ratio means better fund performance relative to the benchmark's performance on a risk-adjusted basis.

Formula:

$$\text{Information Ratio} = \frac{\text{Average Relative Return}}{\text{Tracking Error}}$$

$$\text{Information Ratio Annualized} = \sqrt{\frac{\text{Number of Time Units Per Year}}{\text{Number of Time Units Per Sub Period}}} \times \text{Information Ratio}$$

▪ Sharpe Ratio

The Sharpe ratio is a risk-adjusted measure of performance developed by William F. Sharpe; it is also known as the reward-to-volatility ratio. It is calculated as the average subperiod excess return divided by the standard deviation of subperiod excess return over a given period. Subperiod excess return is the difference between the investment return and the CPFIS-OA guaranteed interest rate for a subperiod. A higher Sharpe ratio means better fund performance relative to the risk-free rate on a risk-adjusted basis. The Sharpe ratio is a special form of information ratio where the risk-free rate is the benchmark.

Formula:

$$\text{Sharpe Ratio} = \frac{\text{Average Sub Period Excess Return}}{\text{Standard Deviation of Sub Period Excess Returns}}$$

$$\text{Sharpe Ratio Annualized} = \sqrt{\frac{\text{Number of Time Units Per Year}}{\text{Number of Time Units Per Sub Period}}} \times \text{Sharpe Ratio}$$

- **Standard Deviation**

Standard deviation is a measure of investment risk or volatility in subperiod returns. It is calculated as the square root of variance, which is the average of the subperiod squared deviations over a given period. Higher standard deviation means higher risk.

Formula:

$$\text{Variance} = \frac{\sum (\text{Sub Period Returns} - \text{Average Return})^2}{\text{Number of Sub Periods} - 1}$$

$$\text{Standard Deviation} = \sqrt{\text{Variance}}$$

$$\text{Standard Deviation Annualized} = \sqrt{\frac{\text{Number of Time Units Per Year}}{\text{Number of Time Units Per Sub Period}}} \times \text{Standard Deviation}$$

- **Maximum Gain**

Maximum gain is the most positive monthly return over a given period.

Formula:

$$\text{Maximum Gain} = \text{Max (Positive Sub-Period Returns)}$$

- **Maximum Loss**

Maximum loss is the most negative monthly return over a given period.

Formula:

$$\text{Maximum Loss} = \text{Min (Negative Sub-Period Returns)}$$

- **Return/Risk**

The return/risk ratio is a measure of risk-adjusted performance. It is calculated as the average return divided by the standard deviation of subperiod returns over a given period. A higher return/risk ratio means better fund performance relative to fund volatility on a risk-adjusted basis.

Formula:

$$\text{Return to Risk} = \frac{\text{Average Return}}{\text{Standard Deviation}}$$

$$\text{Return to Risk Annualized} = \sqrt{\frac{\text{Number of Time Units Per Year}}{\text{Number of Time Units Per Sub Period}}} \times \text{Return to Risk}$$