Investment Performance of the MPF System in 2019

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EXECUTIVE SUMMARY

1. This report reviews the investment performance of the Mandatory Provident Fund (MPF) System in 2019, with the objective of facilitating MPF scheme members in gaining a better and objective understanding of the investment performance of the MPF System and different types of MPF constituent funds (MPF funds).

KEY FINDINGS

Performance of the MPF System as a Whole

2. The global economy in 2019 continued to be affected by the uncertainties centered around the China-US trade tensions as well as the sluggish growth in the Eurozone. According to the World Bank, the estimated global economic growth in 2019 decelerated to 2.4%, its slowest pace since the global financial crisis in 2008.[1]

3. As an open economy, Hong Kong's investment markets are inevitably influenced by the global economy and international fund flow. Nevertheless, despite all the uncertainties, the MPF System registered a return of 12.2% net of fees and charges in 2019. As at December 2019, the MPF System generated an annualized return of 4.1% since its inception in December 2000.

4. The MPF System's relatively robust performance in 2019 was largely attributed to the prosperity of the equity and bond markets, given that the System is characterized by its high exposure to both equity and bond markets (63% and 23% of total assets respectively as at September 2019). Therefore, a sturdy performance in the equity and bond markets helped boost the overall investment returns of the MPF System.

5. In dollar terms, the total assets of the MPF System amounted to $969.5 billion, including $680.6 billion (70%) in net contributions and $288.9 billion (30%) in investment returns net of fees and charges.

Table A: A Snapshot of the MPF System (31 Dec 2019)

Return of the MPF System (2019)	Annualized Return of the MPF System (since Inception)	Total Assets	Net Investment Return
12.2%	4.1%	$969.5 billion	$288.9 billion

1 The World Bank. (2020). *Global Economic Prospects.* Washington, DC: World Bank Group.

Performance of Different Types of MPF Funds

6. In 2019, all six MPF fund types (i.e. equity fund, mixed assets fund, bond fund, guaranteed fund, money market fund – MPF conservative fund, and money market fund – other than MPF conservative fund) posted positive returns.

7. Equity funds, mixed assets funds and bond funds performed better than other fund types, registering a yearly return of 16.7%, 14.7% and 4.2% respectively in 2019.[2] Among the different geographic sub-groups of equity funds, United States equity funds (27.2%) as a group registered the highest return in 2019.

8. As for mixed assets funds, those with higher equity content fared better than those with lower equity content due to the relatively buoyant equity market. While mixed assets funds (81% to 100% equity) reported a return of 17.9% in 2019, mixed assets funds (21% to 40% equity) recorded a relatively lower return of 8.7%.

9. The overall return of bond funds was 4.2% in 2019. Relatively speaking, Asia bond funds (5.8%) and global bond funds (4.6%) performed slightly better than other sub-groups of bond funds. As for guaranteed funds, the return was 2.6% in 2019.

10. Amid the persistent low interest rate environment, money market fund – MPF conservative funds as well as money market fund – other than MPF conservative funds registered mild returns of 1.2% and 1.0% respectively in 2019.

11. Offered in each MPF scheme, the Default Investment Strategy (DIS) comprises two mixed assets funds: the Core Accumulation Fund (CAF) and the Age 65 Plus Fund (A65F). The former outperformed the average of the fund type. In 2019, the CAF and A65F achieved returns of 16.6% and 9.7% respectively.

Table B: Investment Returns of Different Types of MPF Funds in 2019

Equity Funds	Mixed Assets Funds	Bond Funds	Guaranteed Funds
16.7%	14.7%	4.2%	2.6%
Money Market Fund – MPF Conservative Funds	**Money Market Fund – Other than MPF Conservative Funds**	**Core Accumulation Fund**	**Age 65 Plus Fund**
1.2%	1.0%	16.6%	9.7%

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[2] In view of the absence of available data on contributions made into and benefit withdrawn from MPF funds, the returns of different types and sub-groups of MPF funds were calculated by way of the time-weighted method instead of the dollar-weighted method. The time-weighted method takes into account the unit price and asset size of each constituent fund at different points in time. For details of the calculation methodology, please refer to Appendix A.

Risk Level of Different Types of MPF Funds

12. The risk level of MPF funds was measured by the standard deviation and range of monthly returns. Among the six types of MPF funds, equity funds had the highest level of risk, followed by mixed assets funds, bond funds, guaranteed funds, money market fund – other than MPF conservative funds, and money market fund – MPF conservative funds.

13. From the perspective of standard deviation, equity funds posted a level of 5.15% from December 2000 to December 2019, the highest among all fund types. At the other end of the spectrum, money market fund – MPF conservative funds only posted a level of 0.09%. Similarly, from the perspective of range of monthly returns, equity funds were associated with the highest level of risk by having a range as wide as 36.02 percentage points (monthly returns ranging from -20.63% to 15.39%) from December 2000 to December 2019, whereas money market fund – MPF conservative funds had a narrow range of 0.53 percentage points (monthly returns ranging from -0.05% to 0.48%).

POINTS TO NOTE

MPF as a Long-Term Investment

14. MPF is a long-term investment which spans across scheme members' entire working life. Therefore, scheme members should not be overly concerned with the short-term market volatilities. They should instead review their MPF investment regularly to ensure that their investment portfolios (i.e. fund choices) align with their personal circumstances (e.g. risk tolerance level).

Avoid Timing the Market

15. Despite all the uncertainties surrounding the global economy, the financial markets in general had been buoyant in 2019. However, it is impossible for investors to make accurate predictions of market conditions on a consistent basis, particularly when markets are volatile where many investors may actually end up buying high and selling low. Market timing is therefore not generally advisable.

The Tradeoff between Return and Risk

16. Same as most financial instruments, MPF funds in general exhibit a positive relationship between risk and return – the higher the potential return in the long run, the higher the risk. Therefore, scheme members, when making fund choice, should consider, amongst other relevant factors, their respective risk tolerance level in conjunction with the fund's investment performance.

Section 1 – Introduction

Objective

1. This report reviews the investment performance of the Mandatory Provident Fund (MPF) System in 2019, with the objective of assisting MPF scheme members and other stakeholders in gaining an objective and better understanding of the investment performance of the MPF System as a whole and of different types of MPF constituent funds (MPF funds).

Scope

2. Each MPF fund included in this report is classified into one of the following six main fund types:

   i. equity fund;

   ii. mixed assets fund;

   iii. bond fund;

   iv. guaranteed fund;

   v. money market fund – MPF conservative fund; and

   vi. money market fund – other than MPF conservative fund.

3. Appendix B outlines the key features of different types of MPF funds.

4. Among these fund types, equity funds (i.e. funds primarily investing in equities) and mixed assets funds (i.e. funds primarily investing in equities and bonds) are the preferred choices of scheme members. The assets of equity funds and mixed assets funds accounted for 40% and 36% of the aggregate net asset value (NAV) of MPF funds respectively as at December 2019. In terms of the total number of MPF funds, these two fund types together accounted for around 79% of the total number of MPF funds. A comparatively smaller percentage of assets is invested in lower-risk funds like money market fund – MPF conservative funds. In this regard, the assets of money market fund – MPF conservative funds accounted for 11% of the aggregate NAV of MPF funds as at December 2019 (***Table 1***).

5. All MPF investment return figures are net of fees and charges.

Table 1 Net Asset Value and Number of MPF Funds by Fund Type (31 Dec 2019)

Fund Type	NAV		No. of Funds (%)
	$ million	% of Total	
Equity Fund	390,796	40%	157 (36%)
Mixed Assets Fund	353,123	36%	188 (43%)
Bond Fund	40,051	4%	38 (9%)
Guaranteed Fund	74,874	8%	19 (4%)
Money Market Fund – MPF Conservative Fund	106,194	11%	30 (7%)
Money Market Fund – Other than MPF Conservative Fund	4,416	<0.5%	9 (2%)
Total*	**969,455**	**100%**	**441 (100%)**

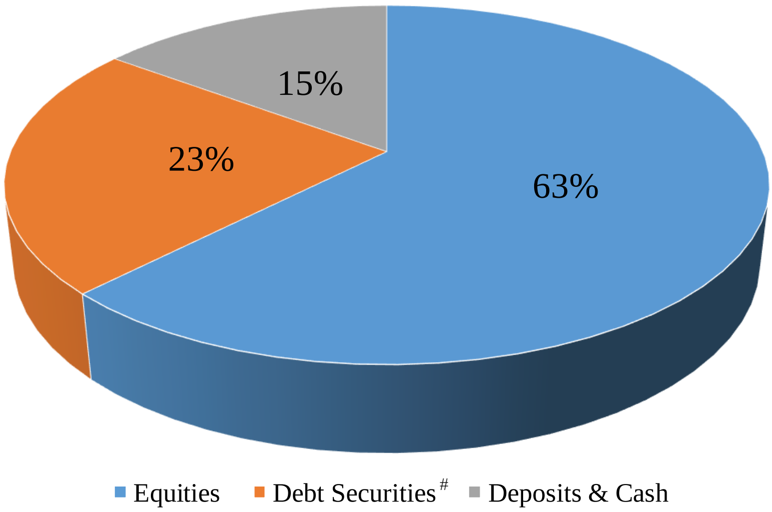
Note: (*) Figures may not sum up to the total or 100% due to rounding.
Source: MPFA

Section 2 – Investment Performance of the MPF System as a Whole

6. Since assets of MPF funds are invested in financial instruments, investment performance of the MPF System hinges on the conditions of the underlying investment markets (e.g. equity, bond and money markets) of MPF funds. Hence, scheme members' fund choice directly affects the overall return of the MPF System. As an outcome of the collective choice of scheme members, the MPF System has significant exposure to equities, mainly through scheme members' investments in equity funds and mixed assets funds.

7. In terms of asset allocation, equities accounted for 63% of the aggregate NAV of MPF funds as at September 2019 (***Chart 1***).[3]

Chart 1 Asset Allocation of MPF Funds by Asset Class* (30 Sep 2019)



Notes: (#) Includes convertible debt securities, bonds and bills, etc.
(*) Figures may not sum up to 100% due to rounding.

Source: MPFA

8. The global economy in 2019 continued to be characterized by the China-US trade tensions and a lack of growth momentum in the Eurozone. According to the World Bank, the estimated global economic growth in 2019 was 2.4%, the slowest growth pace since the global financial crisis in 2008.[4] Yet, against this background, the MPF System recorded a return of 12.2% (net of fees and charges) in 2019 (***Chart 2***).[5]

9. ***Chart 2*** shows the yearly returns of the MPF System from December 2000 to December 2019. Over the past 19 years, the MPF System registered positive returns in 13 years and negative returns in six years. Notably, setbacks were often followed by vibrant rebounds

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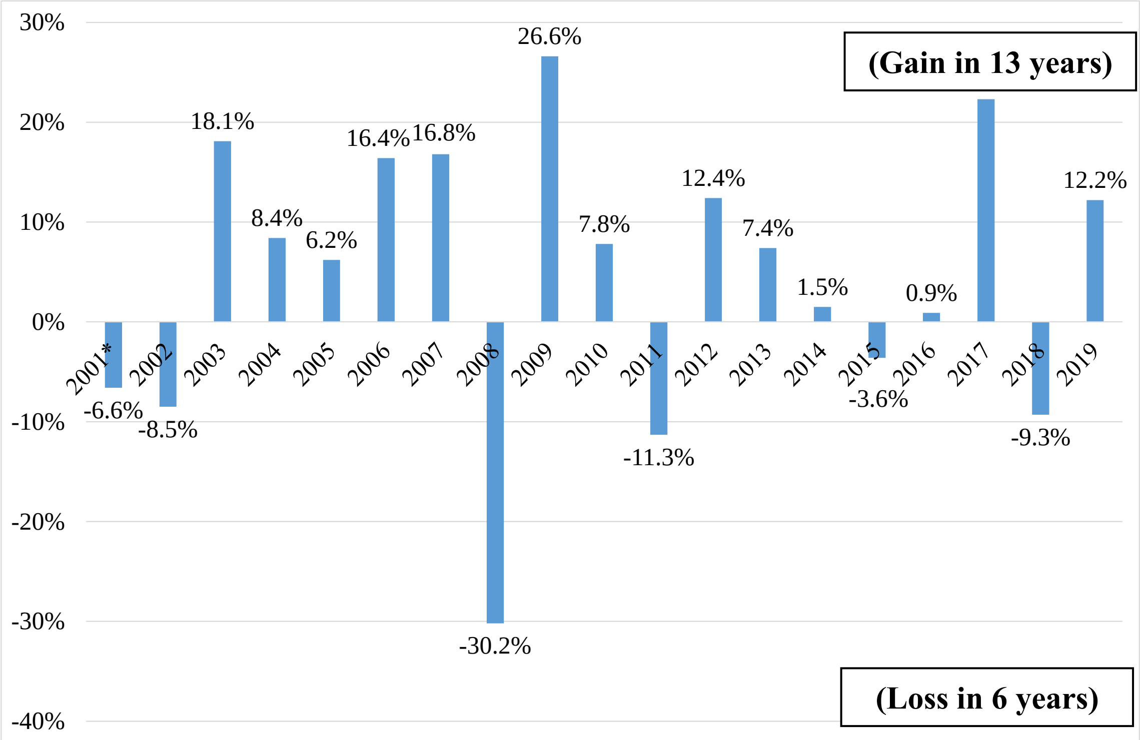
[3] The proportion of different asset classes in the aggregate NAV of MPF funds may also be affected by their respective performances. For example, a downturn of equity markets may lead to a lower proportion of equities in the aggregate NAV of MPF funds.

[4] The World Bank. (2020). *Global Economic Prospects.* Washington, DC: World Bank Group.

[5] The return of the MPF System is calculated by way of the internal rate of return (IRR), a method commonly known as dollar-weighted return. The IRR method, which takes into account the amount and timing of contributions made into and benefits withdrawn from the MPF System, is used as it better reflects the features of cash inflow and outflow of the MPF System. The annualized IRR is calculated by raising the monthly IRR to the power of 12. For details on the calculation method of the annualized IRR, please refer to Appendix A.

thereafter. For instance, negative returns in 2001 and 2002 were followed by a solid recovery in 2003. Such pattern repeated in 2008 and 2009, in 2011 and 2012, and in 2018 and 2019.

Chart 2 Investment Return of MPF System since its Inception by Calendar Year



Notes: (*) Refers to the 13-month period from 1 December 2000 to 31 December 2001.
The investment returns of the MPF System presented in the report are calculated by way of the internal rate of return. For details of the calculation methodology, please refer to Appendix A.
Return figures are net of fees and charges.

Source: *MPFA*

10. While the returns in individual year had been volatile, ranging from -30.2% to 26.6%, over the 19-year period, the MPF System was able to register a positive annualized return of 4.1% (***Table 2***) since its inception in December 2000, demonstrating its ability to add value to scheme members' contributions.

Table 2 Annualized Return of the MPF System by Period (31 Dec 2019)

Past 1 Year	Past 5 Years	Past 10 Years	Since 1 Dec 2000
12.2%	4.2%	3.8%	4.1%

Source: *MPFA*

Section 3 – Investment Performance and Risk Levels of MPF Funds

Investment Performance of Different Fund Types

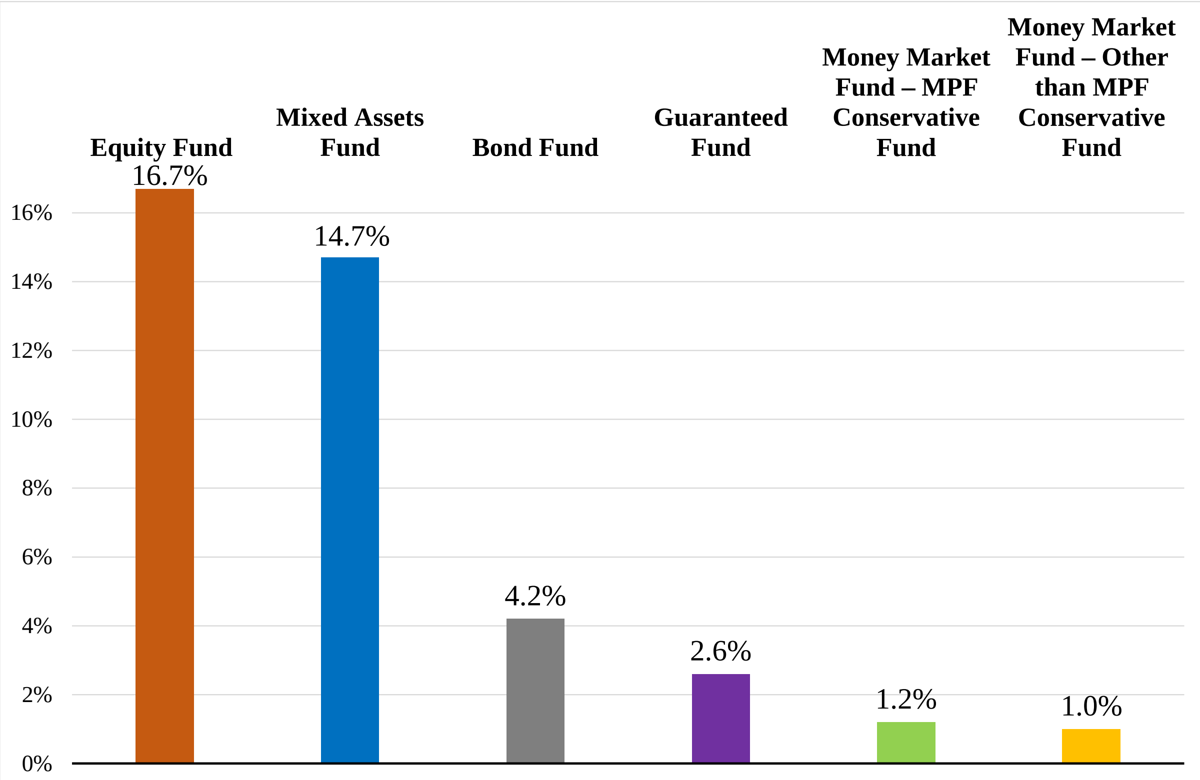
11. Under the MPF System, approved trustees operate MPF schemes. As at December 2019, there were a total of 30 MPF schemes offering 441 MPF funds.

12. MPF funds are categorized into six fund types, namely equity fund, mixed assets fund, bond fund, guaranteed fund, money market fund – MPF conservative fund, and money market fund – other than MPF conservative fund. Different fund types are often associated with different investment objectives, investment instruments and risk levels.

13. All six fund types recorded positive returns in 2019, ranging from 1.0% to 16.7%.[6] Owing to a relatively robust equity and bond markets, equity funds (16.7%), mixed assets funds (14.7%) and bond funds (4.2%) had better performance in 2019.

14. ***Chart 3*** shows the annualized returns of different fund types of MPF funds in 2019. All return figures are net of fees and charges.

Chart 3 Investment Returns of MPF Funds by Fund Type in 2019



Source: MPFA

[6] In view of the absence of available data on contributions made into and benefits withdrawn from MPF funds, the returns of different types of MPF funds were calculated by way of the time-weighted method instead of the dollar-weighted method. The time-weighted method takes into account the unit price and asset size of each constituent fund at different points in time. For details of the calculation methodology, please refer to Appendix A.

15. ***Table 3*** shows the investment performance of different fund types over varying investment horizon. For instance, the annualized return of equity funds since December 2000 was 5.0%, while that of money market fund – other than MPF conservative funds was 0.6%.

Table 3 Investment Returns of MPF Funds by Fund Type and Period (31 Dec 2019)

Fund Type	Annualized Return				Cumulative Return Since 1 Dec 2000
	Past 1 Year	Past 5 Years	Past 10 Years	Since 1 Dec 2000	
Equity Fund	16.7%	5.5%	4.7%	5.0%	151.5%
Mixed Assets Fund	14.7%	4.3%	4.2%	4.3%	123.7%
Bond Fund	4.2%	1.1%	1.5%	2.6%	63.7%
Guaranteed Fund	2.6%	0.7%	0.9%	1.2%	24.8%
Money Market Fund – MPF Conservative Fund	1.2%	0.4%	0.2%	0.7%	15.0%
Money Market Fund – Other than MPF Conservative Fund	1.0%	0.4%	0.2%	0.6%	11.2%

Source: MPFA

Risk Levels of Different Fund Types

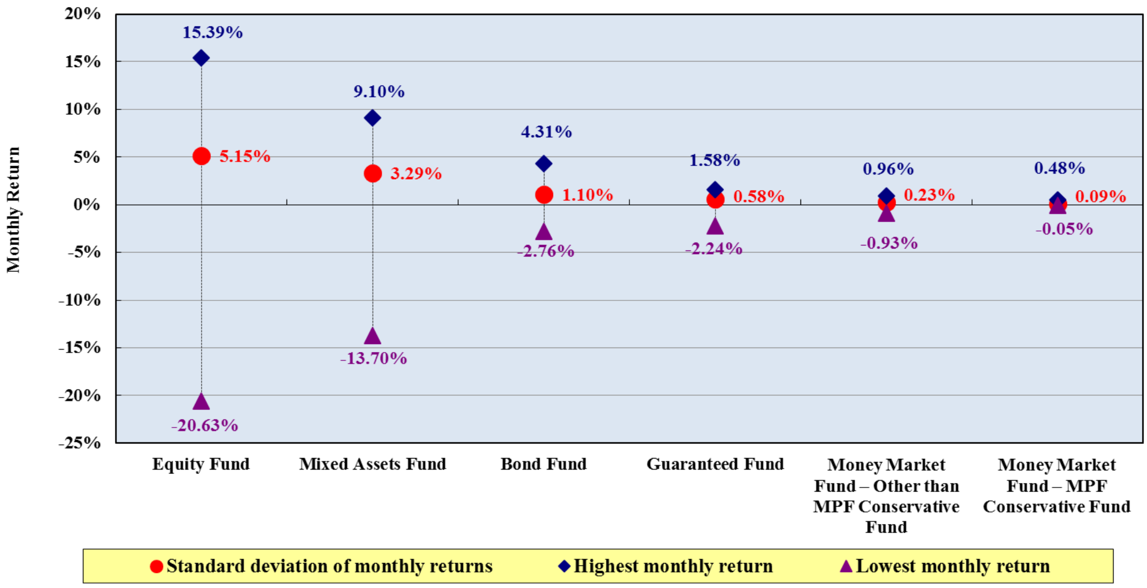
16. While the return rate itself is an important indicator for fund performance, it is by no means the only consideration when making investment decisions. Return figures should always be considered in conjunction with the associated risk level.

17. Risk can be measured and expressed in different ways. One way of expressing risk is in terms of volatility, as measured by the standard deviation of monthly returns. Generally speaking, the higher the standard deviation, the higher the volatility, which can be considered as a higher level of risk. An alternative way of expressing risk is by measuring the range of monthly returns generated over a period of time. In the current context, a fund type with a wider return range (i.e. rising and falling substantially over a certain period) denotes a higher level of risk. On the contrary, a fund type with steadier returns implies a lower level of risk.

18. From the perspective of standard deviation, equity funds had the highest level of risk among the six types of MPF funds from December 2000 to December 2019, followed by mixed assets funds, bond funds, guaranteed funds, money market fund – other than MPF conservative funds, and money market fund – MPF conservative funds (***Chart 4***).

19. From the perspective of range of monthly returns, the same results can be observed. Again, equity funds had the highest level of risk with a range as wide as 36.02 percentage points (monthly returns ranging from -20.63% to 15.39%) from December 2000 to December 2019, while money market fund – MPF conservative funds had a narrow range of 0.53 percentage point (monthly returns ranging from -0.05% to 0.48%).

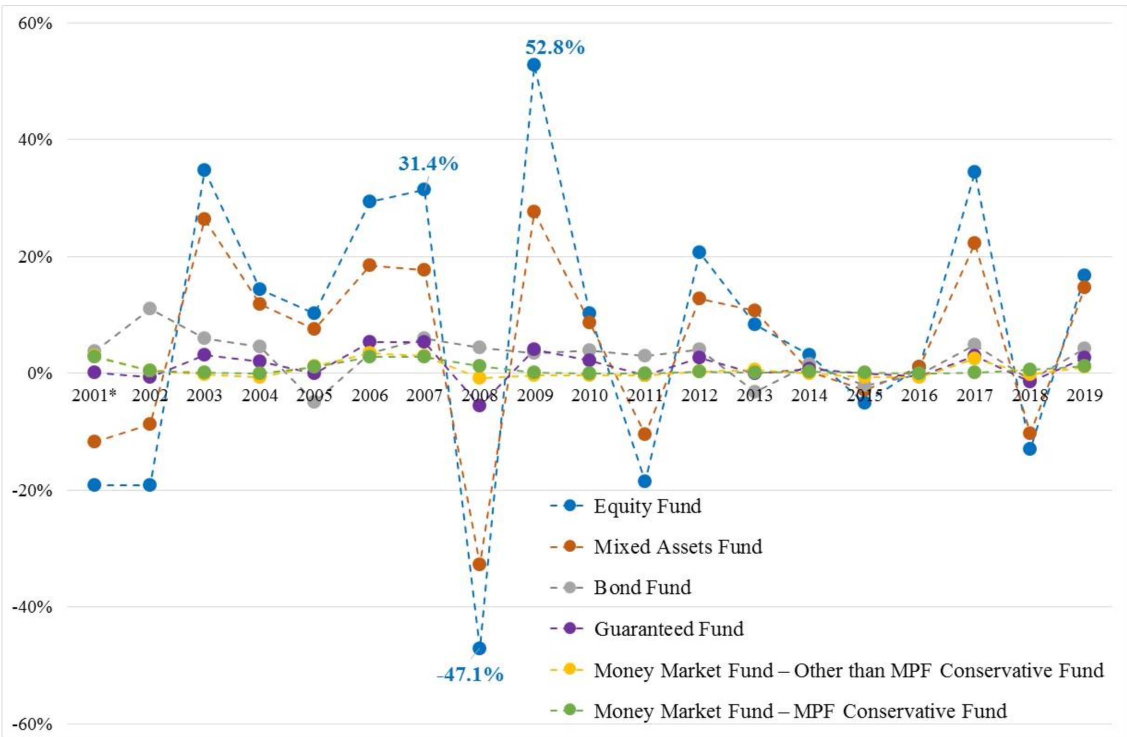
Chart 4 Standard Deviation, Highest and Lowest Monthly Returns of MPF Funds (Dec 2000 – Dec 2019)



Source: *MPFA*

20. As shown in ***Chart 5***, the risk level of each fund type can also be demonstrated by the magnitude of change in their yearly investment returns. For instance, equity funds recorded a promising return of 31.4% in 2007, then a slump in 2008 (-47.1%), followed by a strong recovery in 2009 (+52.8%). In comparison, the yearly returns of money market fund – MPF conservative funds hovered between 0.01% and 2.84% from 2001 to 2019.

Chart 5 Investment Returns by Fund Type and Calendar Year



Notes: The dotted line between two observations is only used to show the direction of yearly changes in return and does not correspond to the actual return rates over the period.

Source: MPFA

Box 1 – Tradeoff between Risk and Return in a Low Interest Rate Environment

- When reviewing their MPF investment portfolios, scheme members often draw comparisons among different funds to facilitate their investment decisions. In addition to focusing on the respective returns of funds, scheme members should also consider other key factors including investment objective (e.g. asset class, geographical market), fees and charges level, and equally important, the risk level of the fund.

- In finance and investment, the relationship between risk and return is positive – the higher the potential return of an investment in the long run, the higher the risk. This relationship also applies to MPF funds. Scheme members may enjoy higher potential returns by investing in MPF funds with higher risk levels, but meanwhile have to run the risk of suffering greater losses in the event of market downfall.

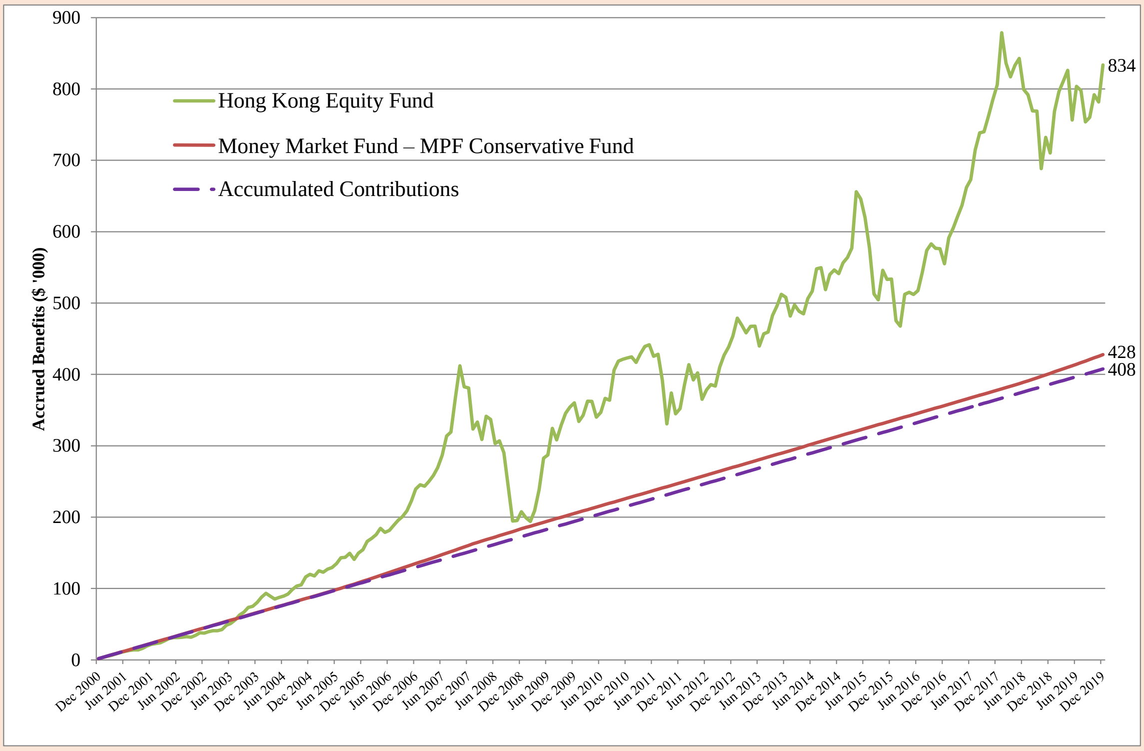
- The risk-return tradeoff is further complicated in the prevailing low interest rate environment observed in most developed economies. A low interest rate environment is especially unfavourable for scheme members who prefer lower risk investments. For instance, scheme members who have continuously invested in the money market fund – MPF conservative funds since the inception of the MPF System only enjoy an annualized return of 0.7%, which is substantially lower than that of growth funds (e.g. Hong Kong equity funds:[7] 6.5%) over the same period of time. It is also lower than the annualized inflation rate over the period (1.9%).

- The following hypothetical example illustrates the difference of accrued benefits between investing in a money market fund – MPF conservative fund and a Hong Kong equity fund (an example of a growth fund) since the inception of the MPF System in December 2000. With both members earning identical level of income (set at the median income level for illustrative purpose), the accrued benefits of investing in Hong Kong equity fund ($834,000) exceeds those of investing in a money market fund – MPF conservative fund ($428,000) by around $406,000 or 95% over a 19-year period.

- Despite the considerable difference in returns, it should be pointed out that the fluctuations of the accrued benefits invested in the Hong Kong equity fund were much more pronounced than those of the money market fund – MPF conservative fund. For instance, during the period of October 2007 to February 2009, the accrued benefits of the investor in the Hong Kong equity fund dropped by around 53%. By comparison, the accrued benefits of the money market fund – MPF conservative fund maintained a steady growth throughout the 19-year period. Against the tradeoff between risk and return, scheme members should ensure that their investment portfolios (i.e. fund choices) align with their risk tolerance level.

[7] Hong Kong equity funds in this section exclude funds under the sub-group “Hong Kong Equity Fund (Index Tracking)”.

Comparing Accrued Benefits of Investing in Money Market fund – MPF Conservative Fund and Hong Kong Equity Fund – A Hypothetical Example



Key assumptions:

i. Commencement of monthly contribution: December 2000

ii. For illustrative purpose, both members are assumed to be earning the median income (i.e. $17,800 per month according to the latest statistic as at September 2019). Monthly contribution amounts are therefore $1,780 ($890 from member and $890 from employer).

iii. Rate of return: average monthly return of the particular fund types during the period

iv. Total amount of contribution over 19 years and one month: $408,000

Disclaimer: The example (including all values and figures) in Box 1 are hypothetical and intended for illustration purposes only. All values and figures indicated in Box 1 do not represent, promise or guarantee the actual amount of the MPF accrued benefits a member will receive. None of these examples shall be taken as recommendation or advice on how a member's investment choice or strategy should be.

Section 4 – Further Analysis of the Investment Performance of Different Types of MPF Funds

Equity Funds

21. Equity funds could be further categorized into different sub-groups with respect to their allocation of assets by geographical region of the funds (***Table 4***). Among all the sub-groups, United States equity funds (27.2%) generated the highest return in 2019.

22. The picture is different when a longer time frame is considered. Since the inception of the MPF System, Asia equity funds (6.7%), Hong Kong equity funds (6.5%) and Hong Kong equity funds (index tracking) (5.4%) posted relatively higher annualized returns than those of global equity funds (3.5%), United States equity funds (3.4%), Europe equity funds (1.6%) and Japan equity funds (1.6%).

Table 4 Investment Returns of Equity Funds by Sub-Group and Period (31 Dec 2019)

Sub-Group	Annualized Return				Cumulative Return Since 1 Dec 2000
	Past 1 Year	Past 5 Years	Past 10 Years	Since 1 Dec 2000	
United States Equity Fund	27.2%	8.3%	10.3%	3.4%	89.2%
Global Equity Fund	22.3%	5.9%	6.6%	3.5%	92.5%
Europe Equity Fund	22.1%	4.1%	4.1%	1.6%	36.0%
Greater China Equity Fund	21.0%	5.6%	4.2%	#	#
Japan Equity Fund	19.6%	6.3%	5.6%	1.6%	35.6%
China Equity Fund	17.5%	4.8%	3.5%	#	#
Asia Equity Fund	15.5%	4.8%	4.1%	6.7%	246.3%
Hong Kong Equity Fund*	14.2%	5.5%	4.3%	6.5%	234.2%
Hong Kong Equity Fund (Index Tracking)	11.9%	6.3%	5.0%	5.4%	173.1%

Notes: (#) Data not available as no equity funds were classified as Greater China equity funds and China equity funds as at 1 December 2000.

(*) The sub-group "Hong Kong Equity Fund" excludes funds under the sub-group "Hong Kong Equity Fund (Index Tracking)".

Source: MPFA

Mixed Assets Funds

23. Mixed assets funds could be further classified based on their equity content. The sub-groups of mixed assets funds include:

- Mixed assets funds (81% to 100% equity)
- Mixed assets funds (61% to 80% equity)
- Mixed assets funds (41% to 60% equity)
- Mixed assets funds (21% to 40% equity)

24. As mixed assets funds generally invest in equities and bonds, their investment returns depend on the performance of these two asset classes. While bond funds generally fared well in 2019, their performance was put in the shade by equity funds owing to the buoyant equity markets, particularly in the US. Therefore, mixed assets funds with higher equity content enjoyed relatively stronger returns in 2019. While mixed asset funds with higher equity content (81% to 100%) recorded a return of 17.9%, mixed asset funds with lower equity content (21% to 40% equity) registered a return of 8.7% only (***Table 5***).

25. In respect of the annualized return since the inception of the MPF System, both mixed assets funds (81% to 100% equity) and mixed assets funds (61% to 80% equity) posted a return of 4.4%, the highest among all the sub-groups.

Table 5 Investment Returns of Mixed Assets Funds by Sub-Group and Period (31 Dec 2019)

Sub-Group	Annualized Return				Cumulative Return Since 1 Dec 2000
	Past 1 Year	Past 5 Years	Past 10 Years	Since 1 Dec 2000	
Mixed Assets Fund (81% to 100% Equity)	17.9%	5.2%	4.8%	4.4%	127.5%
Mixed Assets Fund (61% to 80% Equity)	14.6%	4.4%	4.4%	4.4%	128.3%
Mixed Assets Fund (41% to 60% Equity)	12.1%	3.5%	3.5%	4.2%	119.8%
Mixed Assets Fund (21% to 40% Equity)	8.7%	2.4%	2.4%	3.6%	96.8%

Source: MPFA

Bond Funds

26. Bond funds could be further categorized into different sub-groups with respect to their allocation of assets by geographical region/currency exposure of the funds. In 2019, the overall return of bond funds was 4.2%. Asia bond funds and global bond funds performed slightly better than other sub-groups, generating returns of 5.8% and 4.6% respectively in 2019. As for Hong Kong dollar bond funds and RMB bond funds, their respective returns were 3.4% and 2.6% over the same period (***Table 6***).

Table 6 Investment Returns of Bond Funds by Sub-Group and Period (31 Dec 2019)

Sub-Group	Annualized Return				Cumulative Return Since 1 Dec 2000
	Past 1 Year	Past 5 Years	Past 10 Years	Since 1 Dec 2000	
Asia Bond Fund	5.8%	1.7%	#	#	#
Global Bond Fund	4.6%	1.0%	1.4%	3.0%	75.5%
Hong Kong Dollar Bond Fund	3.4%	1.5%	1.6%	2.0%	46.4%
RMB Bond Fund	2.6%	0.6%	#	#	#

Note: (#) Data not available as bond funds under these sub-groups were launched after the start date of the relevant reporting periods.

Source: MPFA

Constituent Funds under the Default Investment Strategy (DIS)

27. Launched on 1 April 2017, the DIS provides scheme members with a ready-made investment solution which seeks to balance long-term risks and returns. There are three major features of the DIS:

    i. Automatic reduction of investment risk according to scheme members' age;

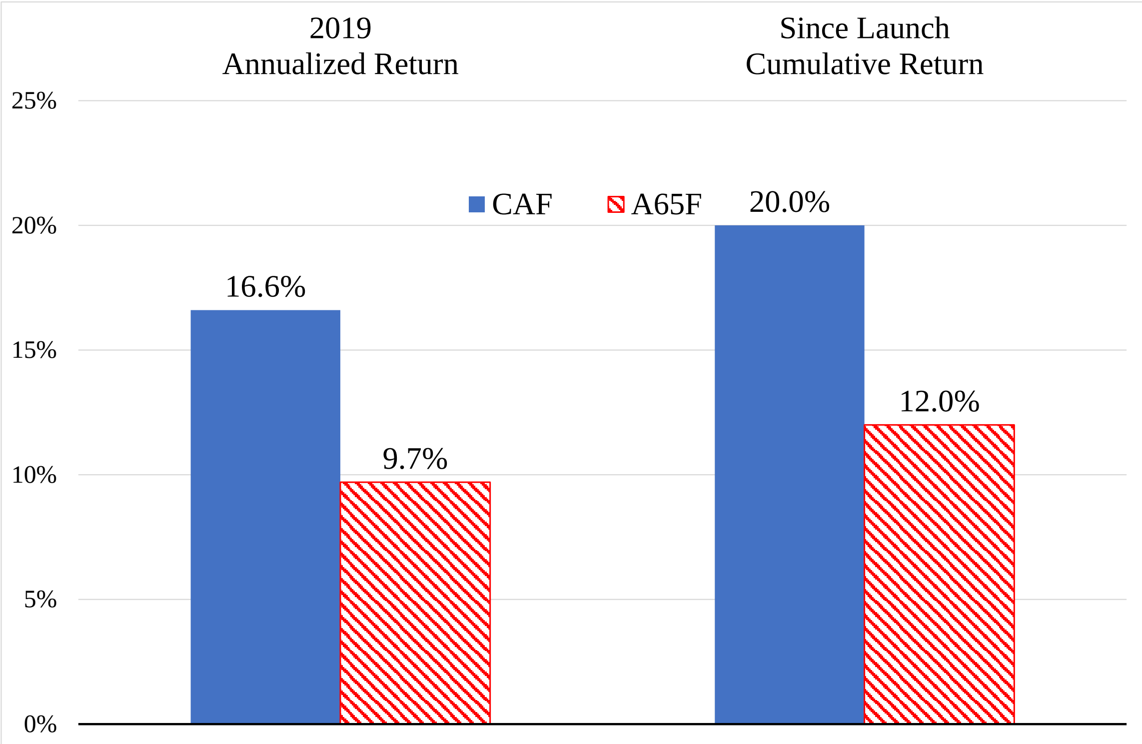
    ii. Fee caps; and

    iii. Globally diversified investment.

28. Offered in each MPF scheme, the DIS comprises two MPF mixed assets funds: the Core Accumulation Fund (CAF) and the Age 65 Plus Fund (A65F).

    - CAF: about 60% of the assets of the fund is invested in higher risk assets (mainly global equities), and the rest in lower risk assets (mainly global bonds).
    - A65F: about 20% of the assets of the fund is invested in higher risk assets (mainly global equities), and the rest in lower risk assets (mainly global bonds).

Chart 6 Investment Returns of CAF and A65F by Period (31 Dec 2019)



Source: MPFA

29. In 2019, the CAF and A65F posted returns of 16.6% and 9.7% respectively. Since their launch in April 2017, the CAF and A65F registered cumulative returns of 20.0% and 12.0% respectively (***Chart 6***). As at December 2019, around 2.2 million accounts (about 22% of total accounts) invested in the DIS or CAF/A65F with the total amount of $49.4 billion (accounting for 5.1% of total MPF assets). For over 60% of these accounts, the scheme members proactively chose to invest through the DIS or CAF/A65F.

Box 2 – Fund Choice of Different Age Cohorts of Scheme Members

- According to a study of the MPFA[8], while scheme members as a whole gradually reduced their investment in equity funds on reaching their 40s, they continued to prefer funds with higher growth potentials (i.e. equity funds and mixed assets funds), albeit the higher level of investment risk. To illustrate this observation, for the age group of 60-64, equity funds and mixed assets funds still accounted for 27% and 41% of their total MPF assets respectively.

Distribution of Accrued Benefits by Age Group and Fund Type

Age Group	Fund Type						Total
	Equity Fund	Mixed Assets Fund	Money Market Fund - MPF Conservative Fund	Guaranteed Fund	Bond Fund	Money Market Fund - Other than MPF Conservative Fund	
≤19	22%	58%	10%	6%	4%	1%	**100%**
20-24	34%	39%	13%	8%	6%	1%	**100%**
25-29	41%	33%	12%	7%	6%	1%	**100%**
30-34	45%	32%	11%	7%	5%	1%	**100%**
35-39	45%	32%	11%	7%	4%	#	**100%**
40-44	44%	34%	11%	7%	4%	#	**100%**
45-49	41%	35%	11%	8%	4%	1%	**100%**
50-54	37%	38%	12%	9%	3%	1%	**100%**
55-59	32%	40%	14%	10%	3%	1%	**100%**
60-64	27%	41%	17%	12%	3%	#	**100%**
≥65	26%	44%	13%	14%	3%	1%	**100%**
Overall	39%	36%	12%	9%	4%	1%	**100%**

Notes:
(1) # denotes less than 0.5%.
(2) Figures may not sum up to 100% due to rounding.
(3) Data as at December 2018
(4) Source: MPFA

- Saving for retirement is a long-term process, striding through different life stages. Members should proactively monitor and manage their investment portfolios and may adjust them to match with their own needs and risk tolerance level at different stages of their work-life. Generally speaking, the proportion of conservative assets in the retirement investment portfolios should be higher for members who are approaching their retirement age. In this regard, in a bid to seek a balance of long-term risks and returns, the DIS adopts an investment approach which automatically reduces risk over time as the member gets closer to age 65. Scheme members who do not know how to manage or do not have time to manage their MPF investment may consider using the DIS for their MPF investment.

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[8] MPFA. (2019). *Statistical Analysis of Accrued Benefits Held by Scheme Members of Mandatory Provident Fund Schemes.* Hong Kong: MPFA. Retrieved from http://www.mpfa.org.hk/eng/information_centre/statistics/MPF_Statistical_Report/files/Statistical_Analysis_of_Accrued_Benefits_Held_by_Scheme_Members_2019.pdf

Section 5 – Concluding Remarks

MPF as a Long-Term Investment

30. While the uncertainties of the global economy over the past few years may have had a negative impact on the investment performance, scheme members should always remember that MPF is a long-term investment which spans across their entire working life. During the period, the investment performance of the MPF System will be subject to different degrees of market fluctuations. Scheme members should not be overly concerned with the short-term volatilities. They should instead regularly review their MPF investment to ensure that their investment portfolios (i.e. fund choices) align with their personal circumstances (e.g. risk tolerance level).

Avoid Timing the Market

31. Despite all the uncertainties surrounding the global economy, the financial markets in general had been buoyant in 2019. However, it is impossible for investors to make accurate predictions of market conditions on a consistent basis, particularly when markets are volatile where many investors may actually end up buying high and selling low. Market timing is therefore not generally advisable.

The Tradeoff between Return and Risk

32. Same as most financial instruments, MPF funds have generally exhibited a positive relationship between risk and return – the higher the potential return in the long run, the higher the risk. Thus, scheme members, when making fund choices, should consider their respective risk tolerance level rather than base their investment decisions on solely the return figures. In addition, scheme members should also note that historical returns of the MPF funds are not firm indicators for future performances.

33. In this regard, when comparing MPF funds, scheme members should not make reference to their return performance without considering other key factors including investment objective (e.g. asset class, geographical market), fees and charges level, and more importantly, the risk level of the fund. For instance, mixed assets funds could be categorized into different sub-groups based on their equity content exposure. Those with high equity content is normally associated with higher risk level as well as higher potential return. Scheme members should take into account all relevant factors in order to make meaningful comparison of MPF funds.

Appendix A: Methodology – Calculation of Return

Return of MPF System

The return of the MPF System is calculated by way of the **internal rate of return** (IRR), a method commonly known as dollar-weighted return. The IRR method, which takes into account the amount and timing of contributions into and benefits withdrawn from the MPF System, is used for the calculation of the return of the MPF System as it better reflects the feature of cash inflow and outflow of the MPF System.

The monthly internal rate of return of the MPF System (MIRR) is the discount rate that equates the net present value of all the net monthly contributions made to the MPF System within the review period to the net present value of the accrued benefits at the end of the period.

$$NAV_B + \sum_{i=0}^{n-1} \frac{CF_i}{(1+MIRR)^i} = \frac{NAV_E}{(1+MIRR)^n}$$

Where NAV_B : Net asset values of the MPF System at the beginning of the period
n : Total number of months
CF_i : Net monthly contributions made to the MPF System, i.e. sum of contributions received and benefits transferred from other schemes minus sum of benefits paid out from the MPF System in month i
$MIRR$: Monthly Internal Rate of Return of the period
NAV_E : Net asset values of the MPF System at the end of the period

Assumption: All the net monthly contributions made to the MPF System occurred at the beginning of the month.

The annualized dollar-weighted return for the MPF System is calculated by raising the MIRR to the power of 12:

Annualized Internal Rate of Return = $(1+MIRR)^{12} - 1$

Return of Different Types of MPF Funds

The returns of different types of MPF funds are calculated by way of the time-weighted method. The time-weighted method takes into account the unit price and asset size of each MPF fund at different points in time. Unlike the IRR method, it does not capture the impact of the contributions into and benefits withdrawn from MPF funds.

The **investment return** (IR) of an MPF fund for month *t* is calculated by dividing the difference between the unit price of the MPF fund at the end of month *t* and the unit price of the MPF fund at the end of the previous month *t-1* by the unit price of the MPF fund at the end of the previous month *t-1*.

$$IR_t = \frac{P_t - P_{t-1}}{P_{t-1}}$$

where

IR_t : Return of the MPF fund for month t
P_{t-1} : Unit price of the MPF fund at the end of month $t-1$
P_t : Unit price of the MPF fund at the end of month t

The **NAV-weighted monthly return** of MPF funds by type is calculated by dividing the sum of the product of the return of each MPF fund and its net asset value of the same type for a specific month by the net asset value of all of the MPF funds of the same type of the same period.

$$IR(type\ A)_t = \frac{\sum_{i=1}^{n(typeA)} NAV_{(t,i)} \times IR_{(t,i)}}{\sum_{i=1}^{n(typeA)} NAV_{(t,i)}}$$

where
$n(type\ A)$: Number of MPF funds grouped under *type A*
$NAV(t,i)$: Net asset value of the i^{th} MPF fund grouped under *type A* at the beginning of month t
$IR_{(t,i)}$: Return of the i^{th} MPF fund grouped under *type A* of month t

The **cumulative return** (CIR) of MPF funds by type for any period (totally N months) is calculated by the geometric link of the NAV-weighted monthly returns of the MPF funds within the same type for the period.

$$CIR(type\ A) = \prod_{t=1}^{N} (1 + IR(type\ A)_t) - 1$$

where

$IR(type\ A)$: NAV-weighted monthly return of the MPF funds grouped under *type A*
N : Total number of months

The **annualized return** (AIR) of MPF funds by type for any period is calculated by adjusting, on an annualized basis, the cumulative return of MPF funds within that specific type for the period.

$$AIR\ (type\ A) = \sqrt[12/N]{1 + CIR(type\ A)} - 1$$

where
$AIR(type\ A)$: Annualized return of the MPF funds grouped under *type A* for the period
$CIR(type\ A)$: Cumulative return of the MPF funds grouped under type A for the period
N : Total number of months

Adjustments

Due to data limitations, the following adjustments were made in deriving the returns of certain money market fund – MPF conservative funds and guaranteed funds:

(a) Money Market Fund – MPF Conservative Funds

During the review period, several money market fund – MPF conservative funds charged fees via deduction of units. The return figures for these MPF conservative funds had been adjusted to eliminate, as far as possible, any errors caused by charging fees via deduction of units.

(b) Guaranteed Funds

For those guaranteed funds without a unit price, the declared rates of return were used as the returns for the funds.

Appendix B: Features and Categorization of Different Types of MPF Funds

General Features of Different Types of MPF Funds

Fund Type	Investment Objective	Investment Instrument	Risk Level	Major Risk	Points to Note
Equity Fund	To achieve capital appreciation and a return higher than inflation over the long term	Stocks	Relatively high	Stock market volatility, exchange rate fluctuation and overall conditions of listed companies	There are generally three types of equity funds: single market, regional market or global market. They invest mainly in stocks listed on stock exchanges approved by the MPFA.
Mixed Assets Fund	To achieve capital appreciation over the long term through investing in a combination of stocks and bonds with risk profile depending on the proportion of stocks and bonds invested by the fund	Stocks and bonds	Medium to high	Stock market volatility, interest rate fluctuation, exchange rate fluctuation, bond credit ratings and credit risk	Different mixed assets funds have different proportions of stocks and bonds. In general, greater proportion of stocks is associated with higher risk.
Bond Fund	To earn stable income from interest and coupon rate and make profits from bond trading	Bonds	Low to medium	Fluctuations in interest rates, exchange rates, bond credit ratings and credit risk	The bonds must meet the minimum credit rating or listing requirements prescribed by the MPFA.
Guaranteed Fund	To provide a guarantee on the capital invested, or to achieve a guaranteed rate of return	Bonds, stocks or short-term interest-bearing money market instruments	Relatively low (but also depends on the guarantee conditions)	The guaranteed rate of return may be modified with prior notice. If the assets of the guaranteed fund are invested in an insurance policy, the fund may be exposed to the credit risk of the insurance policy issuer.	A guaranteed fund provides some form of guarantee to scheme members investing in the fund, usually on the capital invested or on a minimum rate of return. To qualify for the guarantee, all guarantee conditions such as minimum investment period and withdrawal requirements must be met.

Fund Type	Investment Objective	Investment Instrument	Risk Level	Major Risk	Points to Note
Money Market Fund – MPF Conservative Fund	To earn a rate of return similar to the Hong Kong dollar savings rate	Short-term bank deposits and short-term bonds	Relatively low	Fluctuation in interest rates	The law requires that each MPF scheme offers at a minimum an MPF conservative fund. An MPF conservative fund is a low-risk fund, but its return may not be able to beat inflation and may not even be positive. Administrative expenses can only be deducted from an MPF Conservative Fund when the returns of the fund for the month exceed the monthly Prescribed Savings Rate ("PSR") published by MPFA. If the return of an MPF Conservative Fund exceeds the PSR in any one of the following 12 months, trustees can recoup uncollected administrative expenses to the extent of the excess return.
Money Market Fund – Other than MPF Conservative Fund	To earn a rate of return comparatively higher than that of bank deposits or short-term certificates of deposit	Short-term interest bearing money market instruments such as short-term bank deposits, government bills or commercial papers	Relatively low	Fluctuations in interest rates and exchange rates	A money market fund is a low risk fund, but its return may not be able to beat inflation or may not even be positive.