

# Investment Performance of the MPF System in 2017

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February 2018



MANDATORY PROVIDENT FUND  
SCHEMES AUTHORITY

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Published by  
**Mandatory Provident Fund Schemes Authority**

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## **Table of Contents**

<b>EXECUTIVE SUMMARY .....</b>	<b>3</b>
<b>Section 1 – Introduction .....</b>	<b>7</b>
<b>Section 2 – Investment Performance of the MPF System as a Whole.....</b>	<b>9</b>
<b>Section 3 – Investment Performance of MPF Funds .....</b>	<b>11</b>
<b>Section 4 – Further Analysis of the Investment Performance of Different Types of MPF Funds.....</b>	<b>14</b>
<b>Section 5 – Concluding Remarks.....</b>	<b>21</b>
<b>Appendix A: Methodology – Calculation of Return .....</b>	<b>24</b>
<b>Appendix B: Features and Categorization of Different Types of MPF Funds .....</b>	<b>27</b>

## EXECUTIVE SUMMARY

1. This report is prepared to review the investment performance of the Mandatory Provident Fund (MPF) System in 2017, in a bid to facilitate MPF scheme members (members) in gaining a better and objective understanding of the investment performance of the MPF System and different fund types of MPF constituent funds (MPF funds).

### KEY FINDINGS

#### Performance of the MPF System as a Whole

2. The overall return of the MPF System mirrors members' collective choices and market conditions. Members' fund choices, putting together, have a substantial impact on the overall asset allocation of the MPF System. A salient characteristic of members' collective choices is the dominance of Hong Kong and other Asian markets (73% as at September 2017) in the overall allocation of MPF assets (including equities, debt securities and currencies). The ebb and flow of these financial markets weigh heavily on the investment performance of the MPF System.
3. The MPF System is also characterized by a relatively high exposure to equities (69% of total assets as at September 2017), the performance of which has a great impact on the overall return of the MPF System. In this regard, an upturn of equity markets in 2017 helped boost the overall investment performance of the MPF System.
4. In 2017, the MPF System recorded a return of 22.3% after fees and charges<sup>1</sup>, the highest yearly return since 2010<sup>2</sup> and the second highest since the inception of the MPF System.
5. Up to December 2017, the MPF System generated an annualized return of 4.8% since its inception in December 2000.
6. In dollar terms, the total assets of the MPF System hit a record high of \$843.51 billion, including \$576.12 billion (68%) in net contributions and \$267.39 billion (32%) in investment returns net of fees and charges.
7. For 2017 alone, the total assets of the MPF System grew by \$197.17 billion (31%), the highest yearly growth in dollar terms since its inception.

**Yearly Return of the  
MPF System  
(2017)**  
22.3%

**Annualized Return of  
the MPF System  
(since Inception)**  
4.8%

**Total Assets**  
\$843.5 billion  
**Net Investment Return**  
\$267.4 billion

<sup>1</sup> The return of the MPF System was calculated by way of the internal rate of return ("IRR"), a method commonly known as the dollar-weighted return. The IRR method takes into account the amount and timing of contributions made into and benefits withdrawn from the MPF System. For details of the calculation methodology, please refer to Appendix A.

<sup>2</sup> In 2009, the yearly return of the MPF System was 26.6%.

## Performance of Different Types of MPF Funds

8. On the whole, each of the 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) yielded positive returns.
9. As a group, equity funds and mixed assets funds achieved relatively better performance, producing yearly returns of 34.4% and 22.3% respectively in 2017.<sup>3</sup>
10. For equity funds, the sub-groups of Hong Kong equity funds (40.7%), China equity funds (40.3%) and Hong Kong equity funds (index tracking) (39.3%) yielded higher returns in 2017.
11. For mixed assets funds, those with higher equity content posted higher levels of return in 2017, mainly due to the robust equity markets. While mixed assets funds (81% to 100% equity) reported a return of 27.9% in 2017, mixed assets funds (21% to 40% equity) recorded a return of 12.6%.
12. At the other end of the spectrum were bond funds, guaranteed funds, money market fund – other than MPF conservative funds, and money market fund – MPF conservative funds.
13. The overall return of bond funds was 4.8% in 2017. Relatively speaking, Asia bond funds performed better than other sub-groups of bond funds, by generating a return of 7.5% in 2017. While RMB bond funds and global bond funds reported returns of 6.2% and 5.1% respectively in 2017, Hong Kong dollar bond funds posted a return of 2.9%.
14. While guaranteed funds recorded a return of 3.0% in 2017, money market fund – other than MPF conservative funds and money market fund – MPF conservative funds generated returns of 2.5% and 0.1% respectively. In 2017, the persistently low interest rate environment continued to take a toll on the investment performance of money market funds.

### Equity Funds

34.4%

### Mixed Assets Funds

22.3%

### Bond Funds

4.8%

### Guaranteed Funds

3.0%

### Money Market Fund – Other than MPF Conservative Funds

2.5%

### Money Market Fund – MPF Conservative Funds

0.1%

<sup>3</sup> 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**

15. The risk level of MPF funds was examined by measuring the standard deviation and range of monthly returns from December 2000 to December 2017. 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 funds – other than MPF conservative funds, and money market funds – MPF conservative funds.

## **IMPLICATIONS**

### **MPF Plays an Important and Active Role in the Retirement Protection System for Hong Kong**

16. In terms of asset growth, the MPF System had exhibited a strong growth rate in 2017. The total assets of the MPF System hit a record high of \$843.51 billion. Compared to a total asset of \$36.01 billion as at 31 December 2001 (around one year after the inception of the MPF System), it has grown by more than 22 times. From December 2001 to December 2017, the average account balance of members rose from around \$13,000 to \$200,000.<sup>4</sup>
17. These assets are recorded in members' MPF accounts as their savings for retirement. As the MPF System matures over the years and the amount of assets accumulated to a sizeable amount, an increase in MPF assets means that the MPF System has been able to help members accumulate a significant amount of savings for retirement. The continuous growth of MPF assets reinforces the value of the MPF System as an important pillar of Hong Kong's retirement savings system, and the MPF System plays a positive and increasingly important role in members' retirement protection. Assuming that the investment return of the MPF System will be comparable to the average rate since its inception, it is projected that the total assets of the MPF System may reach \$1,000 billion by 2020.<sup>5</sup>

### **MPF as a Long-Term Investment**

18. Despite the encouraging investment performance of the MPF System in 2017, it should be noted that MPF is a long-term investment, spanning across a period of more than 40 years. During the period, the investment performance of the MPF System will be subject to different degrees of market fluctuations. It is advisable for members to regularly review their MPF investment to ensure that the investment portfolio (i.e. fund choices) matches their personal circumstances (e.g. risk tolerance level).

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<sup>4</sup> The average account balance of members covers members of different contribution amounts and histories. The hypothetical examples given in Box 1 on pages 19-20 illustrate different scenarios of saving outcomes for median-income earners who have joined the MPF System since its inception and continuously made contributions to it. It should however be noted that none of these hypothetical examples serve as recommendation or advice on how a member's investment choice or strategy should be.

<sup>5</sup> The projection has taken account of the net asset values of the MPF System, the annual contributions into and benefits withdrawn from the MPF System, and a number of socioeconomic factors such as labour force participation rate and unemployment rate.

## **Members' Saving Outcomes Hinging on their Investment Decisions**

19. In considering their risk tolerance level, members need to balance the potential anxiety over volatility of returns against the prospect of longer-term gain. The fund choice made by members has an important impact on their saving outcomes. Different types of funds are associated with different levels of potential risks and returns.
20. Members will be in a better position to make fund choices suitable for their personal circumstances if they are equipped with proper investment knowledge of MPF. For those members who do not know how to manage or are not interested in managing their MPF investment, the Default Investment Strategy (DIS), which seeks to balance long-term risks and returns, could serve as a ready-made investment solution for them. However, investing in the DIS is also subject to the investment risk associated with market fluctuations.

## **Avoid Timing the Market**

21. Hong Kong and some large equity markets like that of the US have shown strong performance. Members should take caution against “buying high” and taking on excessive risks as equity markets are highly volatile. Members should not try to time the market even if the market is going strong as any sharp correction might negate any gains over the past years. Some research suggests that trading in and out by timing the market may not be the best way for making investment.<sup>6</sup> Those members nearing retirement should pay special attention to avoid short-term speculation. This is because when members approach the retirement age, there would be limited opportunity for them to recoup large losses incurred immediately before retirement.

## **Looking at Performance Figures in Conjunction with the Level of Risk**

22. Members are reminded that the return figures set out in this report are only intended to give a generalized indication of the performance of the MPF System and funds. The performance is measured without taking into account risks, and members need to consider their risk appetite when making fund choice. The report shows that MPF funds had generally exhibited the expected relationship between risk and return, that is, the higher the potential return in the long run, the higher the risk. Members should also note that the System or fund-type return figures set out in the report should not be seen as providing any firm indicators for predicting future absolute performance of MPF funds.

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<sup>6</sup> See Elton, E.J., Gruber, M.J., & Blake, C.R. (2012). An examination of mutual fund timing ability using monthly holdings data. *Review of Finance* (16)3, 619-645 and Henriksson, R.D. (1984). Market timing and mutual fund performance: an empirical investigation. *The Journal of Business*, 57(1), 73-96.

## Section 1 – Introduction

### Objective

1. This report is prepared to review the investment performance of the Mandatory Provident Fund (MPF) System in 2017, with the aim of assisting MPF scheme members (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 fund 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 – other than MPF conservative fund; and
  - vi. money market fund – 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 debt securities) tend to be the preferred choices of members. The assets of equity funds and mixed assets funds accounted for 43% and 37% of the aggregate net asset value (NAV) of MPF funds respectively as at December 2017. In terms of the total number of MPF funds, these two fund types together accounted for almost 80% of the total number of MPF funds. Instead of investing in growth funds like equity funds and mixed assets funds, quite a number of members have chosen lower-risk funds like money market fund – MPF conservative funds for investing their MPF savings. In this regard, the assets of money market fund – MPF conservative funds accounted for 9% of the aggregate NAV of MPF funds as at December 2017 (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 December 2017**

Fund Type	NAV		No. of Funds (%)
	\$ million	% of Total	
<b>Equity Fund</b>	362,273	43%	154 (33%)
<b>Mixed Assets Fund</b>	312,419	37%	210 (45%)
<b>Bond Fund</b>	25,853	3%	43 (9%)
<b>Guaranteed Fund</b>	62,156	7%	21 (4%)
<b>Money Market Fund – Other than MPF Conservative Fund</b>	3,184	<0.5%	9 (2%)
<b>Money Market Fund – MPF Conservative Fund</b>	77,631	9%	32 (7%)
<b>Total*</b>	<b>843,515</b>	<b>100%</b>	<b>469 (100%)</b>

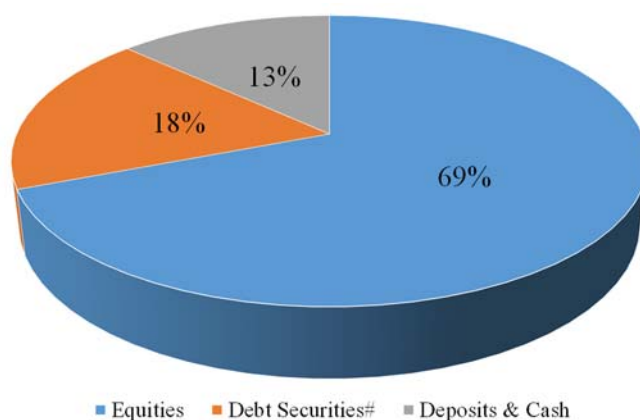
\* Figures may not sum up to the total or 100% due to rounding.

Source: MPFA

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

6. Since assets of MPF funds are invested in financial instruments, the 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. In this regard, the choice of funds by members directly impacts on the overall return of the MPF System. As an outcome of the collective choice of members, the MPF System has significant exposure to equities, mainly through members' investments in equity funds and mixed assets funds.
7. In terms of asset allocation, equities accounted for 69% of the aggregate NAV of MPF funds as at September 2017 (Chart 1).<sup>7</sup>

**Chart 1 Asset Allocation of MPF Funds by Asset Class – 30 September 2017**



# Includes convertible debt securities

Source: MPFA

8. According to the Organisation for Economic Co-operation and Development (OECD), in 2017, the global economy grew at its fastest pace since 2010, attributed to solid employment gains, an upturn in investment and a recovery of trade growth.<sup>8</sup> In line with a strengthening of the global economy, equity markets in different economies fared well in 2017.
9. Against this background, the MPF System as a whole recorded a return of 22.3% (net of fees and charges) in 2017<sup>9</sup>, the highest yearly return since 2010<sup>10</sup> and the second highest since its inception (Chart 2).

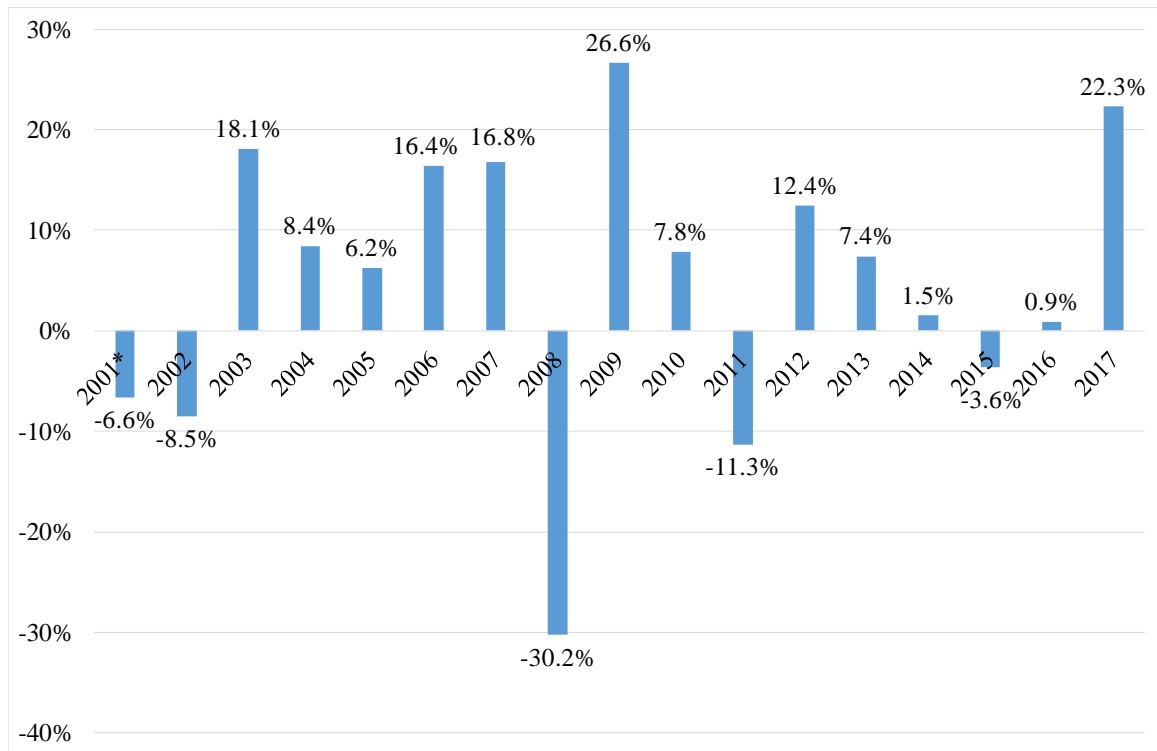
<sup>7</sup> The proportion of different asset classes in the aggregate NAV of MPF funds may also be affected by their respective performances. For example, an upturn of equity markets may lead to a higher proportion of equities in the aggregate NAV of MPF funds.

<sup>8</sup> OECD (2017), *OECD Economic Outlook*, Volume 2017 Issue 2, OECD Publishing, Paris.  
[http://dx.doi.org/10.1787/eco\\_outlook-v2017-2-en](http://dx.doi.org/10.1787/eco_outlook-v2017-2-en)

<sup>9</sup> The return of the MPF System was 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, was used as it better reflects the features of cash inflow and outflow of the MPF System. The annualized IRR was 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.

<sup>10</sup> In 2009, the yearly return of the MPF System was 26.6%.

**Chart 2 Investment Return of the MPF System Since its Inception by Calendar Year**



\* Refers to the 13-month period from 1 December 2000 to 31 December 2001.

Notes:

1. 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.
2. Return figures are net of fees and charges.

Source: MPFA

10. Since its inception in December 2000, the MPF System generated an annualized return of 4.8% (Table 2).

**Table 2 Annualized Return of the MPF System by Period – 31 December 2017**

Past 1 Year	Past 5 Years	Past 10 Years	Since 1 Dec 2000
22.3%	5.8%	3.5%	4.8%

Source: MPFA

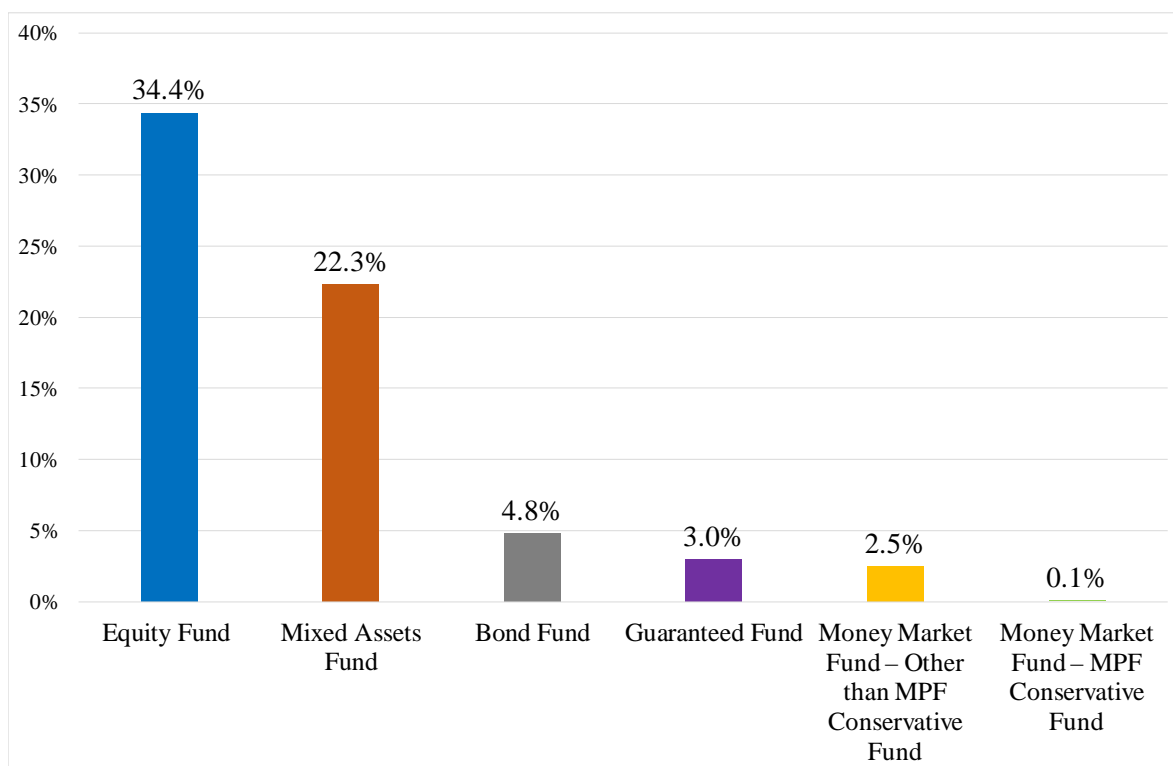
11. Mainly thanks to the strong return gained in the year, as at December 2017, the total assets of the MPF System hit a record high of \$843.51 billion, including \$576.12 billion in MPF contributions (net of amount withdrawn) and \$267.39 billion in investment returns net of fees and charges.
12. For 2017 alone, the total assets of the MPF System grew by \$197.17 billion (from \$646.34 billion in December 2016 to \$843.51 billion in December 2017), the highest yearly growth in dollar terms since its inception.

## Section 3 – Investment Performance of MPF Funds

### Investment Performance of Different Fund Types

13. Under the MPF System, approved trustees operate MPF schemes. As at December 2017, there were a total of 32 MPF schemes. Each MPF scheme offers a number of MPF funds to members. As at December 2017, there were a total of 469 MPF funds.
14. MPF funds are categorized into six fund types, namely equity fund, mixed assets fund, bond fund, guaranteed fund, money market fund – other than MPF conservative fund, and money market fund – MPF conservative fund. Funds of different fund types are often associated with different investment objectives, investment instruments and risk levels.
15. In 2017, on average, all of the six fund types reported positive returns, from 0.1% to 34.4%.<sup>11</sup> Equity funds and mixed assets funds outperformed other fund types by a wide margin. Both equity funds and mixed assets funds benefitted from the generally bullish equity markets in 2017.
16. Chart 3 shows the annualized returns of different fund types of MPF funds in 2017. All return figures are net of fees and charges.

**Chart 3 Investment Return of MPF Funds by Fund Type in 2017**



Source: MPFA

<sup>11</sup> 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.

17. Table 3 shows that fund choice made by members may have an important impact on their saving outcomes. For example, the annualized return of equity funds since the inception of the MPF System amounted to 5.5%, while that of money market fund – other than MPF conservative funds was 0.6%. It is however noteworthy that the investment risk of equity funds are much higher than those of money market fund – other than MPF conservative funds, and investing in the former fund type may suffer from substantial losses in the event of a downturn of equity markets.

**Table 3 Investment Return of MPF Funds by Fund Type and Period  
– 31 December 2017**

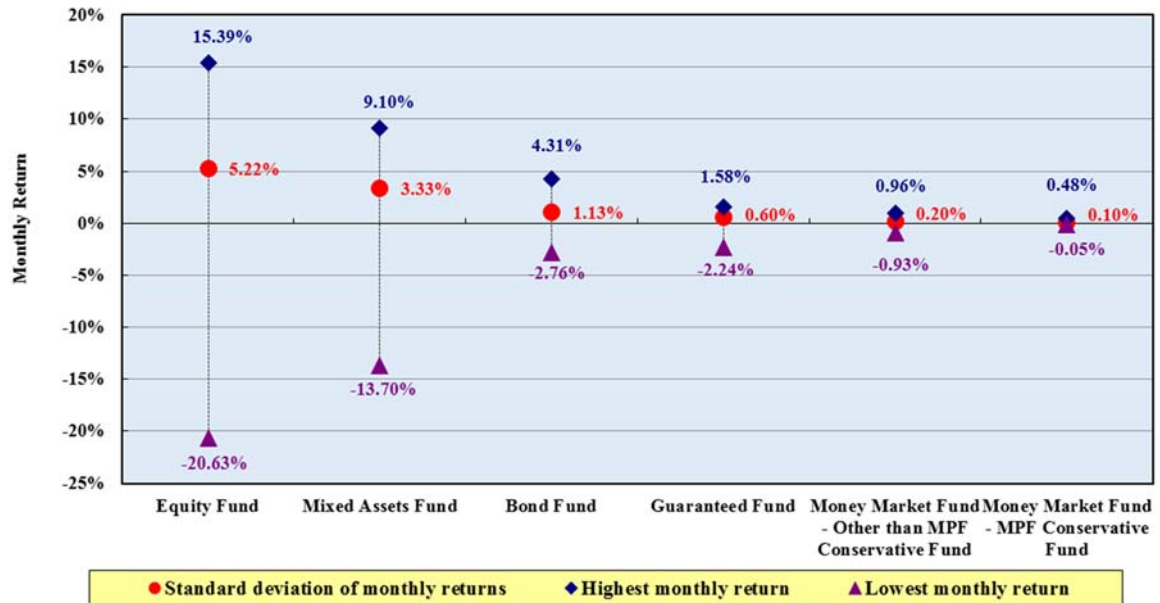
Fund Type	Annualized Return				Cumulative Return Since 1 Dec 2000
	Past 1 Year	Past 5 Years	Past 10 Years	Since 1 Dec 2000	
Equity Fund	34.4%	7.5%	2.3%	5.5%	147.7%
Mixed Assets Fund	22.3%	5.9%	2.3%	4.6%	117.3%
Bond Fund	4.8%	0.1%	1.9%	2.7%	58.9%
Guaranteed Fund	3.0%	0.6%	0.6%	1.2%	23.4%
Money Market Fund – Other than MPF Conservative Fund	2.5%	0.3%	0.0%	0.6%	10.3%
Money Market Fund – MPF Conservative Fund	0.1%	0.1%	0.2%	0.7%	13.0%

### **Risk Levels of Different Fund Types**

18. Return figures need to be considered in conjunction with the level of risk taken in achieving those returns. 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. Applied in the current context, a fund type with wider range, that is with returns rising and falling substantially over a certain period, denotes a higher level of risk. Conversely, a fund type with narrower range denotes a lower level of risk.
19. Looking at the risk level from the perspective of standard deviation from December 2000 to December 2017, among the six types of MPF funds, equity funds indicated 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 (Chart 4).

20. Looking at the risk level from the perspective of range of monthly returns, the results were same as those based on the standard deviation perspective. 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 2017, 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 (December 2000 – December 2017)**

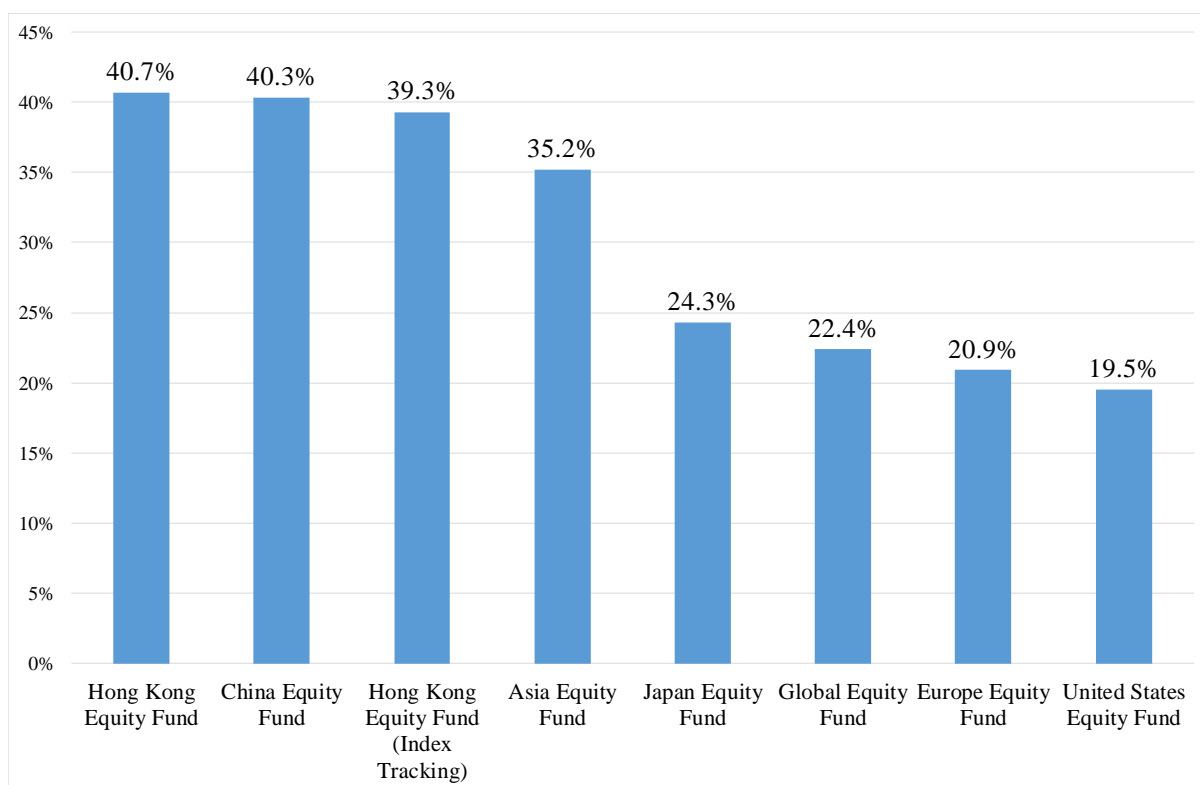


## Section 4 – Further Analysis of the Investment Performance of Different Types of MPF Funds

### Equity Funds

21. Relatively speaking, equity funds as a group were the best performer among all MPF fund types in 2017. Equity funds could be further categorized into different sub-groups with reference to the allocation of assets by geographical region of the funds (Chart 5).

**Chart 5 Investment Return of Equity Funds by Sub-Group in 2017**



Source: MPFA

22. Among the sub-groups of equity funds, Hong Kong equity funds (40.7%), China equity funds (40.3%) and Hong Kong equity funds (index tracking) (39.3%) generated higher returns than those of other sub-groups in 2017.
23. Since the inception of the MPF System, Asia equity funds (7.6%), Hong Kong equity funds (7.4%) and Hong Kong equity funds (index tracking) (6.1%) posted relatively higher annualized returns than other sub-groups like Japan equity funds (1.9%) and Europe equity funds (1.7%) (Table 4).

**Table 4 Annualized and Cumulative Returns of Equity Funds by Sub-Group and Period – 31 December 2017**

Sub-Group	Annualized Return				Cumulative Return Since 1 Dec 2000
	Past 1 Year	Past 5 Years	Past 10 Years	Since 1 Dec 2000	
Hong Kong Equity Fund	40.7%	7.9%	2.3%	7.4%	241.0%
China Equity Fund	40.3%	7.4%	1.6%	#	#
Hong Kong Equity Fund (Index Tracking)	39.3%	8.4%	2.9%	6.1%	174.8%
Asia Equity Fund	35.2%	6.0%	2.3%	7.6%	251.4%
Japan Equity Fund	24.3%	11.9%	1.5%	1.9%	37.4%
Global Equity Fund	22.4%	9.2%	2.9%	3.5%	78.9%
Europe Equity Fund	20.9%	7.4%	0.3%	1.7%	34.0%
United States Equity Fund	19.5%	12.9%	5.9%	3.0%	64.5%

# Data not available as no equity funds were classified as China equity funds as at 1 December 2000.

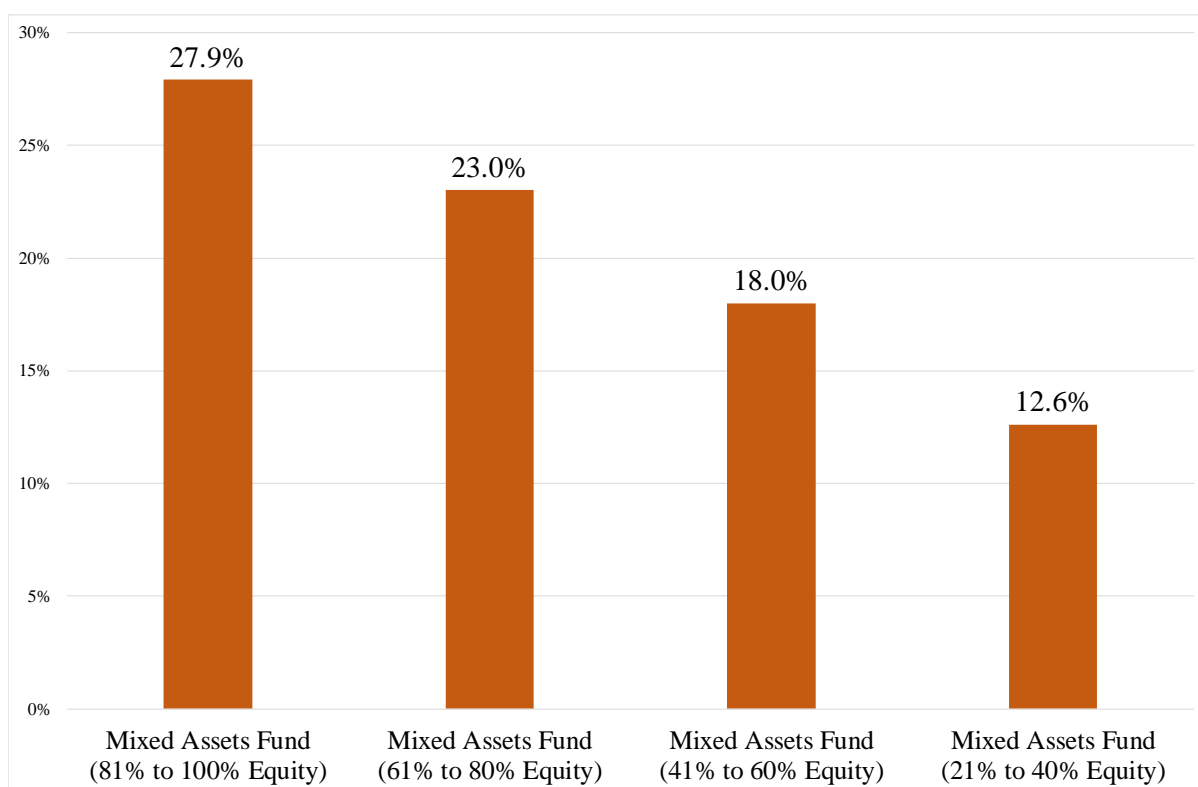
Source: MPFA

### Mixed Assets Funds

24. Mixed assets funds could be 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)
25. Since mixed assets funds generally invest in equities and debt securities, their investment returns hinge on the performance of these two markets. Generally speaking, major equity markets fared well in 2017. Against this background, those mixed assets funds with higher equity content posted relatively higher level of returns. While mixed assets funds (81% to 100% equity) reported a return of 27.9% in 2017, mixed asset funds (21% to 40% equity) only produced a return of 12.6% (Chart 6).



**Chart 6 Investment Return of Mixed Assets Funds by Sub-Group in 2017**



Source: MPFA

26. In respect of the annualized return since the inception of the MPF System, mixed assets funds (81% to 100% equity) and mixed assets funds (61% to 80% equity) posted a return of 4.8%. On this occasion, a more diversified or balanced portfolio generated a return on a par with the one with higher equity content (Table 5).

**Table 5 Annualized Return of Mixed Assets Funds by Sub-Group and Period – 31 December 2017**

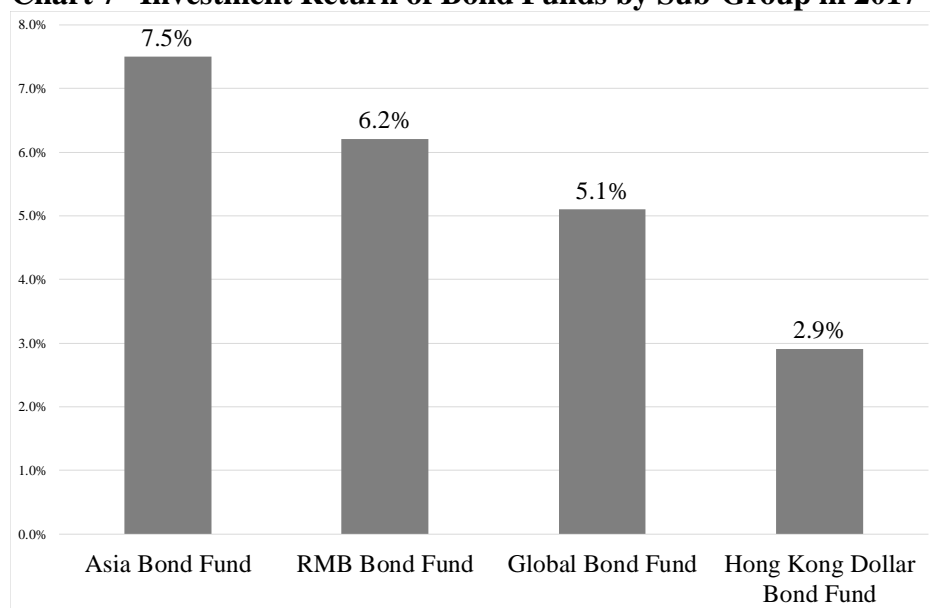
Sub-Group	Annualized Return				Cumulative Return Since 1 Dec 2000
	Past 1 Year	Past 5 Years	Past 10 Years	Since 1 Dec 2000	
Mixed Assets Fund (81% to 100% Equity)	27.9%	7.6%	2.4%	4.8%	123.0%
Mixed Assets Fund (61% to 80% Equity)	23.0%	6.1%	2.6%	4.8%	123.2%
Mixed Assets Fund (41% to 60% Equity)	18.0%	4.5%	2.5%	4.5%	113.7%
Mixed Assets Fund (21% to 40% Equity)	12.6%	2.6%	2.1%	3.9%	92.1%

Source: MPFA

## Bond Funds

27. Bond funds could be further categorized into different sub-groups with reference to the allocation of assets by geographical region/currency exposure of the funds. In 2017, the overall return of bond funds was 4.8%. Relatively speaking, Asia bond funds performed better than other sub-groups of bond funds, by generating a return of 7.5% in 2017. While RMB bond funds and global bond funds reported returns of 6.2% and 5.1% respectively in 2017, Hong Kong dollar bond funds registered a return of 2.9% (Chart 7).

**Chart 7 Investment Return of Bond Funds by Sub-Group in 2017**



Source: MPFA

28. Since the inception of the MPF System, global bond funds and Hong Kong dollar bond funds posted annualized returns of 3.2% and 2.0% respectively (Table 6).

**Table 6 Annualized and Cumulative Returns of Bond Funds by Sub-Group and Period – 31 December 2017**

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	7.5%	0.6%	1.1%	#	#
RMB Bond Fund	6.2%	-0.3%	1.0%	#	#
Global Bond Fund	5.1%	0.0%	2.0%	3.2%	70.8%
Hong Kong Dollar Bond Fund	2.9%	0.6%	1.8%	2.0%	41.0%

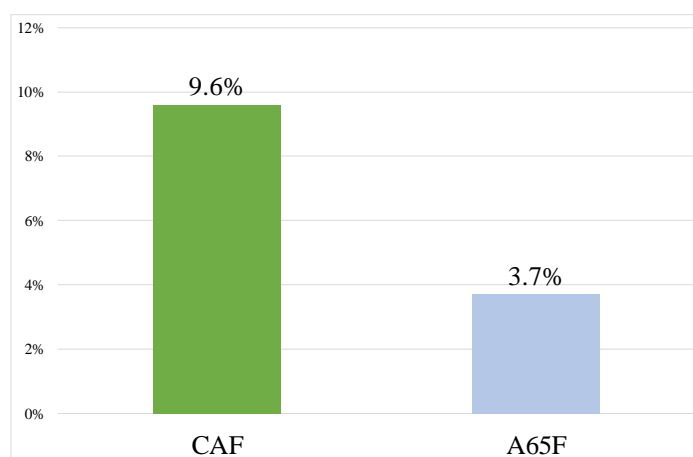
# Data not available as no bond funds were classified as Asia bond funds or RMB bond funds as at 1 December 2000.

Source: MPFA

### Constituent Funds under the Default Investment Strategy (DIS)

29. Launched on 1 April 2017, the DIS provides members with a ready-made investment solution which seeks to balance long-term risks and returns. There are three major features of the DIS:
- Automatic reduction of investment risk according to members' age;
  - Fee caps; and
  - Globally diversified investment.
30. Offered in each MPF scheme, the DIS is made up of two MPF 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 8 Return of CAF and A65F (April 2017 – December 2017)**



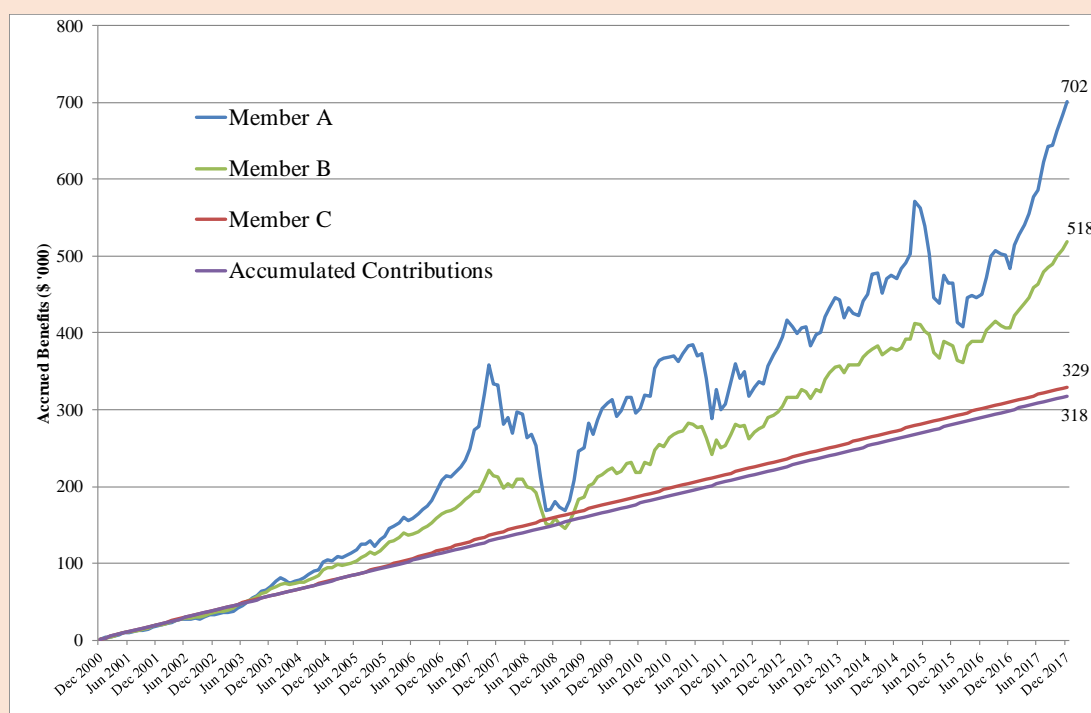
*Source: MPFA*

31. For the nine months since the launch of the DIS, the CAF and A65F posted returns of 9.6% and 3.7% respectively (Chart 8).

### Box 1 – Member’s Fund Choice and Saving Outcomes

- Members’ investment decisions have an impact on the outcome of their MPF savings. Three hypothetical cases are provided here to illustrate this possible relationship. These three hypothetical cases will try to project the probable saving outcomes of members who continue to invest in a i) Hong Kong equity fund; ii) mixed assets fund; and iii) money market fund – MPF conservative fund. The purpose of these hypothetical examples is to show that different funds chosen by members may be associated with different levels of potential risks and returns, as well as the probable final outcome of members’ MPF savings.

**Chart 9 Illustrative Examples of Saving Outcomes**



**Key assumptions:**

- Commencement of monthly contribution: December 2000
- Monthly contribution amount: \$1,550 (\$775 from member and \$775 from employer), which is based on the median income of \$15,500 per month of the employed persons in Hong Kong as at September 2017
- Rate of return: average monthly return of the particular fund types during the period
- Total amount of contribution over 17 years and one month: \$318,000

**Disclaimer: The examples (including all values and figures) given in Box 1 are hypothetical examples 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.**

- Member A – a long-term Hong Kong equity fund investor: This hypothetical case assumes that a member chose a Hong Kong equity fund for investment of his MPF contributions around 17 years ago and did not change investment decision at any point. After around 17 years, the accrued benefits in his MPF account would be about \$702,000, exceeding his total contributions by more than \$384,000 (or 121%). It is however noteworthy that Member A needs to bear higher level of investment risk. To illustrate this, his MPF investment was subject to a major downturn from October 2007 to November 2008 before recording a recovery in April 2009. Greater volatilities of returns took place again during the period of April 2015 to February 2016.
- Member B – a long-term mixed assets fund investor: This hypothetical case assumes that a member chose a mixed assets fund for investment of his MPF contributions around 17 years ago and did not change investment decision at any point. After around 17 years, the accrued benefits in his MPF account would be about \$518,000, exceeding his total contributions by more than \$200,000 (or 63%). Compared with Member A, Member B experienced relatively lower level of volatilities of returns. During the unfavourable market conditions (e.g. Global Financial Crisis in 2007-2008), Member B suffered less losses than Member A. Since mixed assets funds regularly invest in both equities and debt securities, such characteristics can provide the benefit of diversification between these two asset classes. However, mixed assets funds are still subject to the investment risk associated with fluctuations of equity and bond markets.
- Member C – a long-term conservative fund investor: This hypothetical case assumes that a member chose a money market fund – MPF conservative fund for investment of his MPF contributions around 17 years ago and did not make any change in fund choice during this period. After around 17 years, the accrued benefits in his MPF account would be about \$329,000, marginally (\$11,000 or 3%) higher than his total contributions. While the investment of Member C only managed to produce a modest level of return, it was subject to minimal level of fluctuations of returns during the entire investment period.
- It should however be noted that 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, launched in April 2017, adopts an investment approach which automatically reduces risk over time as the member gets closer to age 65. Those members who do not know how to manage or are not interested in managing their MPF investment may consider using the DIS for their MPF investment.

## Section 5 – Concluding Remarks

### **Overall Return of the MPF System Mirroring Members’ Collective Choices and Market Conditions**

32. Members’ fund choices, putting together, have a substantial impact on the overall asset allocation of the MPF System, including the financial markets that MPF assets would be invested in. A salient characteristic of members’ collective choices is the dominance of Hong Kong (59% as at September 2017) and other Asian markets (14% as at September 2017) in the overall allocation of MPF assets (including equities, debt securities and currencies). The ebb and flow of these financial markets weigh heavily on the investment performance of the MPF System.

### **MPF Plays an Important and Active Role in the Retirement Protection System for Hong Kong**

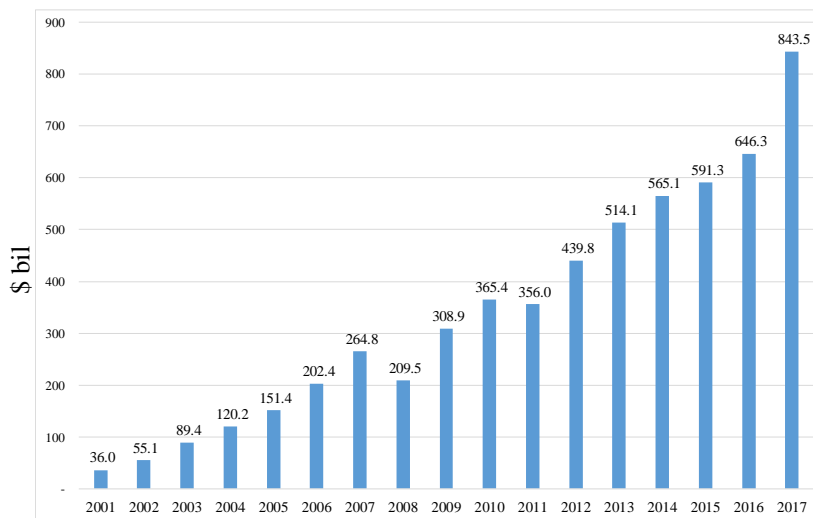
33. In terms of asset growth, the MPF System had a promising year in 2017. The total assets of the MPF System hit a record high of \$843.51 billion, including \$576.12 billion (68%) in MPF contributions (net of amount withdrawn) and \$267.39 billion (32%) in investment returns net of fees and charges. Compared to a total asset of \$36.01 billion as at 31 December 2001 (around one year after the inception of the MPF System), it has grown by more than 22 times. From December 2001 to December 2017, the average account balance of members rose from around \$13,000 to \$200,000.<sup>12</sup>
34. These assets are recorded in members’ MPF accounts as their savings for retirement. As the MPF System matures over the years and the amount of assets accumulated to a sizeable amount, an increase in MPF assets means that the MPF System has been able to help members accumulate a significant amount of savings for retirement. The continuous growth of MPF assets reinforces the value of the MPF System as an important pillar of Hong Kong’s retirement savings system, and the MPF System plays a positive and increasingly important role in members’ retirement protection. Assuming that the investment return of the MPF System will be comparable to the average rate since its inception, it is projected that the total assets of the MPF System may reach \$1,000 billion by 2020 (Chart 10).<sup>13</sup>

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<sup>12</sup> The average account balance of members covers members of different contribution amounts and histories. The hypothetical examples given in Box 1 on pages 19-20 illustrate different scenarios of saving outcomes for median-income earners who have joined the MPF System since its inception and continuously made contributions to it. It should however be noted that none of these hypothetical examples serve as recommendation or advice on how a member’s investment choice or strategy should be.

<sup>13</sup> The projection has taken account of the net asset values of the MPF System, the annual contributions into and benefits withdrawn from the MPF System, and a number of socioeconomic factors such as labour force participation rate and unemployment rate.

**Chart 10 Growth of MPF Assets**



Figures are as at the end of each calendar year.

Source: MPFA

### **MPF as a Long-Term Investment**

35. Despite the encouraging investment performance of the MPF System in 2017, it should be noted that MPF is a long-term investment, spanning across a period of more than 40 years. During the period, the investment performance of the MPF System will inevitably be subject to different degrees of market fluctuations. It is therefore advisable for members to regularly review their MPF investment to ensure that the investment portfolio (i.e. fund choices) matches their personal circumstances (e.g. risk tolerance level).

### **Members' Saving Outcomes Hinging on their Investment Decisions**

36. In considering their risk tolerance level, members need to balance the potential anxiety over volatility of returns against the prospect of longer-term gain. The fund choice made by members has an important impact on their saving outcomes. Different types of funds are associated with different levels of potential risks and returns. For instance, equity funds as a group yielded a return of 34.4% in 2017, while money market fund – MPF conservative funds only reported a return of 0.1%. However, members need to be prepared for tolerating much higher volatility of returns (e.g. greater loss) if they wish to invest in growth funds like equity funds. For instance, equity funds as a group got a loss of 47.1% in 2008, while money market fund – MPF conservative funds reported a return of 1.2%.
37. Members will be in a better position to make fund choices suitable for their personal circumstances if they are equipped with proper investment knowledge of MPF. For those members who do not know how to manage or are not interested in managing their MPF investment, the DIS, which seeks to balance long-term risks and returns, could serve as a ready-made investment solution for them. However, investing in the DIS is also subject to the investment risk associated with market fluctuations.

## **Avoid Timing the Market**

38. Hong Kong and some large equity markets like that of the US have shown strong performance. Members should be cautioned of “buying high” and taking on excessive risks as equity markets are highly volatile. Members should not try to time the market even if the market is going strong as any sharp correction might negate any gains over the past years. Some research suggests that trading in and out by timing the market may not be the best way for making investment.<sup>14</sup> Those members nearing retirement should pay special attention to avoid short-term speculation. This is because when members approach the retirement age, there would be limited opportunity for them to recoup large losses incurred immediately before retirement.

## **Looking at Performance Figures in Conjunction with the Level of Risk**

39. Members are reminded that the return figures set out in this report are only intended to give a generalized indication of the performance of the MPF System and funds. The performance is measured without taking into account risks, and members need to consider their risk appetite when making fund choice.
40. The return and risk profile of an MPF fund can change over time in accordance with changing economic and market conditions. The report shows that MPF funds had generally exhibited the expected relationship between risk and return, that is, the higher the potential return in the long run, the higher the risk. Members who want better prospects of higher returns over the long term should not expect to be able to do so without facing higher risks in the form of greater volatility of returns over time.
41. Members should also note that the MPF System and fund-type return figures set out in the report should not be seen as providing any firm indicators for predicting future absolute performance of MPF funds.

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<sup>14</sup> See Elton, E.J., Gruber, M.J., & Blake, C.R. (2012). An examination of mutual fund timing ability using monthly holdings data. *Review of Finance* (16)3, 619-645 and Henriksson, R.D. (1984). Market timing and mutual fund performance: an empirical investigation. *The Journal of Business*, 57(1), 73-96.



## Appendix A: Methodology – Calculation of Return

### Return of MPF System

1. 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.
2. 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

3. Assumption: All the net monthly contributions made to the MPF System occurred at the beginning of the month.
4. The annualized dollar-weighted return for the MPF System is calculated by raising the MIRR to the power of 12:

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

### Return of Different Types of MPF Funds

5. 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.
6. 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  $t$

7. 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.

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

where

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

8. 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.

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

where

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

9. 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.

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

where

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

## Adjustments

10. 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
<b>Equity Fund</b>	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	<ul style="list-style-type: none"> <li>• There are generally three types of equity funds: single market, regional market or global market.</li> <li>• They invest mainly in stocks listed on stock exchanges approved by the MPFA.</li> </ul>
<b>Mixed Assets Fund</b>	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	<ul style="list-style-type: none"> <li>• Different mixed assets funds have different proportions of stocks and bonds. In general, greater proportion of stocks is associated with higher risk.</li> </ul>
<b>Bond Fund</b>	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	<ul style="list-style-type: none"> <li>• The bonds must meet the minimum credit rating or listing requirements prescribed by the MPFA.</li> </ul>

<b>Fund Type</b>	<b>Investment Objective</b>	<b>Investment Instrument</b>	<b>Risk Level</b>	<b>Major Risk</b>	<b>Points to Note</b>
<b>Guaranteed Fund</b>	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.	<ul style="list-style-type: none"> <li>• 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.</li> <li>• To qualify for the guarantee, all guarantee conditions such as minimum investment period and withdrawal requirements must be met.</li> </ul>
<b>Money Market Fund – MPF Conservative Fund</b>	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	<ul style="list-style-type: none"> <li>• The law requires that each MPF scheme offers at a minimum an MPF conservative fund.</li> <li>• 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.</li> <li>• An MPF conservative fund may be described as a money market fund in the Fund Fact Sheet issued by trustees.</li> </ul>
<b>Money Market Fund – Other than MPF Conservative Fund</b>	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	<ul style="list-style-type: none"> <li>• 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.</li> </ul>